**DATA INTERPRETATION**

**Questions Q1A to Q1D : Refer to the table below and answer the questions that follow.**

**Export of Engineering Goods from India(In Rs Crore)**

| Year | Total Exports | Engineering goods exported |
| --- | --- | --- |
| 1996 | 5143 | 552 |
| 1997 | 5404 | 624 |
| 1998 | 5426 | 717 |
| 1999 | 5999 | 653 |

**Q1A. What percent of exports were engineering goods in 1998?**  
A. 8% B. 13% C. 27% D. 20%  
**Q1B. The fall of engineering exports in 1999 from that in 1998 was nearly:**  
A. 9% B. 91% C. 4% D. 6%  
**Q1C. Over the four year period from 1996 to 1999 Exports rose by nearly:**  
A. 10% B. 18.3% C. 30.9% D. 28.3%  
**Q1D. Percentage growth of Engineering Exports in the period 1997 to 1998 exceeds the percentage growth over the same period by:**  
A. Nearly 71 B. Nearly 93 C. Nearly 4.2 D. 14.5   
   
**Questions Q2A to Q2D : Refer to the table below and answer the questions that follow.**

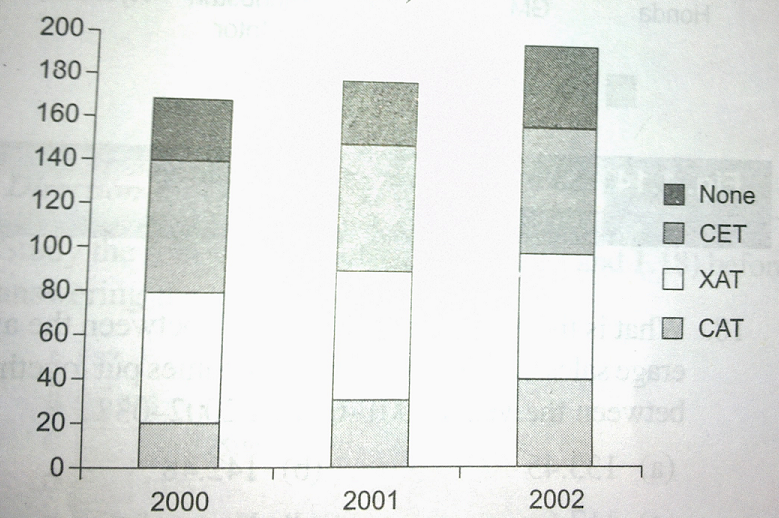
|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **Category** | **Installed Capacity** | | | **Production** | | |
| **1998** | **1999** | **2000** | **1998** | **1999** | **2000** |
| Commercial Vehicles | 70 | 79 | 89.5 | 41.2 | 51.6 | 58.4 |
| Passenger Cars | 48.4 | 52.4 | 53 | 38.3 | 34.6 | 29.3 |
| Jeeps | 13 | 13 | 13 | 9.6 | 11 | 12.3 |
| Motor Cycles | 88.5 | 88.5 | 90 | 67 | 86.8 | 87 |
| Scooters | 250 | 250 | 278 | 160.4 | 168 | 153 |
| 3 Wheelers | 24 | 29 | 32 | 18.4 | 19.2 | 17.1 |

**Note:** **Capacity Utilization = Production/Installed Capacity**

**Q2A. Which of the following automobiles experienced no growth in installed capacity, over the period 1998-2000?**  
A. Commercial Vehicles B. Passenger Cars C. Jeeps D. Motorcycles  
**Q2B. In 2000, capacity utilization was lowest for for which category of automobiles?**  
A. Commercial Vehicles B. Motorcycles C. Jeeps D. 3 Wheelers

**Q2C. In 2000, capacity utilization was highest for for which category of automobiles?**  
A. Passenger Cars B. Motorcycles C. Scooters D. 3 Wheelers  
**Q2D. The only category of automobiles which experienced a steady decline in production was:**  
A. Commercial Vehicles B. Passenger Cars C. Jeeps D. Scooters  
**Q2E. Which of the following statements are true?**  
1. All categories of automobiles experienced a growth in production between 1999 to 2000.  
2. In 2000, the capacity utilization of Jeeps was higher than that of motorcycles.  
3. Passenger cars, scooters and 3 wheelers experienced a decline in production between 1999 and 2000.  
A. 1 only B. 2 only C. 3 only D. 2 and 3

**Q3: Study the following Bar Diagram and answer Q3A-Q3B.**

  
  
**The above chart represents the number of students of XYZ careers at its Lucknow centre who passed the CAT exam or XAT exam or the CET exam or none of the exams. (Assume that there are no students who passed more than one exam.)**

**Q3A: What was the percentage of students who cleared CAT in 2000?**

A. 19.56% B. 12.65% C. 14.28% D. 11.76%

**Q3B: What was the percentage of students who succeeded in at least one of the three exams in 2000?**

A. 82.4% B. 82.8% C. 82.35% D. 83.3%

**Q3C: Which year showed the best result in MBA entrance exams for the institute (in terms of %age)(Note all the three are MBA entrances.)**

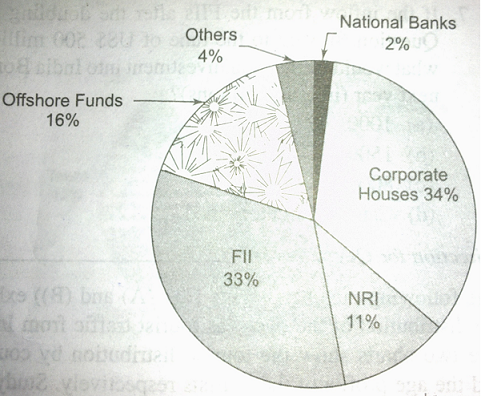
A. 2000 B. 2001 C. 2002 D. Cannot be determined.

**Q3D: What is the percentage increase on the number of students in 2002 over 2000?**

A. 30% B. 17.64% C. 117.6% D. 85%

**Q4. The following pie chart shows the amount of subscriptions generated for the India Bonds from different categories of investors.  
  
Q4A: What should be the degree of the region represented by ‘Corporate Houses’?**A. 122.4 B. 122.8 C. 121.8 D. 122.0

**Q4B: If the investments by NRIs are Rs 4000 crore, then the investment by corporate houses and FIIs together is:**A. 24000 crore B. 24,363 crore C. 25,423.4 crore D. 25,643.3 crore



**Q4C: What is the approximate ratio of investments made by NRIs to that of corporate houses?**A. 1:4 B. 1:3 C. 3:1 D. None of these  
**Q4D: If the total investment other than FII and corporate houses is Rs 335,000 crore, then the investment by NRIs and Offshore funds will be (approximately):**A. 274,000 B. 285,000 C. 293,000 D. Cannot be determined.

**Directions for questions 5A to 5D:**

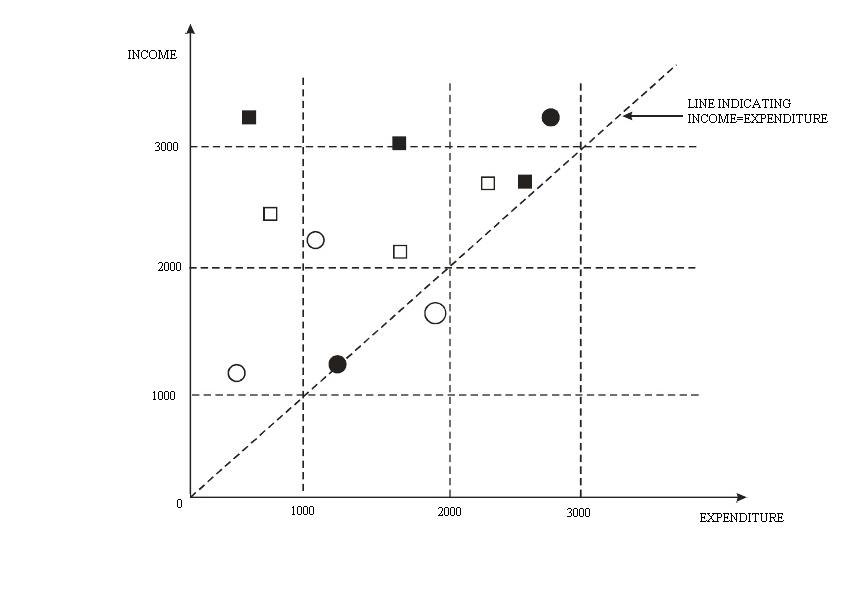
**Answer the questions on the basis of the formation given below. A study was conducted to ascertain the relative importance that employees in five different countries assigned to five different traits in their Chief Executive Officers. The traits were compassion (C), decisiveness (D), negotiation skills (N), public visibility (P), and vision (V). The level of dissimilarity between two countries is the maximum difference in the ranks allotted by the two countries to any of the five traits. The following table indicates the rank order of the five traits for each country.**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **COUNTRY** | | | | |
| **RANK** | **India** | **China** | **Japan** | **Malaysia** | **Thailand** |
| 1 | C | N | D | V | V |
| 2 | P | C | N | D | C |
| 3 | N | P | C | P | N |
| 4 | V | D | V | C | P |
| 5 | D | V | P | N | D |

**Q5A. Which of the following pairs of countries are most dissimilar?**A. China and Japan  B. India and China C. Malaysia and Japan  D. Thailand and Japan **Q5B. Which of the following countries is least dissimilar to India?**A. China  B. Japan  C. Malaysia  D. Thailand **Q5C. Which amongst the following countries is most dissimilar to India?**A. China  B. Japan C. Malaysia  D. Thailand  
**Q5D. Three of the following four pairs of countries have identical levels of dissimilarity. Which pair is the odd one out?**A. Malaysia and China  B. China and ThailandC. Thailand and Japan  D. Japan and Malaysia

**Directions for questions 6A to 6D:**

**Answer the questions on the basis of the information given below. The data points in the figure below represent monthly income and expenditure data of individual members of the AJAY family ( ■), the BOB family (□), the CHARLIE family (○), and the DEV family (●). For these questions, savings is defined as**

**Q6A. Which family has the lowest average income?**  
A. AJAY  B. BOB  C. CHARLIE D. DEV

**Q6B. Which family has the highest average expenditure?**  
A. AJAY  B. BOB  C. CHARLIE D. DEV

**Q6C. Which family has the lowest average savings?**  
A. AJAY  B. BOB  C. CHARLIE D. DEV

**Q6D. The highest amount of savings accrues to a member of which family?**  
A. AJAY  B. BOB  C. CHARLIE D. DEV

**Directions for questions Q7A to Q7D:**

**Answer the questions on the basis of the information given below .Prof. Sunil has been tracking the number of visitors to his homepage? His service provider has provided him with the following data on the country of origin of the visitors and the university they belong to:**Number of visitors:

|  |  |  |  |
| --- | --- | --- | --- |
|  | DAY | | |
| COUNTRY | 1 | 2 | 3 |
| China | 2 | 0 | 0 |
| UAE | 1 | 1 | 0 |
| India | 1 | 2 | 0 |
| UK | 2 | 0 | 2 |
| USA | 1 | 0 | 1 |

Number of visitors:

|  |  |  |  |
| --- | --- | --- | --- |
|  | DAY | | |
| UNIVERSITY | 1 | 2 | 3 |
| University 1 | 1 | 0 | 0 |
| University 2 | 2 | 0 | 0 |
| University 3 | 0 | 1 | 0 |
| University 4 | 0 | 0 | 2 |
| University 5 | 1 | 0 | 0 |
| University 6 | 1 | 0 | 1 |
| University 7 | 2 | 0 | 0 |
| University 8 | 0 | 2 | 0 |

**Q7A. To which country does University 5 belong?**

A. India or UAE but not USA  B. India or USA but not UAE

C. UAE or USA but not India  D. India or USA but not UK

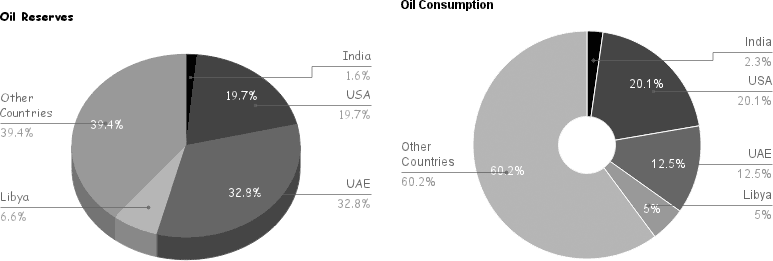
**Q7B. University 1 can belong to**  
A. UK  B. China C. UAE  D. USA

**Q7C. Which among the listed countries can possibly host three of the eight listed universities?**  
A. None  B. Only UK  C. Only India  D. Both India and UK

**Q7D.Visitors from how many universities from UK visited Prof. Sunil’s homepage in the three days?**  
A. 1  B. 2  C. 3  D. 4

**Directions for questions Q8A to Q8E:**

**Answer the questions on the basis of the information given below .**



**Q8A. If the oil reserves in USA is 394 bbl (billion barrels), what is the world reserve approximately?**A. 900bbl B. 1200bbl C. 1500bbl D. 2000bbl

**Q8B. Assume Libya consumes 20 bbl per year and India produces 5 bbl new reserves every year. For how many years India reserves will last if the total world reserve is 2000 bbl?**A. 3.47 yrs B. 7.62yrs C. 9.52yrs D. 10.40yrs

**Q8C.** **If the difference between UAE and Libya's consumption is  22.5 bbl, what is the approximate total consumption by countries other than India, USA, UAE and Libya?**A. 80bbl B. 120bbl C. 180bbl D. 250bbl

**Q8D. If UAE exports twice the amount of it's oil consumption (which is on an average 3 bbl per month) and the average cost of a barrel is 90 USD, what is the total revenue per year via oil exports for UAE?**A. 2480 billion USD B. 3560 billion USD C. 5690 billion USD D. 6480 billion USD

**Q8E. Which country will deplete it's reserves assuming no import of oil and no new reserves being found?**A. UAE B. USA C. India d. Libya

**Q9: Rating of importance of certain factors to production are given on a scale of 0 to 100, country wise.**

| **Country** | **Maintenance of plant** | **Technology** | **After sales service** | **Training** |
| --- | --- | --- | --- | --- |
| USA | 80 | 95 | 90 | 95 |
| UK | 80 | 90 | 90 | 90 |
| Germany | 90 | 90 | 90 | 90 |
| Japan | 95 | 80 | 80 | 95 |
| India | 60 | 40 | 70 | 80 |

**These factors comprise the "Production Rating Factor(PRF)" of a country. The weights of these factors contribution to PRF are**

| **Factor** | **Weight** |
| --- | --- |
| **Plant Maintenance** | 0.3 |
| **Technology** | 0.4 |
| **After sales service** | 0.2 |
| **Training** | 0.1 |

**Q9A. The PRF for India is**

A. 60 B. 56 C. 72 D. 84

**Q9B. If the PRF for UK should be made equal to the PRF for USA, to how much should the training for plant maintenance increased?**

A. 88.33 B. 88 C. 87.33 D. 89

**Q9C. PRF for which country is the highest?**

A. USA B. UK C. Germany D. Japan

**Q9D. In the PRF for India which factor makes highest effective contribution?**

A. Plant maintenance B. Technology

C. After Sales Service D. Training

**Q9E. If only plant maintenance and technology are used to calculate PRF and each factor has equal weight of 0.5, which country will have highest PRF?**

A. USA B. UK C. Germany D. Japan

**Q10. The Dean’s office recently scanned student results into the central computer system. When their character reading software cannot read something, it leaves the space blank. The scanner output read as follows:**

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Name | Finance | Marketing | Statistics | Strategy | Operations | GPA |
| AA |  | B | F |  |  | 1.4 |
| BB | D | D | F | F |  |  |
| CC |  | D | A | F | F | 2.4 |
| DD | A | B |  | D | D | 3.2 |
| FF | D | F | B |  | D | 2.4 |
| GG | C | C | A |  | B | 3.8 |
| HH |  | B | A |  | D | 2.8 |
| II |  |  | B |  | A |  |
| JJ | A | A | B |  | C | 3.8 |
| KK | F |  | A | F | F | 1.8 |
| LL | B | A |  | B | F | 3.2 |
| MM |  |  | A | B | B |  |
| NN | A | D | B | A | F | 3.6 |
| OO | C |  | B | B | A | 4.6 |
| PP | F | D |  | D |  | 3.2 |
| RR | A | C | A |  | F | 4.2 |
| SS |  | C | F | B |  |  |
| TT | B |  |  |  |  | 2.4 |
| UU |  |  | F | C | A | 3.0 |
| VV | A |  | C | C | F | 2.4 |

In the grading system, A, B, C, D, and F grades fetch 6, 4, 3, 2, and 0 grade points respectively. The Grade Point Average (GPA) is the arithmetic mean of the grade points obtained in the five subjects. For example NN’s GPA is (6 + 2 + 4 + 6 + 0) / 5 = 3.6. Some additional facts are also known about the students’ grades. These are(a) VV obtained the same grade in Marketing as AA obtained in Finance and Strategy.(b) FF obtained the same grade in Strategy as UU did in Marketing.(c) TT received the same grade in exactly three courses.

**Q10 A. What grade did PP obtain in Statistics?**  
A. A B. B  C. C  D. D

**Q10 B. In operations, TT could have received the same grade as:**A. II B. HH  C. JJ  D. MM

**Q10 C. In Strategy, GG’s grade point was higher than that obtained by**  
A. FF  B. HH  C. NN  D. RR

**Q10 D. What grade did UU obtain in Finance?**  
A. B  B. C  C. D  D. F

**ANSWERS:**

Q1A. B. 13%  
Q1B. A. 9%  
Q1C. B. 18.3%  
Q1D. D. 14.5

Q2A. C. Jeeps  
Q2B. D. 3 Wheelers  
Q2C. B. Motorcycles  
Q2D. B. Passenger Cars  
Q2E. C. 3 only

Q3. By reading of data.



Q3A. D  
CAT in 2000 = 20/(20+60+60+30) = 11.76%

Q3B. C   
% at least one = (170-30)/170 % = 82.35%

Q3C. B  
a. 2000 :- 140/170  
b. 2001 :- 150/180  
c. 2002 :- 160/200

Q3D. B  
2000->2002 :: 170-> 200 . %age increase should be less than 30%

Q4A.A  
34 % of 360 = 122.4

Q4B.B  
Assume total subscriptions generated = X

Total investment by NRI = 0.11X (From pie chart) = 4000 croreTotal investment by (corporate houses + FIIs) = .34X+ .33x= 0.67X  
If 0.11X= 4000 crore, 0.67X= (67/11)(4000) crore [Option B]

Q4C.B  
Answer: 11%:34% =~ 1:3

Q4D:A  
Given X – [0.33X + 0. 34X] =0.33X=335,000crore  
From pie chart: Investment by NRI + Off-shore = .11X+ .16X = 0.27X  
= [27/33](335,000) =~ 274,000 crore

Q5A.D  
Thailand and Japan (Maximum difference of 4 ranks (5 – 1) = 4)

Q5B.A  
China (Maximum difference between 2 parameter is 2)

Q5C.B  
Japan (Maximum difference of 4)

Q5D.D  
Japan and Malaysia

Q6A. C  
Average income of AJAY = (700+1700+1800)/3 = 4200/3  
Average income of BOB = (800+1600+2300)/3 = 4700/3  
Average income of CHARLIE = (300+1100+1900)/3 = 3300/3  
Average income of DEV = (1200 + 2800)/2 = 4000/2  
It’s clear that lowest average income is of CHARLIE. (It is clear visually as well)

Q6B. D

From the figure draw a line parallel to the expenditure axis and midway between observations of each family’s values.

Q6C. D

From figure the Ist member of DEV’s family is on the line indicating income = expenditure. The 2Nd member is just above the line.

Q6D. A  
Look at the leftmost member of AJAY’S family.

Q7A. A  
Q7B. C  
Q7C. A  
Q7D. B

Q8A. D  
Q8B. A  
Q8C. A  
Q8D. D  
Q8E. C

Q9A. B  
Q9B. A  
Q9C. C  
Q9D. A  
Q9E. C

Q10A. A. GPA of PP = 3.2  
F+D+x+D+y)/5 = 3.2  
0 + 2 + x + 2 + y = 16x + y = 12  
So only combination possible is A, A.So PP obtained A grade in statistics.

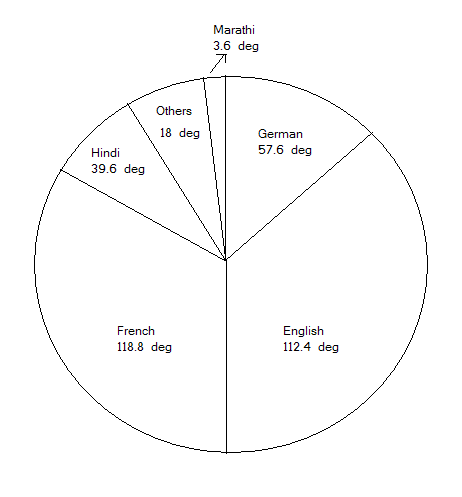
Q10B. D

Tara received same grade in 3 courses. We already know that TT has got B grade in one of the subject and GPA is 2.4. So in 3 courses in which he scored same grade is B. So Tara has received the same grade as MM.

Q10C.B  
GPA of GG is 3.8 i.e. 3 + 3 + 6 + x + 4 = 3.8 × 5  
16 + x = 18x = 2  
So in strategy, GG’s grade is C.RR’s grade in strategy = (4.2 × 5) – 15 = 6, i.e., A.  
FF’s grade in strategy = (2.4 × 5) – 8 = 4, i.e., B.  
Hence, GG’s grade will be higher than that of HH.

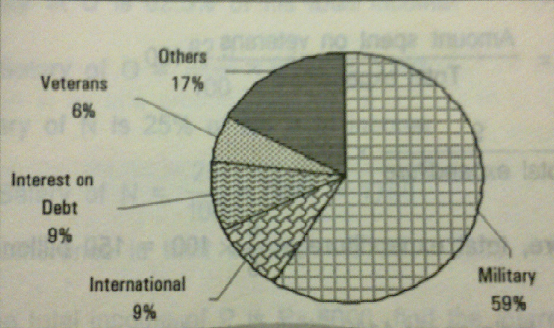
Q10D.C  
 As FF GPA = 2.4  
So D + F + B + P + D = 2.4 × 52 + 0 + 4 + P + 2 = 12  
P = 4  
So his grade in strategy is B.  
So Grade of UU in marketing is also B.  
So for UU, x + B + F + C + A = 3 × 5  
x + 4 + 0 + 3 + 6 = 15  
x = 2  
So grade of UU in finance = D.

**DATA INTERPRETATION**

**Q1B. Refer to pie chart below and answer the question below.**   
1A: If there are 400 Hindi books in the library, how many English books are there in the library?  
A. 837 B. 1236 C. 1612 D. cannot be determined.

1B: If there are 3350 books in the library, other than in English and French, then the number Hindi and German books in the library is about:   
A. 2741 B. 2635 C. 3996 D. None of these

1C: If there are 6812 books in Hindi, Marathi and Other sections put together, how many books in all does the library have?  
A. 36796 B. 46132 C. 40071 D. None of these

Q2: Solve the following Question  
2000 National Budget Expenditure (Percentage Allocation) 

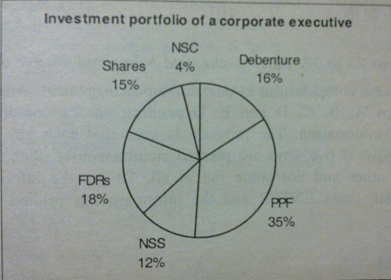
Q2A. Approximately how many degrees should there be in the central angle of the sector for military expenditure?  
A. 212.4 B. 211 C. 212.1 D. 211.8

Q2B. What is the ratio of military expenditure to veterans expenditure approximately?  
A. 10:2 B. 10:1 C. 1:10 D. 2:10

Q2C. In 2000, if India had a total expenditure of Rs. 120 billion rupees, approximately how many billions did it spend on interest on debt?  
A. 10.8 billion B. 10.5 billion D. 100 billion D. 1 billion

Q2D. If 9 billion rupees were spent in 2000 for veterans, what would have been the total expenditure for that year in billions?  
A. 145 billion B. 155 billion C. 140 billion D. 150 billion

Q3: Solve the following Question

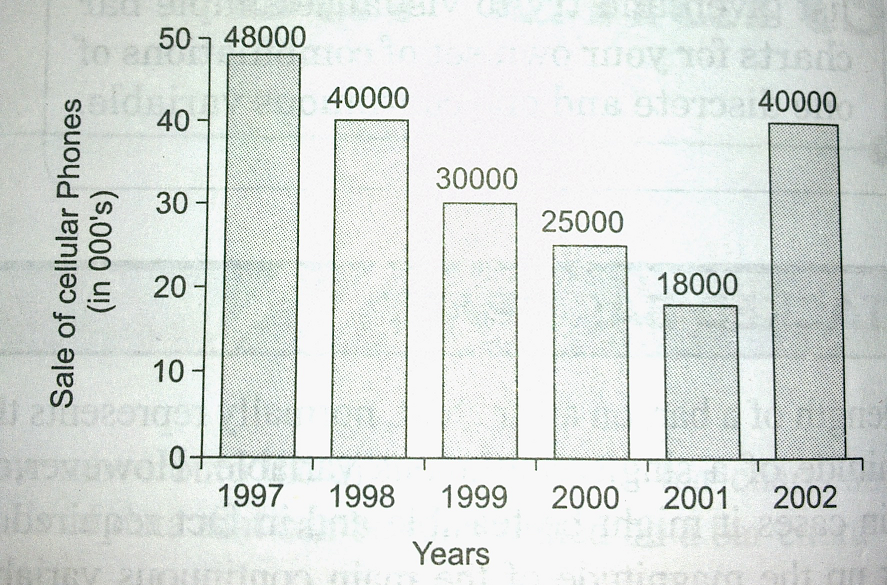


The total portfolio is of Rs 1 Lakh. Interest rate on Debentures is 13%

Q3A. What should be the angle of the sector corresponding to NSC’s?  
A. 14.40 B. 120 C. 600 D. 300

Q3B. What is the total investment in PPF, NSS and NSC’s taken together?  
A. 51,000 B. 35,000 C. 49,000 D. 60,000

Q4: Study the following Bar Diagram and answer Q1A-Q1D.



Q4A: The percentage increase in sales from 2001 to 2002 was  
A. 115% B. 128% C. 122% D. 118%

Q4B: The sum of sales of cellular phones in the years 1999 and 2001 is equal to that in  
A. 1997 B. 1998 C. 2000 D. 2002

Q4C: The two years between which the change of cellualar phones is minimum are:  
A. 1997 & 1998 B. 1999 & 2000 C. Both 1 & 2 D. 2001 & 2002

Q4D: The difference on the sales of cellular phones for years 1997 and 1999 is  
A. 500 units B. 1000 units C. 5000 units D. 18000 units

Q5: Study the following Bar Diagram and answer Q5A-Q5D. 

The above bar chart represents the GDP of different countries during half decades 2001-2005 and 2006 – 2010. All figures in Rs billion.

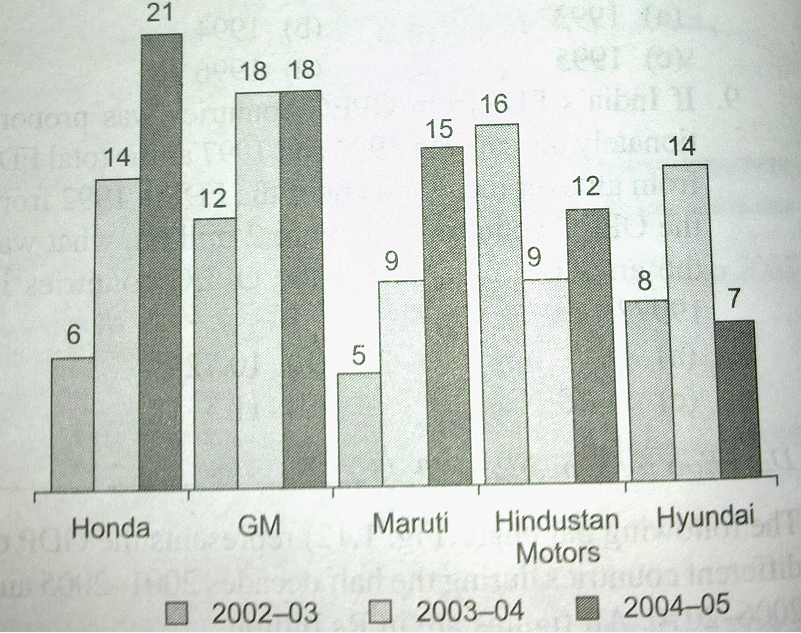
Q5A: Which of the countries listed below accounts for the highest GDP during the half decade 2001 to 2005?  
A. Russia B. China C. India D. UAE

Q5B: Which of the countries listed below accounts for the highest GDP during the half decade 2006 to 2010?  
A. UAE B. US C. India D. China

Q5C: Out of every Rs 10,000 spent during the decade 2001-2010, approximately how much was the GDP of Russia during the half decade of 2001-2005?  
A. Rs 700 B. Rs 1,400 C. Rs. 2,800 D. None of these

Q5D: The GDP of UAE is what fraction of GDP of UK for the decade (approximately)?  
A. 1/4th B. 1/5th C. 1/6th D. Data insuffiecient

Q6A-Q6C: The following chart shows the production of cars in thousands.



Q6A: The ratio of Hindustan Motors’ production in 2003-04 to Honda’s production in 2002-03 is:  
A. 0.66 B. 1.5 C. 2 D. None of these

Q6B: For how many companies has there been no decrease in production in any year from the previous year?  
A. 1 B. 2 C. 3 D. 4

Q6C: How many companies have their average production above their production in 2002-03, but below their production in 2003-04?  
A. 1 B. 2 C. 3 D. 4

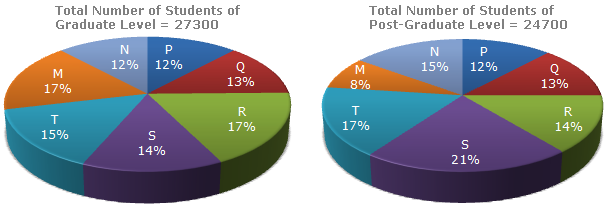
Q7A to Q7E. Refer to the table below and answer the questions.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Production and consumption of Aluminium of major Asian countries | | | | | | |
| (in '000 tonnes) | | | | | | |
|  | Production | | | Consumption | | |
|  | 1995 | 1996 | 1997 | 1995 | 1996 | 1997 |
| Bahrain | 122.1 | 121.4 | 122.8 | Not significant | | |
| India | 209.5 | 183.5 | 205.4 | 170 | 187.6 | 224 |
| Iran | 30.6 | 21.1 | 25.5 | 38.6 | 43.5 | 53.4 |
| Japan | 919.4 | 1188.2 | 1057.7 | 1608.1 | 1421.7 | 1655 |
| South Korea | 17.6 | 17.3 | 17.7 | 52.3 | 75 | 103.2 |
| Taiwan | 25.5 | 29.7 | 49.9 | 55.6 | 68.3 | 99 |
| Turkey | 35.5 | 51.3 | 32 | 68.1 | 78 | 45 |

Q7A. The only Asian country which produced more Aluminium than it consumed for all the three years was:  
A. Bahrain B. India C. Japan 4. South Korea

Q7B. During which of the years was Asian Consumption of Aluminium less than its production (assume the total for the major countries as the total for Asia)?  
1. 1995 2. 1996 3. 1997  
A. 1 only B. 2 only C. 2 and 3 D. None of these  
  
Q7C. Which of the following Asian countries were self sufficient (production exceeds consumption) in Aluminium in 1996?  
1. Bahrain 2. India 3. Japan  
A. 1 only B. 2 Only C. 3 only D. 1 and 2  
  
Q7D. Between 1995 and 1996, the production of Aluminium of the major Asian countries increased by approximately how many percent?  
A. 30 B. 9 C. 19 D. 27  
  
Q7E. If the gap between consumption and production was bridged by imports, then, in 1997 which country's imports as a percentage of its production was highest?  
A. India B. Iran C. Taiwan D. South Korea

Q8. Distribution of students at graduate and post-graduate levels in seven institutes:

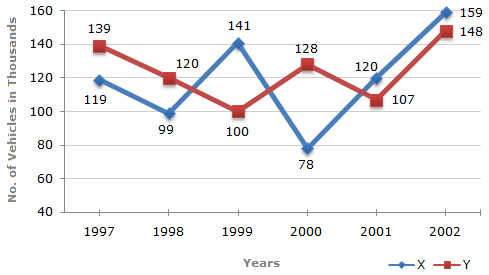


Q8A. What is the total number of graduate and post-graduate level students is institute R?  
A. 8099 B. 9099 C. 7999 D. 8000

Q8B. What is the ratio between the number of students studying at post-graduate and graduate levels respectively from institute S?  
A. 3:1 B. 5187:3822 C. 5135:3583 D. 5:2

Q8C. How many students of institutes of M and S are studying at graduate level?  
A. 8233 B. 8883 C. 8463 D. 8182

Q9: Number of Vehicles Manufactured by Two companies over the Years (Number in Thousands)



Q9A. What is the difference between the number of vehicles manufactured by Company Y in 2000 and 2001?  
A. 23 B. 21 C. -21 D. 22

Q9B. What is the difference between the total productions of the two Companies in the given years?  
A. 26 B. 22 C. 33 D. 19

Q9C. What is the average numbers of vehicles manufactured by Company X over the given period? (rounded off to nearest integer)  
A. 140 B. 120 C. 115 D. 119

Q10. Marks Obtained by student in Six Periodical Held in Every Two Months During the Year in the Session 2001 - 2002.

Maximum Total Marks in each Periodical Exam = 500



Q10A. In which periodical exams did the student obtain the highest percentage increase in marks over the previous periodical exams?  
A. Oct-01 B. Dec-01 C. Jun-01 D. Feb-02  
  
Q10B. What are the average marks obtained by the student in all the periodical exams during the last session?  
A. 76.16 B. 74.33 C. 74.16 D. 76.66

Q10C. In which periodical exams there is a fall in percentage of marks as compared to the previous periodical exams?  
A. Oct-01 B. Dec-01 C. Jun-01 D. None

SOLUTIONS

Q1A.B  
LetX be the total number of the books in library.  
Given [39.6/360]X = 0.11X = 400 => X = 3636  
Number of English books = [112.4/360]\*(3636) = 1236

Q1B. A  
Let X be the number of books in the library. (Do not take the value given in other questions unless mentioned.)  
Given: X – [(112.4/360)X + (118.8/360)X] = 3350  
0.33X=3350  
Hindi + German books = 0.11X+0.16X= 0.27X = (27/33)\*3350 = 2740

Q1C. C  
% of Hindi books = (39.6/360) = 11%  
Similarly % of Marathi books = 1%  
% of Other books = 5%  
Given [11+1+5] % of the books = 6812  
Total books = 6812/0.17 = 40071

Q2A. A 212.4 degrees

Q2B. B 10:1

Q2C. A 10.8 billion

Q2D. D 150 billion

Q3A. A

Q3B. A

Q4A. C  
Sale in 2001: (18,000)  
Sale in 2002: (40,000)  
% increase = (40-18)/18 \* 100 = 122%

Q4B.A   
Sale in 1999: (30,000) + Sale in 2001: (18,000) = 48,000 [Sale in 1997]  
21C. C  
%decrease from 97 to 98 = 8000/48000 = 1/6  
%decrease from 99 to 00 = 5000/30000 = 1/6  
%increase from 01 to 02 = 122%  
Q4D. D  
Sale in 1997: (48,000) - Sale in 1999: (30,000) = 18,000

Q5.  
My reading of decade GDP of the countries given is:  
(UK, US, China, India, UAE, Russia, Australia) = (50,15,10,10,8,22,10)   
Total = 125

Q5A. A  
UK is not listed. So choose the highest one in given options.  
Visually, ‘not-darked’ portion of Russia looks bigger than other countries.

Q5B. A  
UK is not listed. So choose the highest one in given options.  
Visually, ‘darked’ portion of US looks bigger than other countries.

Q5C. D  
Russia’s % is 22/125 =~ 18%  
Russia’s % per half-decade = 9%  
So for every 10,000, Russia’s share = 9% of 10,000 = 900

Q5D. B  
(GDP of UAE)/(GDP of UK) =~ 8/50 = Close to 1/5th

Q6.  
Q6A. B  
HM’s production in 2003-04: 9  
Honda’s prodution in 2002-03: 6

Ratio = 1.5

Q6B. C   
Honda: 6->14->21 :- Only increase\  
GM: 12->18->18 :- No decrease  
Maruti: 5->9->15 :- Only increase  
HM: 16->9->12 :- One decrease from 16 to 9.  
Humdai: 8->14->7 :- One decrease from 14 to 7.  
[Do only visual inspection]

Q6C: C  
Average prodution of Honda in 2002-2005: (6+14+21)/3 = 13.66  
Similarly average for GM= 16, Maruti = 9.66, HM= 12.33 and Hundai= 9.66  
Honda, GM and Hundai satisfy the criteria.

Q7.Q7A. A  
Q7B. D   
Q7C. A  
Q7D. C  
Q7E. D

Q8.  
Q8A. A  
Q8B. B  
Q8C. C

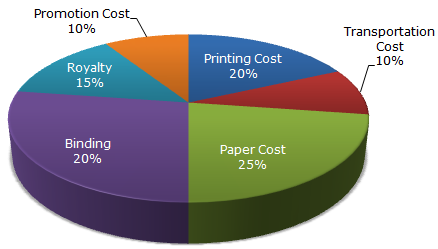
Q9.  
Q9A.  
Q9B.  
Q9C.

Q10.  
Q10A. A  
Q10B. A  
Q10C. D

**PIE CHART**

**Introduction:**

A pie chart is a graphical way to organize data. All pie charts compare parts of a whole. In a pie chart, the [arc length](http://en.wikipedia.org/wiki/Arc_length) of each sector is [proportional](http://en.wikipedia.org/wiki/Proportionality_(mathematics)) to the quantity it represents. A pie chart uses percentages or fractions to compare the data. The whole is equal to 100%, which is the same as 1.



**Types:**

1. **Exploded pie chart:** A chart with one or more sectors separated from the rest of the disk is known as an exploded pie chart. This effect is used to either highlight a sector, or to highlight smaller segments of the chart with small proportions.

### Spie chart: A useful variant of the polar area chart is the spie chart designed by Feitelson .This superimposes a normal pie chart with a modified polar area chart to permit the comparison of a set of data at two different states.

### Ring chart / Multilevel pie chart: A ring chart, or multilevel pie chart, is used to visualize hierarchical data, depicted by concentric circles. The circle in the centre represents the root node, with the hierarchy moving outward from the centre. A segment of the inner circle bears a hierarchical relationship to those segments of the outer circle which lie within the angular sweep of the parent segment.

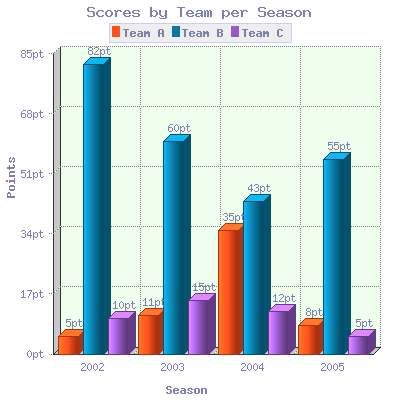
### 3D pie chart / Perspective pie chart: A 3D pie chart, or perspective pie chart, is used to give the chart a [3D](http://en.wikipedia.org/wiki/Three-dimensional_space) look. These plots are difficult to interpret because of the distorted effect of [perspective](http://en.wikipedia.org/wiki/Perspective_(visual)) associated with the third dimension.

### Doughnut chart: A doughnut chart (also spelled donut) is functionally identical to a pie chart, with the exception of a blank centre and the ability to support multiple statistics as one.

**BAR GRAPHS**

**Introduction:**

A bar graph is a visual display used to compare the amounts or frequency of occurrence of different characteristics of data. The bars can be plotted vertically or horizontally. A vertical bar chart is sometimes called a column bar chart. Bar charts provide a visual presentation of categorical data. A bar chart is very useful for recording certain information whether it is continuous or not continuous data.



This type of display allows us to:

* compare groups of data, and
* to make generalizations about the data quickly.

## Parts:

## A bar graph consists of many things like the graph title, two axes, including axes labels and scale, and the bars. Since bar graphs are used to graph frequencies or amounts of data in discrete groups, we will need to determine which axis is the grouped data axis, as well as what the specific groups are, and which is the frequency axis.

## C:\Users\MADHUSHREE\Desktop\barrrrrrrr.PNG

## Graph Title: The graph title gives an overview of the information being presented in the graph. The title is given at the top of the graph.

## Axes and their labels: Each graph has two axes. The axes labels tell us what information is presented on each axis. One axis represents data groups, the other represents the amounts or frequency of data groups.

## Grouped Data Axis: The grouped data axis is always at the base of the bars. This axis displays the type of data being graphed.

## Two important pieces of information we must determine are:

1. [type of data being counted](http://cstl.syr.edu/fipse/tabbar/revbar/datcount.htm)
2. [how the data is grouped](http://cstl.syr.edu/fipse/tabbar/revbar/datgroup.htm).

## Frequency Data Axis: The frequency axis has a scale that is a measure of the frequency or amounts of the different data groups.

## Axes Scale: Scale is the range of values being presented along the frequency axis.

## Bars: The bars are rectangular blocks that can have their base at either vertical axis or horizontal axis (as in this example). Each bar represents the data for one of the data groups.

**Logarithms**

**1**. Option B

**Log(5) not equal to log (6)**

**2**. Option A

|  |  |
| --- | --- |
| Log( 256) | =(56×0.30103) |
| = 16.85768. |
| Its characteristics is 16. |  |
| Hence, the number of digits in 256 is **17.** | | |

**3**. Option A

|  |  |
| --- | --- |
| Given expression | =log 9/log 4 ×log 2/log 3 |
| = log 3²/log 2²×log 2/log 3 |
| =2 log 3/ 2 log 2×log 2/log3 |
| = **1.** |

**4**. Option C

xLog a = ylog b. hence log a/ log b = **y/x.**

**5**. Option C

Log(8^(1/2))/log 8 = **½**

**6**. Option C

|  |
| --- |
|  |
| |  |  | | --- | --- | | log 5512 | = log 512/log 5 | | ‹=›9 log2 /log 10 - log 2 | | =(9 ×0.3010)/(1 - 0.3010) | | ‹=› 2.709/0.699 | | = **3.876.** | |

**7**. Option A

625 = 5^4 and 4= **2^2.**

**8**. Option B

1/125 = **5^(-3).**

**9.** Option D  
  
 X-0.5 = 9/16

=> X=**(16/9)2**

**10.** Option A

x/6 = 81/3

=> x = **12**  
  
**11.** Option A  
  
 Given expression can be simplified as log10(25\*8/2) =**2**   
  
  
**12.** Option D

Simplifying given expression 1+logab = x  
 => logba = 1/(x-1)  
 => logbab = logba +1  
 = **x/(x-1)**

**INTEREST**

**13.** Option A  
  
 2p/5 = p\*r\*10/100 => r=**4%**  
  
**14.** Option C  
   
 300=(x\*3\*5+ (1550-x)\*3\*8)/100  
 => 30000=15x+24(1550-x)  
 => 9x=7200=> x=800  
 Therefore required ratio=800:750 = **16:15**

**15.** Option A

1348.32=1200(1+(R/100))2

=> 1.1236= (1+(R/100))2

=> 1.06-1=R/100

=> R=.06 x 100 =**6%**

**16.** Option C  
  
 Simple interest on Rs 800 for a year was 40Rs (Consider 4th year) => **r=5%**  
  
**17.** Option C  
 Interest=15625(1.04)3-15625 = **1951**  
  
**18.** Option B  
  
 At the end of first 6 months:

Amount=1600(1.025)=1640  
 Principal for next 6 months = 1640+1600=3240  
 Amount after end of one year= 3240+(3240\*5\*0.5/100)=3321

Therefore total interest earned=3321-3200=**121**

**19.** Option D  
  
 Assume P=100

Amount after one year(through CI)=100(1.03)2 = 106.09Rs  
  
 So nominal rate(SI) that gives same interest = **6.09%**  
  
  
**20**. Option C

SI = P\*N\*R/100 = 3.25\*4.5\*16000 = **2340**

**21**. Option B

Given p= si.

Applying formula, we get n = **20 years.**

**22**. Option D

Given si = 3\*p;

Apply formula, we get r = **20%**

**23**. Option D

Equating Si from both we get, n =**8**;

**24**. Option C

A = 7500(1+(4/100))^2

A = 8112

CI= **612**

**25**. Option A

Applying formula for CI

**26**. Option C

First find CI = 840, Si = 420, and apply formula for SI

**27**. Option d

Apply formula for Amount in CI= P(1+(r/100))^n

**28**. Option B

Calculate SI and CI and subtract

**29**. Option B

|  |  |
| --- | --- |
| Difference in C.I and S.I for 2 years | = Rs(696.30-660) |
| =Rs. 36.30. |
| S.I for one years | = Rs330. |
| S.I on Rs.330 for 1 year | =Rs. 36.30 |
| Rate | = (100x36.30/330x1)% |
| =11%. |

**VENN DIAGRAMS**

**30.** Option C Number of students who have taken only Operating Systems=14-5=9  
 Number of students who have taken only Network Security=29-5=24  
  
 Therefore number of students who haven’t opted for either=40-(9+5+24)=**2**

**31.** Option B

Number of patrons who have only dogs=56-8=48  
  
 If ‘a’ people have only cats => 48+8+a=120-8 => 56

Therefore number of patrons who have cats = 56+8 =**64**

**32.** Option D

For lowest possible value of intersection set ‘x’; 30+20-x=40 => x=**10**

**33.** Option C

Let x people read all 3 news papers.

Number of people who read only Hindu=285-(29+x+20)=236-x  
 Number of people who read only India Express= 212-(29+35+x)=148-x  
 Number of people who read only Times of India=127-(20+35+x)=72-x  
  
 Adding all the portions: 285+(148-x)+35+(72-x)=500-50 => x=45

So number of people reading only one news paper: 191+103+ 27 = **321**

**34.** Option C

**35.** Option B

**36a.** Option B

**36b.** Option A

**36c.** Option B

**37.** Option A

N(A U B U C) = n(A) + n(B) + n(C) – n(A^B) – n(B^C) – n(A^C) + n(A^B^C)

90 = 56 + 43 + 35 -18 – 10 – 12 + x

**X = 0**

**38a.** 100

**38b**. 25%

U - n(A U B U C) = 10 % which is 10 students.

Hence there are 100 students in class.

**39.**

N(Cricket) = 150.

Hence, N(Cricket ^ Hockey) = 100.

N(hockey) = 200

Hence **39a**. 200/250 = 80%

**39b**. 100/250 = 40%

LOGICAL REASONING

1. D  
   Explanation: All the figures provided in the options are present in the 'collection' except for D which at first sight might seem similar to the figure in the first column-second row object, but close examination would reveal that it has 5 teeth instead of 4 teeth present in the afore-mentioned figure belonging to the collection.
2. C  
   Explanation: In all of the above spirals there are 3½ turns except the figure in option C which sports 4½ turns, counted from origin to the tail.
3. B  
   Explanation: All the above figures have dark lines adjacent to the triangle on either side, except the figure in option B, which has one dark line misplaced.
4. A  
   Explanation: Positioning oneself on the spout of the above pitchers, one would notice that the pattern of circles travels from left to right except in the pitcher shown in Option D, where the pattern travels from right to left.
5. C  
   Explanation: On counting the number of individual quadrilaterals and clubbed quadrilaterals by combining one or more elementary ones, one would arrive at the answer.
6. A
7. B
8. 5A. C 5B. C 5C. C 5D. D  
   Explanation: Photo order:  
   Ananth, Sunil, Sharath, Shravan, Bharath
9. 6A. C 6B. C 6C. D 6D. B
10. Bold:- Men  
    Not bold:- Women  
    Italic:- Gender not found out

**F** ========== D

(Contractor) (Nurse)

|

|

<----------------------------->

| |

**B** == A**G** == C

(Engineer) | (Professor)

|

*E*

(Student)

10A. A 10B. C 10C.D 10D.C 10E. C

11.  
Bold:- Men  
Not bold:- Women  
Italic:- Gender not found out

**Q** ========== P

(Lawyer) (Housewife)

|

|

**T** ====== S

(Teacher) | (Doctor)  
 |

<-------->  
*RU* (One is male engineer and other is student)

11A. B 11B.D 11C.A 11D. C 11E. D

12.  
Bold:- Men  
Not bold:- Women  
Italic:- Gender not found out

F== **B**<----------> C  
 | |  
 | <------>  
 A D**E  
  
OR***B*<----------> C < --------> F  
 | |  
 | <------>  
 A D**E**

12A. D 12B.B 12C. C

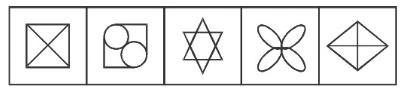
13. C

14. D

15. B

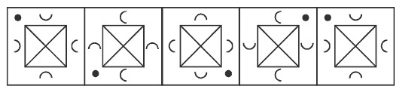
VISUAL REASONING

Choose the odd one out:



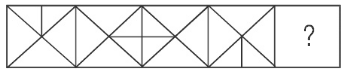
A B C D E

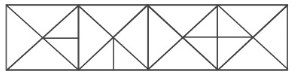
2. Choose the odd one out:



A B C D E

3. Complete the sequence.





A B C D

4. Complete the sequence.

?

A B C D

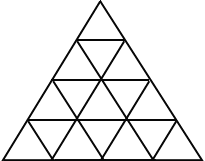
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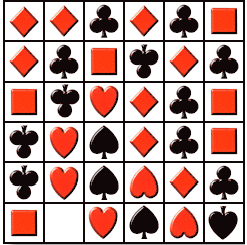
A B C D E

6.How many triangles ?



A. 24 B. 17 C. 20 D. 27

7. Fill in the empty space



ABcDE

**ARRANGEMANTS:**

8.Nameth, Naresh,Naren and Narayan appear for a race which has three rounds. No two persons got the same position in any round. In 1st, 2nd and 3rd rounds Naresh, Naren and Nameth got the first position respectively. Each of Naren’s and Narayan’s positions did not change in the first and the third rounds. Narayan is placed two positions higher in the second round compared to the first round and he is always one position behind Naren. Which of the following statements gives the positions of all the found people in three rounds?  
A. Nameth got 3rd position in 2nd round.  
B. Naresh got 2nd position in 3rd round.  
C. Narayan got 2nd position in 2nd round.  
D. None of the above.

9. Refer to the data below and answer the questions that follow. A pegboard has a total of six holes, all in a horizontal line, numbered one through six from left to right. Five pegs-one blue, one green, one red, one white and one yellow – are to be arranged in the pegboard, one peg per hole, leaving exactly one empty hole for any arrangement. To be acceptable, any arrangement of the pegs must meet the following conditions:

The green peg must be closer to the red peg than to the blue peg.

The yellow peg must be in the hole immediately to the left of the blue peg.

The white peg must not be in a hole immediately adjacent to the blue peg.

The red peg must not be in hole number one.

Question: If the conditions are changed so that the red peg must be in hole number one, and if hole number six is the empty hole, then the only acceptable left-to-right arrangement of the remaining pegs is:  
A. green, white, yellow, blue.  
B. green, yellow, blue, white.

C. green, blue, yellow, white.  
D. white, yellow, blue, green.

10. Six persons namely Ranjith, Daniel, Virat, Amit, Vinay and Praveen are standing in a queue to get a train ticket in a railway station. Ranjith is standing between Vinay and Pradeep. Pradeep is ahead of Daniel and Vinay is standing behind Amit. Virat is standing behind Daniel. Due to closing time at the ticket counter, they will give tickets only to the first four persons. Who will not get the tickets?

A. Daniel and Vinay B. Pradeep and Vinay C. Daniel and Virat D. Pradeep and Virat

**CUBES AND CUBOIDS:**

11. A cube is cut in two equal parts along a plane parallel to one of its faces. One piece is then coloured red on the two larger faces and green on the remaining, while the other is coloured green on two smaller adjacent faces and red on the remaining. Each is then cut into 32 cubes of same size and mixed up.

11a. How many cubes have only one coloured face each ?  
A. 32 B. 8 C. 16 D. 0

11b. What is the number of cubes with at least one green face each ?  
A. 36 B. 32 C. 38 D. 48

11c. How many cubes have two red and one green face on each ?  
A. 0 B. 8 C. 16 D. 4

12. All the opposite faces of a big cube are coloured with red, black and green colours. After that is cut into 64 small equal cubes.

12a. How many small cubes are there where one face is green and other one is either black or red?  
A. 28 B. 8 C. 16 D. 24

12b. How many small cubes are there whose no faces are coloured?  
A. 0 B. 4 C. 8 D. 16

12c. How many small cubes are there whose 3 faces are coloured?  
A. 4 B. 8 C. 16 D. 24

13. All the six faces of a cube of a cube are coloured with six different colours - black, brown, green, red, white and blue.

Red face is opposite to the black face.  
Green face is between red and black faces.  
Blue face is adjacent to white face.  
Brown face is adjacent to blue face.  
Red face is in the bottom.

13a. The upper face is \_\_\_\_\_\_\_\_\_  
A. white B. black C. brown D. none of these

13b. The face opposite to brown is \_\_\_\_\_\_\_\_\_  
A. blue B. white C. green D. red

13c. Which face is opposite to green ?  
A. red B. white C. blue D. brown

**FAMILY CHART:**

14. There are six women, Shalini, Divya, Ritu, Rashmi, Nisha, and Renu in a family of twelve members. There are a few married couples in the family and none of the grandchildren are married. Sunil is married into the family. Rohan, Mahesh, and Jatin have a nephew Dipesh who is the only son of Rashmi. Ravi is the paternal grandfather of Nisha. Ritu is daughter-in-law of Shalini. Renu is the first cousin of Dipesh. Shalini has only three grandchildren. Mahesh has two brothers and only one sister Rashmi and a sister-in-law Divya. Dipesh's only unmarried maternal uncle, Jatin is the brother-in-law of Sunil. Rohan is the paternal uncle of Nisha. Ritu has two daughters one of whom is Nisha.

14A. How many married couples are there in the second generation?  
A. 1 B. 2 C. 3 D. None of these  
  
14B. Dipesh is  
A. Mahesh's son B. Ravi's grandson.   
C. Rohan's son D. Sunil's nephew  
  
14C. Nisha is   
A. Rohan's daughter. B. Jatin's mother.   
C. Renu's cousin. D. None of these  
  
14D. Which one of them is a married couple?  
A. Rohan and Ritu. B. Shalini and Mahesh  
C. Renu and Sunil. D. Mahesh and Ritu

14E. Rashmi is   
A. Mahesh's wife. B. Renu's aunt  
C. Nisha's mother. D. None of these   
  
  
14F. Which one of them is true?  
A. Dipesh is Mahesh's son  
B. Ravi has only two married children  
C. Ravi is the paternal grandfather of Renu  
D. None of these

15. Directions for questions Q2A to Q2E. Refer to the data below and answer the questions that follow.

1. P, Q, R, S, T and U are six members in a family in which there are two married couples.  
2. T a teacher is married to the Doctor who is mother of R and U.  
3. Q the lawyer is married to P  
4. P has one son and grandson.  
5. Of the two married ladies one is a housewife.  
6. There is one student and one male engineer in the family.

15A. Who among the following is a housewife?  
A. Q B. P C. S D. T  
  
15B. Which of the following represents the group of females in the family?  
A. QTR B. PSR C. PSU D. Data Inadequate  
  
15C. Which of the following is true about the granddaughter in the family?  
A. She is a student B. She is an Engineer  
C. She is a lawyer D. None of these  
  
15D. How is R related to U?  
A. Brother B. Sister C. Brother or sister D. None of these

15E. How is P related to R?  
A. Grandfather B. Mother C. Sister D. Grandmother

ANSWER KEY:

C Contains more than 4 enclosed spaces

D The top and right curves rotate 90°clockwise and the left and bottom curves rotate 90° anticlockwise. But this is not true in option (d).

B Option (B) is the correct choice as line is moving clockwise in one step, two steps, three steps and four steps

B

A

D, 27 triangles.  There are 16 one-cell triangles, 7 four-cell triangles, 3 nine-cell triangles, and 1 sixteen-cell triangle.

E

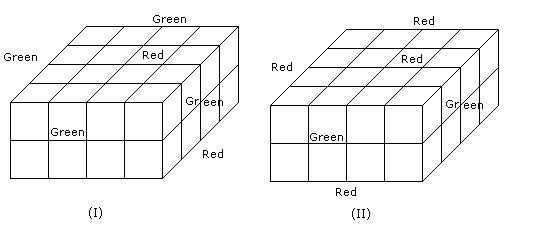
Description: Spade

Each symbol is associated with another's position; this upside-down spade is always to the left of a right-side-up heart.

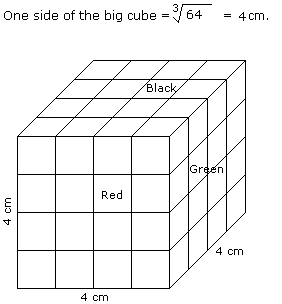
A

B

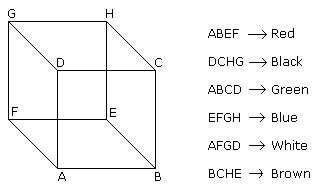
C



11a. C 11b. C 11c. D



12a. C 12b. C 12c. B



13a. B 13b. B 13c. C

Bold:- Men  
Not bold:- Women  
Italic:- Gender not found out

1. Shalini ========= **Ravi** |  
 |2.  **Rohan**==Divya---------**Mahesh**===Ritu----------- Rashmi===**Sunil---------Jatin**   
 | |  
 Nisha<---->Renu **Dipesh**14A. C 14B. B 14C. D 14D. D 14E. B  
14F. C

15. Bold:- Men  
Not bold:- Women  
Italic:- Gender not found out

**Q** ========== P

(Lawyer) (Housewife)

|

|

|

|

**T** ====== S

(Teacher) | (Doctor)  
 |

<-------->  
 *R* *U* (One is male engineer and other is student)

15A. B 15B. D 15C. A 15D. C 15E. D

**Q1.**

Option A: INCORRECT. Statement B to be replaced as ‘Some wood things are hard’. Two particular premises.

Option B: INCORRECT. Two particular premises.

Option C: CORRECT. By Tick and Cross Method.  
Option D: INCORRECT. Common term not distributed even once.

[Option C]

**Q2.**

Option A: INCORRECT. One negative premise. Conclusion is not negative.

Option B: INCORRECT. One particular premise cannot give universal conclusion.

Option C: INCORRECT. Two particular premises.  
Option D: CORRECT. By Tick and Cross Method.

[Option D]

**Q3.**

Option A: INCORRECT. One particular premise cannot give universal conclusion.  
Option B: CORRECT. By Tick and Cross Method.  
Option C: INCORRECT. One particular premise cannot give universal conclusion.  
Option D: INCORRECT. Two negative premises.

[Option B]

**Q4.**

Option A: CORRECT. By Tick and Cross Method.

Option B: INCORRECT. Two negative premises.  
Option C: INCORRECT. Two particular premises.  
Option D: INCORRECT. One particular premise cannot give universal conclusion.

[Option A]

**Q5.**

Option A: INCORRECT. Two negative premises.  
Option B: INCORRECT. Two negative premises.  
Option C: INCORRECT. Two negative premises.  
Option D: CORRECT. By Tick and Cross Method.

[Option D]

**Q6.** A.

Option A: INCORRECT. By Tick and Cross Method.

Option B: CORRECT. By Tick and Cross Method.  
Option C: INCORRECT. One particular premise cannot give universal conclusion.

Option D: INCORRECT. One particular premise cannot give universal conclusion.

[Option B]

**Q7.**

Option A: CORRECT. By Tick and Cross Method.  
Option B: INCORRECT. Conclusion introduces a new term called ‘weak’.  
Option C: INCORRECT. Conclusion introduces a new term called ‘zen’.  
Option D: INCORRECT. By Tick and Cross Method.

[Option A]

**Q8.**

Conclusion A: INCORRECT. ‘All X is Y’ does not imply ‘All Y is X’.  
Conclusion B: INCORRECT. ‘All X is Y’ does not imply ‘All Y is X’.  
Conclusion C: CORRECT. By Tick and Cross Method.

Conclusion D: CORRECT. Follows from Conclusion C. ‘All X is Y’ implies ‘Some Y is X’.

[Option D]

**Q9:**

All conclusions are relating chairs and sofa sets. The common term is not distributed even once. None of the conclusion follow.

[Option C]

**Q10.**

Conclusion I and II are INCORRECT because common term trees is not distributed even once. Conclusion III follows from Tick and Cross Method.

[Option C]

**Q11.**

Option A: INCORRECT. ‘Morning’ is not defined.

Option B: INCORRECT. ‘Morning’ is not defined.  
Option C: INCORRECT. Goes against the premises.

Option D: CORRECT.

[Option D]

**Q12.**

Option A: INCORRECT. ’If X then Y’ does not imply ‘If Y then X’.

Option B: CORRECT. ‘If X then Y’ implies ‘If not Y then not X’.

Option C: INCORRECT. ’If X then Y’ does not imply ‘If not X then not Y’.

Option D: INCORRECT. Goes against the premises.

[Option B]

**Q13:**

Option A: INCORRECT. Goes against the premises.

Option B: INCORRECT. If ‘Not X’ then ‘Not Y’ is not possible.

Option C: INCORRECT. If ‘X’ then ‘Y’ is not possible.

Option D: CORRECT. If ‘Not X’ then ‘Y’ has to happen.

[Option D]

**Q14:**

Option A: CORRECT. By Tick and Cross Method.

Option B: INCORRECT. ‘Closed space’ is not defined.

Option C: INCORRECT. Four terms in the premises.

Option D: INCORRECT. ‘Fight’ is not defined.

[Option A]

**Q15.**

Option A: CORRECT. By Tick and Cross Method.

Option B: INCORRECT. Two particular premises.

Option C: CORRECT. By Tick and Cross Method.

Option D: INCORRECT. Four terms in the premises.

[Option A]

**SYLLOGISMS**

**Q1.**

All X is Y does not imply All Y is X. So conclusion A is false.  
Some X is Y implies Some Y is X. So conclusion B is true.

[Option B]

**Q2.**

‘Tremor proof’ is a new term. So conclusion A is false.  
‘brick houses’ is a new term. So conclusion B is false.

[Option D]

**Q3.**

Considering ‘cooling’ and ‘cold’ as same, the common term is not distributed even once. So conclusion A is false.  
Conclusion 2 is particular form case of statement 2. All X is y => Some X is Y, and is thus correct.  
  
[Option B]

**Q4.**

Conclusion A is wrong. Goes against the premise.  
Conclusion B is wrong as All X is Y does not imply All Y is X.

[Option D]

**Q5.**

A: Wrong because All X is Y does not imply All Y is X.  
B: Wrong because of above said reason again.  
C: Correct: Tick and Cross Method.  
D: Correct: Direct inference of conclusion C.

[Option D]  
  
**Q6.**   
  
A: Incorrect. Common term not distributed even once.  
B: Incorrect. Same as above.  
C: Incorrect. Same as above.  
D: Incorrect. Same as above.  
  
[Option C]

**Q7.**  
  
A: Incorrect: From Tick and Cross method, Avinash is a gentleman is possible.  
B: Correct.  
C: Incorrect: A particular premise must give a particular conclusion.  
D: Incorrect: A particular premise must give a particular conclusion.

[Option B]  
  
**Q8.**  
  
A: Incorrect: A negative premise must yield a negative conclusion.  
B: Incorrect: Two negative premises don’t yield any conclusion.  
C: Correct: Tick and Cross Method.  
D: Incorrect: Common term not distributed even once.   
  
[Option C]

**Q9.**  
  
Most=Some

Option C and D are wrong as they have two particular premises.  
Using Tick and Cross method on statements C and D yields F as the conclusion.  
  
[Option B]

**Q10.**  
  
Option A, Option B and Option C are incorrect because they combine two negative premises.  
  
[Option D]

**Q11.**  
  
A: Incorrect: A particular premise must yield a particular conclusion.  
B: Incorrect: A negative premise must yield a negative conclusion.  
C: Incorrect: A particular premise must yield a particular conclusion.  
D: Correct. (Statement A can be taken as ‘A thesis is exceptional’ and ‘A thesis is original’)

[Option D]

**Q12.**  
Taking two premises together we can draw: No young scientist is superstitious. We can draw any conclusion about scientists and young people. (They can be taken as super sets of young scientists.)  
  
[Option D]

**Q13.**

Conclusion A directly follows from first statement. Taking two statements together we can only draw a particular conclusion. Thus conclusion B is incorrect.  
  
[Option A]  
  
**Q14.**   
  
I: Correct (Tick and Cross Method.)  
II: Incorrect (Tick and Cross Method.)  
III: Incorrect (All X is Y does not imply All Y is X.)  
IV: Correct. (Directly follows from Conclusion I)  
  
[Option B]  
  
  
**Q15.**  
  
I: Incorrect (Common term not distributed even once.)  
II: Incorrect (Common term not distributed even once.)  
III: Correct (Directly follows from statement 2)  
IV: Correct (Directly follows from statement 1)  
  
[Option D]

**SYLLOGISMS**

**Q1 to Q4: In each of these questions, two statements are followed by two conclusions A and B. Assume the given statements to be true, even if they are at variance with commonly known facts. Choose the correct alternative from among A, B, C and D given below:**

**A. If only conclusion A follows.**

**B. If only conclusion B follows.**

**C. If both A and B follows.**

**D. If neither A and B follows.**

Q1.

**Statements:**

All players are smokers.

Some smokers are wine-addicts.

**Conclusions:**

A. All smokers are players.

B. Some wine addicts are smokers.

Q2.

**Statements:**

People live in wooden houses in Shimla.

Earthquakes are frequent in Shimla.

**Conclusions:**

A. Wooden houses are tremor proof.

B. Wooden houses are stronger than brick houses.

Q3.

**Statements:**

Evaporation causes cooling.

Coke is very cold.

**Conclusions:**

A. Some of the coke must have evaporated.

B. Coke offered in this restaurant is very cold.

Q4.

**Statements:**

All biscuits are chocolates.

No chocolate is an ice cream.

**Conclusions:**

A. No biscuit is a chocolate.

B. All chocolates are biscuits.

**Q5 to Q6: in the following questions, select the set of conclusion which logically follows from the statements:**

Q5:

**Statements:**

a All phones are scales.

b All scales are calculators.

**Conclusions:**

A. All calculators are scales.

B. All scales are phones.

C. All phones are calculators.

D. Some calculators are phones.

A. None follows

B. Only A and B follow

C. All follow

D. Only C and D follow

Q6:

**Statements:**

a All chairs are tables.

b Some tables are sofa sets .

**Conclusions:**

A. Some sofa sets are chairs.

B. All sofa sets are chairs.

C. Some chairs are sofa sets.

D. All chairs are sofa sets.

A. All follow

B. Only A and B follow

C. None follows

D. Only C and D follow

**Directions to Q7 to Q11: Each question contains six statements followed by four sets of combinations of three. Choose the set in which statements are logically related.**  
  
Q7.   
A. Cricket is played by gentlemen

B. Some cricketers are not gentlemen

C. Avinash is a good cricketer

D. Some gentlemen are not cricketers.  
E. Avinash is a gentleman  
F. Avinash is not a gentleman.  
A. ACF B. ACE C. BCF D. BCE

Q8.   
A. Some cabinets are made of wood  
B. All wood things are not hard  
C. Some chairs are cabinets  
D. Some chairs are made of wood  
E. All cabinets are hard  
F. Some chairs are hard  
A. ABC B. CDF C. CEF D. EFC

Q9:

A. Some collectors are cops

B. Most Cops are not athletes

C. Some athlete men are drivers

D. No driver is a boxer

E. Some boxers are not drivers

F. Some athlete men are not boxer

A. DCE. B. CDF. C.BAF. D. ABC

Q10.

A. No prisoner is a criminal

B. Pilot is not a criminal

C. Pilot is a prisoner

D. Pawan is not a prisoner

E. Pawan is a criminal

F. Some criminals are prisoners

A. ABE B. ABC C. ADE D. ACB

Q11.

A. A thesis is considered exceptional for it's originality

B. Some thesis are original

C. All thesis are not exceptional

D. Sameera's thesis is exceptional

E. All thesis are not considered original

F. Sameera's thesis is original

A. FBE B. ACD. C. DBC. D. ADF

**Q12 to Q13: In each of these questions, two statements are followed by two conclusions A and B. Assume the given statements to be true, even if they are at variance with commonly known facts. Choose the correct alternative from among A, B, C and D given below:**

**A. If only conclusion A follows.**

**B. If only conclusion B follows.**

**C. If either A and B follows.**

**D. If neither A and B follows.**

**E. If both A and B follows.**

Q12.

Statements:  
All young scientists are open-minded.

No open-minded men are superstitious.

Conclusions:

A. No scientist is superstitious.

B. No young people are superstitious.

Q13.

Statements:  
Some desks are caps.

No cap is red.

Conclusions:

A. Some caps are desks.

B. No desk is red.  
  
Q14.

Statements:  
All branches are flowers.

All flowers are leaves.

Conclusions:

I. All branches are leaves.

II. All leaves are branches.  
III. All flowers are branches.  
IV. Some leaves are branches.  
  
A. None follows B. Only I and IV follow C. Only II and III follow  
D. All follow

Q15.

Statements:  
All aeroplanes are trains.

Some trains are chairs.

Conclusions:

I. Some aeroplanes are chairs.

II. Some chairs are aeroplanes.  
III. Some chairs are trains.  
IV. Some trains are aeroplanes.  
  
A. None follows B. Only I and II follow C. Only II and III follow  
D. Only III and IV follow

**NUMBERS**

**Q1.**

3556 = 22 \* 7 \* 127  
3444 = 22 \* 7\* 123

HCF(3556,3444) = 22 \* 7 = 28

[Option D]

**Q2.**

[Option A]

**Q3.**

76 = 22 \* 19  
108 = 22  \* 33720 = 24  \* 32 \* 5

LCM(76, 108, 720) = 24  \* 33 \* 5 \* 19 = 13680

[Option C]

**Q4.**

LCM \* HCF = product of two numbers

LCM \* 1 = 117

* LCM = 117

[Option B]

**Q5.**

(94578932/11) R = (2-3+9-8 +7-5+4-9)/11R = -3 = 8

[Option C]

**Q6.**

(12378945634/13) R = (634-945+378-12)/13R = 3

[Option A]

**Q7.**

7 639U = 7 636+3 u = 7 3 u = 3

[Option C]

**Q8.**

68333U = 8332+1u = 81u = 8

[Option A]

**Q9.**

1200 = 24 \* 3 \* 52

Sum of factors of 1200 = (20 + 21 + 22 + 23 + 24)( 30 + 31 )( 50 + 51 + 52)

Sum = 31\*4\*31 = 3844

[Option C]

**Q10.**

1200 = 24 \* 3 \* 52

Sum of factors of 1200 divisible by 15 = (20 + 21 + 22 + 23 + 24)( 31 )( 51 + 52)

Sum = 31\*3\*30 = 2790

[Option A]

**Q11.**

20 introduces one zero (20 has one five) and 25 introduces 2 more zeroes ( 2 fives). So 20\*21\*22\*23\*24\*25 i.e 6 terms are needed to be multiplied.

[Option C]

**Q12.**

Highest power of 3 which can divide 31! exactly = [31/3]+[31/9]+[31/27] = 14

[] stands for highest integer function.

[Option C]

**Q13.**

520 + 57/7R = [(53)6 . 52] /7 R + [(53)2 . 51]/7 R

= [(-1)6 . 52]/7 R + (-1)2 . 51]/7 R

= [4+5]/7 R

= 2

[Option D]

**Q14.**

216/17R = (24)4/17R = (-1)4/17R = 1

[Option B]

**Q15.**

18=2\*32

E(18)=18(1/2)(2/3) = 6

1198/18R = (116)16. 112/18R

= (1)16. 112/18R

= 121/18R

= 13

[Option C]

**Q16.**

1260= 22\*5\*7\*9

E(1260) = [22\*5\*7\*9](1/2)(4/5)(6/7)(8/9)  
 = 384

[Option A]

**Q17.**

A=Count of (0->90) = 10  
B=Count of [9(9->89), 9(90->98), 2(99)] = 20

A+B=30

[Option C]

**Q18.**

Let the number be ‘AB’

Given [10B+A] – [10A+B] = 9  
 B-A = 1

(B, A) = (2,1), (3,2), (4,3), (5,4), (6,5), (7,6), (8,7), (9,8)

[Option C]

**Q19.**

(x/2 + x/3 + x/4) – x = 12 => x = 144

**Q20.**

[Option D]

**Q21.**

[Option B]

**Q22.**

[Option A]

**Q23.**

@@+25-++@16 = @25-+16 =621

**HINTS &SOLUTIONS**

**Q1.**

Use trial and error.

48=48\*1 [48/1 = 48]

48=24\*2 [24/2 = 12.xx]

48=16\*3 [16/3 = 5.xx]

48=12\*4 [12/4 = 3]

48= 8\*6 [8/6 = 1.xx]

**Answer= 4 and 12**

**Q2.**

The number ‘x’ between a prime pair is divisible by 6 if x is divisible by both 2 and 3. (Divisibility rule for 6)  
  
Picture:- p … x … (p+2)   
The picture shows the prime pair p and (p+2) and the number x in between.  
  
(i) Show that x is divisible by 2:   
2 is the only even prime. It is given that both numbers in the pair is above 6. That means ‘p’ is an odd number. Because ‘x’ is next integer to ‘p’ it has to be even and thus divisible by 2.

(ii) Show that x is divisible by 3:  
When we examine how the multiples of 3 are distributed, we discover the  
following pattern:  
3 4 5 6 7 8 9 10 11 12  
3 - - 6 - - 9 - - 12 - - and so on. The two minus signs stand for  
two numbers between the multiples of 3.  
In general:   
x - - (x+3) - - and so on.  
There are TWO numbers between two multiples of 3, which can't be divided by 3 (the TWO minus signs).

Now let us examine the first picture:   
p x (p+2)   
with p and (p+2) the prime pair and x the number in between.  
  
Since p is prime, it is not a multiple of 3 and therefore can be replaced by a minus sign:  
p x (p+2) turns into - x (p+2).  
Now the question is, whether the second minus sign is located LEFT or RIGHT from the minus sign.  
Let's assume that the second minus sign is located right (replace x by a minus sign), therefore:  
- x (p+2) turns into - - (p+2). But this can't be since (p+2) is not a multiple of 3.   
Therefore the second minus sign must be located left:  
- x (p+2) turns into - - x (p+2), which means that x is a multiple of 3.

**Q3.**

(a-b)/3.5=4/7 => (a-b) = (3.5)\*(4/7) = 2

For this 'a' should be greater than 'b', so automatically 'b' is less than 'a'

**[Option A]**

**Q4.**

A.

M/N = 6/5 => M = 6N/5

3M+2N= 18N/5+2N = 28N/5 [One more such expression in terms of M can be written similarly.

B. If numerical options are given, you can simplify it in the following way, though mathematically not exact.

M/N=6/5

take M=6 & N=5

=>3M+2N=3(6)+2(5) = 28

**Q5.**

**[Option D]**

**Q6.**

Option C and D can be eliminated directly.

Consider option A.

1/3 of 62 is 20.66. 22 is greater than 1/3 of 62. Thus value of 22/62 is greater than 1/3.

Consider option B

1/3 of 46 is 15.33. 15 is lesser than 1/3 of 46. Thus value of 15/46 is lesser than 1/3.

**[Option B]**

**Q7.**

( 0.75 \* 0.75 \* 0.75 - 0.001 ) / ( 0.75 \* 0.75 - 0.075 +0.01)

= (0.421-0.001)/(0.562 – 0.075 + 0.01)

= 0.420/0.497

= 0.845

**[Option A]**

*Shortcut: In the numerator ‘-.001’ and in denominator ‘-0.075+0.01’ can be removed because they do not affect answer much.*

*The expression simplifies to (0.75\*0.75)/(0.75) = 0.75 =~ Option B. [Other options are very far and we can safely go with our approximation]*

*Note: Denominator is smaller than our approximation. So the actual answer is slightly more than our approximate.*

**Q8.**

(((25)1/2)2)2 – (((16)2)1/2)1/2

= 252 – 16 1/2

= 625 - 4

= **621**

**Q9.**

G(2)=G(1)-G(0) = 1- (-1)=2

G(3)=G(2)-G(1) = 2-1 = 1

G(4)=G(3)–G(2)= 1 – 2 = -1

G(5)=G(4)–G(3) = -1 – 1 = **-2**

**Q10.**

997

**Q11.**

This is an HCF based question.

The marbles used to tile the floor are square marbles. Therefore, the length of the marble = width of the marble.  
As we have to use whole number of marbles, the side of the square should a factor of both 5 m 78 cm and 3m 74. And it should be the highest factor of 5 m 78 cm and 3m 74.  
5 m 78 cm = 578 cm and 3 m 74 cm = 374 cm.  
The HCF of 578 and 374 = 34.  
  
Hence, the side of the square is 34.  
The number of such square marbles required = HCF, GCD, Number theory= 187 marbles.

**[Option B]**

**Q12.**

A number will end in 3 zeroes when it is multiplied by 3 10s.  
To get a 10, one needs a 5 and a 2.  
  
Therefore, this person should multiply till he encounters three 5s and three 2s.

You will always get more 2’s than 5’s. So concern yourself only with number of 5’s.

20 has one five. Only 25 can give next five. 25 has two fives in it. 20\*25 gives three 5’s.

So, he has to multiply from 20 to 25 i.e. 6 numbers.

**[Option C]**

**Q13.**

12x2y3z2= 22\*3\*x2y3z2

18x3y2z4 = 2\*32\*x3y2z4

24xy4z3= 23\*3\*xy4z3

Now the method is similar to finding HCF. Choose lowest power for each factors.  
  
GCD=HCF=2\*3\*x\*y2\*z2 = 6xy2z2

**[Option A]**

**Q14.**

The number should be exactly divisible by 15 (3, 5), 21 (3, 7), 28 (4, 7).  
Hence, it is enough to check the divisibility for 3, 4, 5 and 7.  
  
99960 is the only number which satisfies the given condition

**[Option C]**

**Q15.**

Let the number that Anita wanted to multiply be 'X'.  
She was expected to find the value of 35X.  
Instead, she found the value of 53X.   
  
The difference between the value that she got (53X) and what she was expected to get (35X), according to the question, is 540.  
  
i.e., 53X - 35X = 540  
or (53 - 35) \* X = 540  
X = 30  
  
Therefore, new product = 53 \* 30 = 1590

**[Option D]**

**Q16.**

x and y are odd and positive and z is even and positive  
  
(x - z)2 y is even cannot true  
  
x - z is odd and y is odd  
Therefore, (x - z)2 will be odd and (x - z)2 y will be odd

**[Option A]**

**Q17.**

Let the number be 'a'.  
  
When 'a' is divided by 36, let the quotient be 'q' and we know the remainder is 19  
  
i.e., remainderand remainder is 19  
  
or a = 36q + 19  
  
when a is divided by 12, we get  
  
remainderor remainder  
  
36q is perfectly divided by 12  
  
Therefore, remainder = 7

**[Option B]**

**Q18.**

The sum of first ‘n’ natural numbers = n(n+1)/2

The sum of the first 100 natural numbers = (100(101))/2 = 50(101) = 5050  
  
‘050’ is not divisible by 8.

‘50’ is not divisible by 4.

Hence, 50\*101 is divisible only by 2.

**[Option C]**

**Q19.**

48 = 24 \* 31  
  
Total number of factors of 48 = (4+1)\*(1+1)= 10.

So excluding 1 and 48, there are 8 factors.

**[Option C]**

**Q20.**

1025 - 7 = 99.......93 (24 nines and unit digit is 3)

* This is an odd number and hence not divisible by 2.
* Sum of digits of the above number = 24\*9+3= 219 which is divisible by 3 but not by 9.

**[Option B]**

**Q21.**

Let the number be x. Then X/7 - x/11 =100

11x-7x = 7700 x=1925.

**[Option D]**

**Q22.**

x/y = 0.04/1.5 = 2/75

So (y-x)/(y+x) = (1 - x/y)/(1 + x/y) = (1 - 2/75)/ (1 + 2/75) = 73/77.

**[Option B]**

**Q23.**

The required number = LCM of (21,28, 36,45)+3=1263

**[Option D]**

**Q24.**

80=24\*5

If 653xy has to be divisible 5 as ‘y’ has to be either 5 or 0.

But 653xy has to be divisible by 24, y can only be 0.

653xy = 653x0 and has to be divisible by 16 and thus by 8 too.

Thus 653x0 can be 653x0=> 65320(Not divisible by 16) or 65360 (Divisible by 16)

Note: To divide by 16, first divide by 8 and then divide by 2. 360 divided by 8 given 45 which is not further divisible by 2.   
  
Therefore x+y = 6 + 0 = 6

**[Option D]**

**Q25.**

Wheels take 3/5 sec, 2/5 sec and 1sec respectively to complete single revolution. Alignment of the black mark happens when the slowest of the wheels completes one or more revolutions at the same time when other wheels have completed revolutions as well. This happens for the first time at **5 seconds** (when wheel 2 the slowest of the lot completes a couple of revolutions and the first completes 3)

**[Option D]**

**Q26.**

x/y = 0.04/1.5 = 2/75   
  
So (y-x)/(y+x) = (1 - x/y)/(1 + x/y) = (1 - 2/75)/ (1 + 2/75) = 73/77

**Q27.**Let L.C.M. be l and H.C.F. be h. Then l = 45h   
l + h =1150   
  
Solving h =25 and l = 1125   
  
Thus the second number = (25 \* 1125)/125 = 225

**Q28.**

L.C.M. of 2,4,6,8,10,12 = 120 . So they toll together after every 120 seconds i.e. 2 minutes. So in 30 minutes they toll together 30/2 + 1 = 16 time

**Q29.**

a)3

there are 9 no. of single digit  
there are 180 no. of double digit  
there are 2700 no. of three digit  
now total 2889 no. till 999

remaining no. are 25494 that is divided by 4 and the q is 6373 with reminder of 2 so 28381 is   
6373+999=737(2)  
n next no is 7(3)73  
so answer is 3

**Number Concepts**

Q1. What two numbers have a product of 48 and, when the larger number is divided by the smaller, a quotient of 3?

Q2. Pairs of primes separated by a single number are called prime pairs. For example 17 and 19 are prime pairs. Prove that the number between a prime pair is always divisible by 6 (Assume both numbers in the pair are greater than 6)

Q3. If a and b are positive integers and (a-b)/3.5 = 4/7, then

A. b < a B. b > a C. b = a D. b >= a

Q4. M/N = 6/5,then 3M+2N =

Q5. If the value of x lies between 0 & 1 which of the following is the largest?

A. x B. x2 C. –x D. 1/x

Q6. Which of the following fractions is less than 1/3?

A. 22/62 B. 15/46 C. 2/3 D. 1

Q7. Find the value of

(0.75 \* 0.75 \* 0.75 - 0.001) / (0.75 \* 0.75 - 0.075 +0.01)

A. 0.845 B. 1.908 C. 2.312 D. 0.001

Q8. Find the value of @@+25-++@16, where @ denotes "square" and + denotes "square root".

Q9. G(0)= -1, G(1)=1, G(N)=G(N-1)-G(N-2), G (5)= ?

Q10. What is the max possible 3 digit prime number?

Q11. What is the minimum number of square marbles required to tile a floor of length 5 meters 78 cm and width 3 meters 74 cm?   
A.176 B. 187 C. 54043 D. 748

Q12. A person starts multiplying consecutive positive integers starting from 20. (20\*21\*22 and so on). How many numbers should he multiply before the will have result that will end with 3 zeroes?A. 11 B. 10 C. 6 D. 5

Q13. Find the G.C.D of 12x2y3z2, 18x3y2z4, and 24xy4z3   
A. 6xy2z2 B. 6x3y4z3 C. 24xy2z2 D. 18x2y2z3

Q14. Find the greatest number of five digits, which is exactly divisible by 7, 10, 15, 21 and 28.   
A. 99840 B. 99900 C. 99960 D. 99990

Q15. Anita had to do a multiplication. Instead of taking 35 as one of the multipliers, she took 53. As a result, the product went up by 540. What is the new product?   
A. 1050 B. 540 C. 1440 D. 1590

Q16. Let x, y and z be distinct integers. x and y are odd and positive, and z is even and positive. Which one of the following statements cannot be true?   
A. (x-z)2 y is even B. (x-z)y2 is odd

C. (x-z)y is odd D. (x-y)2z is even

Q17. When a number is divided by 36, it leaves a remainder of 19. What will be the remainder when the number is divided by 12?   
A. 10 B. 7 C. 192 D. None of these

Q18. The sum of the first 100 numbers, 1 to 100 is divisible by   
A. 2, 4 and 8 B. 2 and 4 C. 2 only D. None of these

Q19. How many different factors are there for the number 48, excluding 1 and 48?  
A. 12 B.4 C. 8 D. None of these

Q20. 1025 - 7 is divisible by   
A. 2 B.3 C.9 D.Both (2) and (3)

Q21. If one-seventh of a number exceeds its eleventh part by 100 then the number is…

A.770 B. 1100 C. 1825 D. 1925

Q22. If 1.5x=0.04y then the value of (y-x)/(y+x) is

A. 730/77 B. 73/77 C. 7.3/77 D. None of these

Q23. The smallest number which when diminished by 3 is divisible by 21,28,36 and 45 is...

A. 869 B. 859 C. 4320 D. 1263

Q24. If x and y are the two digits of the number 653xy such that this number is divisible by 80, then x+y is equal to

A. 2 B. 3 C. 4 D. 6

Q25. Three wheels make 36, 24, 60 revolutions per minute. Each has a black mark on it. Wheels are aligned at the start of revolutions. When do the wheels (black marks) align again for the first time?

A. 14sec B. 20sec C. 22sec D. 5sec

Q26. If 1.5x=0.04y then the value of (y-x)/(y+x) is

A. 730/77  B. 73/77  C. 7.3/77  D. None

Q27. The L.C.M. (Lowest (or Least) Common Multiple) of two numbers is 45 times to their H.C.F (Highest Common Factor). If one of the numbers is 125 and sum of L.C.M. and H.C.F. is 1150, the other number is:

A. 215  B. 20  C. 225  D. 235

Q28. Six bells commence tolling together and toll at intervals 2,4,6,8,10 and 12 seconds respectively. In 30 minutes how many times they toll together.

A. 4  B. 10  C. 15  D. 16   
Q29. What is the 28383rd term in the series 1234567891011121314 ............  
 A. 3 B. 4 C. 7 D. 9

**Probability**

**Q1.**

Probability = (Number of favorable outcomes)/(Total number of outcomes)

= (3, 5, 6, 9, 10, 12, 15, 18, 20)/(1 to 20)

= 9/20

[Option D]

**Q2.**

Probability = (Number of favorable outcomes)/(Total number of outcomes)

**=** (Number of words where vowels are together)/(Total words that can be made from alphabets of corporation)

= [(7!/2!)(5!/3!)]/(11!/3!2!)

**Q3.**

Probability = (Number of favorable outcomes)/(Total number of outcomes)

= (Number of 2 digit multiples of 3 which are not multiples of 5)/(Total number of 2 digit numbers)

= [30 multiples of 3 – (15, 30, 45, 60, 75, 90)]/90

= 24/90

**Q4.**

Favorite outcomes: (‘2’, ‘5’) or (‘5’, ‘2’)

* Probability = (1/6)\*(1/6) + (1/6)\*(1/6)

[Option A]

**Q5.**

Out of total 36 possible outcomes favorable outcomes are (‘6, ‘1’), (‘6’, ‘2’), (‘6, ‘3’), (‘6’, ‘4’), (‘6’, ‘5’) are favorable outcomes. So required probability is 5/36

[Option C]

**Q6.**

Out of total 36 possible outcomes favorable outcomes are (‘1, ‘1’), (‘2’, ‘2’), (‘3, ‘3’), (‘4’, ‘4’), (‘5’, ‘5’) and (‘6’, ‘6’) are favorable outcomes. So required probability is 6/36

[Option A]

**Q7. What is the probability of getting at least one six in a single throw of three unbiased dice?**   
A. 1/6 B. 125 / 216 C. 81 / 216 D. 91 / 216

Out of total 216 possible outcomes favorable outcome patterns are as follows:

6 \_\_ \_\_ (5\*5 = 25)

\_\_ 6 \_\_ (5\*5 = 25)

\_\_ \_\_ 6 (5\*5 = 25)

6 6 \_\_ (5)

6 \_\_ 6 (5)

\_\_ 6 6 (5)

6 6 6 (1)

Total = 91

* Probability = 91/216

[Option D]

**Q8.**

Out of total 36 options the favorable outcomes are : (1,1), (1,2), (1,4), (1,6), (2,1), (2,3), (2,5), (3,2), (3,4), (4,1), (4,3), (5,2), (5,6), (6,1) and (6,5)

* P = 15/36

[Option B]

**Q9.**

Out of total 1296 options, favorite combinations are

(6, 6, 6, 2) which can be arranged in 4 ways,

(6, 6, 5, 3) which can be arranged in 4!/2! = 12 ways

(6, 6, 4, 4) which can be arranged in 4!/2!2! = 6 ways

(5, 5, 6, 4) which can be arranged in 4!/2! = 12 ways

(5, 5, 5, 5) which can be arranged in 1 way.

Therefore total favorite cases are 35 ways.

* P = 35/1296

[Option B]

**Q10.**

Out of total of 32 options, favorite combination is HHTTT which can be arranged in 5!/3!2! = 10 ways.

* P = 10/32

[Option C]

**Q11.**

1. P=8/11
2. P=6/11

**Q12.**

1. Both ball are white = First ball White AND Second Ball White

* P = (6/14)\*(6/14)

1. P = (6/14)\*(8/14)
2. One is white and the other is black = (First ball White AND Second Ball Black) OR (First ball Black AND Second Ball White)

* P = (6/14)\*(8/14) + (8/14)\*(6/14)

1. Two balls being of same color = Both White OR Both Black

* P = (6/14)\*(5/13)+(8/14)\*(7/13) [Balls not being replaced]

1. One ball being white and other being black = (First ball White AND Second Ball Black) OR (First ball Black AND Second Ball White)

* P = (6/14)\*(8/13) + (8/14)\*(6/13) [Balls not being replaced]

**Q13.**

Probability of all three balls drawn being black = (5/9)\*(4/8)\*(3/7) = 5/42

* Odds against the event = (42-5)/5 = 37/5

[Option B]

**Q14.**

P(A U B) = P(A) + P(B) – P(AⁿB)

P(Both Kings or Both Blacks) = (4/52)\*(3/51)+(26/52)\*(25/51)-(2/52)\*(1/51)

**Q15.**

P(Problem gets solved) = P(Ramesh solves AND Suresh doesn’t solve) OR

P(Ramesh doesn’t solve AND Suresh solves) OR  
 P(Ramesh solves and Suresh solves)

* P = (3/4)\*(1/3)+(1/4)\*(2/3)+(3/4)\*(2/3) = 11/12

[Option B]

**Q16.**

P(Ramesh makes 3 trials)=P(Ramesh doesn’t get a spade in first trial) AND

P(Ramesh doesn’t get a spade in second trial) AND

P(Ramesh doesn’t get a spade in first trial) AND

* P = (39/52)\*(39/52)\*(13/52)

[Option A]

**Q17.**

* P = (39/52)\*(38/51)\*(13/50)

[Option C]

**Q18.**

1. Both Diodes defective = First diode selected is defective AND second diode selected is defective

P = (3/50)\*(2/49) = 3/1225

[Option B]

1. Only one diode defective = (First diode selected is defective AND second diode selected is not defective) OR (First diode selected is not defective AND second diode selected is defective)

* P = (3/50)\*(47/49) + (47/50)\*(3/49) = 141/1225

[Option A]

1. Neither is defective = First diode selected is not defective AND second diode selected is not defective

* P = (47/50)\*(46/50) = 1081/1225

**Q19.**

P(Two red shoes) = P(First shoe drawn is Red) AND P(Second shoe drawn is Red)

= (6/10)\*(5/9)

**Q20.**

P(One Heart, One Diamond, One Club) = 13C1 \* 13C1 \* 13C1 /(52C3)

**Q21.**

P(All children are boys) = P(First child is a boy) AND P(Second child is a boy) AND …. P (Sixth child is a boy)

* P = (1/2)\*(1/2)\*(1/2)\*(1/2)\*(1/2)\*(1/2) = 1/64

[Option A]

**Q22.**

P(Suresh solves at least one problem) = 1 – P(He does not solve any problem)

= 1-(4/5)10

**Probability Solutions**

**Q1.**

Probability of a randomly chosen employee being male or female: 100%.

% of total persons who are

Male supervisors: 18% (60% of 30%)

Female supervisors: 12% (40% of 30%)

Male employees: 28% (40% of 70%)

Female employees: 42% (60% of 70%)

Total female: 54%

Total male: 46%

That is to say, choose a random employee there is a 54% chance that they are female, and a 46% chance that they are male.

**Q2.**

When one side of the coin is a head, the coin could be either of the coins. So probability of it being either of the coin is ½.

**Q3.**   
**There are total of 64 blocks on a chessboard.**

**=> 3 blocks can be chosen in of 64 in 64C3 ways.**  
**So the sample space is = 41664**

**There are 2 diagonal on chessboard each one having 8 blocks. 3 blocks can be chosen from these two diagonals in 2 \* 8C3 = 112 ways.**

**The require probability is: 112 / 41664= 1/372**

**Q4.**

There are total 450 rooms.  
Out of which 299 room number starts with either 1, 2 or 3. (Room number 100 is not there) Now out of those 299 rooms only  
90 room numbers end with 4, 5 or 6  
(104, 114, ….. 304, 105,115, … 305, 106, 116, .. 306)

So the probability is 90/450 =**1/5**

**Q5.**

Mean=np=4

Variance=np(1-p)=2

Solving n=8, p=1/2

For Binomial Distribution: Pr(K=k) = nCkpk(1-p)n-k

Applying k=2, n=8, p=1/2

Probability = 28/256

**[Option D]**

*Note: Refer to wikipedia for more details on Binomial distribution.*

**Q6.**

Probability= 3C1/8C1= 3/8

**Q7.**

Take one fruit from box with label mixture. If we see an orange, because the basket lies (it can’t have a mixture), then it has only oranges. The other 2 are labeled apples and oranges. The one labeled apples, cannot have oranges inside, because it has already been identified, and because it lies, it cannot have apples either. So it has a mixture. And we are left with the one labeled

oranges that lies and thus has apples.

**Q8.**

(Ball numbered ‘1’ first time and Ball numbered ‘1’ second time and Ball numbered ‘1’ third time)

OR

(Ball numbered ‘2’ first time and Ball numbered ‘2’ second time and Ball numbered ‘2’ third time)

OR

(Ball numbered ‘3’ first time and Ball numbered ‘3’ second time and Ball numbered ‘3’ third time)

Probability= (1/3)\*(1/3)\*(1/3) + (1/3)\*(1/3)\*(1/3) + (1/3)\*(1/3)\*(1/3) [With replacement]

= **1/9**

**Q9.**

WWR -> P(WWR)= 3/8 \* 2/7 \* 2/6 = 12/336  
WRR -> P(WRR)= 3/8 \* 2/7 \* 1/6 = 6/336  
RWR -> P(RWR)= 2/8 \* 3/7 \* 1/6 = 6/336  
BBR -> P(BBR)= 3/8 \* 2/7 \* 2/6 = 12/336  
BRR -> P(BRR)= 3/8 \* 2/7 \* 1/7 = 6/336  
RBR -> P(RBR)= 2/8 \* 3/7 \* 1/6 = 6/336  
WBR -> P(WBR)= 3/8 \* 3/7 \* 2/6 = 18/336  
BWR -> P(BWR)= 3/8 \* 3/7 \* 2/6 = 18/336  
  
So, P(Total) = 84/336 = 1/4 = 0.25

**Q10.**

In QUANTECH: (Q, N, T, C, H) are consonants. U, A, E, are vowels.   
  
Total no. of permutations = 8!

Considering all vowels as one

Required no. of permutations = 6!\*3!

So the required probability = 6!\*3!/8!

**Q11.**

Probability = (Probability of choosing black ball first time)\*(Probability of choosing black ball second time)\*(Probability of choosing black ball third time)

[Independent events because of replacement]

=1/3 \* 1/3 \* 1/3

=1/27

**Q12.**

**To**tal number of shoes = 5+4 = 9  
Probability of getting a red shoes = Number of red shoes/ total number of shoes  
= **5/9**

**Q13.**

P(y)= 3/6, P(R) =2/6,P(B)=1/6

Outcomes are independent of previous outcome.

P(YRB)=P(Y)\*P(R)\*P(B)

(3/6)\*(2/6)\*(1/6) =1/36

**[Option A]**

**Q14.**

Now total cases of selecting two different numbers is 28C2.

Now as two numbers sum should be less than 13 i.e. maximum 12

So numbers can be

(11,1) (10,1) (10,2) (9,1) (9,2) (9,3)  
(8,1) (8,2) (8,3) (8,4) (7,1) (7,2)  
(7,3) (7,4) (7,5) (6,1) (6,2) (6,3)  
(6,4) (6,5) (5,1) (5,2) (5,3) (5,4)  
(4,1) (4,2) (4,3) (3,1) (3,2) (2,1)

(6,6 cant as number should not repeat)

So in total 30

So Probability = 30/(28C2)

**Q15.**

Probability that A and B contradict = Probability[A speaks truth and B lies OR A lies and B speaks truth]

= (3/4)\*(1-5/6) + (1-3/4)\*(5/6)

=3/24 + 5/24

= 1/3

**[Option B]**

**PROBABILITY**

Q1. In a company 30% are supervisors and 40% employees are male. 60% of supervisors are male. What is the probability that a randomly chosen employee is a male or female?

Q2. Two coins one with HEAD IN BOTH SIDES and the other coin HEAD IN ONE SIDE AND TAIL IN THE OTHER SIDE is in a box, a coin is taken at random and found head in one side. What is the probability that the other side is a head?

Q3.Three blocks are chosen randomly on a chessboard. What is the probability that they are in the same diagonal?

Q4. In a hotel, rooms are numbered from 101 to 550. A room is chosen at random. What is the probability that room number starts with 1, 2 or 3 and ends with 4, 5 or 6?

Q5. The mean and the variance of a binomial distribution are 4 and 2 respectively. Then the probability of 2 successes is:

A. 37/256 B. 219/256 C. 128/256 D. 28/256

Q6. A father has 8 children. He takes 3 children at a time to a zoo. What is the probability of a child going to the zoo?

Q7.There are 3 baskets. One of them have apples, one has oranges only and the other has mixture of apples and oranges. The labels on their baskets always lie. (i.e. if the label says oranges, you are sure that it doesn't have oranges only, it could be a mixture) The task is to pick one basket and pick only one fruit from it and then correctly label all the three baskets.

Q8. 3 balls inside a bag having numbers1, 2, 3 written on it. A ball is taken and then put inside it. Find probability that all 3 numbers are the same when it is taken 3 times.  
  
Q9.A bag contains 3 white balls, 3 black balls & 2 red balls. One by one three balls are drawn out without replacement. What is the probability that the third ball is red?

Q10. Arrange the word QUANTECH in such a way that all the vowels come together. What is the probability of getting such a number (in all the permutations of alphabets available)?

Q11. A bag contains 3 black balls,3 yellow balls. A girl picks a ball and places it back in the bag. What is the probability at she selects a black ball all the three time?  
Q12. There are 5 red shoes, 4 green shoes. If one draws randomly a shoe, what is the probability of getting red shoe?  
  
Q13. Three faces of a fair die are Yellow, two faces red and one blue. The die is tossed three times. The probability that the colors yellow, red and blue appear in the first, second and third tosses respectively is:  
A. 1/36 B. 1/18 C. 1/32 D. 1/37 E. None of these   
  
Q14. Two distinct no's are taken from 1,2,3,4......28. Find the probability that their sum is less than 13.

Q15. The probability that A speaks truth is 3/4, while this probability for B is 5/6. The probability that they contradict each other when asked to speak on a fact is:  
A. 3/20 B. 1/3 C. 7/20 D. 4/5

**Percentage, Profit and Loss Assignment Solutions**

**SOLUTION Q1:**

Cost price of the DVD players= Rs.1000 each  
Selling price marked by him to achieve 20% profit = 120/100 x 1000 = Rs. 1200 each  
The first two DVD players he sold at a discount of 5% on S.P.  
Without discount the SP of Two DVD players should had been = Rs. 1200 x 2 = Rs.2400  
But since he discounts 5% from SP, he sold them at 2400 x 95/100 = Rs.2280.

Since he wanted to make overall gain of 20% on the sale of the three DVD players he should sell them at 3000 x 120/100 = Rs.3600  
Since he has already sold 2 DVD players for Rs. 2280, he must sell the third DVD player for 3600 - 2280 = Rs.1320  
Profit Percentage on Third DVD Player = SP - CP / CP X 100% = 1320 - 1000 / 1000 X 100% = 32%

**SOLUTION Q2:**

Let the cost of price of these 12 laptops be Rs.100 each  
Then Selling price of these 12 laptops at 40% profit will be 140/100 x 100 = Rs.140 each  
Eight laptops are sold at a discount of 30% on S.P  
Then each of these 8 laptops is sold at 140 x 70/100 = Rs.98  
Therefore, Total SP of Eight laptops = 98 x 8 = Rs.784 ...(1)

Four laptops are sold at discount of 20% over S.P.  
Each such laptop is sold at 140 x 80/100 = Rs.112  
Therefore, Total SP of these four laptops = 112 x 4 = Rs. 448 ...(2)

Totally 12 laptops are sold at Rs.784 + Rs. 448 = Rs.1232 (we get this by adding values from (1) and (2))  
CP of 12 laptops = 12 x 100 = Rs. 1200  
Therefore profit percentage = SP - CP / CP x 100% = 1232 - 1200 / 1200 x 100% = (32/1200) x 100% = 2 2/3% profit

**SOLUTION Q3:**

Cost price of twenty refrigerators = Rs. 9600 x 20 = Rs.192000  
Selling price marked on each of these 20 refrigerators at 25% over cost price = 125/100 x 9600 = Rs.12000  
12 Refrigerators were sold with a discount of 10% over selling price i.e they are sold at 90/100 x 12000 = Rs.10800 each

Amount received on sale of 12 refrigerators - Rs.10800 x 12 = Rs.129600  
Vivek and Company wants to make an over all profit of 20%  
On Rs. 192000 and hence they should receive totally 120/100 x 192000 = Rs.230400  
Balance amount to be received by selling 8 refrigerators to make a profit of 20% = Rs.230400 - 129600 = Rs.100800

Price at which these 8 refrigerators to be sold = Rs.100800 / 8 = Rs.12600  
Earlier planned selling price = Rs.12000  
To sell each of the 8 refrigerators at Rs. 12600 each instead of the planned Rs. 12000 each, the price has to be marked up by Rs.600 which means 600/12000 x 100 =5% over planned SP.

**SOLUTION Q4:**

Let C.P. be Rs. *x* and S.P. be Rs. *y*.

Then, 3(*y* - *x*) = (2*y* - *x*)   http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *y* = 2*x*.

Profit = Rs. (*y* - *x*) = Rs. (2*x* - *x*) = Rs. *x*.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Profit % = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | *x* | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 100% |
| *x* |

**SOLUTION Q5:**

Let C.P.= Rs. 100. Then, Profit = Rs. 320, S.P. = Rs. 420.

New C.P. = 125% of Rs. 100 = Rs. 125

New S.P. = Rs. 420.

Profit = Rs. (420 - 125) = Rs. 295.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Required percentage = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 295 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% | = | 1475 | % = 70% (approximately). |
| 420 | 21 |

**SOLUTION Q6:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Cost Price of 1 toy = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 375 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 31.25 |
| 12 |

Selling Price of 1 toy = Rs. 33

So, Gain = Rs. (33 - 31.25) = Rs. 1.75

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Profit % = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1.75 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% | = | 28 | % = 5.6% |
| 31.25 | 5 |

**SOLUTION Q7:**

C.P. of 56 kg rice = Rs. (26 x 20 + 30 x 36) = Rs. (520 + 1080) = Rs. 1600.

S.P. of 56 kg rice = Rs. (56 x 30) = Rs. 1680.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Gain = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 80 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 5%. |
| 1600 |

**SOLUTION Q8:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.P. of 1st transistor = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 100 | x 840 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 700. |
| 120 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| C.P. of 2nd transistor = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 100 | x 960 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 1000 |
| 96 |

So, total C.P. = Rs. (700 + 1000) = Rs. 1700.

Total S.P. = Rs. (840 + 960) = Rs. 1800.

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Gain % = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 100 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% | = 5 | 15 | % |
| 1700 | 17 |

**SOLUTION Q9:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| C.P. of 1 orange = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 350 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 3.50 |
| 100 |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| S.P. of 1 orange = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 48 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 4 |
| 12 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Gain% = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 0.50 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% | = | 100 | % = 14 | 2 | % |
| 3.50 | 7 | 7 |

**SOLUTION Q10:**

85 : 18700 = 115 : *x*

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 18700 x 115 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 25300. |
| 85 |

Hence, S.P. = Rs. 25,300.

**SOLUTION Q11:**

A percent represent a part of a whole or a fraction with the denominator equal to 100. The part here is the absolute increase given by part = 150 - 120 = 30.

The whole is the original value, 120, hence the unknown percent x is given by   
x = part / whole = 30 / 120 = 0.25.

Multiply 0.25 by 100 and divide it by 100 to obtain x = 0.25 \* 100 / 100 = 25 / 100 = 25%.

An increase from 120 to 150 is equivalent to a 25% increase of the original value 120.

**SOLUTION Q12:**

The part here is given by part = 80 - 50 = 30.

The whole is the original value, 80, hence the percent x is given by x = part / whole = 30 / 80 = 0.375.

Multiply 0.375 by 100 and divide it by 100 to convert it into percentage.   
x = 0.375\* 100 / 100 = 37.5 / 100 = 37.5%

A decrease from 80 to 50 is equivalent to a 37.5% decrease of the original value 80.

**SOLUTION Q13:**

Number of runs made by running = 110 - (3 x 4 + 8 x 6)

= 110 - (60)

= 50.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Required percentage = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 50 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 45 | 5 | % |
| 110 | 11 |

**SOLUTION Q14:**

Let their marks be (*x* + 9) and *x*.

|  |  |  |
| --- | --- | --- |
| Then, *x* + 9 = | 56 | (*x* + 9 + *x*) |
| 100 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 25(*x* + 9) = 14(2*x* + 9)

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 3*x* = 99

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 33

So, their marks are 42 and 33.

**SOLUTION Q15:**

Clearly, the numbers which have 1 or 9 in the unit's digit, have squares that end in the digit 1. Such numbers from 1 to 70 are 1, 9, 11, 19, 21, 29, 31, 39, 41, 49, 51, 59, 61, 69.

Number of such number =14

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Required percentage = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 14 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 20%. |
| 70 |

**SOLUTION Q16:**

|  |  |  |
| --- | --- | --- |
| 20% of *a* = *b*   http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 20 | *a* = *b*. |
| 100 |

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif *b*% of 20 = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | *b* | x 20 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 20 | *a* x | 1 | x 20 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 4 | *a* = 4% of *a*. |
| 100 | 100 | 100 | 100 |

**SOLUTION Q17:**

Let the number of students be *x*. Then,

Number of students above 8 years of age = (100 - 20)% of *x* = 80% of *x*.

|  |  |  |
| --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif 80% of *x* = 48 + | 2 | of 48 |
| 3 |

|  |  |  |
| --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 80 | *x* = 80 |
| 100 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 100.

**SOLUTION Q18:**

Let the number be *x*.

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Then, error = | 5 | *x* - | 3 | *x* = | 16 | *x*. |
| 3 | 5 | 15 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Error% = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 16*x* | x | 3 | x 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif% = 64%. |
| 15 | 5*x* |

**SOLUTION Q19:**

Let the amount taxable purchases be Rs. *x*.

|  |  |
| --- | --- |
| Then, 6% of *x* = | 30 |
| 100 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 30 | x | 100 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif = 5. |
| 100 | 6 |

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Cost of tax free items = Rs. [25 - (5 + 0.30)] = Rs. 19.70

**SOLUTION Q20:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Rebate = 6% of Rs. 6650 = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 6 | x 6650 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 399. |
| 100 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Sales tax = 10% of Rs. (6650 - 399) = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 10 | x 6251 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 625.10 |
| 100 |

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Final amount = Rs. (6251 + 625.10) = Rs. 6876.10

**PERCENTAGE, PROFIT AND LOSS - SOLUTIONS**

**SOLUTION Q1:**

15lts of water containing 20% alcohol, Quantity of alcohol = 20/100\*15=3lts and Quantity of water = 15-3 = 12lts. To this 10lts of pure water and 5ltrs of coffee is added.

Therefore, the total quantity of the resulting solution is 15+10+5 = 30lts.

Total Water quantity = 12+10 = 22lts & quantity of coffee = 5lts.

Percentage of water= 22/30\*100 = 73.3333%

Percentage of alcohol = 10/30\*100 = 10%

Percentage of coffee = 5/30\*100 = 16.666%

**Option A.**

**SOLUTION Q2:**

Total games played = 60,

Win percentage = 30%, so the total games won = 30/100\*60 = 18.

After a phenomenal winning streak, the winning percentage is 50%.

Let the extra games played be ‘x’. Now, Total games played = 60+x

Winning percentage = 50% & total games won = 18+x

Therefore, 50/100\*(60+x) = 18+x

½\*(60+x) = 18+x

60+x = 2\* (18+x) [Cross Multiplication]

60+x = 36+2x

60-36 = 2x-x

x=24, no. of games won to attain an average of 50% is 24. **Option C.**

**SOLUTION Q3:**

Let the total no. of students be 100.

Thus no. of students from Maharashtra are 76.

Out of these 20% are Bombay students = 20/100 \* 76 = 15.2,

30% are from Pune = 30/100 \* 76 = 22.8

The remaining from Nasik = 50% = 50/100 \* 76 = 38.

The percentages of Bombay, Pune and Nasik students respectively are 15.2%, 22.8%, 38%

**Option D.**

**SOLUTION Q4:**

Each thief Steals 50% of the entire quantity + 50% of one Loaf.

After 5 thieves, the no. of loaves remaining is 3.

3+ 0.5 (50% of one loaf) = 3.5 (50% of remaining quantity)

Hence Multiplying by 2 gives me the remaining quantity

3.5\*2 = 7 = no. of loaves remaining after Thief 4

7+0.5 = 7.5

7.5\*2= 15 = no. of loaves remaining after Thief 3

15+0.5= 15.5

15.5\*2= 31 = no. of loaves remaining after Thief 2

31+0.5 = 31.5

31.5\*2 = 63 = no. of loaves remaining after Thief 1

63+0.5 = 63.5

63.5\*2 = 127 = no. of loaves before the theft. **Option C.**

**SOLUTION Q5:**

The watch gains 2% per hour when the temperature is in the range of 40OC-50OC and it loses at the same rate when the temperature is in the range of 20OC-30OC.

One day, the temperature started steadily raising at the rate of 2OC per hour from 8 am and sometime during afternoon it started coming down at the same rate.

At 8am, the temperature is 32 OC and at 4pm it is 40 OC. Temperature change w.r.t time is given in the table below:

|  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Time | 8am | 9am | 10am | 11am | 12am | 1pm | 2pm | 3pm | 4pm | 5pm | 6pm | 7pm |
| Temp | 32 | 34 | 36 | 38 | 40 | 42 | 44 | 42 | 40 | 38 | 36 | 34 |

By looking at the table above, the watch is gaining time between 12am and 4pm; i.e. the watch is gaining time for 4 hours.

The watch gains time at 2% per hour = 2/100 \* 60 mins = 1.2 mins per hour.

In 4 hours, the watch gains 1.2 \* 4 = 4.8 mins

Therefore the time shown by the watch at 7pm would be 4.8 mins more, i.e. 7 : 04.8pm. **Option C**.

**SOLUTION Q6:**

The amount of vitamins in each option has to be calculated and the maximum has to be chosen.

A. Boost worth Rs. 16

Rs. 8 = 250 gms

Rs. 16 = 16\*250/8 gms (Cross Multiplication)

Amt. of vitamins = 12/100\*(16\*250/8) = 60 gms.

B. Milo worth Rs. 15

Rs. 10 = 250gms

Rs. 15 = 15\*250/10 gms

Amt. of vitamins = 15/100\*(15\*250/10) = 56.25 gms.

C. Ener-G worth Rs. 8

Rs. 7 = 250 gms

Rs. 8 = 8\*250/7 gms (Cross Multiplication)

Amt. of vitamins = 20/100\*(8\*250/7) = 57.14 gms.

D. All the three worth Rs. 12.5 (125gms of each)

125 gms of each = 125 gms of Boost + 125 gms of Milo +125 gms of Ener-G

Amt. of vitamins = (12/100\*125) + (15/100\*125) + (20/100\*125) = 58.75 gms.

Therefore the maximum amount of vitamins is available in Boos worth Rs. 16. **Option A.**

**SOLUTION Q7:**

The cost of each option has to be calculated and the minimum has to be chosen.

A. 200gms of Boost+200gms of Milo

Cost of 200gms of Boost:

250gms = Rs.8

200gms = 200\*8/250 = Rs. 6.4

Similarly Cost of 200gms of Milo = 200\*10/250 = Rs. 8

Total Cost = 6.4 + 8 = Rs. 14.4

B. 300gms of Milo+100gms of Boost

Total Cost = (300\*10/250) + (100\*8/250) = 12 + 3.2 = Rs. 15.2

C. 100gms of Milo+100gms of Boost+100gms of Ener-G

Total Cost = (100\*10/250) + (100\*8/250) + (100\*7/250) = 4 + 3.2 + 2.8 = Rs. 10

D. 300gms of Coke + 100gms of Ener-G

Total Cost = (300\*10/250) + (100\*7/250) = 12 + 2.8 = Rs. 14.8

Therefore the answer is **Option C.**

**SOLUTION Q8:**

The ratio of the number of boys and girls in a class is 3:2. Total Students are 300.

No. of boys = 3/5\*300 = 180

No. of girls = 2/5\*300 = 120

10% boys are given scholarship = 10/100\*180 = 18

No. of boys not given scholarship = 180-18 = 162.

25% girls are given scholarship = 25/100\*120 = 30

No. of girls not given scholarship = 120-30 = 90.

Therefore the answer is **Option C.**

**SOLUTION Q9:**

1kg of paper = Rs. 25 in 2002.

Inflation rate = 6.5% per year. Increase in paper rate = 6.5 + 1.5 = 8% per year.

Cost of paper in 2003 = 25 + (8/100\*25) = Rs. 27

Cost of paper in 2004 = 27 + (8/100\*27) = Rs. 29.16

**Option A.**

**SOLUTION Q10:**

38% students failed in English, and 22% failed in Science, 20% in both.

The percentage of Students who failed the exam = %age of students failed in English+ %age of students failed in Science - %age of students failed in English.

Fail percentage = 38 + 22 – 20 = 40

Pass percentage of students = 100 – Fail Percentage = 60%

No. of students who passed = 960.

60% = 960

100% = 100\*960/60 (Cross Multiplication) = 1600.

**Option B.**

**SOLUTION Q11:**

Marked price (MP) = Rs. 80.

Discount = 10%

Therefore, Selling Price (SP) = 90% of MP = 90/100\*80 = Rs. 72

Profit = 20% = (SP-CP) \*100/CP = (72-CP) \*100/CP

OR 20\*CP = 7200-100CP --------🡪 Cross Multiplication

OR 120CP=7200, CP = 7200/120 = Rs. 60. **Option C.**

**SOLUTION Q12:**

The shopkeeper buys 8 toys for Rs. 68

Therefore, CP for one toy = Rs. 68/8

The shopkeeper sells 12 toys for Rs. 117

Therefore, SP for one toy = Rs. 117/12

Profit Percent = (SP-CP) \*100/CP = [(117/12)-(68/8)]\*100/(68/8) = 14.705 %

**Option C.**

**SOLUTION Q13:**

CP of Vikky = Rs. 10000.

Profit = 15%.

SP = CP + Profit = 10000 + 15\*10000/100 = Rs. 11500

Let Cost price for Bobby be CP2

CP2 = Rs.11500

Loss = 15%

Let Selling Price of Bobby be SP2

SP2 = CP2 – Loss = 11500 – 15\*11500/100 = 9775

Profit Gained by Vicky on second transaction = CP1 - SP2 = 10000 – 9775 = 225

Profit Percent = 225\*100/10000 = 2.25

Therefore Overall Profit = 15+2.25 = 17.25. **Option A.**

**SOLUTION Q14:**

Let the Marked Price (MP) be Rs. 100

Discount = 25%

SP = (MP - 0.25MP) = 0.75\*MP = 0.75\*100 = Rs. 75

Profit = 25% = (SP-CP)\*100/CP = (75-CP)\*100/CP

OR 25CP = 7500-100CP --------🡪 Cross Multiplication

OR 125CP = 7500, CP = 7500/125 = Rs. 60.

If Discount = 10%, SP = 0.9\*MP = Rs. 90

Profit Percent = (SP-CP)\*100/CP = (90 - 60)\*100/60 = 50%. **Option D.**

**SOLUTION Q15:**

An article sold at an amount of 85%, the sale price is Rs. 425.

Therefore, SP= Rs. 425 = 0.85 MP

MP = 425/0.85 --------🡪 Cross Multiplication

MP = Rs. 500. **Option A.**

**SOLUTION Q16:**

Let the cost price be Rs. 100.

MP = CP + 0.5\*CP = 100 + 0.5\*100 = Rs. 150

Discount = 25%

SP= MP-Discount= MP-0.25\*MP = 0.75\*MP = 0.75\*150 = Rs. 112.5

Profit Percent = (SP-CP)\*100/CP and since CP=100, Profit Percent = SP-CP = 112.5 -100

Therefore Profit percent = 12.5%. **Option B.**

**SOLUTION Q17:**

Given, A = 0.75\*B and A = 1.25\*C

From the above equations,

0.75\*B = 1.25 C

OR C = 0.75\*B/1.25 = 0.6\*B

Let Baldwa’s Price be Rs. 100. Therefore Charlie’s price = 0.6\*100 = Rs. 60

Percentage Difference = 100-60 = 40. **Option D.**

**SOLUTIONJ Q18:**

CP = Rs. 200

Initial Profit = 10%

New SP = 230

New Profit percent = (New SP – CP)\*100/CP = (230-200)\*100/200 = 15%

Increase in Profit = New Profit – Initial Profit = 15% - 10% = 5%. **Option A.**

**SOLUTION Q19:**

Actual Cost Price, CP = 250 + 10\*250/100 = 250 + 25 = Rs. 275

Profit = 20% = (SP-CP)\*100/CP = (SP – 275)\*100/CP

OR 20 \* 275 = 100\*SP – 27500

OR 100SP = 20 \* 275 + 27500 = 33000

OR SP = Rs. 330

Discount = 25%

But, SP = MP – Discount = MP – 0.25\*MP = 0.75\*MP

OR 330 = 0.75\*MP

OR MP = 330/0.75 = Rs. 440. **Option B.**

**SOLUTION Q20:**

SP1 = 840

Profit = SP1 – CP = 840 - CP

SP2 = 795

Loss = CP – SP2 = 2 \* Profit = 2\*(840 - CP)

CP – 795 = 1680 – 2\*CP

3CP = 1680 + 795 = 2475, CP = 2475/3 = 825$. **Option B.**

**SOLUTION Q21:**

Let the initial capital be ‘x’

Profit = 50% = (50/100) \* x = 0.5\*x

Total capital = x + 0.5\*x = 1.5\*x

Charity = 50%\*Total Capital = 0.5\*1.5\*x = 0.75\*x = Capital for 2nd year

Let the capital for 2nd year be ‘y’ =0.75\*x

Therefore, Capital for 3rd year = 0.75\*y = Amount donated at the end of 2nd year.

Let the capital for 3rd year be ‘z’ = 0.75\*y

Amount left at the end of 3rd year after charity = 0.75z = Rs. 16875

Therefore, z = 16875/0.75 = Rs. 22500 = Amount donated at the end of 2nd year. **Option B.**

**PERCENTAGE, PROFIT AND LOSS**

**Q1. To 15lts of water containing 20% alcohol, we add 10lts of pure water and 5ltrs of coffee. What is the percentage of water, alcohol and coffee in the final mixture respectively?**

A. 73.333, 10, 16.666 B. 75.55, 16.66, 7.79 C. 66.666, 10, 23.444 D. None of the above

**Q2. In June a football team that played 60 games had won 30% of its game played. After a phenomenal winning streak this team raised its average to 50%. How many games the team must have won in a row to attain this average?**

A. 12 B. 20 C. 24 D. 30

**Q3. A school has 76% of its students from Maharashtra. Out of these 20% are Bombay students, 30% are from Pune and the remaining from Nasik. Find the percentages of Bombay, Pune and Nasik students respectively.**

A. 12.77%,20.61%,22.8% B. 26.65%,28.78%,38% C. 22.8%,28.78%,42.99% D. 15.2%,22.8%,38%

**Q4. There are five thieves, each smuggle a bakery one after the other. The first one takes 50% of the total number of loaves of bread plus 50% of one loaf. Similarly 2nd, 3rd, 4th and 5th also did the same. After the fifth one number of loaves remained were 3. Initially how many loaves were there?**

A. 31 B. 62 C. 127 D. 63

**Q5. A watch gains 2% per hour when the temperature is in the range of 40OC-50OC and it loses at the same rate when the temperature is in the range of 20OC-30OC. The watch functions properly in all other temperature ranges. One day, the temperature started steadily raising at the rate of 2OC per hour from 8 am and sometime during afternoon it started coming down at the same rate. Find what time is shown by the watch at 7pm if at 8am, the temperature was 32OC and at 4pm, it was 40OC.**

A. 6 : 55 pm B.6 : 55.12 pm C.7 : 04.8 pm D. None of the above

**Study the following table and answer the following questions:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Health Drink | % of Vitamins | % of Minerals | % of Micronutrients | Cost per 250gms (in Rs.) |
| Boost | 12 | 18 | 30 | 8 |
| Milo | 15 | 20 | 10 | 10 |
| Ener-G | 20 | 10 | 40 | 7 |

**Q6. Which of the below mentioned health drink options has maximum amount of vitamins?**

A. Boost worth Rs. 16 B. Milo worth Rs. 15 C. Ener-G worth Rs. 8 D. All the three worth Rs. 12.5 (125gms of each)

**Q7. Which of the following is cheapest?**

A. 200gms of Boost+200gms of Milo B. 300gms of Milo+100gms of Boost

C. 100gms of Milo+100gms of Boost+100gms of Ener-G D. 300gms of Coke + 100gms of Ener-G

**Q8. The ratio of the number of boys and girls in a class is 3:2 Out of these 10% of boys and 25% of girls are given scholarship. If the strength of class is 300, find no. of boys and no. of girls who are not given scholarship.**

A. 162 & 30 respectively B. 180 & 90 respectively C. 162 & 90 respectively D. 180 & 30 respectively

**Q9. In 2002, a kg of paper was sold at Rs25/-. If the paper rate increases at 1.5% more than the inflation rate which is 6.5% a year, then what will be the cost of a kg of paper in 2004?**

A. 29.16 B.29.72 C.30.12 D.32.65

**Q10. In an examination, 38% students failed in English, and 22% failed in Science, 20% in both. If the number of students who passed the examination was 960, how many students appeared for the examination if the examination consisted of only these two subjects?**

A. 1200 B. 1600 C. 1920 D. 1800

**Q11. A shopkeeper marks the price of an article at Rs. 80. Find the cost price if after allowing a discount of 10% he makes a profit of 20%.**

A. Rs. 53.33 B. Rs. 70 C. Rs. 60 D. 75

**Q12. A shopkeeper bought locks at the rate of 8 toys for Rs. 68 and sold it at 12 toys for Rs. 117. Calculate the gain percent.** A. 12.52% B. 11.76% C. 14.705% D. 14.76%

**Q13. Vikky owns a house worth Rs. 10000. He sells it to Bobby at a profit of 15%. After some time, Bobby sells it back to Vikky at 15% loss. Find Vikky’s gain percent.**

A. 17.25% B. 6.25% C. 17.64% D. 2.25%

**Q14. If a company gives 25% discount on an item, they earn 25% profit. If they give a 10% discount then, what is the profit percentage?**

A. 40% B. 55% C. 35% D. 50%

**Q15. An article sold at an amount of 85%, the sale price is Rs. 425. What is the marked price of the article?**

A. 500 B. 488 C. 480 D. 510

**Q16. A retailer marks all his goods at 50% above the cost price and offers a discount of 25% on the marked price. What is his actual profit on the sales?**

A. 27% B. 12.50% C. 20% D. 15%

**Q17. Amit sells his product 25% cheaper than Baldwa and 25% dearer than Charlie. By what percentage is Charlie’s product cheaper than Baldwa’s?**

A. 33.33 B. 66.66 C. 50 D. 40

**Q18. Angelina bought an article at Rs. 200 and sold it at a profit of 10%. What would have been the increase in profit percent if the article was sold at Rs. 230?**

A. 5% B. 10% C. 15% D. 20%

**Q19. Bob – a watch dealer pays 10% custom duty on a watch that costs Rs. 250 abroad. For how much should he mark it, if he desires to make a profit of 20% after giving a discount of 25%?**

A. Rs. 400 B. Rs. 440 C. Rs. 275 D. Rs. 330

**Q20. Nicholas sells his camera for 840$ at some profit. Had he sold his camera for 795$, the quantum of loss incurred would be double that of the profit earned. Find the cost price of the camera.**

A. 800$ B. 825$ C. 775$ D. 750$

**Q21. Vimal Tripathi, a clever businessman, started off a business with very little capital. In the 1st year, he makes a profit of 50% and donated 50% of the total capital (initial capital + profit) to charity. He followed the same followed in the 2nd and 3rd years. If at the end of 3years, he is left with Rs. 16875, then find the amount donated by him at the end of second year.**

A. Rs. 45000 B.Rs. 22500 C. Rs. 12500 D. Rs. 20000

**PERCENTAGES, PROFIT AND LOSS**

**Q1.**

Let total number of votes polled be x.

Given 0.84x – 0.16x = 476 => x = 700

[Option D]

**Q2.**

Let money Pramod has = p

* Eden has 1.5p and Arun has 3p

Given (p+1.5p+3p)/3 = 1100 => p = 800

* Arun has 3p = 1800Rs

[Option A]

**Q3.**

B=b

A=1.2b

C=1.22b

D=1.23b = 34560 => b = 20,000

* A= 1.2b = 24000

[Option B]

**Q4.**

From 20kgs of fresh grapes we can get 2kg of pulp. If finally x kg of dry grapes is formed, it will have 0.8x of pulp which should be equal to 2kg

0.8x=2 => x = 2.5kg

[Option C]

**Q5.**

Percentage Error = [|Actual Value-Measured Value|/Actual Value]\*100

= [((5x/3) – (3x/5))/(5x/3) ]\*100 = 64%

[Option D]

**Q6.**

Given 1.16CP = 40.60 => CP=35

[Option C]

**Q7.**

CP = SP + Loss (In case of Loss)

SP + SP/3 = 4SP/3

* Loss % = (SP/3)/(4SP/3) \* 100 = 25%

[Option B]

**Q8.**

Let SP/m = x

Given 33x = CP + 11x => CP=22x

* Profit % = [11x/22x]\*100 = 50%

[Option A]

**Q9.**

Let CP = 100 => MRP = 150

Discount of 25% => SP = 0.75MRP = 0.75\*150 = 112.5

* Profit = 12.5%

[Option B]

**Q10.**

Let CP/egg = 1Re and he sells ‘x’ eggs at 10% profit.

Given 12\*1.05 = 1.1\*x + 0.9(12-x)

Solving the above x=9

[Option B]

**Q11.**

Let CP/ball = x

Given: 17x-720 = 5x => x= 60

[Option D]

**Q12.**

Profit = 50% of 150 = 75 => CP = 75

If CP = 50, to make 40% profit, it should be sold at 1.4\*50 = 70Rs

[Option D]

**Q13.**

Given 0.65x-0.8\*0.8x = 22 => x = 2200

[Option D]

**Q14.**

The consumption has to be reduced by 20/120 percentage = 16.67%

[Option B]

**Q15.**

Profit = 10/90 % = 11.11%

[Option C]

**Q16.**

Given x-y = 1660 .. (1)

7.5x = 12.5y … (2)

Solving (1) and (2)

y = 2490 and x= 4150

[Option C]

**Q17.**

Number of laborers should be increased by 44/(100-44) % = 78.5%

[Option C]

**Q18.**

Let the cost of horse be x and that of carriage be 3000-x

Given : 3000\*1.02 = 1.2x + 0.9(3000-x) => x = 1200

[Option B]

**Q19.**

Let CP = 100

SP = 0.75\*120 + 0.25\*100 =115

* Profit = 15%

[Option B]

**Q20.**

Let Loss = x

1.2x = CP – 380

1x = CP – 400

0.2\*CP = 1.2\*400 – 380 = 100 => CP = 500

**PERCENTAGES, PROFIT AND LOSS**

**Q1. In an election a candidate who gets 84% of the votes is elected by a majority of 476 votes. What is the total number of votes polled?**

A. 553 B. 334 C. 1000 D. 700

**Q2. Arun has twice as much money as Eden. Edgar has 50% more than Pramod has. If the average of the amounts they have is Rs.1100, how much money Agarwal has?**

A. Rs 1800 B. Rs 2100 C. Rs. 800 D. None of these**Q3. A received 20% more salary than B. C received 20% more than A. D received 20% more than C. If D received salary of Rs.34560, how much did A receive as salary?**

A. 22000 B. 24000 C. 26000 D. 20000**Q4. Fresh grapes contain 90% water by weight while dried grapes contain 20% water by weight. What is the weight of dry grapes available from 20 kg of fresh grapes?**

A. 2kg B. 2.4 kg C. 2.5kg D. None of these

**Q5. A student multiplied a number by 3/5 instead of 5/3. What is the percentage error in the calculation?**

A. 4% B. 44% C. 54% D. 64%

**Q6. The cost price, when selling price is Rs.40.60 and gain is 16% is \_\_\_\_\_\_\_\_**

A. Rs. 64.96 B. Rs. 34.10 C. Rs. 35 D. None of these.

**Q7. If loss is 1/3rd of S.P. , the loss percentage is :**

A. 16 % B. 25 % C. 30 % D. 33.33%

**Q8. By selling 33 meters of cloth, one gains the selling price of 11 meters. Find the gain percent.**A. 50% B. 60% C. 75% D. 66%

**Q9. A shopkeeper marks all his goods at 50% above the cost price and offers a discount of 25% on the marked price. What is his actual profit on the sales?**

A. 27% B. 12.50% C. 20% D. 15%

**Q10. Suresh has 12 eggs with him. He sells x at a profit of 10% and remaining at a loss of 10%. He gains 5% on the whole. What is the value of x?**A. 7 B. 9 C. 8 D. 10

**Q11. On selling 17 balls at Rs. 720, there is a loss equal to the cost price of 5 balls. The cost price of a ball is:**

A. Rs. 55 B. Rs. 70 C. Rs. 75 D. Rs. 60

**Q12. An object is sold for Rs. 150 making a profit of 50% on the selling price. If the article is bought for Rs 25 less, what price must be marked so as to gain 40% by selling the object at marked price?** A. 75 B. 80 C. 50 D. 70

**Q13. The difference between a discount of 35% and 2 successive discounts of 20% on a certain bill was Rs. 22. Find the amount of the bill.**

A. Rs.1000 B. Rs. 1400 C. Rs. 1500 D. Rs. 2200

**Q14. If the inflation is 20%, by how much percentage should a consumer reduce his expenditure to maintain the same overall expenditure?**A. 15% B. 16.67% C. 17.32% D. None of these

**Q15. A dishonest dealer uses a scale of 90cm instead of a meter scale and claims to sell at cost price. His profit is:**

A. 8% B. 10% C. 11% D. None of these.

**Q16. Difference between the 2 numbers is 1660. If 7.5% of one number is 12.5% of the other number, then find the two numbers.**

A. 2000,3660 B. 8000, 2460 C. 2490, 4150 D. 1000,3000

**Q17. In a Construction Company, due to the lack of laborers, the output of the company decreases by 44%. By what percentage the number of laborers that should be increased so that the production remains the same as the earlier?**A. 72.5% B. 56% C. 78.5% D. None of these.**Q18. A man bought a horse and a carriage for Rs. 3000. He sold the horse at a gain of 20% and the carriage at a loss of 10%, thereby gaining 2% on the whole. Find the cost of the horse.** A. 1100 B. 1200 C. 1300 D. 1400

**Q19. A dealer sold three-fourth of his articles at a gain of 20% and the remaining at cost price. Find the gain earned by him in the whole transaction.**

1. 12% B. 15% C. 30% D. 25%

**Q20. If a man reduces the selling price of a fan from 400 to 380 his loss increases by 20% . Find the cost price of fan.**

Solution 1:

Choice (3). Correct Answer - **Rs.144**. 

**Explanatory Answer**

8 times A’s share = 12 times B’s share = 6 times C’s share.   
  
Note that this is not the same as the ratio of their wages being 8 : 12 : 6  
  
In this case, find out the L.C.M of 8, 12 and 6 and divide the L.C.M by each of the above numbers to get the ratio of their respective shares.  
  
The L.C.M of 8, 12 and 6 is 24.  
Therefore, the ratio A:B:C :: 24/8 : 24/12 : 24/6  
=> A : B : C :: 3 : 2 : 4  
  
The sum of the total wages = 3x + 2x + 4x = 432 => 9x = 432 or x = 48.  
  
Hence, A who gets 3x will get 3 \* 48 = Rs.144.

Solution 2:

|  |  |  |  |
| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct Answer - **(1)**  **Solution:**  Solution   Let A's income be = 4x A's expenses, therefore = 4x - 25  Let B's income be = 5x B's expenses, therefore = 5x - 50  We know that the ratio of their expenses = 5 : 6 =>  => 24x - 150 = 25x - 250  => Therefore, x = 100.  => A's income = 4x = 400 and B's income = 5x = 500. | | | |

Solution 3:

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| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct Answer - **(3)**  **Solution:**   Let the original number of workers in the group be 'x'  Therefore, actual number of workers = x-7.  We know that the number of manhours required to do the job is the same in both the cases.  Therefore, x (24) = (x-7).30   24x = 30x - 210  6x = 210  x = 35.  Therfore, the actual number of workers who worked to complete the job = x - 7 = 35 -7 = 28. | | | |

Solution 4:

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| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct Answer - **(1)**  **Solution:**   A:B = 3:2 = 9:6;  B:C = 3:2 = 6:4 (making B equal)  Therefore, A:B:C = 9:6:4  Therefore, the runs made by A = (9/19) X 342 = 162. | | | |

Solution 5:

Correct Answer - **120 litres**. Choice (3)

**Explanatory Answer**

To cover a distance of 800 kms using a 800 cc engine, the amount of diesel required = ratio = 80 litres.  
  
However, the vehicle uses a 1200 cc engine and the question states that the amount of diesel required varies directly as the engine capacity.   
  
i.e., for instance, if the capacity of engine doubles, the diesel requirement will double too.  
  
Therefore, with a 1200 cc engine, quantity of diesel required = ratio = 120 litres.

Solution 6:

Choice (3). Correct Answer - **122 men**. 

**Explanatory Answer**

Amount of work done by 20 men = 24 women = 40 boys or amount of work done by 1 man = 1.2 women = 2 boys.  
  
Let us therefore, find out the amount of men required, if only men were working on the task, to complete the new job under the new conditions.  
  
And then make adjustments for the women and boys who are already employed on the task.  
  
The man hours required to complete the new task = 4 times the man hours required to complete the old task. (As the new task is 4 times as big as the old task)  
  
So, the new task is 20 \* 12 \* 8 \* 4 men hours task.  
  
Let 'n' be the number of men required to complete the new task.  
Equating the men hours of task, we get 20 \* 12 \* 8 \* 4 = n \* 5 \* 12. Or n = 128.   
  
The new task will require 128 men, if only men worked on the task to complete it.   
  
However, the problem states that 6 women and 2 boys are working on the job.   
  
6 women are the equivalent of 6/1.2 = 5 men and 2 boys = 1 man.   
  
i.e., the equivalent of 5 + 1 = 6 men are already working on the project.   
  
Therefore, 122 more men are required to work with 6 women and 2 boys to complete the task.

Solution 7:

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| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct Answer - **(2)**  **Solution:**   Let there be 'x' men in the beginning so that after 15 days the food for them is left for 45 days.  After adding 500 men the food lasts for only 40 days.  Now (x+500) men can have the same food for 40 days.  Therefore by equating the amount of food we get,  45 \* x = (x + 500) \* 40  45x = (x+500) \* 40  5x = 20,000  x = 4,000  Therefore there are 4,000 men in the fort. | | | |

Solution 8:

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| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct Answer - **(2)**  **Solution:**   Let Vinod marks be 6x and Basu's is 5x. Therefore, the sum of the marks = 6x + 5x = 11x.  But the sum of the marks is given as 275 = 11x. We get x = 25 therefore, vinod marks is 6x = 150 and Basu marks = 5x = 125.  Therefore, the combined average of their marks = (150 + 125) / 2 = 137.5.  If the total mark of the exam is 100 then their combined average of their percentage is 68.75  Therefore, if their combined average of their percentage is 137.5 then the total marks would be (137.5 / 68.75)\*100 = 200. | | | |

Solution 9:

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| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct choice - (1) Correct Answer -(Rs.520)  **Solution:**  A, B and C will share the amount of Rs. 2340 in the ratio of the amounts of work done by them.  As A takes 6 days to complete the job, if A works alone, A will be able to complete http://www.ascenteducation.com/india-mba/iim/cat/questionbank/Archives/March2004/images/ratio0318041.gif th of the work in a day.  Similarly, B will complete http://www.ascenteducation.com/india-mba/iim/cat/questionbank/Archives/March2004/images/ratio0318042.gif and C will complete http://www.ascenteducation.com/india-mba/iim/cat/questionbank/Archives/March2004/images/ratio0318043.gif of the work.  So, the ratio of the work done by A : B : C when they work together will be equal to http://www.ascenteducation.com/india-mba/iim/cat/questionbank/Archives/March2004/images/ratio0318044.gif   Multiplying the numerator of all 3 fractions by 24, the LCM of 6, 8 and 12 will not change the relative values of the three values. We get http://www.ascenteducation.com/india-mba/iim/cat/questionbank/Archives/March2004/images/ratio0318045.gif = 4 : 3 : 2. i.e., the ratio in which A: B : C will share Rs.2340 will be 4 : 3 : 2.  Hence, C’s share will be http://www.ascenteducation.com/india-mba/iim/cat/questionbank/Archives/March2004/images/ratio0318046.gif = Rs.520. | | | |

Solution 10:

Choice (3). Correct Answer - **24**. 

**Explanatory Answer**

Let the number of boys in the class be 5k.  
  
And the number of girls in the class be 3k.  
  
The class has 16 more boys. i.e., the difference between the number of boys and girls is 16  
  
i.e., 5k - 3k = 2k = 16  
  
So, k = 8.  
  
Number of girls = 3k = 2 \* 8 = 24.  
  
The correct choice is (3).

Solution 11:

|  |  |  |  |
| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Correct Answer - **(1)**  **Solution:**   Let x be the profit.  Their investment ratio = 3600: 4400: 2800 = 9 : 11 : 7  A's profit of Rs. 8000 = (1/4 \* x) + 1/3(3/4\*x) = 1/2 \* x  x = Rs. 16,000  Therefore B's profit = 11/27(3/4 \* 16000) = Rs. 4888.88 | | | |

Solution 12:

let  their total profit be   x  
  
now since Binit recieves monthly salary of 120 for year = 120 \* 12  
                                                                              =1440  
  
now since this salary is for carrying business so  this will be taken out  from profit  
  
now, net profit left  = x-1440  
this has to be equally divided  
  
Binit                                                            Amit  
( x-1440 ) / 2                                      ( x-1440 ) / 2  
  
plus monthly salary of 1440                  plus 10% of half of total amount which

                                                        is 2250 & has to be taken out from Benit

( x-1440) / 2  + 1440  - 2250                  ( x-1440 ) / 2  + 2250  
  
Now

(Binits income)        =   half(Amits income)

or  2(Binits income) =  Amits income

2(( x-1440) / 2  + 1440 - 2250))   = ( x-1440) / 2  + 2250)  
  
x = 9,180     (ANS(a))

Solution 13.

Soln. As d no. ratio of 1 rupee, 50 paise, 25 paise in 2.5:3:4  
=>In value it wud be 2.5:(3/2):(4/4) = 2.5:1.5:1....

No. of 1rupee coins 2.5 x (210/5)=110....

Solution 14.

Soln. Take d max mark in each subject is 100.  So qualifying mark is 50. On a total dt fellow gets 60 x 5= 100.

        We can write (10+9+8+7+6)a=300 => a=15/2  
        In 5 subjects he gets 75,67.5,60,52.5,45.

        He passes in 4 subjects...

Solution 15,

Soln. As C=kW2[K is proportionality constant]  
        So, 100kW2- (1+4+9+16)kW2 = 70000  
            =>kW2 = 1000  
        Price of dt diamond = 1000 x 100 = 1lakh.

Solution 16.

Soln.  Total cost to buy Rs(300 + 320 + 300)=Rs 920.  
         Total cost to cell Rs (920 + 410)=Rs 1330.  
         As he bought 12 kg of dry fruits. Sellin cost per kg. is Rs. (1330/12)=Rs. 111(Approx)

Solution 17.

**Answer:** Option **C**

**Explanation:**

Let A = 2*k*, B = 3*k* and C = 5*k*.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A's new salary = | 115 | of 2*k* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 115 | x 2*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 23*k* |
| 100 | 100 | 10 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B's new salary = | 110 | of 3*k* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 110 | x 3*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 33*k* |
| 100 | 100 | 10 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| C's new salary = | 120 | of 5*k* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 120 | x 5*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 6*k* |
| 100 | 100 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif New ratio | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 23*k* | : | 33*k* | : 6*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 23 : 33 : 60 |
| 10 | 10 |

Solution 18.

**Answer:** Option **B**

**Explanation:**

Let the numbers be 3*x* and 5*x*.

|  |  |  |  |
| --- | --- | --- | --- |
| Then, | 3*x* - 9 | = | 12 |
| 5*x* - 9 | 23 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 23(3*x* - 9) = 12(5*x* - 9)

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 9*x* = 99

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 11.

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif The smaller number = (3 x 11) = 33.

Solution 19.

**Answer:** Option **C**

**Explanation:**

Originally, let the number of boys and girls in the college be 7*x* and 8*x* respectively.

Their increased number is (120% of 7*x*) and (110% of 8*x*).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 120 | x 7*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | and | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 110 | x 8*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif |
| 100 | 100 |

|  |  |  |  |
| --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 42*x* | and | 44*x* |
| 5 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif The required ratio = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 42*x* | : | 44*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 21 : 22. |
| 5 | 5 |

Solution 20.

Answer -> A

The new alloy X is formed from the two alloys A and B in the ratio 4:3. Hence, 7 parts of the alloy contains 4 parts of alloy A and 3 parts of alloy B.

Let 7x ounces of alloy X contain 4x ounces of alloy A and 3x ounces of alloy B.

Now, alloy A is formed of the two basic elements mentioned in the ratio 5:3.

Hence 4x ounces of the alloy A contains(5/(5+3))4x=5x/2 ounces of first basic element and (3/(5+3))4x=3x/2 ounces of the second basic element.

Also, alloy B is formed of the two basic elements mentioned in the ratio 1:2.

Hence, let 3x ounces of alloy A contain (1/(1+2))3x=x ounces of the first basic element and (2/(1+2))3x=2x ounces of the second basic element.

Then the total compositions of the two basic elements in the 7x ounces of alloy X would contain 5x/2 ounces(from A) + x ounces(from B)=7x/2 ounces of the first basic element and 3x/2(from A) + 2x(from B)= 7x/2 ounces of the second basic element.

Hence, the composition of the two basic elements in the alloy X is 7x/2: 7x/2=1:1.

Solution 21.

Answer -> A

Solution: Average rupee collection = speed \* capacity \* occupancy \* ticketrate

Ratio of average rupee collection of truck to that of the boat = product of above rates

(3\*50\*1\*1.5) : (1\*30\*2\*1) = 15:4

Solution 22.

Answer -> B

Solution:

Let the stones with manish, rahul and bharti be m,r and b respectively.

Given 5r=7m and 5m=7b

25r =35m and 35m=49b

25r =35m=49b=k

r/49 = m/35 = b/25

the least possible integral values for r,m,b will be r=49, m=35, and b=25

total = 49 + 35 +25 =109

solution 23:

Answer -> D

Solution:

Suppose N =5x+1

A took (x+1) biscuits.

Now, 4x is of the form 5y+1 then, x must be in the form 5z+4

* 4(5z+4) =5y+1
* Y=4z+3 and x= 5z+4

The ratio of the number of biscuits that A and B took is

[(5z+4)+1] : [(4z+3)+1] = 5:4

So, we can say that any two successive persons A,B,C and D take biscuits in the ratio 5:4

Let the number of biscuits that A,B,C and D took be a,b,c and d respectively.

A:b = b:c = c:d =5:4

A:b:c:d = 125:100:80:64

* A=125k
* X=125k-1 and N=5x+1 = 625k -4

As, N >1000, the least value of N is when k=2

N=1246

ALTERNATIVE APPROACH = substitute all options and verify

Solution 24.

Answer -> C

Similar to q.23,

X=12k – 1 and N=5x +1 = 625k-4

N< 1000, then k=1

N=621

621 = (5\*124)+3

4\*124 = (5\*99)+1

4\*99 = (5\*79) +1

4\*79 = (5\*63) +1

After the fourth man took his share (5\*63+1), the biscuits left is 4\*63 = 252

Solution 25

Answer - > B

Solution

Following the steps of q.24,

The number of biscuits hidden by 3rd and 4th men is 79+1 =80 and 63+1= 64

Ie. A total of 144

**Ratio And Proportion Assignment Solutions**

**SOLUTION Q1:**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | 4 | A | = | 2 | B |
| 15 | 5 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif A = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 2 | x | 15 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gifB |
| 5 | 4 |

|  |  |  |
| --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif A = | 3 | B |
| 2 |

|  |  |  |  |
| --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | A | = | 3 |
| B | 2 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif A : B = 3 : 2.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif B's share = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 1210 x | 2 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 484. |
| 5 |

**SOLUTION Q2:**

Let the third number be *x*.

|  |  |  |  |
| --- | --- | --- | --- |
| Then, first number = 120% of *x* = | 120*x* | = | 6*x* |
| 100 | 5 |

|  |  |  |  |
| --- | --- | --- | --- |
| Second number = 150% of *x* = | 150*x* | = | 3*x* |
| 100 | 2 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Ratio of first two numbers = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 6*x* | : | 3*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 12*x* : 15*x* = 4 : 5. |
| 5 | 2 |

**SOLUTION Q3:**

Let the shares of A, B, C and D be Rs. 5*x*, Rs. 2*x*, Rs. 4*x* and Rs. 3*x* respectively.

Then, 4*x* - 3*x* = 1000

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 1000.

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif B's share = Rs. 2*x* = Rs. (2 x 1000) = Rs. 2000.

**SOLUTION Q4:**

Originally, let the number of seats for Mathematics, Physics and Biology be 5*x*, 7*x*and 8*x* respectively.

Number of increased seats are (140% of 5*x*), (150% of 7*x*) and (175% of 8*x*).

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 140 | x 5*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | , | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 150 | x 7*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | and | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 175 | x 8*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif |
| 100 | 100 | 100 |

|  |  |  |
| --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 7*x*, | 21*x* | and 14*x*. |
| 2 |

|  |  |  |
| --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif The required ratio = 7*x* : | 21*x* | : 14*x* |
| 2 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 14*x* : 21*x* : 28*x*

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 2 : 3 : 4.

**SOLUTION Q5:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Quantity of milk = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 60 x | 2 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.giflitres = 40 litres. |
| 3 |

Quantity of water in it = (60- 40) litres = 20 litres.

New ratio = 1 : 2

Let quantity of water to be added further be *x* litres.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Then, milk : water = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 40 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | . |
| 20 + *x* |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Now, | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 40 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 1 |
| 20 + *x* | 2 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 20 + *x* = 80

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 60.

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif Quantity of water to be added = 60 litres.

**SOLUTION Q6:**

Originally, let the number of boys and girls in the college be 7*x* and 8*x* respectively.

Their increased number is (120% of 7*x*) and (110% of 8*x*).

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 120 | x 7*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | and | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 110 | x 8*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif |
| 100 | 100 |

|  |  |  |  |
| --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 42*x* | and | 44*x* |
| 5 | 5 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif The required ratio = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 42*x* | : | 44*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 21 : 22. |
| 5 | 5 |

**SOLUTION Q7:**

Let the original salaries of Ravi and Sumit be Rs. 2*x* and Rs. 3*x* respectively.

|  |  |  |  |
| --- | --- | --- | --- |
| Then, | 2*x* + 4000 | = | 40 |
| 3*x* + 4000 | 57 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 57(2*x* + 4000) = 40(3*x* + 4000)

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 6*x* = 68,000

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 3*x* = 34,000

Sumit's present salary = (3*x* + 4000) = Rs.(34000 + 4000) = Rs. 38,000.

**SOLUTION Q8:**

Let the three parts be A, B, C. Then,

|  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A : B = 2 : 3 and B : C = 5 : 8 = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 5 x | 3 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | : | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 8 x | 3 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 3 : | 24 |
| 5 | 5 | 5 |

|  |  |  |
| --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif A : B : C = 2 : 3 : | 24 | = 10 : 15 : 24 |
| 5 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif B = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 98 x | 15 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 30. |
| 49 |

**SOLUTION Q9:**

Given ratio = http://www.indiabix.com/_files/images/aptitude/1-div-1by2.gif : http://www.indiabix.com/_files/images/aptitude/1-div-2by3.gif : http://www.indiabix.com/_files/images/aptitude/1-div-3by4.gif = 6 : 8 : 9.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif 1st part = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 782 x | 6 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. 204 |
| 23 |

**SOLUTION Q10:**

Let A = 2*k*, B = 3*k* and C = 5*k*.

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| A's new salary = | 115 | of 2*k* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 115 | x 2*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 23*k* |
| 100 | 100 | 10 |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| B's new salary = | 110 | of 3*k* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 110 | x 3*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 33*k* |
| 100 | 100 | 10 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| C's new salary = | 120 | of 5*k* = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 120 | x 5*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 6*k* |
| 100 | 100 |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif New ratio | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 23*k* | : | 33*k* | : 6*k* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = 23 : 33 : 60 |
| 10 | 10 |

**SOLUTION Q11:**

|  |  |  |
| --- | --- | --- |
| Let 40% of A = | 2 | B |
| 3 |

|  |  |  |  |
| --- | --- | --- | --- |
| Then, | 40A | = | 2B |
| 100 | 3 |

|  |  |  |  |
| --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 2A | = | 2B |
| 5 | 3 |

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | A | = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 2 | x | 5 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = | 5 |
| B | 3 | 2 | 3 |

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif A : B = 5 : 3.

**SOLUTION Q12:**

Let the fourth proportional to 5, 8, 15 be *x*.

Then, 5 : 8 : 15 : *x*

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 5*x* = (8 x 15)

|  |  |  |
| --- | --- | --- |
| *x* = | (8 x 15) | = 24. |
| 5 |

**SOLUTION Q13:**

Let the numbers be 3*x* and 5*x*.

|  |  |  |  |
| --- | --- | --- | --- |
| Then, | 3*x* - 9 | = | 12 |
| 5*x* - 9 | 23 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 23(3*x* - 9) = 12(5*x* - 9)

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 9*x* = 99

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 11.

http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif The smaller number = (3 x 11) = 33.

**SOLUTION Q14:**

Let the number of 25 p, 10 p and 5 p coins be *x*, 2*x*, 3*x* respectively.

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Then, sum of their values = Rs. | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 25*x* | + | 10 x 2*x* | + | 5 x 3*x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = Rs. | 60*x* |
| 100 | 100 | 100 | 100 |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif | 60*x* | = 30 | http://www.indiabix.com/_files/images/aptitude/1-sym-bim.gif  *x* = | 30 x 100 | = 50. |
| 100 | 60 |

Hence, the number of 5 p coins = (3 x 50) = 150.

**SOLUTION Q15:**To cover a distance of 800 kms using a 800 cc engine, the amount of diesel required = ratio = 80 litres.  
However, the vehicle uses a 1200 cc engine and the question states that the amount of diesel required varies directly as the engine capacity. i.e., for instance, if the capacity of engine doubles, the diesel requirement will double too.  
Therefore, with a 1200 cc engine, quantity of diesel required = ratio = 120 litres.

**SOLUTION Q16:**

8 times A’s share = 12 times B’s share = 6 times C’s share.   
Note that this is not the same as the ratio of their wages being 8 : 12 : 6  
In this case, find out the L.C.M of 8, 12 and 6 and divide the L.C.M by each of the above numbers to get the ratio of their respective shares.  
The L.C.M of 8, 12 and 6 is 24.  
Therefore, the ratio A:B:C :: 24/8 : 24/12 : 24/6

=> A : B : C :: 3 : 2 : 4  
The sum of the total wages = 3x + 2x + 4x = 432 => 9x = 432 or x = 48.  
Hence, A who gets 3x will get 3 \* 48 = Rs.144.

**SOLUTION Q17:**

Amount of work done by 20 men = 24 women = 40 boys or amount of work done by 1 man = 1.2 women = 2 boys.  
Let us therefore, find out the amount of men required, if only men were working on the task, to complete the new job under the new conditions.  
And then make adjustments for the women and boys who are already employed on the task.  
The man hours required to complete the new task = 4 times the man hours required to complete the old task. (As the new task is 4 times as big as the old task)  
So, the new task is 20 \* 12 \* 8 \* 4 men hours task.  
Let 'n' be the number of men required to complete the new task.  
Equating the men hours of task, we get 20 \* 12 \* 8 \* 4 = n \* 5 \* 12. Or n = 128.   
The new task will require 128 men, if only men worked on the task to complete it.   
However, the problem states that 6 women and 2 boys are working on the job.   
6 women are the equivalent of 6/1.2 = 5 men and 2 boys = 1 man.   
i.e., the equivalent of 5 + 1 = 6 men are already working on the project.   
Therefore, 122 more men are required to work with 6 women and 2 boys to complete the task.

**SOLUTION Q18:**

|  |  |  |  |
| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Let A's income be = 4x A's expenses, therefore = 4x - 25 Let B's income be = 5x B's expenses, therefore = 5x - 50 We know that the ratio of their expenses = 5 : 6 => 24x - 150 = 25x - 250  => Therefore, x = 100.  => A's income = 4x = 400 and B's income = 5x = 500. | | | |

**SOLUTION Q19:**

|  |  |  |  |
| --- | --- | --- | --- |
| |  |  |  | | --- | --- | --- | | |  |  | | --- | --- | | |  | | --- | | Let there be 'x' men in the beginning so that after 15 days the food for them is left for 45 days. After adding 500 men the food lasts for only 40 days. Now (x+500) men can have the same food for 40 days. Therefore by equating the amount of food we get, 45 \* x = (x + 500) \* 40 45x = (x+500) \* 40 5x = 20,000 x = 4,000 Therefore there are 4,000 men in the fort. | | | |

**SOLUTION Q20:**

Let the maximum marks in each of the three subjects be 100.  
Therefore, the candidate scored an aggregate of 60% of 3 \* 100 = 60% of 300 marks = 180 marks.  
Let the marks scored in the three subjects be 4x, 5x and 6x.  
Then, 4x + 5x + 6x = 180   
&        15x = 180 or x = 12.  
Therefore, marks scored by the candidate in the three subjects are 4\*12, 5\*12 and 6\*12  
= 48, 60 and 72.  
Hence, the candidate has scored more than 60% in one subject.

**Answer Q21 :**c) 288

Solution :

Programmers Lines Minutes

48 48 36

? 192 24

For such problems where efficiency of programmers are considered to be the same, one can employ the equation  
P1 X M1 / L1 = P2 X M2 / L2 -> eq 1  
Where P1,M1 and L1 are the number of programmers, minutes and lines of code respectively in I case and  
P2,M2 and L2 are the number of programmers, minutes and lines of code respectively in II case.

From the question, we can find that P1 = 48, M1 = 36, L1 = 48, M2 = 24 and L2 = 192. P2 is to be found out.  
Substituting the above values in equation 1 we get,  
(48 x 36) / 48 = (P2 X 24)/192  
Or, P2 = (48 x 36 x 192) / (48 x 24) = 288

**Answer Q21:**a)108 days

Solution :

Let efficiency of men in I group be E1 and that of second group be E2.

Ratios of efficiency of men in I group to that of II group can be found by using the formula,

E1/E2 = Time taken by men in II group to do certain amount of work / Time taken by men in I group to do the same amount of work as that of men in II goup

= (3 x 1.5) : (2 x 1)  
= 4.5 : 2

Now, M1D1T1E1W2 = M2D2T2E2W1 --> 1

(where M1 = number of men in I group, M2 = number of men in II group. D1 = number of days required to complete work by group I, D2 = number of days required to complete work by group II. T1 = working hours per day by group I. T2 = working hours per day by group II. w2 = amount of work by group II, w1 = amount of work by group I.)

Since we are to calculate the time taken by group II to complete twice the amount of work as that of group I, W2 = 2 x W1.  
We had earlier calculated E1/E2 = 4.5/2.  
Also from the question we can infer that,  
M1 = 20, M2 = 60.  
T1 = 12, T2 = 4.  
D1 = 24 and D2 is what we need to find.

Substituting all the values in eq 1, we can find D2 as follows.

D2 = (20 X 24 X 12 X 4.5 X 2)/(60 X 4 X 2 X 1)  
= 108 days.

**Answer Q23:** c) 60 min.

Solution:

For problems like this where efficiency of the programmers/workers are assumed constant implicitly, you can apply the below formula  
P1 X M1 / L1 = P2 X M2 / L2  
Here, P1,M1 and L1 are number of programmers, number of minutes and number of lines respectively in case I  
And, P2,M2 and L2 are number of programmers, number of minutes and number of lines respectively in case II.  
Given P1 = 60, M1 = 60, L1 = 60, P2 = 84, L2 = 84.  
Substituting in above formula we get.  
60 x 60 / 60 = 84 x M2 / 84.  
Simplifying we get, M2 = 60 minutes.

**Answer Q24:** b) 252 lines

Solution :

Using the same formula as in first question :  
P1 X M1 / L1 = P2 X M2 / L2  
Given, P1 = 48, M1 = 48 and L1 = 48  
Given P2 = P1 + 72 = 48 + 72 = 120  
Given M2 = M1 + 72 = 48 + 72 = 120  
Substituting values in formula we get,  
48 x 48 / 48 = 120 x 120 / L2  
Simplifying we get L2 = 300  
Increase in number of lines of code = L2 - L1 = 300 - 48 = 252

**Answer Q25 :**a) 90

Solution :

Using the same formula as in first question (Note : M1 and M2 denote time in hours and not minutes. Left hand side and Right hand side should have same units and thats the deal.)  
P1 X M1 / L1 = P2 X M2 / L2  
Given P1 = 36, M1 = 36, L1 = 36.  
Given L2 = 84, M2 = 24  
Substituting we get,  
36 x 36 / 36 = P2 x 24 / 84  
Or P2 = 36 x 84 / 24 = 126  
Number of additional programmers = P2 - P1 = 126 - 36 = 90.

**Ratio Proportion and Variation**

**Q1. A and B together have Rs. 1210. If of A's amount is equal to of B's amount, how much amount does B have?**A. Rs. 460 B. Rs. 484 C. Rs. 550 D. Rs. 664  
  
**Q2. Two numbers are respectively 20% and 50% more than a third number. The ratio of the two numbers is:**A.2:5 B. 3:5 C: 4:5 D. 6:7

**Q3. A sum of money is to be distributed among A, B, C, D in the proportion of 5 : 2 : 4 : 3. If C gets Rs. 1000 more than D, what is B's share?**A. Rs. 500 B. Rs. 1500 C.Rs. 2000 D. None of these

**Q4. Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?**A. 2 : 3 : 4 B. 6 : 7 : 8 C. 6 : 8 : 9 D. None of these

**Q5. In a mixture 60 litres, the ratio of milk and water 2 : 1. If the this ratio is to be 1 : 2, then the quanity of water to be further added is:**A. 20 litres B.30 litres C. 40 litres D.60 litres

**Q6. The ratio of the number of boys and girls in a college is 7 : 8. If the percentage increase in the number of boys and girls be 20% and 10% respectively, what will be the new ratio?**A. 8 : 9 B.17 : 18 C.21 : 22 D. Cannot be determined  
**Q7. Salaries of Ravi and Sumit are in the ratio 2 : 3. If the salary of each is increased by Rs. 4000, the new ratio becomes 40 : 57. What is Sumit's salary?**A.Rs. 17,000 B.Rs. 20,000 C.Rs. 25,500 D.Rs. 38,000

**Q8. The sum of three numbers is 98. If the ratio of the first to second is 2 :3 and that of the second to the third is 5 : 8, then the second number is:**A. 20 B.30 C. 48 D.58

**Q9. If Rs. 782 be divided into three parts, proportional to (1/2):(2/3):(3/4) then the first part is:**A. Rs. 182 B.Rs. 190 C.Rs. 196 D.Rs. 204

**Q10.The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?**A. 3 : 3 : 10 B. 10 : 11 : 20 C.23 : 33 : 60 D. Cannot be determined

**Q11.If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?**A. 2 : 5 B.3 : 7 C. 5 : 3 D.7 : 3

**Q12. The fourth proportional to 5, 8, 15 is:**A.18 B.24 C.19 D.20  
  
**Q13. Two number are in the ratio 3 : 5. If 9 is subtracted from each, the new numbers are in the ratio 12 : 23. The smaller number is:**A. 27 B.33 C.49 D.55

**Q14. In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?**A.50 B.100 C.150 D.200

**Q15. 60 litres of diesel is required to travel 600 km using a 800 cc engine. If the volume of diesel required to cover a distance varies directly as the capacity of the engine, then how many litres of diesel is required to travel 800 kms using 1200 cc engine?** A. 80 litres B. 90 litres C. 120 litres D. 170 litres

**Q16. Rs.432 is divided amongst three workers A, B and C such that 8 times A’s share is equal to 12 times B’s share which is equal to 6 times C’s share. How much did A get?** A. Rs.192 B. Rs.133 C. Rs.144 D. Rs.128

**Q17. If 20 men or 24 women or 40 boys can do a task in 12 days working for 8 hours a day, how many men working with 6 women and 2 boys take to do a task four times as big working for 5 hours a day for 12 days?**A. 8 men B. 2 men C. 122 men D. 24 men

**Q18. The monthly incomes of A and B are in the ratio 4 : 5, their expenses are in the ratio 5 : 6. If 'A' saves Rs.25 per month and 'B' saves Rs.50 per month, what are their respective incomes?**

A. Rs.400 and Rs.500 B. Rs.240 and Rs.300  
C. Rs.320 and Rs.400 D. Rs.440 and Rs.550

**Q19. A fort has provisions for 60 days. If after 15 days 500 men strengthen them and the food lasts 40 days longer, how many men are there in the fort?** A. 3500 B. 4000 C. 6000 D. None of these

**Q20. The marks scored by a student in three subjects are in the ratio of 4 : 5 : 6. If the candidate scored an overall aggregate of 60% of the sum of the maximum marks and the maximum marks in all three subjects is the same, in how many subjects did he score more than 60%?**A. 1 B. 2 C. 3 D. None of the subjects

**Q21. An overseas software company entrusted the work to a company in India. The Indian company conducted campus recruitment drives and recruited men and women on a large scale. It gave training to newcomers in its training centre with advanced facilities at Mysore for over three weeks. The company conducted periodical tests to assess the progress in terms of knowledge and output of its employees in order to ensure uniform output being given by all the employees. Company’s 48 programmers wrote 48 lines of program in 36 minutes. How many programmers are required to write 192 lines program in 24 minutes?**A. 24 B. 36 C. 288 D. 72

**Q22. A private limited company entrusts works to 20 men, working 12 hours a day. This group can complete the work in 24 days. The company now wants to entrust twice the work to 60 men working 4 hours a day. Assume that 2 men of the first group do as much work in one hour as 3 men of second group do in 1 ½ hours. How many number of days will the second group of men take to complete this work?**A. 108 days B. 120 days C. 124 days D. 81 days

**Q23. “Hunterkey” a leading software company situate in China was started in the year 1988. The company had been progressing well since inception and the company has achieved a turn over of over 10 billion $. The management of the company has plans for achieving greater heights in terms of turnover and has been training its members in various skills such as technical skills, soft skills, programming skills etc. 60 programmers of the company write 60 lines of programs in 60 minutes totally. How long will it take for 84 programmers to write 84 lines of programs?**A. 84 min. B. 48 min C. 60 min D. 72 min

**Q24. “Universal Software Inc.” USA is situated in California. The company was started in the year 1975 and has been progressing extremely well. It is aiming to reach the topmost position in the near future. During the year 2010, in a team, on any particular day, 48 programmers of the company were able to write 48 lines of software programs in 48 minutes. The company recruits 72 more programmers. Also the team management improves the throughput by making them to work for 72 more minutes every day. What will be the increase of the number of lines of code possible now ?**A. 300 lines B. 252 lines C. 48 lines D. 48 lines

**Q25. “Extremely fast solutions” a software programmer provider has been training its manpower in such a way that 36 programmers could write 36 software programs of similar nature in 36 hours. The company has received an order for getting 84 software programs of similar nature in 24 hours. How many additional programmers should the company employ for this project?**A. 90 B. 42 C. 66 D. 44

**Logarithms, Interest and Venn Diagrams**

**A. Basics of Logarithms**  
  
Definition:- If *a* is a positive real number, other than 1 and , then we write: m = logax and we say that the value of log x to the base a is m.

(i)  => log 10 1000 = 3   (Common logarithms)

(ii)   => log 3 81 = 4

(iii)   => log 2 (1/8) = -3

**B. Properties of Logarithms**  
  
(i)  log a (xy) = log a x + log a y

(ii) log a (x/y) = log a x - log a y

(iii) log x x = 1

(iv) log a 1 = 0

(v) log a () = p(log a x )

(vi) log a x = 1/(log x a)  
  
(vii) log a x = (log b x)/(log b a)

**C. Simple Interest**  
  
let Principal = P, rate = R % annum, Time = T years

Then,  
  
Simple Interest SI = (PTR)/100   
Amount after T years A=P+SI

**D. Compound Interest**

let Principal = P, rate = R % annum, Time = n years  
  
1. When interest is compounded annually:  
Amount(Principal + interest) =   
  
  
  
  
2. When interest is compounded Half-Yearly:

Amount =   
  
3. When interest is compounded Quarterly:  
  
Amount = 

4. When interest is compounded annually but but time is in fraction say 4.5 years,  
Amount =  \* (1 + (R/2)/100)

5. When rates are say R1% in the first year, R2% in the second year and R3% in the third year and so on ...  
  
Amount = P\*(1+R1/100)\*(1+R2/100)\*(1+R3/100)....

**E. Venn Diagrams  
  
1. Two Set Venn Diagrams**



Total number of elements belonging to set A = X  
Total number of elements belonging to set B = Y  
Number of elements belonging to both Set A and Set B = c

Therefore

Elements belonging to ONLY A = a = X – c  
Elements belonging to ONLY B = b = Y – c  
Number of elements in EITHER A or B = a + b + c = X + Y - c

Number of elements in NEITHER A or B = Number of elements in Universal set - (a + b + c)

**2. Three Set Venn Diagrams**



Number of elements in set A = X  
Number of elements in set B = Y  
Number of elements in set C = Z

Number of elements in ONLY set A = a  
Number of elements in ONLY set B = b  
Number of elements in ONLY set C = c

Number of elements in set A and B but not in C = q  
Number of elements in set A and C but not in B = p  
Number of elements in set B and C but not in A = r

Number of elements in all the three sets = z

X = a + p + q + z  
Y = b + q + r + z  
Z = c + p + r + z

Number of elements in only one set = a + b + c  
Number of elements in two sets = p + q + r  
Number of elements in at least one set = (a + b + c) + (p + q + r) + z

Number of elements in neither of three sets = U - ((a + b + c) + (p + q + r) + z)

**TIME, SPEED & DISTANCE Solutions**

**SOLUTION Q1:**

Average Speed = 2xy/(x+y)

x=40kmph and y=60kmph

Average Speed = 2\*40\*60/(40+60) = 4800/100 = 48 kmph – Option B

**SOLUTION Q2:**

Average Speed = 2xy/(x+y)

x=8km/hr and y=6km/hr

Average Speed = 2\*8\*6/(8+6) = 48/7 = 6 6/7 km/hr – Option B

**SOLUTION Q3:**

Ans: s=d/t, d is constant-

Therefore, 15\*20/60 = s \* 15/ 60 Hence s= 20 kmph **SOLUTION Q4:**

s=d/t, d is constant, s1=30 km/h and s2=32km/h

s1t1 = s2t2 = distance d;

and t1=t2+(16/60)

30\*(t2+16/60) = 32\*t2; Therefore t2 = 4hrs

And Distance d = 32\*4 = 128 kms - Option A

**SOLUTION Q5:**

s=d/t, d is constant, s1=25 km/h and s2=30 km/h

s1t1 = s2t2 = distance d;

and t1=t2+1

25\*(t2+1) = 30\*t2; Therefore t2 = 5h – Option C

**SOLUTION Q6:**

s=d/t, d = 80kms, s=80/t1, i.e. t1 = 80/s

s2=80/t2 ------- eqn 2

s2 = s+10 ------eqn 3

t2=t1-16/60 ------eqn 4

Or t1-t2 = 16/60

Or (80/s)-(80/s+10) = 16/60

Taking LCM

[80(s+10)-80s]/s(s+10) = 16/60

(80s+800-80s)\*60= 16\*s(s+10)

800\*60/16 = s(s+10)

Or s(s+10) = 50 \* 60 = 3000. Solving the Quadratic equation, s = 50 km/hr – Option C

**SOLUTION Q7:**

Distance = Length of train(Lt) + Length of Platform (Lp)

Speed= 36km/hr = 10m/s

Time = 35s

D = Lt+Lp = Lt+250 = S\*T = 10\*35; Therefore Lt = 350-250 = 100m – Option C

**SOLUTION Q8:**

Distance= Lt = 110m, Relative Speed = Train Speed – Man’s Speed = 54kmph = 15 m/s Time = Distance/Speed = 110/15 = 7.33s – Option B

**SOLUTION Q9:**

Relative Speed = Train1 Speed + Train2 Speed = 36 kmphDistance= 60km, Time for collision, t= D/S= 60/36=5/3hrs Speed of Chitti = 80kmph, Distance travelled by Chitti = Speed of Chitti\*Time taken for collision = 80\*5/3 = 60kmph

**SOLUTION Q10:**

Distance travelled by the bus with Stoppage in 1hr = 60km; Speed = 72 km/h; Time taken to travel 60 kms without stoppage at 72 km/h,

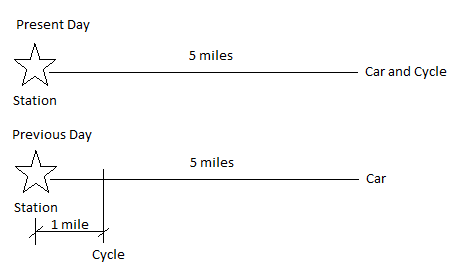
T= D/S= 60/72 =5/6 hrs = 5\*60/60 mins = 50mins.

Stoppage time = 1hr – 50 mins = 60-50=10mins – Option D

**SOLUTION Q11:**

Location of cyclist on the previous day when the car is 5miles from the station= Distance of cyclist from the station. Therefore the car travels 5miles by the time the cyclist travels 1 mile.

Therefore Speed of car= 12\*5 = 60mph.



**SOLUTION Q12:**

Speed Downstream (Sd) = Boat speed(x) + Stream speed(y);

Speed upstream (Su) = Boat speed – Stream speed.

Distance Constant. Sd\*Td=Su\*Tu, i.e. (20+y) \* 20\*60 = (20-y) \* 30\*60

y= 4m/s – Option C

**SOLUTION Q13:**

Distance downstream (Dd) = 27km, Distance upstream (Du) = 18km and Time (T)= 3hr .

Sd = x+y = Dd/T= 27/3 =9km/h ------ eqn 1

Su = x-y = Du/T = 18/3= 6km/h ------eqn2

Eqn1-Eqn2----2y=3 and y= 1.5km/h – Option C

**TIME, DISTANCE and SPEED Question Bank Solutions**

**Answer Q1 :**c) 70 sec.

Solution :

The two trains are standing 2520 metres apart in two adjacent railway lines. After every five second they come closer by 600 metres.(300 + 300). They halt for 12 seconds and then start moving. So after every 17 seconds they come closer by 600 metres. The process continues. After 68 second they would have covered 2400 metres. So in the next two seconds that is after 70 second the engines of the two trains will cross each other in adjacent line having covered 2520 metres.

**Answer Q2:**a) 32 days

Solution :

For ten days the tree grows at 6 cm per day and it will reach a height of 60 cm.  
On the 11th day its height will be reduced to 50% of its size – 30 cm.  
Till 21st day the tree will grow further 60 cm and reach a height of 90 cms.  
On 22nd day its height would have been reduced to 45 cm.(50%)  
It grows at 6 cm per day and on 32nd day it would have grown further 60 cm and reached height of 105 cms.

**Answer Q3:**b) 40 km/hr.

Solution :

Karnatak Express train crosses the Brindavan Express in three hours  
Distance covered by Karnatak express when it crosses Brindavan Express = Speed of Karnatak Express x Time Until It Crosses Brindavan = 60 x 3 = 180 km  
This means that, Brindavan express would had covered the same distance 180 Km from Chennai when it is crossed (Overtook) by Karnatak.

The distance covered by Brindavan Express from 7.10 am till 11.40 am = 180 km (in 4 1/2 hours)  
So the average speed of Brindavan Express is = Distance covered by Brindavan till crossing / Time taken till crossing = 180 / 4 1/2  
180 / 9 x 2 = 40 km/hour

**Answer Q4:**c) 12 . 45 p.m.

Solution :

Indica had started 2 hours 15 mins in advance to that of Innova Car  
Before, Innova started, Tata Indica covers a distance of 135 km in 2 hours and 15 minutes. (you can check this by using the formula Speed x Time where speed of Indica = 60km)  
Innova travels at 90 km/hr.

Relative speed of Innova with respect to Indica = Speed of Innova - Speed of Indica = 90 - 60 = 30 km/hr  
**Time that would be taken by Innova to catch up with Indica = Distance Difference at Start of Innova/ Relative Speed of Innova with respect to Indica**= 135/30 = 4 1/2 hours for Innova to cross Tata Indica  
Innova started at 8.15 am . It will cross Tata Indica at 12.45 pm.

**Answer Q5 :**d) 50 km/hr

Solution :

Transport bus travelled at average speed of 40 km/hour  
For 1 1/2 hours (i.e from 7 am till 8.20 am) Distance covered = 60 km.  
Express bus starts at 11 am.  
Till the express bus starts, transport bus would have covered further distance of  
30 x 2 = 60 km.

Total distance covered upto 11 am by Transport bus is 60 + 60 = 120 km  
Transport bus is travelling further at an average speed of 30 km per hour.  
Express bus crossed Transport bus at 5 pm after travelling for 6 hours

Distance covered by the Transport bus till 5 pm = 120 + 180 = 300 km  
This distance of 300 km is covered by express bus in 6 hours.  
Hence average speed of Express bus = X = 300/6 = 50 km/hour

**Answer Q6 :**c)20 km

Reason :

Rahim travels 4 Kms in 15 minutes and another 4 Kms in 5 mins. This means he effectively travels 4 + 4 = 8 Kms in 15 + 5 = 20 minutes. This is his average speed. This equals the speed of Deepak.

Considering Deepak travels 8 Kms during 20 minutes, distance covered by him in 1 minute = 8/20 Km.

Therefore distance covered by him in 50 minutes = (8/20) x 50 = 20 Km

**Answer Q7 :**a) 3/5

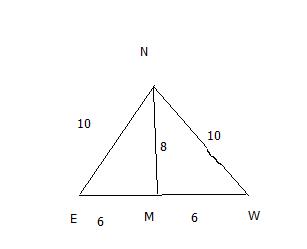
Reason :

Distance between Westgate and Eastgate is 12 km. Middle gate is 6 km from Westgate and Eastgate. Northgate to Middle gate in northern direction is 8 km.

Applying Pythagoras theorem, Distance of Northgate from Westgate is

Sq.root of 62 + 82 = 10 km

Similarly, distance from East gate to north gate is also 10 km



Distance to be covered by man A = 12 Km

Distance to be covered by man B = 20 Km

Let ta and tb be the time taken for man A and B respectively to complete their respective travel courses.

Speed of man A = 12/ta

Speed of man B = 20/tb

Since their speed is uniform, Speed of man A = Speed of man B

12/ta = 20/tb Or ta/tb = 12/20 = 3/5

**Answer Q8:**b)89.1Km

Reason :

For every 10 minutes he takes a rest for 1 minute.

Hence for 90 minutes of drive he would require 9 minutes of rest. In effect he will be traveling for 90 - 9 = 81 minutes.

For 60 minutes he covers 66 Km.

For 1 minute he would cover 66/60 Km.

For 81 minutes he would cover (66/60)81 = 89.1 Km

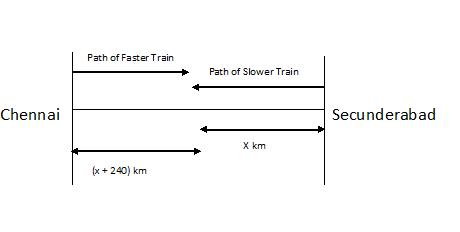
**Answer Q9 :**c) 64 km/hour

Solution :

Let Karthikeyan cover a distance of 4X divided into four equal parts of X each  
Let the initial speed be V  
Then total time taken for the journey = X/V + X/2V + X /4V + X /8V  
= 15X / 8V  
Therefore Average speed = 4X / (15X/8V) = 32V/15  
But V is given to be, V = 30 km per hour  
Therefore Average speed = 32 x 30/15 = 64 km per hour

**Answer Q10:**d) 960 km

Solution :

The relative speed of the faster train = Speed of the faster train - Speed of the slower train = 75 - 45 = 30 kmph  
In the question it is given that the faster train had covered 240 Km more when compared to the slower train when they meet each other.  
  
**Time taken for the trains to meet = Additional distance covered by faster train from chennai station compared to the slower train from Secunderabad (during the meeting) / Relative speed of faster train with respect to slower train**  
= (x + 240) - x / 30  
= 240 / 30 = 8 hours.  
Hence, the trains will cross each other in 8 hours.

So the distance between the two stations = Distance covered by the faster train in 8 hours + Distance covered by the slower train in 8 hours  
= Speed of the faster train x 8 + Speed of the slower train x 8  
= 75 x 8 + 45 x 8 = (75 + 45) x 8 = 960 km

**Answer Q11 :**a) 15 m/sec

Solution :

Length of the two trains – 200 m and 160 m.  
Let the speed of the faster train be A and that of the slower train be B.  
The distance to be crossed by the faster train = sum of the lengths of two trains = 360 m

**Case I : Trains travelling in same direction :**  
Time taken while running in same direction – 36 sec.  
Relative speed of faster train with respect to the slower train when travelling in same direction = A - B = 360 / 36 = 10 m/sec ->equation 1

**Case II : Trains travelling in opposite direction :**  
When they travel in opposite direction, again the distance to be crossed is 360 m  
But time taken is 18 seconds.  
Relative speed of faster train with respect to the slower train when travelling in opposite direction = A + B = 360/18 = 20 m/sec ->equation 2

Adding equations 1 and 2,  
2A = (20 + 10 ) = 30 m / sec  
Or, A = 30/2 = 15 m/sec.  
(slower train will run at 5 m/sec)

**Answer Q12:**a) 665 km

Solution :

Let both the trains meet after t hours since start.  
Distance covered by I train in t hours = speed x time = 40t  
Distance covered by II train in t hours = speed x time = 55t  
When the trains cross each other the difference in distance is 105 Km (as given),  
Therefore 55t - 40t = 105  
15t = 105  
or t = 7 hour ie the trains would cross each other in 7 hours.  
In 7 hours, First train would had run -- 40 x 7 = 280 km  
In 7 hours, the Second train would had covered -- 55 x 7 = 385 km  
Distance between Hyderabad and Chennai = Sum of distances covered by both the trains in 7 hours = 280 + 385 = 665 km.

**Answer Q13:**a) 80 kmph

Solution :

In 7 hours the trains cross each other.  
In 7 hours I train would had covered a distance of speed x time = 60 x 7 = 420 km  
Let the speed of second train be s  
In 7 hours, II train would had covered 7s km.  
Distance between Bengaluru and Mumbai = 980 Km = Sum of the distances covered by both the trains  
i.e 420 + 7s = 980  
7s = 560  
s = 80 kmph

**Answer Q14 :**b) (D - 585) / 9

Solution :

Trains cross each other after 9 hours.  
Distance covered by Train A in 9 hours = 65 x 9 = 585  
Let speed of train B be s  
Distance covered by Train B in 9 hours = 9s  
Let the distance between Mumbai and Chennai be D.  
Distance between Mumbai and Chennai = D = Sum of distances covered by the trains in 9 hours = 585 + 9s  
D = 585 + 9s  
Or s = (D - 585) / 9

**Answer Q15:**a) 78.75 km/hour

Solution :

Ashok Leyland has run 10 ½ hours before the trucks met at an average speed of 60 km/hour  
Distance covered by Ashok Leyland - 60 x 10 ½ = 630 km  
This distance has been covered by Tata Truck in 8 hours (as it started at 8.30 am and crossed the other truck at 4.30 pm)  
Average speed of Tata Truck = 630 / 8 = 78.75 km/hour

**Answer Q16 :**c) 58.18 km/hour

Solution :

Tata Indigo car had taken 8 hours to cross Maruti Swift running at 80 km/hour.  
Distance covered by Tata Indigo in 8 hours = 80 x 8 = 640 km  
This distance has been covered by Maruti Swift in 11 hours (as it started at 7 am and was crossed by Tata Indigo at 6 pm)  
So average speed of Maruti Swift - 640 /11 = 58.18 km/hour

**Answer Q17 :**b) 5.30 pm

Solution :

Tata Indica starts at 5.30 which is 3 hours before Innova started. Therefore it has run for 3 hours at 50 Km/hr speed. Hence Tata Indica car has run 50 x 3 = 150 km by the time Innova starts.  
The relative speed of Innova car = Innova Speed - Indica Speed = 66 2/3 - 50 = 16 2/3 km/hour  
(Note: To calculate relative speed we are subtracting Indica's speed from Innova's speed as they travel in same direction. If they were travelling in opposite directions we would had added the speeds.)  
Innova will take Distance/Relative Speed = (150) / (16 2/3) = 9 hours.  
So Innova will cross Tata Indica 9 hours after 8.30 am i.e at 5.30 pm

**Answer Q18 :**b) 4 4/5 km

Solution :

Speed of boat – 15 kmph ---- B  
Speed of current(river) ---3 kmph – C  
Effective downward speed D (downward ) = Speed of boat + Speed of river = 15 +3 = 18 kmph  
Effective upward speed U (upward ) = Speed of boat - Speed of river = 15 – 3 = 12 kmph  
Let the place of interest be at a distance of x Km from start.  
Time taken to row to x and come back = x/D + x/U = 40mins = 2/3 hours  
Or, x/18 + x/12 = 2/3 (40 minutes)  
x = 4 4/5 km

**Answer Q19 :**d) 12, 3

Solution :

Let the effective upstream speed be x and the effective downstream speed be y  
AK Rehman can row 180 km upstream and 120 km downstream in 28 hours.  
Distance while travelling upstream / Effective upstream speed + Distance while travelling downstream / Effective downstream speed = Total time taken for upstream and downstream  
Or 180/x + 120/y = 28 …(1)

Also it is given that he can row 90 km upstream and 90 km downstream in 16 hours  
Similar to eq 1 we can form a new equation as below  
90/x + 90/y = 16 ….(2)  
Multiply by 2 on both sides of eq 2 we get,  
180/x + 180/y = 32….. (3)  
(1) - (3) = 180/x + 120/ y - 180/x – 180/y = 28 - 32 = -4  
-60/y = -4  
Effective downstream speed = y = 15  
Effective upstream speed = x = 9

Speed of boat can be calculated using the below formula :  
Speed of Boat = Effective upstream speed + Effective downstream speed / 2 = (15 +9)/2 = 12.  
Speed of current can be calculated using the below formula :  
Speed of Current = Effective upstream speed - Effective downstream speed / 2 = (15 - 9)/2 = 3.

**Answer Q20:**d) 16 km/hour

Solution :

Note : This question is very much similar to the 19th question except for the way the question is worded. On Monday she travels 42 Km upstream. While returning she overshoots her starting point by 48 km. This means she has travelled 42 + 48 = 90 km during downstream. In total for upstream and downstream she has taken 8 hours.  
Let her upstream speed be U and downstream speed be D. Then similar to 2nd question, we can form the below equation.  
42/U + 90/D = 8 ….(1)

On Tuesday she travels 70 Km upstream. While returning she overshoots her starting point by 2 km. This means she has travelled 70 + 2 = 72 km in downstream. In total for upstream and downstream she has taken 9 hours.  
Then similar to 2nd question, we can form the below equation.  
70/U + 72 /D = 9 ….(2)  
MULTIPLYING eq 2 by 3 on both sides, we get  
210/U + 216/D = 27 ...(3)  
MULTIPLYING eq 1 by 5 on both sides, we get  
210/U + 450/D = 40 ...(4)

eq (4) - eq (3) gives :  
210/U + 450/D - 210/U – 216/D = 40 - 27 = 13  
234/D = 13  
13D = 234  
D = 18

Substituting D =18 in eq (1), we get,  
42/U + 90/18 = 8  
42/U = 8 -5 = 3  
42= 3U  
U = 14  
Speed of boat can be found using the formula ( D + U) / 2  
Speed of boat B = ( D + U) / 2 = (18 + 14 )/ 2 = 16 km/hour

**Answer Q21 :**c) 12 km

Solution :

Let the speed of the boat be B and the speed of stream be S.  
Equation for travel along with Stream : B + S = 14.5 ----> eq 1  
During the travel against the stream, the speed of the stream temporarily doubled.  
Therefore, Equation for travel against the stream = B - 2S = 7 ----> eq 2 (NOTE: We are using 2S instead of S in the equation as speed of the stream has temporarily doubled when he travelled against the stream)  
eq 1 - eq 2 => 3S = 7.5  
or S = 2.5 kph  
Substitute S = 2.5 in eq 1  
B = 14.5 - 2.5 = 12

**Answer Q22 :**b) 12 km

Solution :

Let the speed of the boat be B and the speed of the river be S.  
B + S = 222/3 ----> eq 1  
B - S = 100/2 ----> eq 2  
Adding equations 1 and 2 we get : 2B = 300 + 444 / 6  
2B = 744/6  
2B = 124  
B = 62  
Substituting B = 62 in eq 2 we get,  
S = B - 100/2 = 62 - 50 = 12

**Answer Q23:** a) 533.33%

Solution :

Speed of boat along with the river per hour = 22 km (132 divided by 6)  
Speed of boat against the river per hour = 16 km (128 divided by 8)  
B + S = 22 ----> eq 1  
B – S = 16 ----> eq 2  
Adding equations 1 and 2, we get : B+S-B+S = 22 -16 = 6 =2S  
S = 3 km/hour  
Substituting S= 3, in eq 1 we get : B + 3 = 22  
B = 22 - 3 = 19 km /hour  
Cruiser's speed exceeds the speed of the River By : Cruiser's Speed - River Speed / River Speed x 100 = B - S / S X 100% = 19 - 3/ 3 X 100 = 16/3 X 100 = 533.33%

**Answer Q24:**d) 384 km

Solution :

1/4th distance covered by car.  
Out of the balance i.e. 3/4 th distance , 50% was covered by train.  
i.e. 3/8th of distance was covered by train.  
Balance left was 3/8. Out of this 1/4th of distance was covered by motor cycle.  
Distance covered by motorcycle = 3/8 x 1/4th of distance = 3/32 th of distance.  
Remaining Distance left out for boat = 3/8 - 3/32 = 9/32 = 9/32 th of distance  
This portion 9/32 was covered by him in boat which is given as 108 km  
Let total distance be D. Then 9/32 x D = 108. Or D = 384 km.

**Answer Q25 :**b) 245 km

Solution :

3/7 th of distance covered by train , Balance - 4/7 th of distance  
Out of 4/7 th balance , 1/2th of distance was covered by luxury bus.  
i.e.4/14th of distance was covered by luxury bus. Balance left = 4/14 = 2/7 th of distance  
This 2/7th of distance is covered by call taxi i.e. 70 km  
Let total distance be D. Then 2/7 x D = 245. Or D = 245 km

**Answer Q26 :**d) 800 km

Solution :

By race car he travelled 22% of total distance  
Balance distance to cover is 78% and out of this 1/2 that is 39% is covered by train.  
In the remaining 50% i.e. 39% , he had covered half by motor cycle i.e. 19.5% of the distance.  
Distance covered by cycle is 156 km which is the remaining 19.5% of the distance.  
Hence 19.5% covers 156 km , then for 100% i.e. 15600 / 19.5 = 800  
The total distance travelled will be 800 km

**Answer Q27:**c) 9pm

Solution :

Suppose Bala meets Siva X hours after 5pm.  
Then Siva meets Bala X - 1 hours after 6pm. (Since he started 1 hour late)  
Distance covered by Bala in X hours = 40 x X  
Distance covered by Siva in X - 1 hours = 50 x (X - 1)  
Given, Distance between Chennai and Bangalore = 310 km  
Hence, 40X + 50 (X-1) = 310  
90X = 360  
X = 4  
Hence, Bala will meet Siva after 4 hours.  
That is, they will meet at 9pm.

**Answer Q28 :**c) 1 min 40 sec

Solution :

The Relative Speed of the Nellai Express with respect to Pandiyan Express = (77 – 68) km/hr = 9 km/hr  
Relative speed in metres per second = (9 x 5/18) m/sec = 5/2 m/sec.  
Time taken by Pandiyan Express to cross Nellai Express = Time taken to cover (115 + 135) metres at 10 seconds with the relative speed  
= 250/(5/2) seconds = 100 seconds. (i.e.) 1 min 40 sec (Using the time = distance / speed formula)

**Answer Q29:** a) 500km

Solution :

Let the distance travelled by Vaigai Express be d.  
Then the distance travelled by Chennai Express is d + 100.  
We know that Time = Distance / Speed.  
Since the time travelled by both trains is same, d / 40 = (d + 100) / 60.  
20d = 4000.  
d = 200.  
Therefore, the distance travelled by Vaigai Express is 200 km and the distance travelled by Chennai Express is 300 km.  
Hence, the distance between Chennai and Madurai is 500 km.

**Answer Q30 :**d) 6.54 a.m.

Solution :

Let the distance between Delhi and Agra be X.  
And let the train A meet the train B be Y hours after 6.30 a.m.  
Then, train A covers X km in 3hrs and B covers X km in 2hrs. (you can find the durations of travel from the time of start and arrivals of the trains as given in question)  
Therefore, Speed of Train A = X / 3 km/hr and Speed of Train B = X / 2 km/hr

Distance covered by the train A in (Y+2) hrs + Distance covered by the train B in Y hrs = X. (We are using Y + 2 hours in this equation for train A as it has started 2 hours earlier)  
(X/3) x (Y+2) + (X/2) x Y = X  
Y/3 + 2/3 + Y/2 = 1  
5Y = 2  
Y = 2/5 hr.  
Y = (2/5) x 60 min = 24 min.  
Hence, the train A meet the train B at 6.54 a.m.

**Answer Q31: (i) 3km**

**Solution:  
Speed downstream = (5+1)km/hr = 6 km/hr Speed upstream = (5-1)km/hr = 4 km/hr Let the required distance be x km x/6 + x/4 = 75/60 2x+3x = 15 x = 3km**

**Answer Q32**: b) 97.5 Km from station II.

The distance between the trains = 150

For the first six minutes, when A is at rest, the distance covered by B from station II = Speed of B in Kmph X Time in hours = 100 X 6/60 = 10 Km. -> eq 1

After six minutes, the distance between two trains = 150 - 10 = 140 Km.

From now on, relative speed of B with respect to A = Speed of B + Speed of A = 160 Kmph.

Time when B will cross A = Distance between B and A / Relative speed of B with respect to A  
= 140/160 = 7/8 hours.

In 7/8 hours distance covered by B = Speed of B in Kmph X Time in hours = 100 X 7/8  
= 87.5 Km. -> eq 2

Adding values of eq 1 and eq 2 we will get the answer which is 97.5 Km from station II.

**TIME, DISTANCE and SPEED Question Bank**

**Q1. A new type of study about movement of trains was conducted by South Central Railway. Two trains are standing 2520 metres apart in two adjacent railway lines. Both the trains move for five seconds at 60 m/sec. They halt for 12 seconds. Then again they start moving for five second at 60 m/sec. The process continues. After how many seconds will the engines of the two trains cross in the adjacent railway lines?**A. 50 sec B. 60 sec C. 70 sec D. None of these.

**Q2. Kumaresan Environment Industries Limited, planted a tree. The tree was growing at 6 cm every day. The tree was allowed to grow for ten days. On the 11th day the tree will be cut to 50% of its size. From the next day (12th day) for the next ten days it was allowed to grow at the rate of 6 cm every day. On the 11th day the tree is cut to 50% of its size. The process continued. Assuming the tree was planted afresh as a seed after how many days the tree would have reach a height of 105 cms?**A. 32 days B. 26 days C. 18 days D. None of these.

**Q3. Brindavan Express started from Chennai Central Station at 7.10 am. Karnatak express train for the same destination started from the same station on the same day at 8.40 am and ran with an average speed of 60 km/hour. Karnatak express crossed the Brindavan Express at 11.40 am. Find the average speed of Brindavan Express.**A. 75 km/hr B. 40 km/hr C. 30 km/hr D. 45 km/hr

**Q4. A Tata Indica car started from Mumbai towards Kolkata at 6 am and travelled at an average speed of 60 km/hr. It was found that an important material to be sent to Kolkata was omitted to be included in the packets sent in Tata Indica car. The omitted material was carried on an Innova car that started at 8.15 am and travelled with an average speed of 90 km/hr. At what time Innova car will cross Tata Indica car ?**A. 1.15 pm B. 3.15 PM C. 12.45 pm D. 4.15 pm

**Q5. A Transport bus started Madurai Bus Terminal at 7 am and travelled at an average speed of 40 km per hour till 8.30 am. This bus stopped at the on-way hotel for breakfast till 9 am and travelled at an average speed of 30 km per hour thereafter till its destination. Another express bus started from Madurai at 11 am and travelled at an average speed of X km per hour. The Express bus crossed the transport bus at 5 pm on the same day. Find the value of X?**A. 60 km/hr B. 40 km/hr C. 20 km/hr D. 50 km/hr

**Q6. Rahim travels 4 Kms in 15 minutes and another 4 Kms in 5 mins. Deepak travels at the average speed of Rahim. Then what could be the distance covered by him in 50 minutes?**A. 10km. B. 12 km. C. 20 km. D. 13.5km.

**Q7. Eastgate is 12 km from Westgate. Middlegate is midway between them. Northgate is 8 km from Middlegate. Consider a man A who travels directly from Eastgate to Westgate. Let another man B travel from East to North and then to West gate. If they travel with uniform speed, what is the ratio of the time taken by A to that of B?**

A. 3/5 B. 4/5 C. 0.5 D. 0.25

**Q8. John is driving A Royal Enfield motor cycle at 66 km per hour when his rest duration is not considered. He takes small breaks each of 1 minute for every 10 minute of his drive. How much distance will the motor cycle cover in 90 minutes?**

A. 89.9Km B. 89.1Km C. 89.2Km D. 89.3Km

**Q9. Karthikeyan covers a certain distance by car.Karthikeyan divided the complete distance into four equal parts and after finishing each part he increased his speed to twice the previous one. If, in the first part, his speed was 30 kmph then what is the average speed of the complete journey?**

A. 48 km/hour B. 56 km/hour C. 64 km/hour D. 72 km/hour

**Q10. Two Express trains started at the same time from two stations – Chennai Central and Secunderabad and proceed towards each other at the speed of 75 kmph and 45 kmph respectively. When they met, it was found that one express train had travelled 240 km more than the other. What is the distance between Secunderabad and Chennai Central, as per the problem?**

A. 1200 km B. 11140 km C. 1050 km D. 960 km

**Q11. Two trains of length 200 m and 160 m respectively run on parallel lines of rails. When running in the same direction the faster train passes the slower train in 36 seconds. When they run in opposite directions with the same speeds as earlier, they pass each other in 18 seconds. Find the speed of the faster train?**

A. 15 m/sec B. 10 m/sec C. 5 m/sec D. 20 m/sec

**Q12. Hyderabad Chennai Express started from Hyderabad at 6 am. Chennai Hyderabad Express also started from Chennai at the same time. The first train was travelling at 40 km per hour and the second train was running at 55 km per hour. When the two trains met the first train had travelled 105 km less than the second train. What is the distance between Hyderabad and Chennai?**A. 665 km B. 705 km C. 725 km D. 740 km

**13. Two Express trains – one from Mumbai to Bengaluru and another from Bengaluru to Mumbai started at the same time viz. 8 am. The first train was running at a speed of 60 km/hour and the second train was travelling faster than first train. Two trains cross each other at 7 hours from the start. If the distance between Bengaluru and Mumbai is 980 km, find the speed of the second train?**

A. 80 kmph B. 90 kmph C. 70 kmph D. Can't be determined

**Q14. Mumbai Chennai Express (Train A) and Chennai Mumbai Express (Train B) started from Mumbai and Chennai stations respectively at 8 am. Train A was running at 65 km per hour and Train B was running at a greater speed than train A. Two trains meet each other after 9 hours. How you can express speed of Train B as a function of distance D between Mumbai and Chennai?**A. (D - 585/9) B. (D - 585) / 9 C. (D + 585) /9 D. Can't be determined

**Q15. An Ashok Leyland Truck started from Ennore factory towards Kolkata at 6 am and it was running at an average speed of 60 km per hour. Another Tata Truck started from Ennore at 8.30 am and crossed the Ashok Leyland at 4.30 pm. What is the average speed of Tata Truck?**A. 78.75 km/hour B. 74.75 km/hour C. 72.50 km/hour D. 76.85 km/hour

**Q16. A Maruti Swift car started from Chennai towards Mumbai at 7 am. A Tata Indigo car newly purchased started from Chennai at 10 am towards Mumbai and the second vehicle was able to cross the first vehicle at 6 pm on the same day. If Tata Indigo was running at an average speed of 80 km per hour what would have been the speed of Maruti Swift car?**A. 64.24 km/hour B. 59.12 km/hour C. 58.18 km/hour D. 65.42 km/hour

**17. A Tata Indica car started from Hyderabad towards Madurai at 5.30 am and travelled at an average speed of 50 km/hour. An Innova car started at 8.30 am from Hyderabad again towards same destination at an average speed of 66 2/3 km/hour. At what time Innova will cross the Tata Indica Car?**

A. 4.30 pm B. 5.30 pm C. 3.30 pm D. 6.40 pm

**Q18. Sridevi can row 15 kmph in still water. If in a river running at 3 km an hour, it takes her 40 minutes to row to a place and back, how far off is the place?**A. 5 4/5 km B. 4 4/5 km C. 6 2/5 km D. None of these.

**Q19. AK Rehman can row 180 km upstream and 120 km downstream in 28 hours. Also he can row 90 km upstream and 90 km downstream in 16 hours. Find the speed of AK Rehman in still water and the speed of the current.(km/hour)**A. 15, 2 B. 18, 2 C. 14, 2 D. 12, 3

**Q20. On Monday Mayawati rows 42 Km upstream to a spot and returns back. While returning she overshoots the starting point by 48 km. The overall travel time is 8 hours. On Tuesday Mayawati rows 70 km upstream to a spot. Now while returning she is careful not to overshoot as on Monday. However, she again overshooted the origin by 2 km. The overall journey time was 9 hours.What is the speed of Mayawati in still water?**

A. 18 km/hour B. 12 km/hour C. 14 km/hour D. 16 km/hour

**Q21. The students of Vidya Mandir Secondary school, Jalpaiguri went for an excursion. It was seen that a boat travels at 14.5 km per hour when it goes along with the stream. By the time he starts returning the speed of the river doubled than its original value due to a sudden storm. The speed of the boat is 7 km per hour when it goes against the river stream. What is the speed of boat per hour?**A. 10 km B. 8 km C. 12 km D. 7 km

**Q22. A boat man was driving a boat during a cyclonic storm during which time the speed of the river was considerably high than normal times. He found that the boat travelled 222 km in three hours when he was driving along with the river. But when he drove the boat against the river the boat travelled 100 km in two hours. What is the speed of the river per hour during cyclonic storm?**A. 10 km B. 12 km C. 8 km D. 9 km

**Q23. Maruti Cruisers sailed 132 km along with the river in six hours. Suddenly the boat had to return to the starting point and it started returning against the river and this time the Cruiser travelled at 128 km in eight hours. By how much percentage Cruiser's speed exceeds the speed of the River ?**A. 533.33% B. 444.44% C. 267.67% D. None of these.

**Q24. A tourist from USA wanted to experiment different types of travel. He travelled 1/4 of the distance by car. He travelled by train 50% of the balance left. From out of the present balance 1/4th was covered by him in his motor cycle. Thereafter he covered the balance of 108 km by boat. What is the total distance travelled by him?**A. 468 km B. 728 km C. 546 km D. 384 km

**Q25. A tourist company arranged 3/7th of total travel by train. Of the balance half the distance was covered by Volvo luxury bus. The balance distance of 70 km was covered by call taxi. What is the total distance of travel arranged by the tourist company?**A. 145 km B. 245 km C. 345 km D. 445 km

**Q26. An enterprising traveller covered 22% of the total distance by race car. Out of the balance he covered 50% by train. Now with the remaining balance he covered half of it by motor cycle and the balance of 156 km by cycle. What is the total distance travelled by him?**A. 600 km B. 900 km C. 700 km D. 800 km

**Q27. Bala started driving from Chennai at 5pm to reach Bangalore. At 6pm, Siva started driving from Bangalore to reach Chennai. Bala travelled at 40 km/hr and Siva travelled at 50 km/hr. If the distance between Bangalore and Chennai is 310 km, then at what time will they meet?**A. 9.30pm B. 10pm C. 9pm D. 8.30pm

**Q28. Pandiyan Express and Nellai Express are running in the same direction with speeds of 77 km/hr and 68 km/hr. And the length of Nellai Express is 115 metres and the Pandiyan Express is 135 metres. Assume Pandiyan Express's engine is just behind the last carriage of Nellai express on parallel tracks (not same track). Now, how much time will be taken by Pandiyan express to cross the Nellai express?**A. 1 min 10 sec B. 1 min 05 sec C. 1 min 40 sec D. 1 min 25 sec

**Q29. At 8 p.m., Vaigai Express from Madurai and The Chennai Express from Chennai are moving in opposite direction at 40 km/hr and 60 km/hr. At Trichy, they meet each other. If the distance covered by the Chennai Express was 100 km more than the Vaigai Express at Trichy, then the distance between Chennai and Madurai is?**A. 500 km B. 300 km C. 200 km D. 400 km

**Q30. A train A leaves from Agra at 4.30 a.m. and reaches Delhi at 7.30 a.m. And a train B leaves from Delhi at 6.30 a.m. and reaches Agra at 8.30 a.m. At what time do the two trains cross each other?**A. 7.06 a.m. B. 6.45 a.m. C. 7.15 a.m. D. 6.54 a.m.

**Q31. A man can row 5 kmph in still water. If the river is running at 1kmph, it takes him 75 minutes to row to a place and back. How far is the place?**A. 3km B. 2.5 km C. 4 km D. 5 km

**Q32. Consider two trains A and B in stations I and II respectively with a distance of 150Km between them. A travels at a speed of 60 Km/hour and B travels at a speed of 100 km/hr towards each other in parallel tracks. A has started with a delay of 6 minutes compared to that of B. Find the distance at which the two trains will meet when measured from station II.**A. 96.5km B. 97.5km C. 90.5km D. 91.5km

**TIME & WORK Solutions**

**SOLUTION Q1:**

A’s per day Work, A = 1/6, B’s per day Work, B = 1/8

[(1/6) + (1/8) + C]\*3 = 1(Completed Work)

B’s Share = 3/8\*600 = 225 – Option C

**SOLUTION Q2:**

A’s per day Work, A = 1/18, B’s per day Work, B = 1/9 and C’s per day Work, C = 1/6.

In 2days A and B finish [(1/18) + (1/9)] \* 2 portion of the work, i.e 1/3 of entire work.

2/3 of the work is left and C joins.

Let the time taken by all three to finish the remaining work be ‘x’

Therefore [(1/18) + (1/9) + (1/6)] \* x = 1-(1/3) = 2/3

(1+2+3)\*x/18 = 2/3

6x = 36/3 = 12, x= 2 days.

Time taken by all three to complete remaining work = 2 days.

Total time = 2 + 2 = 4days – Option B

**SOLUTION Q3:**

A’s per day Work, A = 1/8, B’s per day Work, B = 1/7 and C’s per day Work, C = 1/6

A + B + C = 1/8 + 1/7 + 1/6 = (21 +24 + 28)/168 = 73/168 = 3days Work

6days work = 2\*(73/168) = 146/168

7days work = (146/168) + (1/6) = 167/168

Therefore the work is completed on the 8th Day.

**SOLUTION Q4:**

One man’s per day work, M = 1/44

2 women per day work = 1/44

Therefore, One Woman’s per day Work, W = 1/(44\*2) = 1/88

Three boys per day work = 1/44

One Boy’s per day work, B = 1/(44\*3) = 1/132

Let the time taken be ‘x’.

Therefore, (M+W+B)\*x = 1

OR (1/44+1/88+1/132)\*x = 1, x = 24 days

**SOLUTION Q5:**

Roja’s per hr work, R = 32/6 parcels; Edward’s per hr work, E = 40/5=8 parcels.

Total Parcels to pack =330

Let the time taken be ‘x’

(R+ E)\*x = 330,

i.e. (32/6+8) \* x = 330;

x= 24.75 hrs or 24 hrs 45 mins – Option A

**SOLUTION Q6:**

A’s per min work, A = 1/12; B’s per min work, B = 1/15.

First Three minutes Work done = (1/12+1/15)\*3 = 9/20

Remaining portion = 1-9/20 = 11/20

Let the time taken by B be ‘x’,

B\*x = x/15 = 11/20

X=11\*15/20 = 8.25 min or 8min 15 s – Option C

**SOLUTION Q7:**

Without leak Work per hr = 1/5; With Leak Work per hr = 1/6

Leak rate = without leak /hr - With leak /hr = 1/5-1/6 = 1/30.

Thus the tank is emptied in 30hrs - Option C

**SOLUTION Q8:**

A’s per hr work, A = 1/10 and B’s per hr Work, B = 1/15.

Let time taken be ‘x’;

(A+B) \* x = 1/2 (Half of the tank)

(1/10-1/15) \* x = 1/2

x = 30/2 = 15hrs – Option B

**SOLUTION Q9:**

A’s per hr work, A = 1/6 and B’s per hr work, B = 1/4.

In 2hrs, Work done = A + B = 1/6+1/4 = 5/12

In 4hrs, Work done = 10/12

(10/12)+(1/6) = 1

Therefore, time taken by A and B to fill the tank simultaneously with A as the first is 5hrs.

**TIME AND WORK Question Bank Solutions**

**Answer Q1.**

Correct answer is B

Consider WA, WB and WC be the work done per day by A,B and C respectively. Then

WA + WB = 1/21 -- eq 1

WB + WC = 1/14 -- eq 2

WA + WC = 1/28 -- eq 3

Eq 2 - Eq 3 will give

WB - WA = 1/14 - 1/28 = 1/28 -- eq 4

Eq 1 + Eq 4 will give

2WB = 1/21 + 1/28 = 7/84

WB = 7/168

Sub value of WB in eq 1, we get

WA = 1/21 - 7/168 = 1/168.

Sub value of WA in eq 3, we get

wc = 1/28 - WA = 1/28 - 1/168 = 5/168

Since WB (work done by B per day) is greater when compared to WA and WB clearly B will be able to the maximum work on any given day and hence he should consume least amount of time when working independently.

**Answer Q2:**

Correct ans is option c. 144/25 hours.

A can deliver 20 parcels in 3 hours. Hence for 1 hour he can deliver 20/3 parcels.  
B can deliver 15 parcel in 4 hours. Hence for 1 hour B needs 15/4 parcels.

When A and B work together, for 1 hour they can deliver, 20/3 + 15/4 parcles = 80 + 45 /12 = 125/12 parcels.  
Hence to deliver 60 parcels they would require : 60 X 12/125 = 720/125 = 144/25 hours

**Answer Q3**

Correct answer is a. 8.3 days

Total amount of work W = N x D X W

where N = number of men, D = number of days, W = amount of work per day

Applying the above formula for company A we get,

Work done by company A to deliver 100 parcels = 5 X 5 X 8 = 200 -- eq 1

Work done by company B to deliver 100 parcels = 4 X D x 6 = 24D -- eq 2

Since the work to be done is same in both the cases, eq 1 = eq2

or 200 = 24D or D = 8.3

**Answer Q4 :**c) 36

Solution :

Panchapakesan plucks 4 and his wife plucks 5 per hour. In one hour they can pluck 9. In Twelve hours they will pluck 108. Their daughter eats 3 per hour. Hence throughout the day she will eat —72. (While the plucking is done for 12 hours by the couple, their daughter eats for 24 hours at the rate of 3 per hour) Then balance would be 108 - 72 = 36. Hence they would be taking 36 apples to market.

**Answer Q5:**a) 120 days

Solution :

Let Au denote work done by 1 Australian in 1 day.  
Let Ru denote work done by 1 Russian in 1 day  
Let Br denote work done by 1 British in 1 day.  
As per question, 22 Australians and 16 Russians can complete work in 10 days. Therefore in one day, they will complete 1/10th of work. Putting this in equation, we get :  
22 Au + 16 Ru = 1/10

Similarly : 22 Br + 6 Ru = 1/12  
Adding the above two equations, 22 Au + 22 Br + 22 ru = 1/10 + 1/12 = 22/120  
or Au + Br + Ru = 1/120  
That is, 1 Australian , 1 British and 1 Russian can complete 1/120th of work in 1 day. Hence they can complete the entire work in 120 days.

**Answer Q6:** a) 10, 30, 5/6

Solution :

Let E be the speed of the escalator in steps per second, S the number of steps climbed by the son and N the number of steps between the two points (start and end). Prabhadeva takes 30 second to reach the top and during this time he climbs 5 steps and the escalator moved by 30 E steps. So the total number of steps is (5 + 30 E)  
Thus, N = 5 + 30 E ......(1)  
Applying the same logic for the son N = S + 24E ....(2)  
Since Prabhudeva’s wife does not take any steps of her own,  
N = 36 E ....(3)

From (2) and (3) S = 12 E  
Substitute N = 5 + 30 E in eqn 2,  
5 + 30 E = S + 24 E  
S = 6E + 5  
Substituting S value we get,  
12 E = 6E + 5  
6 E = 5  
E = 5/6  
S = 5/6 x 12 = 10  
N = 30 x 5/6 + 5 = 30

**Answer Q7:**a) 2 days.

Solution :

Let the number of letters to be dispatched be X.  
If the three people together take ‘D’ days to complete the work then  
Peter will take (D +2) days to complete it alone.  
Satish will take (D + 10) days to complete it alone.  
And Raju will take 3 D days to complete it alone.  
Speed of Peter --- X / (D+2) letters per day  
Speed of Satish -- X / (D + 10) letters per day  
Speed of Raju -- X / 3D letters per day

All of them working together for one day will dispatch –  
X/(D+2) + X/(D+10) + X/3D letters -> eq 1  
Number of days it will take for them to complete the dispatch of all the X letters = X / Letters that can be dispatched by all of them in one day = X / [ X/D+2 + X/D+10 + X/3D]  
But we had assumed the number of days to dispatch all X letters as D.  
Therefore, D = X / [ (X/D+2) + (X/D+10) + (X / 3D)]  
Or X/D = (X /D+2) + (X/D+10) + (X/3D)  
Or 1/(D+2) + 1/(D+10) + 1/ 3D = 1 /D

Substituting the options one by one, we can find that D = 2 satisfies the equation.  
i.e Substitute D = 2 in both sides of 1/(D+2) + 1/(D+10) + 1/ 3D = 1 /D.  
Substituting D = 2 On LHS : 1/4 + 1/12 + 1/6 = 6/12 = 1/2  
On RHS D = 2 we get 1/2  
Therefore, LHS = RHS when D =2 and hence 2 is the right answer

**Answer Q8:**c) 25 hours 15 minutes

Solution :

Speed of Roja per hour = 32/6 parcels  
Speed of Edward per hour = 40/5 = 8 parcels  
When both of them work together in one hour they will pack  
32/6 + 8 = 13 1/3 parcels  
For packing 330 parcels it will take = 330 / parcels that can be packed by them in one hour = 330 / 13 1/3 = 25 hours 15 minutes

**Answer Q9 :**c) 9 6/11 days.

Solution:

Adhvaith can do 1/30 of the work in one day  
In 9 days he would have completed - 9 x 1/30 = 3/10 of the work  
Balance work = 1 - 3/10 = 7/10  
Kashyap can do 1/25 of the work in one day  
Work that can be done by Adhvaith and Kashyap in one day = (1/30 + 1/25) = 11/150 of the work.  
So Adhvaith and Kashyap can complete 7/10 of the work in  
7/10 x 150/11 = 105/11 = 9 6/11 days.

**Answer Q10:** a)2/3

Solution :

In this type of problems where answers cannot be easily found out using equations, it is advisable to go from the given answer choices.  
Based on information given one hour work done by all the three together =  
1/ X+6 + 1/ X+1 + 1/2X = 1/X  
X is not known.  
Using the data given  
1/ (2/3) +6 + 1/(2/3) +1 + 1/(4/3) = 1/ ( 2/3)  
This comes out correctly. Whereas other values given in b), c) and d) do not get the result properly. Hence a) is correct.

**TIME AND WORK Question Bank**

**Q1. Consider three people A,B and C. Let A and B can finish a job in 21 days, B and C in 14 days and A and C in 28 days. Who will take the least time when working independently?**A. A B. B C. C D. Can't be determined

**Q2. Consider two postmen A and B respectively. A is young and can deliver 20 parcels in 3 hours while B is older than A and can deliver only 15 parcels in 4 hours. If the total number of parcels to deliver is 60, how long they will take working together.**A. 121/12 hours B. 144/36 hours C. 144/25 hours D. 121/25 hours

**Q3. Consider a courier company A which can deliver 100 parcels in 5 days with 5 men working for 8 hours a day. Consider another courier company B where every employee is equally efficient as that of company B. Company B is short of one man when compared to A and has a policy of asking its workers to work only for 6 hours a day. How long (in days) company B will take to deliver 100 parcels.**A. 8.3 B. 24 C. 12 D. 6.6

**Q4. Panchapakesan and his wife Swarnamalya are harvesting apples. Panchapakesan can pluck one apple in 15 minutes and Swarnamalya can pluck one apple in 12 minutes. Their daughter Rupasri takes 20 minutes to eat an apple and she eats all day. How many apples will they be able to sell to the market, if they work from 6 am to 6 p.m.?**A.24 B. 30 C. 36 D. 42

**Q5. Twenty two Australians and 16 Russians can complete a piece of work in 10 days, whereas 22 British and 6 Russians can complete the same work in 12 days. In how many days will one Australian, working along with one Russian and 1 British can complete the work?**A.120 days B. 40 days C. 60 days D. 30 days

**Q6. Prabhudeva, his wife and their son went to Express Plaza in Chennai. Prabhudeva’s wife fears walking along with the escalator. All the three got onto an escalator going up .Prabhudeva reached the top in 30 seconds taking 5 steps, but the son reached 6 seconds ahead of Prabhudeva. Prabhudeva’s wife did not take any step of her own and reached the top 6 seconds after Prabhudeva. Find out a) the number of steps taken by the son,   
 b) the distance between the two points and   
 c) the speed of the escalator.**

A. 10, 30, 5/6 B. 12, 24, 5/6 C. 18, 24, 4/5 D. None of these.

**Q7. A company has three staff members working in communications department. They are Peter, Satish and Raju. The company has received a work of sending communication to its potential customers. The time the three take to complete the dispatch work together is 2 days less than Peter would have taken to do it alone, 10 days less than Satish to do the work alone and one-third of the time that Raju would have taken working alone. How many days will the three people take to do the dispatch of all the mails working together?**A. 2 days B. 4 days C. 5 days D. 3 days

**Q8. Roja and Edward were working in a courier company. Roja takes 6 hours to pack 32 parcels while Edward takes 5 hours to pack 40 parcels. How long they will take to pack 330 parcels working together?**A. 24 hours 45 minutes B. 23 hours C. 25 hours 15 minutes D. None of these.

**Q9. Adhvaith can do a certain work in 30 days. Kashyap can do same work in 25 days. Adhvaith started the work and worked for 9 days. Kashyap came and joined to do the work from the 10th day. How many more days would they have taken together to complete the work?**A.10 3/11 days B. 11 2/11 days C. 9 6/11 days D. 8 2/11 days

**Q10. Three persons Manmohan, Anna And Sushma working together, can do a job in X hours. When working alone, Manmohan needs an additional six hours to do the job; Anna, working alone needs an additional hour and Sushma working along needs X additional hours. What is the value of X?**A. 2/3 B. 3/2 C. 11/12 D. 2

**Progressions**

**Q1.**

Tn = a + (n-1)\*d

55 = 1 + (n-1)\*2 => n = 28

[Option D]

**Q2.**

Sn = (n/2)[a+L] = (n/2)[104+999] ….. (1)

999= 104 + (n-1)\*5 => n = 180 ………… (2)

From (1) and (2) Sn = 99270

[Option D]

**Q3.**Sn = -5 -5 -5 …………. (50 times) = -250[Option B]

**Q4.**

By trial and error, we identify that common terms are 3, 9, 15 .. i.e every alternate number of second series is identical to first. So Number of common terms = 80/2 = 40.

[Option C]

**Q5.**

Let the four numbers me (a-3d), (a-d), (a+d), (a+3d)

Given Product= (a-3d)\*(a-d)\* (a+d)\* (a+3d) = 384 ……. (1)  
 Sum = 4a = 20 ……….. (2)

Solving (1) and (2) Largest Number a+3d = 8

[Option B]

**Q6.**

Given (a+2d) + (a+8d) = 8 => 2a+10d =8

S11 = (11/2)[2a+10d] = 44

[Option A]

**Q7.**

CD of resulting AP = (39-4)/5 = 35/5 = 7

Largest of the 4 AMs = a + 4d = 4+4\*7 = 32

[Option C]

**Q8.**

CD of resulting AP = (71-51)/6 = 20/6

Sum of 5 AMs = [(71+51/2]\*5 = 305

[Option B]

**Q9.**

ar6 = 8ar3 …. (1)

ar4 = 48 …… (2)

Solving (1) and (2) a =3

[Option B]

**Q10.**

Let the three terms be: a/r, a, ar.

Given product = a3 = 729 => a = 9

[Option A]

**Q11.**

[Option A]

**Q12.**

The area forms an infinite GP with 256(16\*16) as first term and ½ as CR. So total area = 256/0.5 = 512

[Option B]

**Q13.**

CR of resultant GP = (128/(1/8))1/5 = 4

Third GM = ar3 = 8

[Option D]

**Q14.**

Solving it in AP: a = 5/2 and (a+d) = 13/12

* CD = d = 13/12 – 5/2 = -17/12
* T13 = (5/2)- 12\*17/12 = -14.5
* In HP, 13th term = -1/14.5

[Option D]

**Q15.**

Given: (m + m+1 + m+2 + m+3 + m +4 ) = 5n

* 5m + 10 = 5n
* m + 2 = n

Average of 9 consecutive numbers will be 5th term which will m+6 = n+4

[Option D]

**Q16.**

Putting n = 3 we see that only option B satisfies.

[Option B]

**Q17.**

Taking y=2, z= 4 and x as 4.5 and substituting in given equation, we get value to be 2.

[Option A]

**Q18.**

(1/n) = a +(m-1)d …… (1)

(1/m) = a + (n-1)d ……. (2)

Solving (1) and (2), a=d= 1/mn

Smn = (mn/2)[2(1/mn) + (mn-1)(1/mn)] = (mn+1)/2

[Option C]

**Q19.**

Putting n = 2, we get only option C as the correct answer.

[Option B]

**Q20.**

[Option C]

**Progressions**

**Q1:- There is an AP 1, 3, 5 .... Which term of this AP is 55?**A. 27th    B. 26th    C. 25th    D. 28th    E. 29th

**Q2:- Find the sum of all three-digit natural numbers, which on being divided by 5, leave a remainder equal to 4.**

A. 57270 B. 96,780 C. 49,680 D. 99,270

**Q3:- Find the value of the expression** *1 - 6 + 2 - 7 + 3 - 8 + ..........................upto 100 terms*A. -240 B. -250 C. -260 D. None of these

**Q4:- How many terms are identical in the two APs 1, 3, 5 ... up to 120 terms and 3, 6, 9 ....up to 80 terms?**A. 38         B. 39    C. 40    D. 41    E. 42

**Q5:- Sum of four terms of an AP is 20 and their product is 384. Find the largest of those four numbers.**A. 6    B. 8    C. 10    D. None of these

**Q6. The sum of third and ninth term of an A.P is 8. Find the sum of the first 11 terms of the progression.**

A. 44 B. 22 C. 19 D. None of these

**Q7:- Four numbers are inserted between the numbers 4 and 39 such that AP results. Find the biggest of there four numbers.**A. 31.5    B. 31    C. 32    D. 30    E. 33**Q8:- 5 AM’s are inserted between 51 and 71. Find sum of those 5 AMs.**

A. 295 B. 305 C. 315 D. None of these

**Q9:- The seventh term of a GP is 8 times the fourth term. What will be the first term when its fifth term is 48?**

A. 4 B. 3 C. 5 D. 2 E. 6 **Q10:- Product of three terms of a GP is 729 and their sum is 39. Find the middle of the three numbers.**A. 9     B. 6    C. 12    D. None of these

**Q11:- If a, b, c are in GP, then log a, log b and log c are in**

A. AP B. GP C. HP D. None of these

**Q12:- A square is drawn by joining the midpoints of the sides of a given square, a third square drawn inside the second square in the same way and this process continues indefinitely, if the side of the first square is 16cm, what is the sum of areas of all squares?**A. 1024    B. 512    C. 2048    D. 1200

**Q13:- Four geometric means are inserted between 1/8 and 128. Find the third geometric mean.**

A. 4 B. 16 C. 32 D. 8

**Q14:- If the first two terms of a HP are 2/5 and 12/13 respectively, find the 13th term.**

A. 13.5 B. -14.5 C. 14.5 D. None of these

**Q15. The average of 5 consecutive integers starting with m as the first integer is n. What is the average of 9 consecutive integers that start with m+2?** A. m + 4 B. n + 6 C. n + 3 D. m + 5 E. n + 4

**Q16:- The sum of first 3 terms of a G.P is 16 and the sum of next 3 terms is 128. Find the sum of n terms of the G.P**A. 16/7(2n+1) B. 16/7(2n-1) C. A. 9/7(3n+1) D. A. 16/7(3n-1)

**Q17:- Let ‘x’ be the AM and ‘y’, ‘z’ be the two GM’s between any two positive numbers. The value of (y3 + z3)/(xyz) is**A. 2 B. 3 C. ½ D. 3/2

**Q.18:- If the *m*th term of an AP is *1/n* and *n*th term is *1/m*, then find the sum to *mn* terms.**A. (mn-1)/4 B. (mn+1)/4 C. (mn+1)/2 D. (mn-1)/2**Q19: Find the sum to n terms of the series 11 + 103 + 1005 + ….**A. [10(10n – 1)/9]+1 B. [10(10n – 1)/9]+n] C. [10(10n – 1)/9]+n2]D. [10(10n + 1)/9]+n2] E. None of these

**Q20. Find the sum of the series 1.2 + 2. 22 + 3.23 + … + 100. 2100**

A. 100. 2101 + 2 B. 99. 2100 + 2 C. 99. 2101 + 2

D. 100. 2100 + 2 E. None of these

**HINTS &SOLUTIONS**

**Q1.**

a=72, d=-2

Find n the number of terms

40=72+(n-1)(-2) => n=17

Sum of n terms in AP:

Sum = (17)\*(56) =952

**Q2.**

The sum of the 4th and 12th term = 20.  
  
Let t1 be the first term, t4 be the fourth term, and t12 be the 12th term  
  
Then t4 + t12 = 20  
  
t4 can be expressed as t1 + 3d  
Similarly, t12 can be expressed as t1 + 11d  
  
Then t4 + t12 = 20 can be expressed as   t1 + 3d + t1 + 11d = 20  
  
=>      2t1 + 14d = 20   
=>      t1 + 7d =10  
=>      t8 = 10  
  
The sum of the first 15 terms = 15/2(t1 + t15)  
In an arithmetic progression t1 + t15 = t1 + t1 + 14d = 2t1 + 14d = 2(t1 + 7d) = 2(t8).  
Therefore, the sum of the first 15 terms =15/2(2*10) = 150

**[Option C]**

**Q3.**

SET A - (2, 4, 6, 8,...., 50). A total of 25 consecutive even numbers.  
  
SET B - (102, 104, 106,....., 150). Another set of 25 consecutive even numbers.  
  
Difference between 1st term of set 1 and set 2 is 100. Difference between 2nd term of set 1 and set 2 is 100 and so on.  
  
So total difference is (100 + 100 + 100 + ....) = 25\*100 = 2500.

**[Option A]**

*Shortcut: Every term of B AP is 100 more than corresponding term of A AP. So the difference should be a multiple of 100. Only option A holds good. The difference will be 100 times the number of terms.*

Q4. (E) **n + 4**.

The fastest way to solve problems of this kind is to covert Algebra question to Arithmetic.

Let m=3

So first set of consecutive integers are 3,4,5,6,7

Their average is 5=n.

The next set of integers are: 5,6,7,8,9,10,11,12,13  
andit’s average is 9 = n+4

**[Option E]**

**Q5.**

The smallest 3-digit positive integer that when divided by 7 leaves a remainder of 5 is 103.  
The largest 3-digit positive integer that when divided by 7 leaves a remainder of 5 is 999.  
  
The series of numbers that satisfy the condition that the number should leave a remainder of 5 when divided by 7 is an A.P (arithmetic progression) with the first term being 103 and the last term being 999 having a common difference of 7.  
  
We know that in an A.P, 'l' the last term is given by l = a + (n - 1) \* d, where 'a' is the first term, 'n' is the number of terms of the series and 'd' is the common difference.  
  
Therefore, 999 = 103 + (n - 1) \* 7  
  
Or 999 - 103 = (n - 1) \* 7  
Or 896 = (n - 1) \* 7  
Or n - 1 = 128  
Or n = 129

**[Option E]**

**Q6.**

The smallest 3 digit number that will leave a remainder of 2 when divided by 3 is 101.  
  
The next number that will leave a remainder of 2 when divided by 3 is 104, 107, ....  
  
The largest 3 digit number that will leave a remainder of 2 when divided by 3 is 998.  
  
So, the given series is an AP with the first term being 101 and the last term being 998 and the common difference being 3.  
  
Sum of an AP = ap summation formula  
  
  
We know that in an A.P., the nth term an = a1 + (n - 1)\*d  
  
In this case, therefore, 998 = 101 + (n - 1)\* 3  
  
i.e., 897 = (n - 1) \* 3  
  
Therefore, n - 1 = 299   
  
Or n = 300.  
  
Sum of the AP will therefore, be 101 + 998 /2 * 300= 164,850

**[Option B]**

**Q7.**   
**Statement 1**: The elements are in arithmetic progression.  
  
So, x could either be 3 or 27.   
  
INSUFFICIENT.  
  
**Statement 2**: x is prime  
  
x could be any prime number.   
  
INSUFFICIENT  
  
Combining the two statements, we know that x could take only two values from statement 1. viz., 3 or 27; from statement 2 we know that x is prime. 3 is the only value that satisfies both the conditions.  
**[Option C]**

**Q8.**

Step1: Finding the first number that satisfies both the conditions.

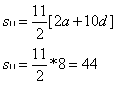
The number is of the form N=7k+4=11p+9

7k+4= 4,11,18,25,32,39,46,53 ….

11p+9=9,20,31,42,53 ….  
  
The first number that satisfies both the conditions is 53.   
  
The common term of above two APs can be represented as 53+7\*11\*r = 53+77r  
  
The terms that satisfy the conditions can be expressed as 77r + 53, where r takes values from 0 to 12. i.e., a total of 13 numbers.

**[Option D]**

**Q9.**

The third term t3 = a + 3d  
The ninth term t9 = a + 8d  
t3 + t9 = 2a + 10d = 8  
  
Sum of first 11 terms of an AP is given by   


**[Option A]**

**Q10.**

7th term = 23 = a + 6d ---- (1)  
12th term = 38 = a + 11d ---- (2)  
 Solving (1) and (2) we get a = 5 and d = 3

**Q11.**

n[-18 + (n - 1)3]/ 2 = 66   
n2 - 7n - 44 = 0  
 -->**n = 11** or -4.  
 The series is -9, -6, -3, 0, 3, 6, 9, 12, 15, 18, 21..

We can see that the sum of first 7 terms is 0. The sum of next four terms after 7th terms gives us the sum. Otherwise, if we count 4 terms backward from -9 we'll get the sum as -66.

**Q12.**

If the terms are in AP the difference between two consecutive terms will be the same. Hence,  
 (3k - 1) - (k + 1) = (4k + 1) - (3k - 1)  
 2k - 2 = k + 2 -->**k = 4**.

**Q13.**

Let the means be m1, m2, m3... m10. Therefore 4, m1, m2, m3... m10, 37 are in AP and 37 is the 12th term in the arithmetic progression.

Hence, 37 = 4 + 11d --> d = 3  
 Therefore means are 7, 10, 13 ... 34 and their **sum is 205**.

**Q14.**

Let the numbers be a - d, a, a + d  
Hence a - d + a + a + d = 30 or a = 10  
The numbers are 10 - d, 10, 10 + d  
Therefore, (10 - d)2 + 102 + (10 + d)2 = 318  
Or d = 3, therefore the numbers are 7, 10, and 13.

**Q15.**

**28 days**[Technique discussed in class]

**Q16.**

Let Sandy’s share be x

x+(x+20)+(x+40)+(x+60)+(x+80)=1000

5x+200=1000

**x=160**

**Q17.**

Trial and Error

**-2, -1, 1, 2, 3**

**Q18.**

The positive integers, which are divisible by 5, are 5, 10, 15, ..., 1000  
Out of these 10,20,30,.... 1000 are divisible by 2  
Thus, we have to find the sum of the positive integers 5, 15, 25, ...., 995.

If the initial term of an arithmetic progression is *a*1 and the common difference of successive members is *d*, then the *n*th term of the sequence is given by:

\ a_n = a_1 + (n - 1)d,

So number of terms in series

995 = 5 + 10(n - 1) => 1000 = 10n  
Therefore, n = 100.  
Thus the sum of the series

 S_n=\frac{n}{2}[ 2a_1 + (n-1)d].

= (100/2) (10 + 99\*10) = **50000**.

**[Option D]**

**Q19.**

Let the cost of equipment is Rs. 100.   
Now the percentages of depreciation at the end of 1st, 2nd, 3rd years are 15, 13.5, 12, which are in A.P., with a = 15 and d = - 1.5.  
  
Hence, percentage of depreciation in the tenth year =

a + (10-1) d = 15 + 9 (- 1.5) = 1.5

Also total value depreciated in 10 years = 15 + 13.5 + 12 + ... + 1.5 = 82.5  
  
Hence, the value of equipment at the end of 10 years=100 - 82.5 = 17.5.  
 The total cost being Rs. 6, 00,000/100 \* 17.5 = **Rs.1,05,000**.

**[Option B]**

**Q20.**

B is in G.P. with a = 20, r = 2, n = 65   
  
http://questions.ascenteducation.com/iim_cat_mba_free_sample_questions_math_quant/arithmetic_geometric_progressions/images/apgp-14020301.gifSn = http://questions.ascenteducation.com/iim_cat_mba_free_sample_questions_math_quant/arithmetic_geometric_progressions/images/apgp-14020302.gif  
  
http://questions.ascenteducation.com/iim_cat_mba_free_sample_questions_math_quant/arithmetic_geometric_progressions/images/apgp-14020301.gifB = 265 - 1   
 => B = A - 1   
http://questions.ascenteducation.com/iim_cat_mba_free_sample_questions_math_quant/arithmetic_geometric_progressions/images/apgp-14020301.gif**A is larger than B by 1**

**[Option D]**

**Q21.**

The two series are in A.P. Therefore, the common series will also be in an A.P  
  
Common difference of 1st series = 4 and the common difference of 2nd series = 5. Common difference of the sequence whose terms are common to the two series is given by L.C.M of 4 and 5 = 20  
  
Here the first term of the identical (common terms) sequence is 19.  
  
We know the sum of first n terms is given by = n/2 [2a + (n - 1) d]  
  
 Hence, the sum of first 50 terms of this sequence = 50/2[2(19) + 49 * 20]= **25450**.

**[Option A]**

**Q22.**

Let the value of the certificates purchased in the first year be Rs. a.  
  
The difference between the value of the certificates is Rs.300 (d=300).  
  
 Since, it follows Arithmetic progression the total value of the certificates after 20 years is given by   
  
Sn = n/2 [2a + (n - 1) d]= 20/2 [2a + (20 - 1) 300].  
  
 By simplifying, we get 2a + 5700 = 8300.  
  
 Therefore, a = Rs.1300.  
  
 The value of the certificates purchased by him in nth year = a + (n - 1) d.  
  
 Therefore, the value of the certificates purchased by him in 13th year = 1300 + (13 - 1) 300 = **Rs.4900**.

**[Option A]**

**Q23.**

Let the numbers are be a - d, a, a + d  
 Then a - d + a + a + d = 21   
 3a = 21  
 a = 7  
 and (a - d) (a + d) = 45  
 a2 - d2 = 45  
 d2 = 4   
 d = +2  
 Hence, the numbers are 5, 7 and 9 when d = 2 and 9, 7 and 5 when d = -2. In both cases numbers are the same.

**[Option C]**

*Note: Go back from answer options.*

**PROGRESSIONS**

Q1. Find the sum 72, 70, 68, 66 ...40?

Q2. The sum of the fourth and twelfth term of an arithmetic progression is 20. What is the sum of the first 15 terms of the arithmetic progression?   
A. 300 B. 120 C. 150 D. 170 E. 270

Q3.Set A contains all the even numbers between 2 and 50 inclusive. Set B contains all the even numbers between 102 and 150 inclusive. What is the difference between the sum of elements of set B and that of set A?  
A. 2500 B. 5050 C. 11325 D. 6275 E. 2550

Q4. The average of 5 consecutive integers starting with m as the first integer is n. What is the average of 9 consecutive integers that start with m+2?   
A. m + 4 B. n + 6 C. n + 3 D. m + 5 E. n + 4

Q5. How many 3 digit positive integers exist that when divided by 7 leave a remainder of 5?   
A. 128 B. 142 C. 143 D. 141 E. 129

Q6. What is the sum of all 3 digit numbers that leave a remainder of '2' when divided by 3?   
A. 897 B. 164,850 C. 164,749 D. 149,700 E. 156,720

Q7. A set S contains the following elements: {7, 11, 15, 19, 23, x}. what is the value of x? (Data Sufficiency)

(1)    The elements are in arithmetic progression   
(2)    x is prime

Q8. In the first 1000 natural numbers, how many integers exist such that they leave a remainder 4 when divided by 7, and a remainder 9 when divided by 11?  
A. 11 B. 14 C. 12 D. 13 E. 10

Q9. The sum of third and ninth term of an A.P is 8. Find the sum of the first 11 terms of the progression.

A. 44 B. 22 C. 19 D.None of these

Q10. If the 7th term of an Arithmetical Progression is 23 and 12th term is 38 find the first term and the common difference

Q11. How many numbers of the series -9, -6, -3 should we take so that their sum is equal to 66?

Q12. What is the value of k such that k + 1, 3k - 1, 4k + 1 are in AP?

Q13. If 10 arithmetic means are inserted between 4 and 37, find their sum.

Q14. The sum of three numbers in A.P. is 30, and the sum of their squares is 318. Find the numbers.

Q15. A frog falls down in a well 30 ft deep. Every day it jumps 3 ft up and every night it falls down by 2ft. How many days will the frog it take to come out of the well?

Q16. Sandy’s uncle died leaving 1000 Rs behind to be distributed among his five nephews. The money is to be divided among the nephews according to their ages. A person gets 20 more than his immediate younger brother. Sandy being the youngest what was his share?

Q17. The temperature is noted for 5 consecutive days and it is noted that no two days have the same temperature. Moreover the product of all the 5 readings is 12. The difference is noted to the nearest degrees. What were the readings of the temperature?

Q18. Obtain the sum of all positive integers up to 1000, which are divisible by 5 and not divisible by 2.  
A. 10050 B. 5050 C. 5000 D. 50000

Q19. A piece of equipment cost a certain factory Rs. 600,000. If it depreciates in value, 15% the first year, 13.5 % the next year, 12% the third year, and so on, what will be its value at the end of 10 years, all percentages applying to the original cost?  
A. 2,00,000 B. 1,05,000 C. 4,05,000 D. 6,50,000

Q20. Given A = 265 and B = (264+263+262+...+20)   
A. B is 264 larger than A B. A and B are equal   
C. B is larger than A by 1 D. A is larger than B by 1

Q21. The sum of the first 50 terms common to the Arithmetic Sequence 15, 19, 23..... and the Arithmetic Sequence 14, 19, 24..... is  
A. 25450 B. 24550 C. 50900 D. 49100

Q22. A gentleman buys every year Bank's cash certificates of value exceeding the last year's purchase by Rs. 300. After 20 years, he finds that the total value of the certificates purchased by him is Rs. 83,000. Find the value of the certificates purchased by him in the 13th year.  
A. Rs.4900 B. Rs.6900 C. Rs.1300 D. None of these.

Q23. The sum of the three numbers in A.P is 21 and the product of their extremes is 45. Find the numbers.  
A. 5, 7 and 9 B. 9, 7 and 5 C. Both (1) and (2) D. None of these

**PROGRESSIONS**

**A. Arithmetic Progression**  
  
Quantities are said to be in arithmetic progression when they increase or decrease by a common difference.  
  
Thus terms of an AP can be represented as,  
  
**a, a + d, a + 2d, a + 3d** ....  
  
Where 'a' is first term of the AP and 'd' is the constant common difference.  
  
The common difference is found by subtracting any term of the series from the next term.  
  
i.e **d = Tn - Tn-1**  
  
  
Formulas for AP  
  
1. 'n'th term of an AP with first term 'a' and common difference (CD) 'd'   
  
**Tn = a + (n-1)\*d**  
  
2. Sum of the 'n' terms of an AP with first term 'a' and common difference (CD) 'd'   
  
**Sn =**   
  
Where L is the last term of the series ( nth in this case) which is again L = a + (n-1)\*d  
  
=> **Sn = () [2a + (n-1)\*d]**  
  
**Note :-**   
  
1. If you have to assume three terms of an AP, assume them to be of the form:   
       a - d , a , a + d.  
  
2. If you have to assume four terms of an AP, assume them to be of the form:  
       a - 3d , a - d , a + d , a + 3d.  
  
3. If you have to assume five terms of an AP, assume them to be of the form:  
       a - 2d , a - d ,a, a + d , a + 2d.  
  
4. Terms of an AP when divided by the AP's common difference, or factors of common difference, leave a same reminder.  
  
  
**B. Arithmetic Mean**  
  
1. Arithmetic mean of a and b is   
  
2. Arithmetic mean of n terms is   
  
3. Inserting Arithmetic means  
  
Suppose we need to insert 'n' arithmetic means between a and b.  
  
Including the extremes, the number of terms will then be n + 2 so that we have to find a series of n + 2 terms in AP, of which a is the first and b is the last term.  
  
Let d be the common difference;  
  
then b = the (n + 2) the term   
         = a + (n + 1)\*d  
  
=> **d =**

and the required means are  
  
**a + d,  a + 2d,  a + 3d  .......  a + nd**  
  
  
  
**C. Geometric Progression**  
  
Quantities are said to be in Geometric Progression when they increase or decrease by a constant factor.  
  
The common factor is also called the common ratio and it is found by dividing any term by the term immediately preceding it.  
  
Therefore the series can be expressed as **a, ar, ar2, ar3,**    
  
  
a = first term of the GP  
  
Common ratio of the GP **r =**   
  
  
Formulas for GP  
  
  
1. nth term of a GP with first term 'a' and common ratio (CR) 'r'   
**Tn = arn-1**  
  
  
2. Sum of the 'n' terms of a GP with first term 'a' and common ratio (CR) 'r'

**Sn =** (When r > 1)

**Sn =**  (When r < 1)   
  
3. Sum of an infinite GP when  r<1

**S∞ =**   
  
  
**Note :**  
  
1. If you have to assume three terms of a GP, assume them to be of the form:   
            **, a , ar**  
  
2. If you have to assume four terms of a GP, assume them to be of the form:

**, ar, ar3**                 
              
  
3. If you have to assume five terms of a GP, assume them to be of the form:   
**, , a, ar, ar2  
   
  
D. Geometric Mean**  
  
1. Geometric mean of a and b is   
  
2. Geometric mean of n terms is   
3. Inserting Geometric Means  
  
Let a and b be the given quantities and n the required number of means to be inserted. In all there will be n + 2 terms so that we have to find a series of n + 2 terms in GP of which a is the first term and b is the last.  
  
Let r be the common ratio;  
  
Then b = (n + 2) th term = **arn+1**  
  
=> r =   
  
  
Hence the required number of means are: **a, ar, ar2, ar3….**  
  
  
**E. Harmonic Progression**  
  
1. a, b, c are said to be in Harmonic Progression if their reciprocals i.e 1/a, 1/b, 1/c are in AP.  
  
2. There is no general formula for the nth term or sum to nth term for quantities in HP. Questions on HP are generally solved by inverting the terms, and making use of the properties of the corresponding AP.  
  
3. Harmonic mean HM of a and b =   
  
  
**F. General points**  
  
1. If AM, GM and HM of n terms are A, G and H respectively then,  
  
 **A > G > H**  
  
2. Sum of 1 + 2 + 3 + ........ + n =   
  
3. Sum of 12 + 22 + 32 + ….. n2=   
  
4. Sum of 13 + 23 + 33 + ….. n3 =[ ]**2**

**Permutations and Combinations**

**Q1.**

Number of words that can be formed = 5P5 = 5! = 120

[Option B]

**Q2.**

Number of words that can be formed = 10!/(2!4!2!) [2A’s, 4S’s and 2 T’s]

**Q3.**

Considering all vowels as one letter, we have 6! Arrangements for each of which 3 vowels (A, E, U) can be arranged in 3! Ways.

* Number of words that can be formed = 6!\*3! = 4320

[Option C]

**Q4.**

Number of words where 2 A’s are not together = (Total words possible – Number of words where 2 A’s are together)

= 10!/(2!2!2!2!) – (9!/2!/2!/2!)

[Note: In ‘MANAGEMENT’ 2A’s, 2M’s, 2E’s and 2N’s are repeated)

[Option D]

**Q5.**

Number of words where vowels are not together = (Total words possible – Number of words where vowels are together)

**=** 5! – 4!\*2! = 72

[Option A]

**Q6.**

5 men from 7 men can be selected in 7C5 ways.  
2 women can be selected from 3 women in 3C2 ways

So selection of men AND women can be made in 7C5 \* 3C2 = 63 ways

[Option B]

**Q7.**

4 consonants can be selected from 12 consonants in 12C4 ways.  
3 vowels can be selected from 4 vowels in 4C3 ways.

Selected 7 letters can be arranged in 7! Ways.

* Number of words that can be made = 12C4 \* 4C3 \* 7!

[Option B]

**Q8.**

1. After selecting Randy, remaining 7 people to the committee can be selected from remaining 13 people in 13C7 ways.
2. Exactly 3 Africans = 3 Africans and 5 Asians

So committee can be made in 5C3 \* 9C5 ways

1. At least 3 Africans = Exactly 3 Africans OR Exactly 4 Africans OR Exactly 5 Africans

So committee can be made in 5C3 \* 9C5 + 5C4 \* 9C4 + 5C5 \* 9C3 ways

**Q9.**

Total handshakes = 20C2 – 10 = 180

[Option B]

**Q10.**

Number of ways of travelling = 8C5 [Selecting 5 students to bigger car so that remaining 3 go to small car]

OR

8C4  [Selecting4 students to bigger car so that remaining 4 go to small car]

So total = 126 ways

[Option C]

**Q11.**

Numbers can end is 12, 16, 24, 32, 36, 52, 56, 64. Remaining(first three) digits can be filled in 4P3 ways.

Total = 8\*4P3 = 192 ways.

[Option C]

**Q12.**

Words starting with A, E, R, T (4! Each), XA, XE, XR (3! Each) , XTA(2!) comes before the word ‘XTEAR’ i.e. 116 words come before given word. So the ranking of the word will be 117.

**Q13.**

Sum = (5-1)!\*(11111)\*(4+5+6+7+8) = 7999920

[Option D]

**Q14.**

Total number of arrangements = (21-1)!/2

[Option D]

**Q15.**

7 people to be seated in the bigger table can be done in 12C7 ways(remaining 5 will automatically get selected for smaller table.)

AND

7 friends in the bigger table can be arranged in 6! Ways

AND

5 friends in the smaller table can be arranged in 4! Ways

Total = 12C7 \* 6! \* 4!

[Option B]

**Q16.**

5 students can be first seated in 4! ways. In 5 places between students 5 teachers can be seated in 5! Ways. So total number of arrangement = 4!\*5!

[Option C]

**Q17.**

Number of squares in chess board = ∑ 8 2

Number of rectangles in chess board = ∑ 8 3

**HINTS & SOLUTION**

**Q1.**

The word 'LEADER' contains 6 letters, namely 1L, 2E, 1A, 1D and 1R.  
Required number of ways = 6!/2! = 360.  
**[Option C]**

**Q2.**

No. of ways of selecting 3 consonants out of 7 consonants = 7C3

No. of ways of selecting 2 vowels out of 4 vowels = 4C2

After selection, 5 alphabets, they can be arranged in 5! ways.

Therefore total words formed = 7C3\* 4C2\* 5! = 25200

**[Option C]**

**Q3.**

2 boys can be selected from 12 boys in 12C2 ways.  
  
3 girls can be selected from 15 girls in 15C3 ways.  
  
Therefore, total ways of making the dance group = 12C2\*15C3

**Q4.**

We may select (1 black and 2 non-black) or (2 black and 1 non-black) or (3 black) balls.  
Required number of ways = (3C1 x 6C2) + (3C2 x 6C1) + (3C3)  
  
= 64.

**[Option D]**

**Q5.**

A number is divisible by 4 if it’s last 2 digits is divisible by 4.

So possible last two digits are 12, 16, 24, 32, 36, 52, 56, 64.(8 options.)

In each case first three digits can be formed using 4P3 ways.

So total no. of 5 digits that can be formed is 8\*4P3 = 192 ways.

**[Option C]**

**Q6.**

We may have (1 boy and 3 girls) or (2 boys and 2 girls) or (3 boys and 1 girl) or (4 boys).

Required no. of ways = (6C1 x 4C3) + (6C2 x 4C2) + (6C3 x 4C1) + (6C4) = 209

**[Option D]**

**Q7.**

Vowels = A U I O =4   
  
Consonants = C T N = 3  
  
So 3(Consonants)+ 1(4 Vowels as 1 unit ) can be arranged in 4!ways.  
  
4 vowels within themselves can be arranged in 4!ways.  
  
  
So 4!\*4!= 576

**[Option D]**

**Q8.**

The alphabets in alphabetical order is: A, C, H, I, R, T

There will be 5! words each starting with A, C, H, I before alphabets starting with R starts.

Of words starting with R, RACHIT comes first.

So rank= 4\*5! +1 = 481.

**[Option D]**

**Q9.**

1. The numbers in which 7 occurs only once. e.g. 7, 17, 78, 217, 743 etc.

* 7 \_ \_ (9\*9 such numbers{because 7 has to be ignored.})
* \_ 7 \_ (9\*9 such numbers.)
* \_ \_ 7 (9\*9 such numbers)

Note: 007 is counted as a number because it contributes to one 7 in form of number 7.

2. The numbers in which 7 will appear twice. e.g. 772 or 377 or 747 or 77

* 77\_ (9 such numbers{because 7 has to be ignored})
* 7\_7 (9 such numbers{because 7 has to be ignored})
* \_77 (9 such numbers{because 7 has to be ignored})

Total=27

In each of these 26 numbers, the digit 7 is written twice. Therefore, 7 is written 54 times.   
  
3. The number in which 7 appears thrice - 777 - 1 number. 7 is written thrice in it.

Total=300.  
  
**[Option B]**

**Q10.**

There are 2n ways of choosing ‘n’ objects. For e.g. if n = 3, then the three objects can be chosen in the following 23 ways - 3C0 ways of choosing none of the three, 3C1 ways of choosing one out of the three,3C2 ways of choosing two out of the three and 3C3 ways of choosing all three.  
  
In the given problem, there are 5 Rock songs. We can choose them in 25 ways. However, as the problem states that the case where you do not choose a Rock song does not exist (at least one rock song has to be selected), it can be done in 25 - 1 = 32 - 1 = 31 ways.  
  
Similarly, the 6 Carnatic songs, choosing at least one, can be selected in 26 - 1 = 64 - 1 = 63 ways.  
The 3 Indi pop can be selected in 23 = 8 ways. Here the option of not selecting even one Indi Pop is allowed.  
  
Therefore, the total number of combinations = 31 \* 63 \* 8 = 15624**[Option A]**

**Q11.**

There are 8 students and the maximum capacity of the cars together is 9.  
  
We may divide the 8 students as follows  
  
Case I: 5 students in the first car and 3 in the second.   
  
Case II: 4 students in the first car and 4 in the second.  
  
Hence, in Case I: 8 students are divided into groups of 5 and 3 in 8C3ways.  
  
Similarly, in Case II: 8 students are divided into two groups of 4 and 4 in 8C4 ways.  
  
Therefore, the total number of ways in which 8 students can travel is8C3 + 8C4 = 56 + 70 = 126.

**[Option C]**

**Q12.**

In the word 'CORPORATION', we treat the vowels OOAIO as one letter.

Thus, we have CRPRTN (OOAIO).

This has 7 (6 + 1) letters of which R occurs 2 times and the rest are different.

|  |  |  |
| --- | --- | --- |
| Number of ways arranging these letters = | 7! | = 2520. |
| 2! |

Now, 5 vowels in which O occurs 3 times and the rest are different, can be arranged

|  |  |  |
| --- | --- | --- |
| in | 5! | = 20 ways. |
| 3! |

Description: http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gifRequired number of ways = (2520 x 20) = 50400.

**[Option E]**

**Q13.**

4 consonants out of 12 can be selected in 12C4 ways.  
  
3 vowels out of 4 vowels can be selected in 4C3 ways.  
  
Therefore, total number of groups each containing 4 consonants and 3 vowels = 12C4 \* 4C3  
  
Each group contains 7 letters, which can be arranging in 7! ways.  
  
Therefore required number of words = 12 C4 \* 4C3 \* 7!  
**[Option B]**

**Q14.**

1 million distinct 3 digit initials are needed.   
  
Let the number of required alphabets in the language be ‘n’.  
  
Therefore, using ‘n’ alphabets we can form n \* n \* n = n3 distinct 3 digit initials.   
  
[Note: Distinct initials are different from initials where the digits are different.   
For instance, AAA and BBB are acceptable combinations in the case of distinct initials while they are not permitted when the digits of the initials need to be different.]  
  
This n3 different initials = 1 million  
  
i.e. n3 = 106 (1 million = 106)  
=> n3 = (102)3 => n = 102 = 100  
  
Hence, the language needs to have a minimum of 100 alphabets to achieve the objective.

**[Option C]**

**Q15.**

When 4 dice are rolled simultaneously, there will be a total of 64 = 1296 outcomes.  
  
The number of outcomes in which none of the 4 dice show 3 will be 54= 625 outcomes.  
  
Therefore, the number of outcomes in which at least one of the dies will show 3 = 1296 – 625 = 671

**[Option C]**

**Q16.**

A team of 6 members has to be selected from the 10 players. This can be done in 10C6 or 210 ways.  
Now, the captain can be selected from these 6 players in 6 ways.  
Therefore, total ways the selection can be made is 210\*6 = 1260.  
  
**[Option A]**

**Q17.**

Refer to solution for Q10.

No. of ways = (25-1)(24-1)(23) = 3720.

**Q18.**

Number of ways taking 5 flags out of 8-flags = 8P5 = 6720

**Q19.**

1\*1! = (2 -1)\*1! = 2\*1! - 1\*1! = 2! - 1!  
2\*2! = (3 - 1)\*2! = 3\*2! - 2! = 3! - 2!  
3\*3! = (4 - 1)\*3! = 4\*3! - 3! = 4! - 3!  
..  
..  
..  
n\*n! = (n+1 - 1)\*n! = (n+1)(n!) - n! = (n+1)! - n!  
  
Summing up all these terms, we get (n+1)! - 1!

**[Option D]**

*Shortcut: Algebra to Arithmetic Conversion.*

*Take n = 2*

*1\*1! + 2\*2! + 3\*3! = 23*

*For n=3, only option D gives 23 as answer.*

**Q20.**

Any one prize can be given to any one of the 3 boys and hence there are 3 ways of distributing each prize.  
  
Hence, the 4 prizes can be distributed in 34= 81 ways.

**[Option C]**

**Permutation & Combination**

Q1. In how many ways can the letters of the word 'LEADER' be arranged?  
A. 72 B. 144 C. 360  D. 720

Q2. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?  
A. 210 B.1050 C.25200 D.None

Q3. There are 12 boys and 15 girls. How many different dancing groups can be formed with 2 boys and 3 girls?

Q4. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?  
A. 32 B. 48 C. 96 D.64

Q5. How many 5-digit numbers can be formed from the digits 1, 2, 3, 4, 5 and 6 which are divisible by 4 and none of the digits is repeated?  
A. 144 B. 168 C.192 D.NONE

Q6. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?  
A. 159 B. 194 C. 205 D. 209 E. None

Q7. In how many different ways can the letters of the word 'AUCTION' be arranged in such a way that the vowels always come together?  
A. 30 B. 48 C. 144 D. 576 E. None

Q8. The letters of the word “rachit” are arranged in all possible ways and these word are written out as in a dictionary, what is the rank of the word “rachit”?  
A. 485 B. 480 C. 478 D. 481

Q9.How many times will the digit ‘7' be written when listing the integers from 1 to 1000?  
A. 271 B. 300 C. 252 D. 304

Q10. There are 5 Rock songs, 6 Carnatic songs and 3 Indi pop songs. How many different albums can be formed using the above repertoire if the albums should contain at least 1 Rock song and 1 Carnatic song?  
A. 15624 B. 16384 C. 6144 D. 240

Q11. A team of 8 students goes on an excursion, in two cars, of which one can seat 5 and the other only 4. In how many ways can they travel?  
A. 9 B. 26 C. 126 D. 3920

Q12.In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?

A. 2880 B.810 C. 1440 D. 5760 E. 50400

Q13. How many words of 4 consonants and 3 vowels can be made from 12 consonants and 4 vowels, if all the letters are different?  
A. 16C7 \* 7! B. 12C4 \* 4C3 \* 7! C. 12C3 \* 4C4 D. 12C4 \* 4C3

Q14. How many alphabets need to be there in a language if one were to make 1 million distinct 3 digit initials using the alphabets of the language?  
A. 26 B. 50 C. 100 D. 1000

Q15. Four dice are rolled simultaneously. What is the number of possible outcomes in which at least one of the die shows 6?  
A. 6! / 4! B. 625 C. 671 D. 1296

Q16. A college has 10 basketball players. A 5-member team and a captain will be selected out of these 10 players. How many different selections can be made?

A.1260 B.210 C.10C6 \* 6! D.10C5 \* 6

Q17. From 5 different green balls, 4 different blue balls and 3 different red balls, how many combinations of balls can be chosen taking at least one green and one blue ball?

Q18. How many different signals can be made by 5 flags from 8-flags of different colors?

Q19. What is the value of 1\*1! + 2\*2! + 3!\*3! + ............ n\*n!,   
[where n! means n factorial or n(n-1)(n-2)...1]

A. n(n-1)(n-1)! B. (n+1)!/(n(n-1)) C. (n+1)! - n! D. (n + 1)! - 1!

Q20. How many ways can 4 prizes be given away to 3 boys, if each boy is eligible for all the prizes?

A. 256 B. 12 C. 81 D. None of these

Solution 1:

|  |  |
| --- | --- |
| **Total weight of(36+44)Students** | = (36x40+44x35)Kg |
| = 2980 kg. |
| **Average weight of the whole class** | = (2980 / 80) |
| =37.25. |

Solution 2.

|  |  |
| --- | --- |
| **Let the average after 17th inning = x. Then, average after 16th inning = (x - 3)** | |
| **Average** |  |
| =16 (x-3)+87 |
| = 17x or x=(87-48) |
| = 39. |

Solution 3.

|  |  |
| --- | --- |
| **Clearly, we have (3+11+7+9+15+13+8+19+17+21+14+x/12)** | =12 |
| **Number in place of x is** |  |
| 137+x=144 |
| x= 144-137 |
| x= 7. |

Solution 4:

|  |  |
| --- | --- |
| **Average = (76+65+82+67+85 / 5)** | =(375 / 5) |
| = 75. |

Solution 5:

|  |  |
| --- | --- |
| **Average of 20 numbers** | = 0 |
| **Sum of 20 numbers** | =(0 x 20) =0. |
| **It is quite possible that 19 of these numbers may be positive and if there sum id a, then 20th number is (-a).** | |

Solution 6:

|  |  |
| --- | --- |
| **Required average speed** | =(2xy / x+y)km/hr |
| = 2 x 84 x 56 /(84 + 56) |
| = (2 x 84 x 85 /140) |
| = 67.2 km/hr. |

Solution 7:

**Clearly, to find the average,we ought to know the numbers of boys , girls or students in the class, neither of which has been given.  
so the data provided is inadequate.**

**Solution 8:**

|  |  |
| --- | --- |
| **Age of the teacher** | =(37x15 - 36x14) years |
| = 51 years. |

Solution 9:

|  |  |
| --- | --- |
| **Excluded number** | = (27 x 5 ) - ( 25 x 4) |
| = 135 - 100 |
| = 35. |

Solution 10:

|  |
| --- |
| **Let the highest score be x. Then, lowest score =(x-172)** |
| = [(50 x 40)-(x+(x-172)] |
| = 38 x 48 |
| 2x= 2000+172-1824 |
| 2x=348 |
|
| x= 174. |

Solution 11:

|  |  |
| --- | --- |
| **Required average** | =(38.9 x 10)-(42 x 6)/ 4 |
| = 137 / 4. |
| = 34.25 |

Solution 12:

|  |
| --- |
| **since the month begins with a sunday , so there will be five sundays in the month.** |
| **Required Average** | = (510x5+240x25 / 30) |
| = (8550 / 30) |
| = 285 |

Solution 13:

|  |  |
| --- | --- |
| **Clearly, we have** | X =(3y+3z/6) |
| or |
| 2x= y + z |

Solution 14:

|  |  |
| --- | --- |
| **Average Speed** | = (2xy/x +y )km/hr |
| =(2x50 x30/ 50+30) |
| = 37.5 km/hr. |

Solution 15.

|  |  |
| --- | --- |
| **Sum of the present ages on husband, wife and child** | =(23x2+5x2)+1 |
| = 57 years |
| **Required average** |  |
| = (57/3) |
| = 19 years. |

Solution 16:

|  |
| --- |
| **Let the number pf papers be x. Then, 63x + 20+2=65x** |
| 65x-63x=22 |
| 2x = 22 |
| x = 11. |

Solution 17:

|  |
| --- |
| **Let the toatl number of workers be x.  Then 8000x=(12000 x 7) + 6000 (x -7)** |
| 2000x =42000 |
| x= 21. |

Solution 18:

|  |  |
| --- | --- |
| **Age decreased** | = (5 x 3) years |
| 15 years |
| **So, required difference =15years.** |  |

Solution 19:

|  |
| --- |
| Amount of milk left after 3 operations |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-quiz-1.gif |

Solution 20:

|  |  |
| --- | --- |
| Since first second varieties are mixed in equal proportions, so their average price = **Rs.(126+135/2) = Rs.130.50** | |
| So, the mixture is formed by mixing two varieties, one at Rs. 130.50 per kg and the other at say, Rs. x per kg in the ratio 2 : 2, i.e., 1 : 1. We have to find x. | |
| Cost of 1 kg tea of 1st kind | Cost of 1 kg tea of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-2.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png x-153/22.50 = 1 =› x - 153 = 22.50 =› x=175.50. | |
| **Hence, price of the third variety = Rs.175.50 per kg.** | |

Solution 21:

|  |  |
| --- | --- |
| Let the cost of 1 litre milk be Re. 1 | |
| Milk in 1 litre mix. in 1st can = 3/4 litre, C.P. of 1 litre mix. in 1st can Re. 3/4 | |
| Milk in 1 litre mix. in 2nd can = 1/2 litre, C.P. of 1 litre mix. in 2nd can Re. 1/2 | |
| Milk in 1 litre of final mix. = 5/8 litre, mean price = Re. 5/8. | |
| By the rule of alligation, we have: | |
| Cost of 1 kg mixture of 1st kind | Cost of 1 kg mixture of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-3.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Ratio of two mixtures = 1/8 : 1/8 = 1:1. | |
| **So, quantity of mixture taken from each can = (1/2 X 12) = 6 litres.** | |

Solution 22:

|  |  |
| --- | --- |
| Let the C.P. of spirit be Re. 1 litre. | |
| Spirit in 1 litre mix. of A = 5/7 litre, C.P. of 1 litre mix. in A = Re. 5/7 | |
| Spirit in 1 litre mix. of B = 7/13 litre, C.P. of 1 litre mix. in B = Re. 7/13 | |
| Spirit in 1 litre mix. of C = 8/13 litre, Mean price = Re. 8/13. | |
| By the rule of alligation, we have: | |
| Cost of 1 litre mixture in A | Cost of 1 litre mixture in B |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-4.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 1/13 : 9/91 = 7:9. | |

Solution 23:

|  |  |
| --- | --- |
| **Suppose the can initially contains 7x and 5x litres of mixtures A and B respectively** | |
| Quantity of A in mixture left  = (7x - 7/12 x 9) litres = (7x - 21/4) litres. | |
| Quantity of B in mixture left  = (5x - 5/12 x 9) litres = (5x - 15/4) litres. | |
| (7x - 21/4) / [(5x - 15/4)+9] = 7/9 = › 28x - 21/20x + 21 = 7/9 =› 252x - 189 = 140x + 147 | |
|  | =› 112x = 336 =’ x = 3. |
| So, the can contained 21 litres of A. | |

Solution 24:

|  |
| --- |
| **Suppose the vessel initially contains 8 litres of liquid. Let x littres of this liquid be replaced with water.** |
| Quantity of water in new mixture = (3 - 3x/8 + x) litres. |
| Quantity of syrup in new mixture = (5 - 5x/8) litres. |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png (3 - 3x/8 + x) = (5 - 5x/8) = 5x + 24 = 40 - 5x  =› 10x = 16 =› x = 8/5 |
| So, part of the mixture replaced = (8/5 x 1/8) = 1/5. |

Solution 25:

|  |  |
| --- | --- |
| Let the price of the mixed variety be Rs. x per kg. By the rule of alligation, we have : | |
| Cost of 1 kg of type 1 rice | Cost of 1 kg of type 2 rice |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-7.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png (20-x)/(x-15) = 2/3 =› 60 - 3x = 2x - 30 =› 5x = 90 =› x = 18. | |
| **so, price of the mixture is Rs. 18 per kg.** | |

Solution 26:

|  |  |
| --- | --- |
| By the rule of alligation: | |
| C.P. of 1 litre of water | C.P. of 1 litre of milk |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-8.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Ratio of water to milk = 4 : 8 = 1 : 2 | |

Solution 27.

|  |  |
| --- | --- |
| By the rule of alligation: | |
| Cost of 1 kg tea of 1st kind | Cost of 1 kg tea of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-9.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 750 : 250 = 3 : 1 | |

Solution 28.

|  |  |
| --- | --- |
| By the rule of alligation: | |
| Cost of 1 kg rice of 1st kind | Cost of 1 kg rice of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-10.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 60 : 90 = 2 : 3 | |

Solution 29:

|  |  |
| --- | --- |
| By the rule of alligation: | |
| Cost of 1 kg pulses of 1st kind | Cost of 1 kg pulses of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-11.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 3.50 : 1.50 = 35 : 15 = 7 : 3. | |

Solution 30:

|  |
| --- |
| Let the quantity of the wine in the cask originally be *x* litres |
| then, quantity of wine left in cask after 4 operations = [*x*(1- 8/*x*)**4**] litres. |
| Therefore *x*(1- 8/*x*)**4** / *x* = 16/81 =› (1- 8/*x*)**4** = (2/3)**2**  =› (*x* - 8 / *x*) = 2/3 =› 3*x* - 24 = 2**x** =› **x** = 24. |

Solution 31:

|  |  |
| --- | --- |
| By the rule of alligation: | |
| Strength of first jar | Strength of second jar |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-13.gif | |
| So, ratio of 1st and 2nd quantities = 7 : 14 = 1 : 2. | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required quantity replaced = 2/3 | |

Solution 32

|  |  |
| --- | --- |
| By the rule of alligation: | |
| Profit of first part | Profit of second part |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-14.gif | |
| So, ratio of 1st and 2nd parts = 4 : 6 = 2 : 3. | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Quantity of 2nd kind = (3/5 x 1000)kg = 600 kg. | |

Solution 33:

|  |  |
| --- | --- |
| By the rule of alligation: | |
| C.P. of 1 kg sugar of 1st kind | C.P. of 1 kg sugar of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-15.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Ratio of quantities of 1st and 2nd kind = 14 : 6 = 7 : 3. | |
| Let *x* kg of sugar of 1st kind be mixed with 27 kg of 2nd kind. Then, 7 : 3 = *x* : 27 or *x* = (7 x 27 / 3) = 63 kg. | |

Solution 34:

|  |  |
| --- | --- |
| By the rule of alligation: | |
| C.P. of 1 kg rice of 1st kind (in paise) | C.P. of 1 kg rice of 2nd kind (in paise) |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-16.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 80 : 70 = 8 : 7. | |

Solution 35:

|  |  |
| --- | --- |
| S.P. of 1 kg of the mixture = Rs. 68.20, Gain = 10 % | |
| C.P. of 1 kg of the mixture = Rs. (100 / 110 x 68.20) = Rs. 62. | |
| By the rule of alligation: | |
| C.P. of 1 kg tea of 1st kind | C.P. of 1 kg tea of 2nd kind |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/alligation-or-mixture-formula-17.gif | |
| http://www.a2zinterviews.com/Aptitude/alligation-or-mixture/therefore.png Required ratio = 3 : 2. | |

**Logarithms, Interest and Venn Diagrams**

**A. Basics of Logarithms**  
  
Definition:- If *a* is a positive real number, other than 1 and , then we write: m = logax and we say that the value of log x to the base a is m.

(i)  => log 10 1000 = 3   (Common logarithms)

(ii)   => log 3 81 = 4

(iii)   => log 2 (1/8) = -3

**B. Properties of Logarithms**  
  
(i)  log a (xy) = log a x + log a y

(ii) log a (x/y) = log a x - log a y

(iii) log x x = 1

(iv) log a 1 = 0

(v) log a () = p(log a x )

(vi) log a x = 1/(log x a)  
  
(vii) log a x = (log b x)/(log b a)

**C. Simple Interest**  
  
let Principal = P, rate = R % annum, Time = T years

Then,  
  
Simple Interest SI = (PTR)/100   
Amount after T years A=P+SI

**D. Compound Interest**

let Principal = P, rate = R % annum, Time = n years  
  
1. When interest is compounded annually:  
Amount(Principal + interest) =   
  
  
  
  
2. When interest is compounded Half-Yearly:

Amount =   
  
3. When interest is compounded Quarterly:  
  
Amount = 

4. When interest is compounded annually but but time is in fraction say 4.5 years,  
Amount =  \* (1 + (R/2)/100)

5. When rates are say R1% in the first year, R2% in the second year and R3% in the third year and so on ...  
  
Amount = P\*(1+R1/100)\*(1+R2/100)\*(1+R3/100)....

**E. Venn Diagrams  
  
1. Two Set Venn Diagrams**



Total number of elements belonging to set A = X  
Total number of elements belonging to set B = Y  
Number of elements belonging to both Set A and Set B = c

Therefore

Elements belonging to ONLY A = a = X – c  
Elements belonging to ONLY B = b = Y – c  
Number of elements in EITHER A or B = a + b + c = X + Y - c

Number of elements in NEITHER A or B = Number of elements in Universal set - (a + b + c)

**2. Three Set Venn Diagrams**



Number of elements in set A = X  
Number of elements in set B = Y  
Number of elements in set C = Z

Number of elements in ONLY set A = a  
Number of elements in ONLY set B = b  
Number of elements in ONLY set C = c

Number of elements in set A and B but not in C = q  
Number of elements in set A and C but not in B = p  
Number of elements in set B and C but not in A = r

Number of elements in all the three sets = z

X = a + p + q + z  
Y = b + q + r + z  
Z = c + p + r + z

Number of elements in only one set = a + b + c  
Number of elements in two sets = p + q + r  
Number of elements in at least one set = (a + b + c) + (p + q + r) + z

Number of elements in neither of three sets = U - ((a + b + c) + (p + q + r) + z)

**Logarithms**

**1**. Option B

**Log(5) not equal to log (6)**

**2**. Option A

|  |  |
| --- | --- |
| Log( 256) | =(56×0.30103) |
| = 16.85768. |
| Its characteristics is 16. |  |
| Hence, the number of digits in 256 is **17.** | | |

**3**. Option A

|  |  |
| --- | --- |
| Given expression | =log 9/log 4 ×log 2/log 3 |
| = log 3²/log 2²×log 2/log 3 |
| =2 log 3/ 2 log 2×log 2/log3 |
| = **1.** |

**4**. Option C

xLog a = ylog b. hence log a/ log b = **y/x.**

**5**. Option C

Log(8^(1/2))/log 8 = **½**

**6**. Option C

|  |
| --- |
|  |
| |  |  | | --- | --- | | log 5512 | = log 512/log 5 | | ‹=›9 log2 /log 10 - log 2 | | =(9 ×0.3010)/(1 - 0.3010) | | ‹=› 2.709/0.699 | | = **3.876.** | |

**7**. Option A

625 = 5^4 and 4= **2^2.**

**8**. Option B

1/125 = **5^(-3).**

**9.** Option D  
  
 X-0.5 = 9/16

=> X=**(16/9)2**

**10.** Option A

x/6 = 81/3

=> x = **12**  
  
**11.** Option A  
  
 Given expression can be simplified as log10(25\*8/2) =**2**   
  
  
**12.** Option D

Simplifying given expression 1+logab = x  
 => logba = 1/(x-1)  
 => logbab = logba +1  
 = **x/(x-1)**

**INTEREST**

**13.** Option A  
  
 2p/5 = p\*r\*10/100 => r=**4%**  
  
**14.** Option C  
   
 300=(x\*3\*5+ (1550-x)\*3\*8)/100  
 => 30000=15x+24(1550-x)  
 => 9x=7200=> x=800  
 Therefore required ratio=800:750 = **16:15**  
  
**15.** Option A

1348.32=1200(1+(R/100))2

=> 1.1236= (1+(R/100))2

=> 1.06-1=R/100

=> R=.06 x 100 =**6%**

**16.** Option C  
  
 Simple interest on Rs 800 for a year was 40Rs (Consider 4th year) => **r=5%**  
  
**17.** Option C  
 Interest=15625(1.04)3-15625 = **1951**  
  
**18.** Option B  
  
 At the end of first 6 months:

Amount=1600(1.025)=1640  
 Principal for next 6 months = 1640+1600=3240  
 Amount after end of one year= 3240+(3240\*5\*0.5/100)=3321

Therefore total interest earned=3321-3200=**121**

**19.** Option D  
  
 Assume P=100

Amount after one year(through CI)=100(1.03)2 = 106.09Rs  
  
 So nominal rate(SI) that gives same interest = **6.09%**  
  
  
**20**. Option C

SI = P\*N\*R/100 = 3.25\*4.5\*16000 = **2340**

**21**. Option B

Given p= si.

Applying formula, we get n = **20 years.**

**22**. Option D

Given si = 3\*p;

Apply formula, we get r = **20%**

**23**. Option D

Equating Si from both we get, n =**8**;

**24**. Option C

A = 7500(1+(4/100))^2

A = 8112

CI= **612**

**25**. Option A

Applying formula for CI

**26**. Option C

First find CI = 840, Si = 420, and apply formula for SI

**27**. Option d

Apply formula for Amount in CI= P(1+(r/100))^n

**28**. Option B

Calculate SI and CI and subtract

**29**. Option B

|  |  |
| --- | --- |
| Difference in C.I and S.I for 2 years | = Rs(696.30-660) |
| =Rs. 36.30. |
| S.I for one years | = Rs330. |
| S.I on Rs.330 for 1 year | =Rs. 36.30 |
| Rate | = (100x36.30/330x1)% |
| =11%. |

**VENN DIAGRAMS**

**30.** Option C Number of students who have taken only Operating Systems=14-5=9  
 Number of students who have taken only Network Security=29-5=24  
  
 Therefore number of students who haven’t opted for either=40-(9+5+24)=**2**

**31.** Option B

Number of patrons who have only dogs=56-8=48  
  
 If ‘a’ people have only cats => 48+8+a=120-8 => 56

Therefore number of patrons who have cats = 56+8 =**64**

**32.** Option D

For lowest possible value of intersection set ‘x’; 30+20-x=40 => x=**10**

**33.** Option C

Let x people read all 3 news papers.

Number of people who read only Hindu=285-(29+x+20)=236-x  
 Number of people who read only India Express= 212-(29+35+x)=148-x  
 Number of people who read only Times of India=127-(20+35+x)=72-x  
  
 Adding all the portions: 285+(148-x)+35+(72-x)=500-50 => x=45

So number of people reading only one news paper: 191+103+ 27 = **321**

**34.** Option C

**35.** Option B

**36a.** Option B

**36b.** Option A

**36c.** Option B

**37.** Option A

N(A U B U C) = n(A) + n(B) + n(C) – n(A^B) – n(B^C) – n(A^C) + n(A^B^C)

90 = 56 + 43 + 35 -18 – 10 – 12 + x

**X = 0**

**38a.** 100

**38b**. 25%

U - n(A U B U C) = 10 % which is 10 students.

Hence there are 100 students in class.

**39.**

N(Cricket) = 150.

Hence, N(Cricket ^ Hockey) = 100.

N(hockey) = 200

Hence **39a**. 200/250 = 80%

**39b**. 100/250 = 40%

**Logarithms**

**1. Which of the following statements is not correct?**

A. log10 10 = 1 B. log (2 + 3) = log (2 x 3)   
C. log10 1 = 0 D. log (1 + 2 + 3) = log 1 + log 2 + log 3

**2.If log 2 = 0.30103, Find the number of digits in 256 is**

A. 17 B. 19 C. 23 D. 25

**3. If ( log 5 5) (log 4 9) (log 3 2) is equal to**

A. 1 B. 3/2 C. 2 D. 5

**4. If ax = by**

A. log a/b = x/y B. log a/ log b = x/y C. log a/ log b = y/x D. None

**5. log√ 8 / log 8 is equal to**

A. 1/√8 B. 1/4 C. 1/2 D. 1/8

**6. If log 2 = 0.3010 and log 3 = 0.4771, the values of log5 512 is**

A. 2.870 B. 2.967 C. 3.876 D. 3.912

**7. The value of log2(log5625) is**

A.2 B.5 C. 10 D. 15

**8. The value of log5(1/125) is**

A. 3 B. -3 C. 1/3 D. -1/3

**9. If log x (9/16) = -(1/2), then x is equal** to    
A. -3/4       B. 3/4     C. 81/256         D. 256/81

**10. If log8x + log8(1/6) = 1/3, then the value of x is :**A. 12      B. 16   C. 18  D. 24

**11. 2log105 + log108 - (1/2) log104 = ?**A. 2       B. 4     C. 2 + 2log102      D.  4 - 4log102

**12. If loga(ab) = x, then logb(ab) is :**  
A. 1/x        B. x/(x+1)       C. x\*(1-x)        D. x/(x-1)

**INTEREST**

**13. At what rate percent per annum will the simple interest on a sum of money be 2/5 times of the principal in 10 years?**  
A. 4% B. 17/3 % C. 6% D. 20/3 %

**14. A sum of Rs. 1550 was lent partly at 5% and partly at 8% p.a. simple interest. The total interest received after 3 years was Rs. 300. The ratio of money lent at 5% to that lent at 8% is:**  
A. 5:8 B. 8:5 C. 16:15 D. 31:6

**15. At what rate of compound interest per annum will a sum of Rs. 1200 become Rs. 1348.32 in 2 years ?**A. 6% B. 6.5% C. 7% D. 7.5%

**16. A sum of money invested at compound interest amounts to 800 in 3 years and to 840 in 4 years. The rate of interest per annum is:**A. 5/2% B. 4% C. 5% D. 20/3%

**17. Find the compound interest on Rs. 15,625 for 9 months at 16% per annum compounded quarterly.**A. 1851 B. 1941 C. 1951 D. 1961

**18. A bank offers 5% compound interest calculated on half-yearly basis. A customer deposits Rs. 1600 each on 1st January and 1st July of a year. At the end of the year, the amount he would have gained by way of interest is:**A. Rs. 120 B. Rs. 121 C. Rs. 122 D. Rs. 123

**19. The effective annual rate of interest corresponding to a nominal rate of 6% per annum payable half-yearly is:**  
A. 6.06% B. 6.07% C. 6.08% D. 6.09%

**20. Find the S.I. on Rs.16,000 for 3 years 3 months at 4 ½ % per annum?**

A. Rs.5200 B. Rs.1800 C. Rs.2340 D. None

**21. In how many years will a Sum of money becomes double at 5% p.a. S.I.?**

A. 18 years B. 20 years C. 15 years D. None

**22. At what rate% p.a. a Sum of money becomes four times of itself in 15 years?**

A. 8% B. 10% C. 15% D. 20%

**23. A man deposited Rs.9000 in a bank at 6% p.a. for 4 years. For how many years, must another man deposit an amount of Rs.5400 at 5% p.a. in another bank so that both of them get the same interest?**

A. 6 years B. 4 years  C. 3 years D. None

**24. Find compound interest on Rs. 7500 at 4% per annum for 2 years, compounded annually.**  
A. Rs.512 B. Rs.552 C. Rs.612 D. Rs.622

**25. Find the compound interest on Rs.16,000 at 20% per annum for 9 months, compounded quarterly.**  
A. Rs. 2552 B. Rs. 2512 C. Rs. 2572 D. Rs. 2592

**26. Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs. 4000 for 2 years at 10% per annum. The sum placed on simple interest is**  
A. Rs. 1550 B. Rs. 1650 C. Rs. 1750 D. Rs. 2000

**27. Albert invested an amount of Rs.8000 in a fixed deposit scheme for 2 years at compound interest rate 5 pc. p.a. How much amount will Albert get on maturity of the fixed deposit?**

A. Rs. 8600 B. Rs. 8620 C. Rs. 8840 D. Rs. 8820

**28. The difference between simple interest and compound interest on Rs. 1200 for one year at 10% per annum reckoned half yearly is**

A. Rs.2.50 B. Rs. 3 C. Rs. 4 D. Rs. 3.75

**29. On a sum of money, the simple interest for 2 years is Rs. 660,while the compound interest is Rs.696.30,the rate of interest being the same in both the cases. The rate of interest is**

A. 10% B. 11% C. 12% D. 10.5%

**VENN DIAGRAMS**

**30. Out of forty students, 14 are taking Operating Systems and 29 are taking Network Security. If five students take both, how many students have not opted for either ?**  
A. 0         B. 1         C. 2         D. None of these

**31. A veterinarian surveys 120 of his patrons. He discovers that 8 patrons have neither dogs not cats. 8 patrons have both cats and dogs. If 56 patrons have dogs, how many have cats ?**   
A. 48     B. 64       C. 52         D. None of these.

**32. In the class of 40 students, 30 speak Hindi and 20 speak English. What is the lowest possible number of students who speak both the languages?**  
A. 5 B. 20 C. 15 D. 10

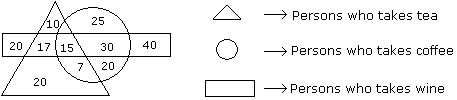
|  |  |
| --- | --- |
| **34.** | **Which of the following diagrams indicates the best relation between Profit, Dividend and Bonus ?** |
| |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c8.png | [**B.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c2.png | | [**C.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c5.png | [**D.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c18.png | |

**33. In town of 500 people, 285 read Hindu and 212 read Indian express and 127read Times of India 20 read hindu and times of India and 29 read hindu and Indian express and 35 read times of India and Indian express. 50 read no news paper. Then how many read only one paper?**   
A. 351        B. 341       C. 321         D. None of these

**35.** **Which of the following diagrams indicates the best relation between Travelers, Train and Bus?**

|  |  |  |  |
| --- | --- | --- | --- |
| [**A.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c6.png | [**B.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c3.png |
| [**C.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c9.png | [**D.**](javascript:%20void%200;) | http://www.indiabix.com/_files/images/verbal-reasoning/venn-diagram/4-19-1-c11.png |

**36. Study the diagram below and answer the questions**



**36A. How many persons take tea and wine but not coffee?**  
A. 16 B. 17 C. 18 D. 20  
  
**36B. How many persons are there who takes only coffee?**  
A. 45 B. 25 C. 30 D. 23  
  
**36C. How many persons take all the three?**  
A. 10 B. 15 C. 20 D. 25

**37. 90 people were asked if they liked Math, Science, or Social Studies.  Everyone answered that they liked at least one. 56 like Math, 43 like Science, 35 like Social Studies, 18 like Math and Science, 10 like Science and Social Studies, 12 like Math and Social Studies. How many liked all the three?**  
A. None         B. 4         C. 2         D. None of these

**38. In a class, 40 % of the students drink Coffee, 40% of the students drink Tea and 50% of the students drink Milk. 20% of the students drink both Tea and Coffee, 20% of the students drink both Tea and Milk, 20% of the students drink Milk and Coffee and 10% of the students drink all three drinks. 10 students do not drink either of Tea, Coffee or Milk. Based on the information given, answer the following**.  
 (a) How many students are there in the class?  
 (b) What percentage of Coffee-drinkers drink only Coffee?

**39. 250 students in a certain class play either Cricket or Hockey. 60% of the students play Cricket and two-thirds of the students playing Cricket also play Hockey.   
   (a) What percentage of the students play Hockey?  
   (b) What percentage of students playing Hockey also play Cricket?**

**ANALOGY:-**

An analogy is a word problem comprised of two different pairs of words. The word problem is set up to reveal one set of words first. This first pair of words is related to each other in some way. Then the problem gives you the first word of the second pair, and it asks you to complete the second pair by choosing a second word. This second word must be related to the first word in the same manner that the first pair of words is related to each other.

You can recognize those in parallel form, may be the words are synonyms/antonyms or related to each other at some extent. The relationship between the words in the question asked is similar to the options; just you have to find out the correct option. You have to deal with the entire field of science, literature, arts, etc. to find out the answer of an analogy. The best way to find the relationship between the two words in the question is to use both of them in a sentence.

**Background Information:**

* Analogy (analogies) is just a fancy term for word relationship(s).
* If you like math more than English, here is something you are going to like. Analogies are the closest thing to an equation and solving for X that English class offers!
* Once you learn the most common kinds of analogies used in test situations, you will likely find they are kind of fun to do — like a word puzzle.
* Analogies involve critical thinking — that is why they appear during the interviews.

Example . They show that you not only can tell what words mean in isolation, but you can also find relationships that bind words together.

* Analogies involve a little bit of "secret language:"
* [word 1] : [word 2] : : [word 3] : [word 4]
* In this analogy format, : reads "*is to*" and : : reads "*as*"
* [word 1] is to [word 2] as [word 3] is to [word 4]

**Instructions-**

1. Memorize as many of the high-frequency vocabulary words as you can. The QTO study guides have a list of these words. Review this list to help build your vocabulary.
2. The common relation types used can be found in QTO study guides. Common relation types include definition, synonyms, worker and tool. Review these relation types to become familiar with the types of analogy questions you will encounter on the test.
3. Define the relationship of the words in question for yourself before reading the answer choices for an analogy question. Defining the relationship first will help keep you from falling for a trick answer.
4. Eliminate answers that are only loosely related as you read the answer choices. The correct answer to an analogy question will have an equally strong link as the words in question.
5. Return to the words in question if you feel that more than one answer is a match. See if they can be defined in other ways or if there is a more narrow relationship between them. Return to the answer choices after redefining the relationship.

**How to solve analogy questions?**

1. **Capitalize the words:**   
   Before you look at the choices, try to find out the relationship between the capitalized (important) words in the sentences, it will clear the idea about to choose the correct option.  
     
   **2. Narrower Approach:**   
   If more than one answer fits the relationship in you sentence, then look for a narrower approach and deal with the enough detail to particular analogy. Precision is important in analogy.  
     
   **3. Primary and Secondary meaning:**   
   Consider the primary and secondary meaning of the word, sometimes it will mislead you by using familiar words but relatively is uncommon ways. Look closely to the options and question words.  
     
   **4. Eye-Catcher words:**   
   Watch out for the errors caused by the eye-catchers, in analogy there are two capitalized words, which act as eye-catchers and test-makers attempts to relate those words, but grammatically and logically.  
     
   **5. Part of speech:**   
   Determine the part of speech in that word in the answer choices. If you suspect that capitalized word may represent more than one part of speech, then don't worry. Spot the use of grammar and unfamiliar words to find the correct choice.  
     
   **6. Familiarize yourself:**   
   Practice makes man perfect, so practice as much as you can, because nobody knows that from which field the analogy questions comes. So, be prepared for the examinations.

**ANTONYMS:-**

In the question based on antonyms the vocabulary of a person is put to test in more direct manner than in the sentence correction or reading comprehensions questions. In those quests the passage can be thrown some light on the probable meaning of a word, but when you consider a word in isolation then it is bound to be difficult to interpret its meaning. Hence questions on antonyms require knowledge of a wide variety of words. The questions based on antonyms are not merely direct but difficult as well. This complexity lies in the meaning of the word antonyms. It simply means opposites.

Apart from your knowledge there are very few tricks which can help you arrive at the correct answers in these questions.In the questions based on antonyms you shall be given 4 choices of antonyms of a given word. It is your sense of analysis that is required for answering these questions. These tips should be kept in mind when you are answering the questions based on antonyms as they can be of great help.

**TIPS:-**

* Firstly you should try to prepare a list of words for the verbal section as a whole. This should start well before attending interviews. Start writing down every difficult word that you come across.
* This list should contain meaning, synonyms and examples illustrating the usage of the word. This would help you understand how a word is to be used and what all possibilities of usage of the word exit.
* When you prepare such a list you have to keep extra conscious about penning down all the possible synonyms and antonyms. The synonyms and antonyms of a word do not just depend on the word as such but also depends upon the usage of the word. Hence you should keep writing all the possible antonyms and synonyms of a word as you revise.
* This practice will develop in you a keen sense of analysis and you shall exercise your brain to infer the antonyms of a word depending on its application. In fact it is this ability that the test takers want to judge rather than your knowledge. This should be your first step towards preparation.
* Most likely there will be 2 answer options which will be fairly close in meaning. Here you have to keep in mind the way the word is used. Do not jump to conclusions but deliberate on each answer option given.
* In case you cannot spot the antonym of the word, you must form short sentences to infer the most likely meaning of the word. At the same time try to make contradicting sentences using the answer option that seems to be correct to you.
* Reject the irrelevant options right away and contemplate on the ones which are closest to being the antonym of the word in question.
* In case you come across an unfamiliar word you need to concentrate and judge the most likely answer instead of skipping the question. Remember that these questions are the ones in which will help you clear your first round.
* The above tactics required for solving the antonym questions will certainly help you score better in the verbal section.

**Which of these words is most nearly the opposite of the word provided?**

1 .Pit

* 1. group
  2. peak
  3. select
  4. marry

1. Rotund
   1. round
   2. unimportant
   3. thin
   4. dull
2. Talent
   1. ungrateful
   2. silent
   3. show
   4. inability
3. Common
   1. strange
   2. uneasy
   3. quick
   4. fast
4. Brazen
   1. bashful
   2. boisterous
   3. noisy
   4. heated
5. Expect
   1. attend
   2. regret
   3. despair
   4. loathe
6. Malodorous
   1. acrid
   2. pungent
   3. fragrant
   4. delicious
7. Expound
   1. besmirch
   2. confuse
   3. confine
   4. condemn
8. Pique
   1. value
   2. gully
   3. smooth
   4. soothe
9. Abate
   1. free
   2. augment
   3. provoke
   4. wane
10. Dearth
    1. lack
    2. poverty
    3. abundance
    4. foreign
11. Peaked
    1. tired
    2. arrogant
    3. pointy
    4. ruddy
12. Abridge
    1. shorten
    2. extend
    3. stress
    4. easy
13. Kindle
    1. smother
    2. detest
    3. enemy
    4. discourage
14. Meager
    1. kind
    2. generous
    3. thoughtful
    4. copious
15. Philistine
    1. novice
    2. intellectual
    3. pious
    4. debutante
16. Zenith
    1. worst
    2. apex
    3. nadir
    4. past
17. Germane
    1. irrelevant
    2. indifferent
    3. impartial
    4. improvident
18. Irascible
    1. determined
    2. placid
    3. reasonable
    4. pliant
19. Approbate
    1. ingratitude
    2. condemn
    3. dissatisfaction
    4. master
20. Supercilious
    1. unimportant
    2. relevant
    3. serious
    4. meek
21. Improvident
    1. cautious
    2. fortunate
    3. proven
    4. intelligent
22. Demur
    1. embrace
    2. crude
    3. boisterous
    4. falter
23. Fatuous
    1. crafty
    2. frugal
    3. sensible
    4. inane
24. Quiescent
    1. lackadaisical
    2. active
    3. dull
    4. prescient
25. Sartorial
    1. cheerful
    2. sincere
    3. inelegant
    4. homespun
26. Sapient
    1. hunched
    2. strong
    3. simple
    4. simian
27. Mutational
    1. paternal
    2. crepuscular
    3. maritime
    4. marsupial
28. Impecunious
    1. wealthy
    2. cautious
    3. hungry
    4. tardy
29. Valor
    1. cowardice
    2. false
    3. drop
    4. heavy
30. Severe
    1. lenient
    2. cautious
    3. join
    4. one
31. Imaginative
    1. playful
    2. written
    3. small
    4. dull
32. Knowing
    1. wasteful
    2. dense
    3. clumsy
    4. fast
33. Animosity
    1. love
    2. plantlike
    3. barren
    4. tiny
34. Exact
    1. join
    2. sympathetic
    3. incorrect
    4. whole
35. Extravagant
    1. unknown
    2. homebody
    3. punctual
    4. moderate
36. Stamina
    1. weakness
    2. clear
    3. decisive
    4. calmness
37. Rough
    1. tumble
    2. sleek
    3. fast
    4. distant
38. Garner
    1. unravel
    2. mar
    3. squander
    4. tarnish
39. Prodigal
    1. thrifty
    2. secondary
    3. distant
    4. squalid
40. Tacit
    1. grand
    2. dictated
    3. illicit
    4. messy
41. Repudiate
    1. argue
    2. soften
    3. slander
    4. admit
42. Pristine
    1. free
    2. sullied
    3. wide
    4. thorough
43. Concede
    1. sit
    2. withstand
    3. dismiss
    4. elaborate
44. Placate
    1. appease
    2. strip
    3. tremendous
    4. enrage
45. Popular
    1. empty
    2. uncommon
    3. famous
    4. feisty
46. Felicitous
    1. morbid
    2. boorish
    3. inopportune
    4. delightful
47. Austere
    1. lavish
    2. unfavorable
    3. light
    4. devout
48. Insipid
    1. cold
    2. brave
    3. exciting
    4. bashful
49. Wastrel
    1. sober
    2. spendthrift
    3. mute
    4. miser
50. Temperate
    1. Celsius
    2. inordinate
    3. lukewarm
    4. safely
51. Nebulous
    1. cloudy
    2. dim
    3. distinct
    4. desirable
52. Adroit
    1. clumsy
    2. left
    3. diplomatic
    4. unpersuasive
53. Mite
    1. weakness
    2. tend
    3. bulk
    4. drive
54. Supernal
    1. nocturnal
    2. special
    3. despicable
    4. hellish
55. Reprobate
    1. sage
    2. elevated
    3. possess
    4. dismiss
56. Specious
    1. genuine
    2. logical
    3. common
    4. deliberate
57. Effete
    1. conquer
    2. proper
    3. prosperous
    4. civilized
58. Rabble
    1. order
    2. clear
    3. open
    4. union
59. Protean
    1. unformed
    2. unchanging
    3. elaborate
    4. selective
60. Vertiginous
    1. horizontal
    2. litigious
    3. constant
    4. lowly
61. Parvenu
    1. wallflower
    2. highway
    3. melody
    4. plan
62. Lapidarian
    1. square
    2. secular
    3. pasture
    4. inelegant
63. Tragic
    1. boring
    2. mysterious
    3. comic
    4. incredulous
64. Able
    1. willful
    2. inept
    3. careful
    4. feasible
65. Tireless
    1. exhausted
    2. unfailing
    3. broke
    4. driving
66. Wean
    1. flourish
    2. flush
    3. strengthen
    4. addict
67. Haste
    1. delay
    2. frugal
    3. debauchery
    4. solemnity
68. Malice
    1. goodwill
    2. bitterness
    3. coddle
    4. distress
69. Permanent
    1. loose
    2. fierce
    3. fleeting
    4. unhappy
70. Attain
    1. crave
    2. lose
    3. harbor
    4. credit
71. Taint
    1. cheer
    2. worry
    3. clear
    4. purify
72. Belittle
    1. plain
    2. detract
    3. magnify
    4. torment
73. Tedious
    1. unwavering
    2. frightening
    3. horrible
    4. pleasurable
74. License
    1. restriction
    2. allow
    3. join
    4. gather
75. Frivolous
    1. pious
    2. inexpensive
    3. serious
    4. contemptuous
76. Plain
    1. meadow
    2. ugly
    3. lovely
    4. unadorned
77. Denounce
    1. covet
    2. condemn
    3. blame
    4. deplore
78. Contrary
    1. urbane
    2. agreeable
    3. unpleasant
    4. despicable
79. Glower
    1. prairie
    2. smile
    3. raise
    4. throw
80. Exacting
    1. upright
    2. lenient
    3. sober
    4. general
81. Curtail
    1. remain
    2. detain
    3. placate
    4. prolong
82. Eminent
    1. imminent
    2. obscure
    3. retire
    4. unsure
83. Abdicate
    1. deny
    2. usurp
    3. blame
    4. renounce
84. Indolent
    1. industrious
    2. complimentary
    3. native
    4. smooth
85. Fortuitous
    1. undefended
    2. gratuitous
    3. deliberate
    4. impoverished
86. Disparage
    1. hesitate
    2. settle
    3. trouble
    4. applaud
87. Dubious
    1. reliable
    2. pleasing
    3. rhythmic
    4. careful
88. Interdict
    1. continue
    2. abstain
    3. wallow
    4. sanction
89. Mendacious
    1. bashful
    2. capacious
    3. veracious
    4. quiet
90. Lassitude
    1. release
    2. demure
    3. fatigue
    4. vigor
91. Verdant
    1. dishonest
    2. suspicious
    3. moldy
    4. arid
92. Ductile
    1. unfeeling
    2. arrogant
    3. precious
    4. rigid
93. Asperity
    1. moistness
    2. amenity
    3. sour
    4. generosity
94. Epicurean
    1. ascetic
    2. slovenly
    3. imprecision
    4. providential
95. Traduce
    1. deduce
    2. laud
    3. presuppose
    4. converge
96. Bridle
    1. heckle
    2. dissuade
    3. vent
    4. persist
97. Spare
    1. rotund
    2. pacify
    3. impolite
    4. impose
98. Proclivity
    1. calm
    2. antipathy
    3. desire
    4. dearth

100. Vituperation

* 1. alacrity
  2. alertness
  3. reparation
  4. acclaim

101. Gambol

* 1. trudge
  2. hedge
  3. crone
  4. misplace

102 Quixotic

* 1. simple
  2. staid
  3. passé
  4. unpredictable

103. Lachrymose

* 1. quick
  2. loquacious
  3. blithe
  4. plentiful
  5. fusing
  6. broke
  7. critical

1. .Disconsolate
   1. joyful
   2. inhospitable
   3. anguished
   4. rude
2. . Brusque
   1. cold
   2. opulent
   3. gracious
   4. suspect
3. . Callow
   1. kind
   2. urbane
   3. sensitive
   4. gentle

**CRITICAL REASONING**

**Answers and Solutions**

**Q1.**  
The assumption is clearly (C). (B) Talks about top executives and not all the top executives and hence is not the answer.

**Q2.**   
Answer choice (A) is incorrect because we are trying to support the conclusion that the

changes made resulted in World News viewers switching to Nighttime News. Sports, weather,

and personal interest stories were all part of those changes. Trying to distinguish among

these makes a finer distinction than is necessary to this argument.

Answer choice (D) is tempting because it addresses a possible separate cause for the increase

in viewers at Nighttime News. However, this answer choice weakens the conclusion. Even if Nighttime News did gain some new viewers for a different reason, some World News viewers could still have switched to Nighttime News due to the new programming changes. If there are other possible reasons for an increase in the number of viewers, it is less likely that the recent programming changes are responsible for drawing new viewers. Remember, an assumption actually supports the conclusion.

Answer choice (E) discusses the quality of World News-perhaps, if World News also improves, then Nighttime News will still find itself behind. The problem with this choice is that the changes have already been implemented and the viewership has already changed as a result. The conclusion seeks to explain why the viewership has changed. This choice discusses a future possibility, which cannot affect what has already happened.

In contrast, both answer choices (B) and (C) seem closely tied to the language of the conclusion. Use LEAST EXTREME NEGATION.

Answer choice (B) refers to programming content and interests of overall audience, which may not be true.

Answer choice (C) refers to ‘some World News Viewers’ and they would have switched to Nighttime News and that balanced viewers.

**Q3.**

The correct answer choice establishes the FEASIBILITY OF A PREMISE.

The argument outlines a proposal for the country to reduce by a substantial amount the number of car accidents via a new safe driving plan. The plan would remove safety features on the driver's side of the vehicle, presumably so that the. driver would be very likely to be injured if he, or she is in an accident. In addition, the driver would receive shocks if he or she engaged in unsafe driving behavior, presumably to train him or her not to engage in such practices. The author assumes that a substantial number of accidents are due to driver error or could be avoided with a change in driver behavior. The author also assumes that the electroshock system will not itself cause a substantial number of accidents, or health problems that could lead to accidents.

(A) It is likely true that some accidents are the result of unforeseen conditions, such as a natural disaster. Such an assumption, however, does not negate the idea that some car accidents are due to driver error, or that forcing drivers to drive more safely will help to reduce the incidence of car accidents.

(B) This may very well be true, but the argument does not propose that the country lower speed limits in order to reduce the number of accidents. Further, the argument does mention that drivers would receive a shock for exceeding the speed limit, but it does not cla1nl a majority of fatal car accidents involve speeding.

(C) CORRECT. The author claims that the new plan will result in a substantial reduction in the number of car accidents. For this to be true, the author must assume that a significant number of those accidents are a direct result of driver behavior and could be prevented via safer driving habits.

(D) Many citizens in the country in question may agree with this opinion, but the opinion has no bearing on whether the author's plan will result in the author's goal: a reduction in the number of car accidents. In fact, if enough people were to reinstall their own safety equipment, the plan would no longer be valid.

(E) This choice is the result of faulty logic. If the shock system that is meant to train people to be better drivers can cause immediate and severe health problems, this is not likely to be very helpful in reducing the incidence of car accidents. If anything, the author must be assuming that the system would be largely, if not entirely, safe.  
  
**Q4.**

The correct answer choice eliminates an ALTERNATE PATH TO THE SAME END.

The conclusion of the argument is that Fresh Start not only gives your teeth a beautiful look but also provides the most reliable protection against dental cavities. Note the strong language ‘*most reliable’* as this indicates that there is no other, better protection available against dental cavities.  
  
(A) CORRECT. Since the argument singles out Fresh Start as the most reliable protection against dental cavities, the author must assume that no other toothpaste provides stronger protection against cavities. Otherwise, the conclusion of the argument is inaccurate.

(B) A premise states that Fresh Start's new formula results *in whiter, healthier-looking teeth,* but the argument does not tell us compared to what? The comparison could be to competitors' results, but it could also be to Fresh Start's old formula. Further; the conclusion only states that using Fresh Start will give teeth "a beautiful look." It does not conclude that using Fresh Start results in whiter teeth than does any other toothpaste.

(C) The conclusion does not make a distinction between customers' relative interest in beautiful teeth versus healthy teeth. This choice is therefore irrelevant.

(D) Since the advertisement focuses only on dental cavities, discussion of other dental disorders is beyond the scope of the argument.

(E) While the statement in this answer choice is quite plausible, this information does not have to be assumed, since the issue of popularity is beyond the scope of this argument.  
  
**Q5.**

The correct answer choice eliminates an ALTERNATE MODEL OF CAUSATION.

In this argument, the student advisor cites two correlated events that happened last year: (1) a series of arguments between the student and her parents and (2) a decline in her GPA. Using this evidence, the advisor concludes that problematic family relationships cause academic problems. However, to claim one causal relationship (that the arguments caused the decline in GPA), we need to exclude other possible causal relationships. For example, we need to assume that the reverse is not true: the decline in the GPA did not lead to the arguments between the student and her parents.

(A) There could have been many reasons for the decline in the student's GPA, such as poor concentration or less time spent studying, but anyone potential cause is not absolutely necessary to assume. Further, the conclusion here addresses a causal relationship between the arguments and the decline in GPA; this choice does not address the given conclusion.

(B) CORRECT. This assumption correctly eliminates the alternate model of causation, demonstrating that the decline in the GPA did not cause the arguments between the student and her parents.

(C) The question of whether the GPA accurately measures a student's intellectual ability is beyond the scope of this argument. The conclusion does not make any claims about students' intellectual ability.

(D)This may be true, but the conclusion does not make any claims about the permanency or reversibility of the decline in GPA. The conclusion is about the cause of the decline; not what might happen after the decline occurs.

(E) Again, this may be true but, the conclusion does not make any claims about the frequency with which *many students* experience fluctuations in performance. It merely concludes that problematic relationships cause academic problems.  
  
**Q6.**

The correct answer is (C).  
The trick is in the way the passage is worded. Warp generators are made of malleable circuits and malleable circuits are not toroid resistant. If they are not toroid resistant they are in danger of imploding from laser beams. This a typical critical reasoning question that can also be solved with the help of a Venn diagram. The passage requires clear understanding of the language, the logic is very simple.   
  
**Q7.**This paragraph discusses the different enrollment and tuition trends at two universities during the same period of time. Brownsville University has experienced growth in both areas, while Canterbury University has not. We should look for an answer choice that results directly from these trends, and be wary of answer choices that go beyond them.

(A) We have no information regarding the number of students enrolled at either college. We also do not know the tuition rates. Therefore, we have no basis to calculate the total revenue from tuition at either school.

(B) This choice may be tempting because more students are enrolling at Brownsville University each year, even as it increases tuition. However, the answer choice is only one of many possible explanations for these trends, The college may have constructed a new dormitory or received significant' publicity from a successful athletic team. Nothing in the premises suggests that students connect the rising fees with higher quality.

(C) CORRECT. This answer choice accurately connects the premises about enrollment and tuition, stating a conclusion that can be logically proven. Canterbury University has had constant revenue despite steadily declining enrollment. Therefore, each individual student must be paying more tuition.

(D) Although Brownsville University's enrollment is rising while that of Canterbury University is falling, Canterbury University may have started with a much larger student body. We have no numerical information to indicate how many years it would take Brownsville to surpass Canterbury in enrollment. More importantly, the premises do not predict how many students will enroll at either school in the coming years. The trends may reverse themselves at any time.

(E) The argument does not suggest how Canterbury University will deal with its declining revenue. It may cut expenses, or seek revenue from other sources. The fact that tuition is the only revenue source mentioned in the argument does not mean that raising tuition is Canterbury University's only course of action.

**Q8.**In the argument above, it is important to recognize that revenue from network television commercials is not necessarily going down; rather, what is going down is its proportion relative to non-network television advertising revenue. In fact, because costs have remained steady and profits have increased, we can conclude that total revenue for networks has gone up.

(A) The argument concerns advertising revenue; we are given no information about access to non network television. While it can be argued that access is indirectly related to revenue, we are not given any information that allows us to draw a direct connection between the two.

(B) The argument did not distinguish the viewers by age group, and we know of nothing that directly connects the changes in advertising revenue with specific categories of viewers.

(C) Since the argument contains information only about percentages, or relative amounts, we cannot ascertain actual dollar amounts.

(D) CORRECT. If profit grew, and costs remained steady, we know that revenues from network television commercials must have grown from 1984 to 2004. If non-network television advertising revenue grew at the same rate, the proportion of revenue generated by network television commercials would have remained steady. Since the proportion of revenue generated by network television commercials decreased, we know that non-network television advertising revenue must have grown at a faster rate.

(E) We know nothing of what will happen in the future. Perhaps the proportion of revenue generated by non-network television commercials will climb, perhaps it will hold steady, or perhaps it will decline.

**Q9.**  
This argument consists of a number of premises, and we are asked to find a conclusion that must follow from these premises. The first premise is that Gift Catalogue Inc. sent seven custom-made gift packages last week. The second premise is that all of the packages sent on Wednesday or later were not custom-made. The third premise is that seven gift packages were sent to Technocorp last week, and that at least two of these packages were custom-made.

(A) This may or may not be true. From the third premise, it may be the case that all seven gift packages sent to Technocorp last week were custom-made.

(B) This may or may not be true. From the first and third premises, it may be the case that all seven custom-made gift packages sent last week were sent to Technocorp.

(C) This may or may not be the case. From the third premise, it may be the case that all of the gift packages sent to Technocorp were custom-made and sent prior to Wednesday.

(D) CORRECT. In the third premise, it is stated that at least two of the gift packages sent to Technocorp were custom-made. In the second premise, it is stated that all gift packages sent on Wednesday or later were not custom-made. Therefore, it must be the case that some (at least two) of the gift packages sent to Technocorp last week were sent on Tuesday or earlier.

(E) This may or may not be the case. We have no information about the number of packages sent to companies other than Technocorp.

**Q10.**This argument first describes the claims of many mutual fund managers that they have been able to generate consistently higher rates of return than the general stock market. The argument also describes and defines the "efficient capital markets hypothesis" as the principle that stock prices accurately reflecting all publicly available information. The question then asks for a conclusion that depends on the premise that the efficient capital markets hypothesis is correct.

(A) While the described event could occur, it would not be expected to occur as a consequence of the efficient capital markets hypothesis. The efficient capital markets hypothesis posits that stock prices accurately reflect the value of the underlying investments. Bidding up the price does not equate to an accurately-priced stock.

(B) Though it is possible that some mutual fund managers have engaged in insider trading, we do not have to conclude that mutual fund managers must do this as a consequence of the efficient capital markets theory in order to generate a high rate of return.

(C) The premises do not indicate that stock prices will rise over time. Stock prices will only rise according to the efficient capital markets hypothesis if the value of the underlying investments also rises over time.

(D) CORRECT. If the efficient capital markets hypothesis is correct, and stock prices accurately reflect the value of the underlying investments, incorporating public information, then if only public information is available, companies would not be either undervalued or overvalued; instead, they would be valued appropriately.

(E) While it is probably true in the real world that some mutual fund managers are more successful than others, it does not follow from the efficient capital markets hypothesis.

**Q11.**  
The correct answer is (E).  
(B) And (E) qualify as the options that strengthen the conclusion. However, (E) definitely strengthens the conclusion that the winner this year will also be a South American because the option says that a continent has a winner for 5 years in a row. (A) and (D) weaken the argument.  
  
**Q12.**The conclusion is located in the question: the prediction that The Gold Standard shoe line will be profitable. In the passage, we have been given information that seems to run counter to this conclusion-the costs of manufacturing this shoe are exceptionally high. We can think of profit as revenue minus cost. If costs are exceptionally high, the only way a profit can be made is if revenue is also exceptionally high.

(A) CORRECT. Strengthen. If urban hipsters are willing to pay exceptionally high prices, the exceptionally high costs might be offset enough for the shoe line to be profitable.

(B) Irrelevant. A higher sales rate than projected does not actually give us any information about profitability. In any case, the results of past releases are not necessarily indicative of the case at hand.

(C) Irrelevant. One can argue that this is good for Brand X, in that it will mean that there is one less competitor, or that this is bad for Brand X, in that it is indicative of a sagging sneaker market. In any case, there is no direct connection between this rival brand and the potential profitability of The Gold Standard.

(D) Irrelevant. We have been told nothing that connects the market to profitability. We also lack information about the profitability of past sneakers.

(E) Irrelevant. This is perhaps one reason why manufacturing costs are so high, but we already knew the costs were high from the argument. This choice does not in allY way support the conclusion that the new sneaker will be profitable.

**Q13**

The argument concerns Corporation XYZ's 2006 fourth quarter profits. It presents evidence that its most recent product has doubled sales projections, while keeping costs in line with initial projections. The company's CEO then projected that the company's overall profits would dramatically exceed previously expected profit levels in the fourth quarter. If we study the evidence provided, it is unclear whether the sales of the new product comprise a high enough proportion of Corporation XYZ's revenues to result in the company *dramatically* exceeding profitability projections. The correct answer choice will help to address this gap.

(A) Irrelevant. The periodic replacement of products manufactured by Corporation XYZ does not affect whether Corporation XYZ's profits would be dramatically higher than originally expected in the fourth quarter of 2006.

(B) Weaken. The fact that older products manufactured by Corporation XYZ are sold at a substantial discount weakens the CEO's conclusion in two ways. First, it suggests lower profits in the fourth quarter. Second, it indicates that Corporation XYZ's new product was just one of several products manufactured by the Company, suggesting that the success of the one product may not indicate high profits overall.

(C) Irrelevant. The fact that the new product enjoys higher profit margins than the industry average does not indicate that Corporation Y.YZ as a whole enjoyed dramatically higher profits than initially expected in the fourth quarter. It is also unknown how high industry profit margins are-they could be very small on average.

(D) Irrelevant. This answer choice is tempting in that it indicates why the new product may be selling well. However, it is already established in the premises that sales of the new product are exceeding projections. The fact that the new product is well-reviewed does not affect whether Corporation XYZ as a whole dramatically exceeded its profitability projections for the fourth quarter.  
  
(E) CORRECT. Strengthen. If the vast majority of the projected revenue in the fourth quarter of 2006 was to come from the new product, the additional success of the new product would indicate that the Company as a whole would be likely to exceed projected profit for the quarter. This answer choice effectively eliminates the biggest concern with the CEO's projection-that the new product represents a small proportion of Corporation XYZ's revenues.

**Q14.**The owners believe that the merger will produce more customers, which in turn will create higher revenue. The correct answer will give reason to doubt that the merger will result in higher revenue.

(A)Strengthen. This answer choice validates the claim that those who come in to buy coffee might buy books, and those who come in for books might suddenly decide to buy coffee.

(B) Strengthen. If the two stores are combined, coffee customers who did not notice the books for sale earlier will notice them now, and if some purchase books, revenue will increase.

(C) Irrelevant. This statement has no direct relationship with the conclusion which discusses revenue, not profits. We do not have any information to determine whether combining the two stores will increase, decrease, or do nothing to the frequency with which books are damaged within the store.

(D) CORRECT. Weaken. If teenagers frequent the coffee shop in order to get away from their parents, and if their parents are now going to be coming to the combined coffee shop and book store, the teenagers may stop coming to the coffee shop as a result. This would shrink the combined customer base, and thus this answer choice weakens the conclusion.

(E) Irrelevant. This statement has no direct relationship with the conclusion. There are too many unknown factors about the store in the neighboring city, and not enough to connect what happened in that store with what will happen in this one. If similar factors could be established, then this choice might strengthen the conclusion.  
  
**Q15.**  
The article claims that Band 1 generated the most revenue of any band during the period 2002 to 2006. The evidence presented is that Band 1 sold the most albums in each of those years, and had the top grossing tour in 2006. This conclusion would be weakened if there were substantial sources of revenue for bands other than album sales and tours during the period. Alternatively, another band might have toured more often than Band 1 for the period 2002 through 2006, or earned more from touring in the years 2002 through 2005.

(A) Strengthen/irrelevant. If the band that had the highest grossing tour in 2002 did not tour again during the period in question, it may be more likely that Band 1 did generate more revenue than other bands during that period. At best, this is irrelevant to the claim that Band 1 generated the most revenue during the period 2002 to 2006.

(B) Irrelevant. The fact that the concerts put on by Band 1 were extraordinarily expensive does not impact the revenue generated by the band during the period. It may influence tour profitability, but that is beyond the scope of this argument.

(C) **CORRECT.** Weaken. The evidence presented for the claim that Band 1 generated the most revenue in the period.2002 to 2006 on a revenue basis relies on album sales and concert tours. However, if other bands released very lucrative DVDs during this period, another band may have generated more revenue overall than did-Band 1, which apparently did not release lucrative DVDs (the choice says that "other bands" did this, not Band 1).

(D) Irrelevant. The reception of music critics to Band I's albums is irrelevant to the amount of revenue generated by the band in the period, as given by the premises.

(E) Irrelevant. The fact that album sales were depressed from 2002 to 2006 does not affect whether Band 1 generated the most revenue in the period. Other bands would face the same threat of piracy.

Answer key for question bank 1:

16)Correct Answer: **E**

Brief explanation

The conclusion to the argument is that "Raju is obviously a bad fisherman" while the premise is Raju's poor fishing performance relative to the peers on his fishing boat this past season.

The argument is flawed as the conclusion does not follow from the premise. The line of reasoning fails to take into consideration other possibilities for Raju's performance this past season: perhaps Raju fished with different bait. So we cannot assume that he is a bad fisherman just because Raju caught fewer fish in one season than other individuals does not mean that. It simply means that he caught fewer fish than his teammates in one season. This season could have been an exception in Raju's career or his teammates could be far above average.

17) Correct Answer: **A**

The conclusion to the argument is that "when the industry completes its transition to the new cork, there will no longer be any threat to landfills from Champagne corks." The conclusion omits an important fact: even after manufacturers stop making the old Champagne corks, there will still be thousands of old bottles in circulation. Individuals who purchased Champagne bottles years ago will consume them and discard the old corks in landfills, thereby continuing to pollute landfills. Consequently, we cannot conclude that "there will no longer be any threat to landfills from Champagne corks."

To further see that this is the conclusion, consider the points of the argument and which points support a conclusion versus which point is a conclusion supported by other points. The points of the argument are:  
(1) Champagne corks pose a threat to the environment  
(2) a solution has been found  
(3) when the industry adopts the solution, the threat will be gone

Notice that it makes no sense to say that since (3) is true, therefore (1) must be true, as would be the case if (3) were a premise and (1) were a conclusion. Instead, it makes sense to say that since (1) and (2) are true, therefore we conclude (3). Now the task at hand is to see how even though (3) is the conclusion, it is not an extremely sound conclusion.

1. This statement properly identifies a weakness in the conclusion.
2. The timing of the industry's transition is irrelevant due to the qualifier in the conclusion: "when the industry completes its transition to the new cork."
3. The time taken to produce a cork does not impact matters of pollution.
4. At first glance, this answer has some appeal. However, the conclusion relates to pollution in a landfill--not fumes omitted into the air during production.
5. The cost to produce the new cork is not pertinent in a consideration of landfill pollution.

18)Correct Answer: **E**

Due to the question being asked, the correct answer must follow closely from the statements in the stimulus. An answer that intuitively appears correct yet fails to follow closely from the statements in the stimulus is incorrect.

1. This answer snags a significant number of test takers. However, it is wrong because it draws too broad of a conclusion. The stimulus never indicates that "all" wavelengths that damage the eyes of animals are blocked by a healthy ozone layer. Further, notice the words "which enables more." The word "more" seems to indicate that a healthy ozone enables some wavelengths to pass through.
2. The fact that the decay in the ozone layer is believed to cause permanent eye damage in some animals does not mean other animals do not experience damage. Similarly, a decay of the ozone layer does not mean that wavelengths are entirely unfiltered. It simply means that less filtering of light exists.
3. The location of the animals that are damaged is never discussed and has no relevancy on the issue at hand.
4. Although this statement is true, it is not the main (or even a main) point of the argument. Similarly, the word "severe" is too strong and not supported by the statements in the stimulus.
5. This statement captures the main argument from the stimulus. Further, it is a near rephrase of "which enables some harmful wavelengths of light to reach the earth's surface."

19) If the newly discovered micro-organism has been identified in several   
shapes, it can be inferred that (D) there must be some other way besides shape to identify this micro-organism. If this were not the case, scientists wouldn't know that it was the same micro-organism they were seeing when it took on different shapes.   
(A)Just because it's capable of assuming three shapes doesn't mean it must   
necessarily assume any others.   
(B)Beyond the scope; there's no indication of the micro-organisms uniqueness.   
(C)Sci-Tech Lab's reliability is never questioned.   
(E)There's no indication that these three are the only possible FORMs the micro-organism can take.

20) Insurance companies can improve the ratio of revenues to claims paid, thus minimizing losses,

if they insure as many people belonging to low-risk groups as they can. Because the strategy

described in A adds a low-risk group to the pool of policyholders, this choice is the best answer.

B is irrelevant, since no link is established between childhood diseases and diseases affecting

the elderly. C is inappropriate, since increasing the number of services covered is unlikely to

minimize losses. D is inappropriate, since it would increase the likelihood that claims against

the policy will be made. Because policyholders will file claims against the policy for services

covered rather than pay for the cost of the services themselves, E is irrelevant.

**Analysis**

1. B is correct  
     
   The author argues that because punk rock fosters a nihilistic view of the world and leads to amoral behavior, the lack of social responsibility it conveys will ruin a generation of young Americans. But if (B) American youths don't listen to punk rock, the music's message won't corrupt them.   
     
   (A)InFORMation about movies doesnt undermine the authors point about punk rock its beyond the scope.   
   (C)Just because punk rock isn't aimed at American youth doesn't mean that Americans don't listen to it.   
   (D)The origins of rock are irrelevant; it's the effects we're concerned with.   
   (E)Beyond the scope; the argument predicts ruin, but doesn't promote censorship or any other plan for preventing it.

2) B is correct

The passage recommends that parents participate in a tuition prepayment program as a

means of decreasing the cost of their children's future college education. If B is true, placing

the funds in an interest bearing account would be more cost-effective than participating in the

prepayment program. Therefore, B would be a reason for NOT participating and is the best 4

answer. A is not clearly relevant to deciding whether to participate since the program applies to

whatever public college the child might attend. C and D, by stating that tuition will increase,

provide support for participating in the program. E is not clearly relevant to deciding whether to

participate, since the expenses mentioned fall outside the scope of the program.

3) Restricting use of the coupons to the immediate families of those awarded them, as B

suggests, would make the coupons valueless for anyone else, so that marketing the coupons

would no longer be possible. The coupons, however, would still allow the people to whom

Fk gives them to enjoy free travel. Thus, awarding coupons would remain a strong

incentive to frequent travel on Fk. Therefore, B is the best answer. A would do nothing to

reduce the resale value of the coupons. C, D and E all not only fail to prevent X's coupon

sales from competing with Fk's own ticket sales, but also potentially reduce the usefulness

of the coupons to the people to whom they are awarded.

4) The group's contention suggests that animals that are shy and active at night are feared and

persecute for that reason. D establishes that raccoons and owls are shy and active at night,

but that they are neither feared nor persecuted. Therefore, D is the best answer. Although an

increasing prevalence of bats might explain the importance of addressing people's fear of bats,

A does not address the original causes of that fear. B and E, while relevant to the rationality of

people's fear of bats, do not affect the assessment of the accuracy of the group's contention.

That bats are feared outside the United kingdom, as C states, does not conflict with the group's

explanation for fear of bats in the United kingdom.

5) The passage concludes that, where royalty retention of faculty members' works is concerned,

software should be treated as books and articles are, not as inventions are. The conclusion

requires an additional premise establishing that software is, in relevant respects, more

comparable to books and articles than to inventions. E provides this kind of premise and is

therefore the best answer. A, B,C and D each describe some difference between software and

inventions, or between inventions and books and articles, or between software and books and

articles. However, none establishes the required relationship among inventions, software, and

books and articles.

6) If the tariff on importing radios from Country X to Country Y were as high as ten percent or

more of the cost of producing radios in Y, then, contrary to what the passage says, the cost of

importing radios from X to Y would be equal to or more than the cost of producing radios in Y.

thus, the tariff cannot be that high, and C is the best answer. A and E give possible partial

explanations for the cost difference, but neither is supported by the passage because the cost

advantage in X might be attributable to other factors. B and D are both consistent with the

information in the passage, but the passage provides no evidence to support them.

7) The passage concludes that, where royalty retention of faculty members' works is concerned,

software should be treated as books and articles are, not as inventions are. The conclusion

requires an additional premise establishing that software is, in relevant respects, more

comparable to books and articles than to inventions. E provides this kind of premise and is

therefore the best answer. A, B,C and D each describe some difference between software and

inventions, or between inventions and books and articles, or between software and books and

articles. However, none establishes the required relationship among inventions, software, and

books and articles.

8) If the statement about oil-supply disruption is true, domestic oil prices in an open-market

country will rise when an oil-supply disruption causes increased international oil prices. A

reduction in the amount of oil an open-market country consumes could reduce the economic

impact of these increases. D gives a way to reduce oil consumption and is thus the best

answer. A and E describe policies that could actually increase the long-term impact of

increases in international oil prices, so neither of these choices is appropriate. No relationship

is established between the economic impact and either the number of oil tankers or diplomatic

relations in B and C, so neither of these choices is appropriate.

9) Correct Answer: **C**

Firm management believes that flex-time will help meet three goals: (1) decrease total costs (2) increase productivity (3) improve product quality.

If the firm's research work requires considerable in-person collaboration, three hours a day of time together will not be sufficient and the firm's plan will lead to decreases in productivity and product quality. This will weaken the management's argument since its plan will not achieve two of its three goals.

1. The presence of new costs associated with flex-time does not weaken the argument that flex-time will decrease total cost as it may well be the case that cost savings outweigh cost increases. In other words, this answer only deals with one side of the equation (cost increases) and not the other side (cost decreases). Consequently, the answer does not enable us to conclude that the argument is weakened since it is entirely possible that *on balance*, costs will be reduced.
2. Since the firm abandoned it for "unknown reasons," we cannot make a conclusion about the affect of flex-time on costs, productivity, and product quality. It is entirely possible that the competitor abandoned flex-time for reasons not related to these three reasons and, therefore, for reasons not relevant to the argument of the management of the boutique research firm.
3. Since the firm in question performs work that requires frequent and in-person collaboration, it is reasonable to infer that cutting the time spent together at work down from 9 to 3 hours will have a considerable affect on productivity and quality as workers will have severely restricted access to a crucial component of their work (i.e., co-workers).
4. This answer strengthens the argument instead of weakening it. Further, using one employee's situation as an example is not the best grounds to critique an argument.
5. The duration of the project (in and of itself) has nothing to do with costs, productivity, or product quality. Given the information in the question and in this answer, an argument could be made that flex-time will increase quality (employees enjoy their work more with flex-time and work harder).

10) Correct Answer: **B**

The argument concludes that "common medical problems such as depression" "will be all but eliminated through early identification and genetic therapy." This is based upon the assumption that the only cause of these common medical problems is a treatable genetic deformity. If this assumption proves false (and problems arise from non-genetic issues), the argument's conclusion is not logical as the genetic therapy would not stop common medical problems that were caused by non-genetic factors.

1. The original argument does not pertain to the number of treatments for common medical problems but rather pertains to the ability of early identification and genetic therapy to eliminate common medical problems. Consequently, whether there is only one method (the one described) or one million methods is irrelevant.
2. This answer points out that if common medical problems arise either in part or in whole for reasons that are not genetic, early genetic detection and therapy will not rectify the problem. The assumption that these common medical problems are based entirely on treatable genetic malformations is an essential part of the argument.
3. This may be a logical result (or consequence) if the original argument proves to be true. However, it is not a necessary assumption for the original argument to be true.
4. The original argument pertains to the ability of doctors to treat "common medical problems" when they exist not whether these "common medical problems" exist in everyone. Further, the original argument hinges on the assumption that these problems are rooted in genetic defects and treatable via genetic therapy.
5. The original argument pertains to common medical problems such as depression and not to "each human defect or sickness." Further, the original argument assumes that genetic therapy alone is sufficient to treat the problem while this answer simply states that all human defects or sickness can be traced in part to (and not necessarily treated by) genetics.

11) Correct Answer: **E**

The researchers' conclusion is: "habitual smoking causes increased difficulties in concentrating"

The group of researchers confuses correlation with causation. In other words, the group concludes that a correlation between smoking and an inability to concentrate implies that smoking causes an inability to concentrate. Perhaps it is the other way around and an inability to concentrate causes individuals to become distracted and take up smoking. Evidence to support this counter theory would weaken the researchers' conclusion.

1. This answer strengthens (not weakens) the original argument as it provides an explanation for how habitual smoking increases difficulties in concentrating after becoming hooked.
2. The answer deals only with some ADD non-smokers and some smokers so it does not provide any solid evidence and justification to weaken or reject the original argument. Further, it is not logical to compare the concentration ability of individuals with an attention deficit condition to other individuals who do not have an attention deficit condition.
3. The incarceration rate is irrelevant in determining the relationship between concentration and smoking. Whether smokers are incarcerated at higher or lower rates does not enable us to strengthen or weaken the causal relationship between smoking and concentration proposed in the original argument.
4. This strengthens (not weakens) the original argument as it intensifies the causal relationship between smoking and subsequent difficulties concentrating.
5. This additional study pinpoints that individuals with preexisting (or already established) concentration difficulties subsequently became addicted to smoking. This pinpoints that the smoking could not have caused the attention and concentration difficulties (as these difficulties already existed prior to becoming addicted).

12) Correct Answer: **A**

The political commentator's argument is: "tax cuts will not help the country escape from its current economic troubles." The commentator's evidence for this is the failure of the past administration's tax cuts to prevent the economic recession.

1. This answer identifies that the argument illogically compares apples and oranges (i.e., it compares entirely different types of tax cuts). It is not reasonable to assume that capital gains tax cuts for the ultra-rich will have the same effect as cuts on salary taxes.
2. This answer does not weaken the political commentator's argument since the tax cuts referred to occurred under such radically different circumstances. Further, this answer simply states that tax cuts "helped stem" a recession while the commentator states that tax cuts will "help the country escape" from a recession. Simply helping stem (or slow down) a recession is considerably different (and less impressive) than actually turning around an entire economy in recession.
3. This answer notes that a piece of legislation is widely considered essential to escaping the current recession. However, it does not break down what in the legislation is considered essential (is it tax cuts alone, in which case the commentator's argument is undermined—or is it government spending alone, in which case the commentator's argument is strengthened—or is it both). Without more information, it is impossible to ascertain whether the economists feel the tax cuts currently being proposed will be simulative, anti-simulative, or neither.
4. The political commentator's argument pertains to the tax cuts ability to "help the country escape from its current economic troubles" not the tax cut's effect on the government deficit. Consequently, the effect on the deficit has no bearing on the argument about tax cuts and economic recovery.
5. This answer explicitly states that the campaign contained "many deceptive" political attacks and arguments. Consequently, the credibility of the governor's claim is severely questioned. Further, even if the governor's comments were true, we cannot conclude that the correlation between his state's prosperity and his tax proposals also has a causal relationship (i.e., we cannot conclude that the governor's philosophy of tax cuts caused the state to be prosperous). In other words, correlation does not imply causation. Further, the macroeconomic dynamics of a state are different than the macroeconomic dynamics of a country.

13) Correct Answer: **b**

The paradox: After a government recall of some peanut butter, shoppers indicated that they would not change their peanut butter purchasing habits. However, same-store-sales of peanut butter subsequently fell dramatically.

Since consumers did not publicly signal any intention to change their behavior, another explanation must exist. Multiple possible explanations exist: the stores voluntarily removed peanut butter, subsequent and more damaging information about peanut butter contamination became public, or consumers responded to the survey in a biased manner (e.g., denying that they will change their purchasing habits so as to appear as if they never fell for purchasing contaminated products).

1. This answer heightens the paradox by making the subsequent fall in sales of peanut butter even more unexplainable since a price cut would have stimulated sales (not provided an explanation for their decline).
2. This answer identifies a correct explanation for the paradox. With stores fearful about lawsuits, they removed peanut butter and consequently "same-store sales to customers fell."
3. Although a tabloid is a much less respected source than a leading newspaper, the fact still remains that the article appeared in a leading newspaper. Further, the source of the news does not explain the discrepancy between individuals' stated intent to continue purchasing peanut butter and the subsequent poor sales figures. If the tabloid as a source were a problem, it would only further increase the paradox over why sales declined (why would consumers seemingly base their decisions upon a tabloid).
4. When the individuals took the survey where they stated their intent to continue purchasing peanut butter, they knew about the op-ed piece as it appeared "days before the newspaper conducted its survey." Consequently, the op-ed cannot explain individuals' switch in behavior (i.e., intending to purchase peanut butter but then deciding not to).
5. The original argument notes that "the country's peanut butter manufacturers" (i.e., every manufacturer accounted for—not limited to the specific type of peanut butter recalled) reported a drop in sales. Although consumers' intention to change the type of jelly and bread they purchased could imply that consumers would change the type of peanut butter they purchased, it does not explain why sales would virtually stop altogether. There is a difference between changing the type of jelly purchased (and by correlation, the type of peanut butter purchased) and stopping purchasing jelly altogether (and by correlation, stopping purchasing peanut butter altogether).

14) Correct Answer: **C**

E-News argues that its subscription service will eliminate the presence of all ads for individuals attempting to read the news. The advertisement implies that this is appealing to news readers since it saves them time. However, there are possible problems with this argument. For example, if E-News partnered with other online content providers, who themselves served up ads, the user would not truly avoid advertisements and would still waste time "seeing and ignoring advertisements while attempting to read."

1. This answer pertains to enjoying reading a news website while the original argument centers on avoiding the "wasted time" that comes from seeing and ignoring advertisements.
2. The original argument centers around "wasted time" not volume of content. Consequently, this answer weakens a point (volume of content) that serves as no support or justification for the original argument (which is based upon "wasted time").
3. Since users of E-News will not be able to entirely (or perhaps even considerably) "eliminate wasted time that results from seeing and ignoring advertisements" since these ads will be part of the online newspaper reading experience through the content network, the argument that users should sign up in order "to eliminate" ads is weakened.
4. This answer does not weaken the crux of the original argument (i.e., avoiding ads eliminates "wasted time"). The original argument is not weakened, it is simply deemed irrelevant to a certain portion of the country.
5. This does not weaken the argument about the user's experience and ability to save time with E-News. The original argument pertains to signing up with E-News in order to save time and this answer does not pertain to signing up with E-News.

15) Correct Answer: **E**

In answering this question, we must keep separate revenue and profit. Further, we must separate revenue from all other aspects of the business. It is important to keep in mind that MicroChip's efforts are aimed at increasing revenue so any assumption that does not pertain to revenue is almost certainly unnecessary.

1. This answer addresses "enabling the firm to survive in the long-term." However, the original argument deals with "an attempt to abate the pernicious decline in MicroChip's revenue." In other words, this answer deals with the ability of the firm to survive in the long-term and retain customers instead of addressing how the company will increase its revenue (which is different from the number of customers or the level of profitability). It is not necessary to make an assumption about long-term survival in order to make a conclusion about increasing revenue.
2. Even if there were other companies with lower prices, as long as the other companies do not further lower their prices, it will not affect MicroChip's ability to increase its demand and revenue. Further, the original argument only deals with MicroChip's attempt to increase its revenue. In other words, the original argument deals with MicroChip's ability to raise its revenue on absolute terms—not its ability to raise revenue more than rivals. It is not necessary to make an assumption about other firms' prices in order to make a conclusion about increasing MicroChip's revenue.
3. Although this would improve MicroChip's revenue, it is not a necessary assumption underlying MicroChip's strategy of offering a discount as the company did not need to offer a discount to increase revenue if it assumed the government would stimulate demand on its own. In other words, if MicroChip assumed the government would stimulate demand, MicroChip would not have offered a discount for the discount would not have been necessary.
4. This answer does not address an assumption that underlies increasing revenue, but rather legality. Further, the answer does not state that MicroChip's actions violate a law. Finally, even if the government pursued charges, this would not necessarily decrease revenue (although it would certainly decrease profit as MicroChip would incur legal fees etc.).
5. This answer contains the assumption that directly relates to MicroChip's attempt to increase its revenue. In order for the decrease in price to increase total revenue, the volume of sales must increase as total revenue equals price multiplied by volume.

16) Correct Answer: **E**

The fundamental flaw in the argument is that it is comparing unlike parts. Specifically, the argument is comparing the net value of assets held by or in the name of a group with the net value of assets held by (and not in the name of) another group. It is quite possible that the large value of assets held for children or beneficiaries (e.g., trusts and estates) comprise large amounts of money.

1. The argument notes that the study considered "the net value of assets" (i.e., assets minus liabilities). Consequently, the study did adequately account for the role of debt in acquiring assets.
2. Eliminating one's debt via bankruptcy would not be unique to the twenty something demographic nor would debt spending change the value of *net* assets held in one's name.
3. The information about the tax code does not undermine the conclusion of the study. Instead, it simply provides an explanation for why the value of assets (not necessarily net assets) is larger than expected among twenty somethings (i.e., tax incentives fueled it).
4. The argument is not based upon the exact amount of spending between age groups. Rather, the argument is based upon relative spending and saving between age groups.
5. The argument compares the assets held by and for the benefit of someone with the assets held by (and not for) a different type of person. This unlike comparison is not sufficient logical grounds to make an argument comparing the two groups.

17) Correct Answer: **B**

The conclusion of the stimulus is: "regulators noted that updated architectural norms and theory advised that the bridge's towers should be reinforced to meet anticipated increases in usage".

1. Since the bridge "should be reinforced to meet anticipated increases in usage," the author implies that the bridge is currently safe but should be reinforced to prepare for future changes in usage.
2. Two reasons are given for reinforcing: (1) "updated architectural norms" (2) "to meet anticipated increases in usage." Since the changes must be made for these two reasons, we can conclude that the original standards did not anticipate these two reasons/factors.
3. This answer states that the bridge still "will not be safe." The passage never states or implies that the bridge will not be safe. In fact, the words "to meet" seem to imply that the bridge will be safe with the changes.
4. The new architectural norms advocate the addition of supplemental reinforcements for the Watergate Bridge "to meet anticipated increases in demand." We cannot conclude that the historic regulations are faulty or that the situation with the Watergate Bridge mirrors that of every other bridge (i.e., since not every bridge is like the Watergate in its "anticipated increases in usage," we cannot conclude that every bridge needs the same reinforcements as the Watergate does).
5. The action should be undertaken because it is advised by regulators and is consistent with current design theory. The bridge was originally constructed "consistent with best-practices at the time" and the new reinforcements will help "meet anticipated increases in usage." The stimulus gives no indication that current best-practices should be abandoned simply because it is impossible to predict future theory.

18) Correct Answer: **A**

When a question asks about the "main point," it is asking for the conclusion (i.e., thesis) of an argument. In answering this question, it is essential to separate the conclusion from the premises that support and lead up to the conclusion.

The argument can be broken up sentence-by-sentence and dissected, enabling us to ascertain the role that each sentence plays in the overall argument.

There are five major points:  
(1) automation maximizes profit  
(2) health care executives want to maximize profit  
(2b) as a result of 2, health care executives propose automation  
(3) 2b should be rejected  
(3b) reasoning for 2b being rejected is decline in quality of care

Every point leads to and supports point 3, which is the conclusion of the argument.

"Automation, the trademark of a modern economy, is essential to maximizing a country's economic production while minimizing its costs." This is a premise since it is used later to make a point (i.e., reject automation in health care). It is simply stated as a fact and does not draw on other premises.

"Health care executives want to increase profits while reducing costs." This is a premise since it is used later to make a point. It is simply stated as a fact and does not draw on other premises.

"Consequently, they propose significantly greater automation of health care." Some students falsely assume that this is the main point. Although this statement does draw on the two aforementioned premises, it is not the conclusion because it is not the argument that the author is trying to make (as we shall see).

"Yet, this should be rejected." This is the argument that the author is making and it is the main point. To see this, notice that all the statements before (and after) build on this statement.

"Radical automation of health care would cause patients to lose trust in the system as the health care they would receive would lack the in-person care that studies show patients desire." This is a premise since it is evidence that the author is using to support the conclusion that automation should be rejected.

1. This is the main point or argument of the statement. The author indicates, "Yet, this should be rejected," where this refers to "significantly greater automation of health care."
2. The author argues against automation since it will "lack the in-person care that studies show patients desire." The argument is against automation, not for in-person care. In other words, "patients desire customized in-person care" is used as a premise to support the rejection of automation.
3. Although this is a possible inference that can be made by piecing together the premises, it is not the argument that is being advocated.
4. The statement says nothing about executives becoming too greedy. Automation "should be rejected" because it "would cause patients to lose trust in the system."
5. The statement says nothing about automation becoming inevitable. The author argues not for inevitability of automation of health care but rejection of excessive automation of health care.

19) Correct Answer: **C**

The school authorities argue that the new track "*entirely*" caused the reduction in "*complaints*" about shin splints. There are two important points about this argument.

(1) The argument of the school administrators is based upon a reduction in the number of complaints about shin splints, which is not the same as a reduction in the number of actual instances. It is entirely possible that students complain about shin splints and yet actually have other problems.

(2) The argument of the school administrators established a causal relationship (i.e., the new track caused the reduction). This is a much more assertive and broad claim than simply noticing that the two are correlated (i.e., occurred together).

1. The argument made by West County High School officials is based upon the fact that "the number of students who *complained* about shin splints dropped significantly." This answer would weaken an argument that dealt with the number of diagnosed instances of shin splints. However, the school administrators make their argument only because of a reduction in the number of "claims."
2. This answer significantly strengthens the argument of the high school administrators by noting that other schools experienced a link between a new track and a decrease in claims about shin splints.
3. This answer calls into question the school's assertion that the new track was "entirely" responsible for the reduction in claims of shin splints. The answer does this through providing an alternative and viable (but not necessarily competing) explanation of the reduction in claims of shin splints.
4. The original argument pertains to *complaints* about *shin splints* in particular (not the number of students who "complained of pain while running"). This answer confuses complaints in general with complaints about shin splints in particular.
5. This answer strengthens the school officials' claim instead of weakening it as it provides more evidence that the new track helped decrease complaints of shin splints.

20) Correct Answer: **C**

The argument’s conclusion is: "computer science has lost its creative aspect"

The argument draws the false dichotomy that the writing of profitable programs requires forgoing the writing of creative applications. In other words, it assumes that profitable and creative programs are mutually exclusive. Further, it assumes that all computer scientists are pursuing writing profitable programs.

1. There is a difference between being well received and being profitable. The argument assumes that only non-creative programs can be profitable. However, this does not mean creative programs will not be well-received. It just means they will not be profitable.
2. Even if some computer scientists disregarded creativity, we cannot (as the original argument and this answer do) assume that creativity and profit are mutually exclusive.
3. This answer identifies a crucial assumption in the original argument. If writing creative and profitable programs were not mutually exclusive, then one could write profitable programs without "computer science [having] lost its creative aspect."
4. The extent to which a computer scientist is obsessed with the profitability of his work has no influence on whether profitability drives away creativity (as the original argument assumes).
5. The users of software have influence on whether software can be both profitable and creative.
6. Punk rock gives our teenagers a nihilistic view of the world. It fosters the attitude that it is acceptable to behave in any way that strikes ones fancy, regardless of the consequences for anyone else. The total lack of social responsibility conveyed by this so-called music will be the ruination of a generation of Americans youngsters.   
   Which of the statements below, if true, undermines the conclusions in the paragraph above?   
     
   (A) Movies also convey an attitude of social irresponsibility.   
   (B) Punk rock has not found an audience among the teenagers of this nation.   
   (C) Punk rock is not aimed at our teenagers, but at teenagers in England.   
   (D) Punk rock has its origins in a critical stance towards our society.   
   (E) Censorship of an art FORM inevitably gives greater appeal to the message it presents.
7. A program instituted in a particular state allows parents to prepay their children's future

college tuition at current rates. The program then pays the tuition annually for the child at any

of the country’s public colleges in which the child enrolls. Parents should participate in the

program as a means of decreasing the cost for their children's college education.

Which of the following, if true, is the most appropriate reason for parents NOT to participate in

the program?

A. the parents are unsure about which public college in the state the child will attend.

B. The amount of money accumulated by putting the prepayment funds in an

interest-bearing account today will be greater than the total cost of tuition for any of the

public colleges when the child enrolls.

C. The annual cost of tuition at the country’s public colleges is expected to increase at a faster

rate than the annual increase in the cost of living.

D. Some of the country’s public colleges are contemplating large increases in tuition next year.

E. The prepayment plan would not cover the cost of room and board at any of the country’s public colleges.

3) Company X buys free-travel coupons from people who are awarded the coupons by

Fk Airlines for flying frequently on Fk airplanes. The coupons are sold to people who

pay les for the coupons than they would pay by purchasing tickets from Fk. This making of

coupons results in lost revenue for Fk.

To discourage the buying and selling of free-travel coupons, it would be best for Fk Airlines

to restrict the

A. number of coupons that a person can be awarded in a particular year

B. use of the coupons to those who were awarded the coupons and members of their

immediate families

C. days that the coupons can be used to Monday through Friday

D. amount of time that the coupons can be used after they are issued

E. number of routes on which travelers can use the coupons

4 . A conservation group in the United kingdom is trying to change the long-standing image of

bats as frightening creatures. The group contends that bats are feared and persecuted solely

because they are shy animals that are active only at night.

Which of the following, if true, would cast the most serious doubt on the accuracy of the

group's contention?6

A. Bats are steadily losing natural roosting places such as caves and hollow trees and are

thus turning to more developed areas for roosting.

B. Bats are the chief consumers of nocturnal insects and thus can help make their hunting

territory more pleasant for humans.

C. Bats are regarded as frightening creatures not only in the United kingdom but also in

Europe, Africa, and South America.

D. Raccoons and owls are shy and active only at night; yet they are not generally feared and

persecuted.

E. People know more about the behavior of other greatly feared animal species, such as

lions, alligators, and greatly feared animal species, such as lions, alligators, and snakes,

than they do about the behavior of bats.

5) Even though most universities retain the royalties from faculty members' inventions, the

faculty members retain the royalties from books and articles they write. Therefore, faculty

members should retain the royalties from the educational computer software they develop.

The conclusion above would be more reasonably drawn if which of the following were inserted

into the argument as an additional premise?

A. Royalties from inventions are higher than royalties from educational software programs.

B. Faculty members are more likely to produce educational software programs than

inventions.

C. Inventions bring more prestige to universities that do books and articles.

D. In the experience of most universities, educational software programs are more

marketable that are books and articles.

E. In terms of the criteria used to award royalties, educational software programs are more

nearly comparable to books and articles than to inventions.

6) . The cost of producing radios in Country X is ten percent less than the cost of producing

radios in Country . even after transportation fees and tariff charges are added, it is still

cheaper for a company to import radios from Country X to Country Y than to produce radios in

Country Y.

The statements above, if true, best support which of the following assertions?

A. labor costs in Country X are ten percent below those in Country Y.

B. importing radios from Country X to Country Y will eliminate ten percent of the

manufacturing jobs in Country Y.10

C. the tariff on a radio imported from Country X to Country Y is less than ten percent of the

cost of manufacturing the radio in Country Y.

D. the fee for transporting a radio from Country X to Country Y is more than ten percent of

the cost of manufacturing the radio in Country X.

E. it takes ten percent less time to manufacture a radios in Country X than it does in Country

Y.

7) Even though most universities retain the royalties from faculty members' inventions, the

faculty members retain the royalties from books and articles they write. Therefore, faculty

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D. In the experience of most universities, educational software programs are more

marketable that are books and articles.

E. In terms of the criteria used to award royalties, educational software programs are more

nearly comparable to books and articles than to inventions.

8) . If there is an oil-supply disruption resulting in higher international oil prices, domestic oil

prices in open-market countries such as the United States will rise as well, whether such

countries import all or none of their oil.

If the statement in the passage concerning oil-supply disruptions is true, which of the following

policies in an open-market nation is most likely to reduce the long-term economic impact on

that nation of sharp and unexpected increases in international oil prices?

A. Maintaining the quantity of oil imported at constant yearly levels

B. Increasing the number of oil tankers in its fleet

C. Suspending diplomatic relations with major oil-producing nations

D. Decreasing oil consumption through conservation

E. Decreasing domestic production of oil

9) As a result of changes in cultural norms and dynamics, a boutique financial research company is considering implementing flex-time, which enables employees to work during any time of the day from any location as long as they are present at the office from 12:30pm to 3:30pm on weekdays. By comparison, workers currently must be in the office from 8am to 5pm. Firm management believes this change will help meet three key goals: decrease total costs, increase productivity, and improve product quality.

Which of the following, if true, most weakens the argument of firm's management?

|  |  |
| --- | --- |
| A) | Some new costs will arise as a result of telecommuting. |
| B) | A similar firm tried a version of flex-time and abandoned it after a month for unknown reasons. |
| C) | The firm in question performs work that requires frequent and extensive in-person collaboration. |
| D) | The firm in question recently lost its most experienced research analyst due to his perception of the firm's poor work-life balance. |
| E) | The firm in question works on projects that often take weeks to complete. |

10) Due to significant advances in biotechnology, experts predict that within years, doctors will be able to trace the genetic roots of common medical problems such as depression and bi-polar syndrome. As a result, some physicians predict that these conditions and others like them will be all but eliminated through early identification and genetic therapy.

The argument above is based most heavily upon which of the following assumptions?

|  |  |
| --- | --- |
| A) | There is one and only one strategy for eliminating common medical problems such as depression. |
| B) | Common medical problems such as depression are based entirely on treatable genetic malformations. |
| C) | Within years, genetics will be the only important scientific field in detecting and treating common medical problems such as depression. |
| D) | Every member of the human race has at least one genetic defect. |
| E) | Each human defect or sickness can be traced in part to genetics. |

11) . After studying a random sample of 10 individuals who had smoked daily for at least three years and comparing the results of this study with the results of a study of 10 individuals who had never smoked, a group of researchers concluded that habitual smoking causes increased difficulties in concentrating.

Which of the following, if true, most severely weakens the researchers' conclusion?

|  |  |
| --- | --- |
| A) | The addiction to smoking and the cravings this addiction engenders is often on the mind of habitual smokers. |
| B) | Some non-smokers with attention deficit disorder (ADD), which causes an inability to concentrate, display even less ability to concentrate than some smokers. |
| C) | A separate research study found that smokers and non-smokers exhibited statistically significant differences in their incarceration rates. |
| D) | After developing a severe addiction to smoking for fifteen years, the ability of many individuals to concentrate is decreased. |
| E) | A separate research study found that individuals with pre existing attention and concentration disorders exhibited significantly higher rates of trying cigarettes and subsequently becoming addicted to smoking. |

12) Political Commentator: During the previous presidential administration, members of congress approved large tax cuts and yet the economy today stands in shambles. During the current economic crisis, those who espouse large tax cuts as an economic stimulus should consider the failure of tax cuts during the past eight years to prevent the current economic recession as conclusive evidence that tax cuts will not help the country escape from its current economic troubles.

Which of the following, if true, most weakens the argument above?

|  |  |
| --- | --- |
| A) | The large tax cuts of the past administration targeted the capital gains on the financial investments of the ultra-rich while proponents of tax cuts today suggest cutting payroll taxes for both employers and employees. |
| B) | Economists from across the spectrum now agree that tax cuts helped stem the country's most severe recession in history, which occurred about 70 years ago prior to industrialization in this country. |
| C) | Economists from across the spectrum predict that if Congress fails to pass the tax-cut legislation, which also includes government spending and much more, it could well be 15 years before the economy escapes the current recession. |
| D) | Economists from across the spectrum agree that these tax cuts will add less to the fiscal deficit than the tax cuts of the previous administration. |
| E) | During the most recent political campaign cycle, which featured many deceptive political attacks, the governor of a prosperous state attacked those who opposed tax cuts by citing his own state's ostensible prosperity. |

13) . A recent article in one of the nation's leading newspapers noted that despite the government's warning about peanut butter likely being contaminated by salmonella and the government's subsequent recall of a limited amount of peanut butter, 90% of grocery store shoppers surveyed said that they did not plan to change their peanut butter purchasing habits. Nevertheless, roughly two months after the limited recall and one month after the leading newspaper published its article, the country's peanut butter manufacturers reported that same-store sales to grocery store shoppers fell 75% year-over-year.

Which of the following, if true, best explains the apparent paradox above?

|  |  |
| --- | --- |
| A) | The initial survey of shoppers failed to consider the effect of subsequent cuts in the price of peanut butter. |
| B) | Fearing additional instances of contamination and subsequent lawsuits, many retailers that sold peanut butter removed the product voluntarily from their shelves. |
| C) | A report similar to the report that appeared in the leading newspaper appeared in one of the nation's tabloid magazines on the same day. |
| D) | Days before the newspaper conducted its survey, a widely-respected bacterial research specialist published an op-ed article in a major newspaper arguing that the threat from salmonella-infected peanut butter was smaller than the government would later contend. |
| E) | A study published after the government recall of some peanut butter stated that individuals intended to change the type of jelly and bread they purchased. |

14) An advertisement for E-News, a subscription-only online newspaper with no ads accompanying its content, argued that individuals should subscribe to E-News so as to eliminate wasted time that results from seeing and ignoring advertisements while attempting to read newspapers that feature ads.

Which of the following, if true, most severely weakens E-News' argument?

|  |  |
| --- | --- |
| A) | Individuals who currently read only print newspapers are much less likely to enjoy a subscription news website without first learning about reading online news through a free news website. |
| B) | Free ad-sponsored news websites and blogs offer more content than E-News. |
| C) | E-News partners with other e-content providers, many of which always show numerous ads alongside their content. |
| D) | For regions of the country that lack adequate internet coverage, switching to an online subscription website is not logical. |
| E) | E-News recently announced it would sell some of its content to ad-supported websites and print newspapers. |

15) . In an attempt to abate the pernicious decline in MicroChip's revenue brought about by shrinking demand that is accompanying an economic recession, MicroChip is offering customers a 50% discount for the next three months on all purchases fully paid for within 15 days.

Which of the following assumptions most underlies the chip maker's offer of a discount?

|  |  |
| --- | --- |
| A) | MicroChip expects this discount to help the company retain existing customers and gain new ones, enabling the firm to survive in the long-term. |
| B) | There are no other competing chip companies with prices lower than the reduced price. |
| C) | The government will provide massive technology tax credits to businesses, spurring them to purchase chips and other related products. |
| D) | The government will not pursue MircoChip if in fact its behavior in offering a deep discount amounts to a violation of predatory pricing laws. |
| E) | The decrease in revenue brought about by the reduction in price will be smaller than the anticipated increase in revenue brought about by the increase in demand (spurred by the reduction in price). |
|  |  |

16) Based upon the results of a recent study, the net value of assets held by young adults or for the benefit of young adults exceeds the net value of assets held by middle-age working professionals with children. The common notion that young adults or so-called "twenty somethings" are bigger spenders and smaller savers than middle-age adults is, therefore, false.

The argument is primarily flawed for which of the following reasons?

|  |  |
| --- | --- |
| A) | The argument does not properly consider the impact of the debt financing of assets. |
| B) | The argument never discusses the effects of filing for bankruptcy and twenty something's proclivity for deficit spending leading to bankruptcy. |
| C) | The argument never discusses the role that the country's tax code, which encourages financial investment on the part of twenty somethings, plays. |
| D) | The argument does not specify the exact amounts of saving and spending on the part of each age group. |
| E) | The argument never considers that the study compares assets held both by or for the benefit of young adults with assets held by working adults. |

17) The strength of a suspension bridge rests in part on how deep the towers are anchored into the ground. During the first wave of suspension bridge construction, consistent with best-practices at the time, regulations required engineers to drill holes for the towers such that the portion of the tower below ground accounted for at least half of the height of the tower. After conducting an inspection into the depth of the holes drilled for the towers of the Watergate Bridge, constructed over 50 years ago during the first wave of suspension bridge construction, regulators noted that updated architectural norms and theory advised that the bridge's towers should be reinforced to meet anticipated increases in usage.

Which of the following is most strongly supported by the information above?

|  |  |
| --- | --- |
| A) | In light of current architectural theory, the Watergate Bridge should be closed until reinforcements can be added. |
| B) | The original regulations for the depth of the suspension tower failed to anticipate future changes in demand or architectural theory. |
| C) | Even with the implementation of the reinforcements advocated by the new architectural norms, the bridge will still not be safe. |
| D) | In light of the regulators’ findings, every suspension bridge built during the first wave of construction must be updated to provide additional strength and carrying capacity. |
| E) | The action advocated by current architectural theory should not be undertaken since there is no evidence to guarantee that the reinforcements will be adequate or advisable in light of future architectural research. |

18) . Automation, the trademark of a modern economy, is essential to maximizing a country's economic production while minimizing its costs. Health care executives want to increase revenues while reducing costs. Consequently, they propose significantly greater automation of health care. Yet, this should be rejected. Radical automation of health care would cause patients to lose trust in the system as the health care they would receive would lack the in-person care that studies show patients desire.

Which of the following expresses the main point of the argument?

|  |  |
| --- | --- |
| A) | Health care should not be heavily automated |
| B) | Patients desire customized in-person care |
| C) | Trends in the general economy do not apply to the health care industry |
| D) | Health care executives are becoming too greedy |
| E) | Due to economic forces, automation of health care is eventually inevitable |

19)

For years, a considerable number of students on West County High School's track team complained about shin splints (*medial tibial syndrome*). However, during the most recent season, the number of students who complained about shin splints dropped significantly. School officials assert that this reduction in complaints occurred entirely as a result of the school's decision to build a new running track that provided a softer running surface, which absorbed much of the shock on the knees and shins that occurs when running and causes shin splints.

Which of the following, if true, most severely weakens the school officials' explanation for the decrease in complaints about shin splints?

|  |  |
| --- | --- |
| A) | As a result of West County High School's adoption of better medical staff and new medical scanning devices, many students whose complaints would have been diagnosed in years past as an instance of shin splints are now diagnosed with a different condition. |
| B) | West County High School built its track after a number of neighboring schools with similar track teams built new tracks and each school saw the number of complaints about shin splints drop. |
| C) | This past season, members of West County High School's track team received and wore new and highly acclaimed shoes designed to soften the impact of running on the shin and knee. |
| D) | This past season, the total number of students who complained of pain while running rose. |
| E) | The maker of the new track claims that on average, complaints about shin splints fall 25% when its tracks are implemented. |

20) . During the past 20 years, computer scientists focused increasingly on starting and running successful businesses. However, since businesses must be profitable, computer scientists must focus on developing products that generate profit. Consequently, computer science has lost its creative aspect.

Which of the following assumptions is most necessary in order for the conclusion above to be drawn from the argument above?

|  |  |
| --- | --- |
| A) | All computer programs must lack creativity in order to be well received. |
| B) | Some computer scientists entirely disregarded creativity and chose instead to pursue profit. |
| C) | A program cannot be both creative and profitable. |
| D) | Computer scientists are obsessed with the profitability of their work. |
| E) | Non-profit institutions use large amounts of software. |

|  |  |  |  |
| --- | --- | --- | --- |
| **Part of Speech** | **Function** | **Example words** | **Example Sentences** |
| **Verb** | action or state | (to) be, have, do, like, work, sing, can, must | She goes to work everyday. |
| **Noun** | thing or person | pen, dog, work, music, town, London, teacher | This is my **dog**. He lives in my **house**. |
| **Adjective** | describes a noun | some, good, big, red, well, interesting | My dog is **big**. I like **big** dogs |
| **Adverb** | describes a verb, adjective or adverb | quickly, silently, well, badly, very, really | My dog eats **quickly**. |
| **Pronoun** | replaces a noun | I, you, he, she, some | Tara is Indian. **She** is beautiful. |
| **Preposition** | links a noun to another word | to, at, after, on, but | We went **to** school **on** Monday. |
| **Conjunction** | joins clauses or sentences or words | and, but, when | I like dogs **and** I like cats. I like cats **and** dogs. |
| **Interjection** | short exclamation, sometimes inserted into a sentence | oh!, ouch!, hi!, well | **Ouch**! That hurts! **Well**, I don't know. |

**Verbs**

Any action word is called a verb.

Verbs may be treated as two different parts of speech:

1. **Lexical Verbs** (*work, like, run*)
2. **Auxiliary Verbs** (*to be, to have, to do*)

For example:

I ***am*** from England.

I ***am*** going to England.

I ***have*** a dog.

I ***have*** bought a dog.

I ***do*** my homework regularly.

I am ***doing*** my homework with Sam.

**ARTICLES**

***The indefinite article - a***

The indefiinte article ***"a"*** is the same for all genders.

***a boy, a girl, a cat***

The indefinite article has no plural form.

***a boy - boys***

We use "***an"*** if the following word starts with a vowel.

***an eagle***

***Use of the indefinite article a/an***

- before phrases of time and measurements (per week/weekly)

***We have English 4 times a week.***

***I go on holiday twice a year.***

- before phrases of jobs

***My father is a car mechanic.***

- before phrases of nationality

***Bruce Springsteen is an American.***

**-** half/quite

***This is quite a good story.***

The definite article ***"the"*** is the same for all genders in singular and in plural.

***the boy, the girl, the cat, the computers***

"The" is used

for definite articles

***I like flowers. I like the flowers in your garden.***

family names in the plural

***Aunt Mary lives in Los Angeles.* The Smiths live in Chicago.**

for public buildings, institutions, means of transport

**Mandy doesn't like school. The school that Mandy goes to is old.**

for certain days, months, or years.

**Weekends are over on Monday morning. I will always remember the Monday when I had an accident.**

**Simple Past Tense**

**Form:**

***positive sentences: verb+ed or irregular verbs***

**Examples: I called James home.**

**Helen failed her driving tests.**

**I saw a movie yesterday.**

***negative sentences/question: auxiliary verb did + verb***

**Examples: Did you call James?**

**She did not do her homework**

**Use the Simple Past to express the idea that an action started and finished at a specific time in the past. Sometimes, the speaker may not actually mention the specific time, but they do have one specific time in mind.**

Examples:

1. I **saw** a movie yesterday.
2. I **didn't see** a play yesterday.
3. Last year, I **traveled** to Japan.
4. Last year, I **didn't travel** to Korea.
5. **Did** you **have** dinner last night?
6. She **washed** her car.
7. He **didn't wash** his car.

**We use the Simple Past to list a series of completed actions in the past. These actions happen 1st, 2nd, 3rd, 4th, and so on.**

Examples:

1. I **finished** work, **walked** to the beach, and **found** a nice place to swim.
2. He **arrived** from the airport at 8:00, **checked** into the hotel at 9:00, and **met** the others at 10:00.
3. **Did** you **add** flour, **pour** in the milk, and then **add** the eggs?

**The Simple Past can be used with a duration which starts and stops in the past. A duration is a longer action often indicated by expressions such as: for two years, for five minutes, all day, all year, etc.**

* I **lived** in Brazil for two years.
* Shauna **studied** Japanese for five years.
* They **did not stay** at the party the entire time.
* We **talked** on the phone for thirty minutes.
* How long **did** you **wait** for them?

**The Simple Past can also be used to describe a habit which stopped in the past. It can have the same meaning as "**[**used to**](http://www.englishpage.com/verbpage/usedto.html)**." To make it clear that we are talking about a habit, we often add expressions such as: always, often, usually, never, when I was a child, when I was younger, etc.**

* I **studied** French when I was a child.
* He **didn't play** the piano.
* **Did** you **play** a musical instrument when you were a kid?
* She **worked** at the movie theater after school.
* They never **went** to school, they always **skipped** class.

**The Simple Past can also be used to describe past facts or generalizations which are no longer true. this use of the Simple Past is quite similar to the expression "**[**used to**](http://www.englishpage.com/verbpage/usedto.html)**."**

Examples:

* She **was** shy as a child, but now she is very outgoing.
* He **didn't like** tomatoes before.
* **Did** you **live** in Texas when you **were** a kid?
* People **paid** much more to make cell phone calls in the past.

**Past Continuous**

**FORM:**

***was/were + present participle***

Examples:

* You **were studying** when she called.
* **Were** you **studying** when she called?
* You **were not studying** when she called.

**Use the Past Continuous to indicate that a longer action in the past was interrupted. The interruption is usually a shorter action in the Simple Past. Remember this can be a real interruption or just an interruption in time.**

Examples:

* I **was watching** TV when she called.
* When the phone rang, she **was writing** a letter.
* While we **were having** the picnic, it started to rain.
* What **were** you **doing** when the earthquake started?

**In the Simple Past, a specific time is used to show when an action began or finished. In the Past Continuous, a specific time only interrupts the action.**

Examples:

* Last night at 6 PM, I **ate** dinner.

***I started eating at 6 PM****.*

* Last night at 6 PM, I **was eating** dinner.

***I started earlier; and at 6 PM, I was in the process of eating dinner.***

**When you use the Past Continuous with two actions in the same sentence, it expresses the idea that both actions were happening at the same time. The actions are parallel.**

* I **was studying** while he **was making** dinner.
* While Ellen **was reading**, Tim **was watching** television.
* **Were** you **listening** while he **was talking**?

**In English, we often use a series of parallel actions to describe the atmosphere at a particular time in the past.**

* When I walked into the office, several people **were** busily **typing**, some **were talking** on the phones, the boss **was yelling** directions, and customers **were waiting** to be helped. One customer **was yelling** at a secretary and **waving** his hands. Others **were complaining** to each other about the bad service.

**When you talk about things in the past, "when" is most often followed by the verb tense**[**Simple Past**](http://www.englishpage.com/verbpage/simplepast.html)**, whereas "while" is usually followed by Past Continuous. "While" expresses the idea of "during that time." Study the examples below. They have similar meanings, but they emphasize different parts of the sentence.**

* I was studying **when she called**.
* **While I was studying**, she called.

Form:

**had + past participle**

Examples:

* You **had studied** English before you moved to New York.
* **Had** you **studied** English before you moved to New York?
* You **had** not **studied** English before you moved to New York.

**The Past Perfect expresses the idea that something occurred before another action in the past. It can also show that something happened before a specific time in the past.**

Examples:

* I **had** never **seen** such a beautiful beach before I went to Kauai.
* I did not have any money because I **had lost** my wallet.
* Tony knew Istanbul so well because he **had visited** the city several times.
* **Had** Susan ever **studied** Thai before she moved to Thailand?

**We use the Past Perfect to show that something started in the past and continued up until another action in the past.**

Examples:

* We **had had** that car for ten years before it broke down.
* By the time Alex finished his studies, he **had been** in London for over eight years.
* They felt bad about selling the house because they **had owned** it for more than forty years.

**Past Perfect Continuous**

Form:

had + been + present participle

Examples:

* You **had been waiting** there for more than two hours when she finally arrived.
* **Had** you **been waiting** there for more than two hours when she finally arrived?
* You **had not been waiting** there for more than two hours when she finally arrived.

**We use the Past Perfect Continuous to show that something started in the past and continued up until another time in the past. "For five minutes" and "for two weeks" are both durations which can be used with the Past Perfect Continuous. Notice that this is related to the Present Perfect Continuous; however, the duration does not continue until now, it stops before something else in the past.**

Examples:

* They **had been talking** for over an hour before Tony arrived.
* She **had been working** at that company for three years when it went out of business.
* How long **had** you **been waiting** to get on the bus?

Using the Past Perfect Continuous before another action in the past is a good way to show cause and effect.

Examples:

* Jason was tired because he **had been jogging**.
* Sam gained weight because he **had been overeating**.
* Betty failed the final test because she **had not been attending** class.

**Past Continuous vs. Past Perfect Continuous**

**If you do not include a duration such as "for five minutes," "for two weeks" or "since Friday," many English speakers choose to use the Past Continuous rather than the Past Perfect Continuous. Be careful because this can change the meaning of the sentence. Past Continuous emphasizes interrupted actions, whereas Past Perfect Continuous emphasizes a duration of time before something in the past. Study the examples below to understand the difference.**

Examples:

* He was tired because he **was exercising** so hard.
* *This sentence emphasizes that he was tired because he was exercising at that exact moment.*
* He was tired because he **had been exercising** so hard.
* *This sentence emphasizes that he was tired because he had been exercising over a period of time. It is possible that he was still exercising at that moment OR that he had just finished.*

**Simple Past Tense**

**Form:**

***positive sentences: verb+ed or irregular verbs***

**Examples: I called James home.**

**Helen failed her driving tests.**

**I saw a movie yesterday.**

***negative sentences/question: auxiliary verb did + verb***

**Examples: Did you call James?**

**She did not do her homework**

**Use the Simple Past to express the idea that an action started and finished at a specific time in the past. Sometimes, the speaker may not actually mention the specific time, but they do have one specific time in mind.**

Examples:

1. I **saw** a movie yesterday.
2. I **didn't see** a play yesterday.
3. Last year, I **traveled** to Japan.
4. Last year, I **didn't travel** to Korea.
5. **Did** you **have** dinner last night?
6. She **washed** her car.
7. He **didn't wash** his car.

**We use the Simple Past to list a series of completed actions in the past. These actions happen 1st, 2nd, 3rd, 4th, and so on.**

Examples:

1. I **finished** work, **walked** to the beach, and **found** a nice place to swim.
2. He **arrived** from the airport at 8:00, **checked** into the hotel at 9:00, and **met** the others at 10:00.
3. **Did** you **add** flour, **pour** in the milk, and then **add** the eggs?

**The Simple Past can be used with a duration which starts and stops in the past. A duration is a longer action often indicated by expressions such as: for two years, for five minutes, all day, all year, etc.**

* I **lived** in Brazil for two years.
* Shauna **studied** Japanese for five years.
* They **did not stay** at the party the entire time.
* We **talked** on the phone for thirty minutes.
* How long **did** you **wait** for them?

**The Simple Past can also be used to describe a habit which stopped in the past. It can have the same meaning as "**[**used to**](http://www.englishpage.com/verbpage/usedto.html)**." To make it clear that we are talking about a habit, we often add expressions such as: always, often, usually, never, when I was a child, when I was younger, etc.**

* I **studied** French when I was a child.
* He **didn't play** the piano.
* **Did** you **play** a musical instrument when you were a kid?
* She **worked** at the movie theater after school.
* They never **went** to school, they always **skipped** class.

**The Simple Past can also be used to describe past facts or generalizations which are no longer true. this use of the Simple Past is quite similar to the expression "**[**used to**](http://www.englishpage.com/verbpage/usedto.html)**."**

Examples:

* She **was** shy as a child, but now she is very outgoing.
* He **didn't like** tomatoes before.
* **Did** you **live** in Texas when you **were** a kid?
* People **paid** much more to make cell phone calls in the past.

**Past Continuous**

**FORM:**

***was/were + present participle***

Examples:

* You **were studying** when she called.
* **Were** you **studying** when she called?
* You **were not studying** when she called.

**Use the Past Continuous to indicate that a longer action in the past was interrupted. The interruption is usually a shorter action in the Simple Past. Remember this can be a real interruption or just an interruption in time.**

Examples:

* I **was watching** TV when she called.
* When the phone rang, she **was writing** a letter.
* While we **were having** the picnic, it started to rain.
* What **were** you **doing** when the earthquake started?

**In the Simple Past, a specific time is used to show when an action began or finished. In the Past Continuous, a specific time only interrupts the action.**

Examples:

* Last night at 6 PM, I **ate** dinner.

***I started eating at 6 PM****.*

* Last night at 6 PM, I **was eating** dinner.

***I started earlier; and at 6 PM, I was in the process of eating dinner.***

**When you use the Past Continuous with two actions in the same sentence, it expresses the idea that both actions were happening at the same time. The actions are parallel.**

* I **was studying** while he **was making** dinner.
* While Ellen **was reading**, Tim **was watching** television.
* **Were** you **listening** while he **was talking**?

**In English, we often use a series of parallel actions to describe the atmosphere at a particular time in the past.**

* When I walked into the office, several people **were** busily **typing**, some **were talking** on the phones, the boss **was yelling** directions, and customers **were waiting** to be helped. One customer **was yelling** at a secretary and **waving** his hands. Others **were complaining** to each other about the bad service.

**When you talk about things in the past, "when" is most often followed by the verb tense**[**Simple Past**](http://www.englishpage.com/verbpage/simplepast.html)**, whereas "while" is usually followed by Past Continuous. "While" expresses the idea of "during that time." Study the examples below. They have similar meanings, but they emphasize different parts of the sentence.**

* I was studying **when she called**.
* **While I was studying**, she called.

**PREPOSITIONS OF TIME**

|  |  |  |
| --- | --- | --- |
| **on** | For days of the week  Dates of the month/year | His birthday is on 12th August.  We are leaving on Monday. |
| **in** | months / seasons  time of day  year  after a certain period of time *(when?)* | in August / in winter  in the morning  in 2006  in an hour |
| **at** | for *night*  for *weekend*  a certain point of time *(when?)* | at night  at the weekend  at half past nine |
| **since** | from a certain point of time (past till now) | Since 1980 |
| **for** | over a certain period of time (past till now) | for 2 years |
| **ago** | a certain time in the past | 2 years ago |
| **before** | earlier than a certain point of time | before 2004 |

|  |  |  |
| --- | --- | --- |
| **to** | telling the time | ten to six (5:50) |
| **to / till / until** | marking the beginning and end of a period of time | from Monday to/till Friday |
| **till / until** | in the sense of *how long something is going to last* | He is on holiday until Friday. |
| **by** | in the sense of *at the latest*  up to a certain time | I will be back by 6 o’clock.  By 11 o'clock, I had read five pages. |

**PREPOSITIONS OF PLACE (position/direction)**

|  |  |  |
| --- | --- | --- |
| in | room, building, street, town, country  book, paper etc.  car, taxi  picture, world | in the kitchen, in London  in the book  in the car, in a taxi  in the picture, in the world |
| at | meaning *next to, by an object*  for *table*  for events  place where you are to do something typical (watch a film, study, work) | at the door, at the station  at the table  at a concert, at the party  at the cinema, at school, at work |
| on | attached  for a place with a river  being on a surface  for a certain side (left, right)  for a floor in a house  for public transport  for *television, radio* | the picture on the wall  London lies on the Thames.  on the table  on the left  on the first floor  on the bus, on a plane  on TV, on the radio |

|  |  |  |
| --- | --- | --- |
| **by, next to, beside** | left or right of somebody or something | Jane is standing by / next to / beside the car. |
| **under** | on the ground, lower than (or covered by) something else | the bag is under the table |
| **below** | lower than something else but above ground | the fish are below the surface |
| **over** | covered by something else  meaning *more than*  getting to the other side (also *across*)  overcoming an obstacle | put a jacket over your shirt  over 16 years of age  walk over the bridge  climb over the wall |
| **above** | higher than something else, but not directly over it | a path above the lake |
| **across** | getting to the other side (also *over*)  getting to the other side | walk across the bridge  swim across the lake |

|  |  |  |
| --- | --- | --- |
| **through** | something with limits on top, bottom and the sides | drive through the tunnel |
| **to** | movement to person or building  movement to a place or country  for *bed* | go to the cinema  go to London / Ireland  go to bed |
| **into** | enter a room / a building | go into the kitchen / the house |
| **towards** | movement in the direction of something (but not directly to it) | go 5 steps towards the house |
| **onto** | movement to the top of something | jump onto the table |
| **from** | in the sense of *where from* | a flower from the garden |
| **among** | used for a group of people or things | among my friends  among my luggage |
| **between** | middle of two people or things | I sit between Mary and Jane. |

Examples:

Helen works **at** Stratford University.

She lives **in** an apartment.

"At" gives an overall location/point (at home, at work)

"In" expresses a situation where you are enclosed and surrounded by something.

in a house, in a taxi

**IN, AT, ON**

A mother is free to do her own activities when her children are **AT** school.

**AT** school, the children are **IN** the class.

I was **AT** school when you called.

I was **IN** my class when you called.

I was **ON** the bus when you called.

**OTHER USES OF PREPOSITIONS**

|  |  |  |
| --- | --- | --- |
| **from** | from whom? | a present from Jane  Have you heard from him |
| **of** | who/what does it belong to  what does it show | a page of the book  the picture of a palace |
| **by** | who made it | a book by Mark Twain |
| **on** | walking or riding on horseback  entering a public transport vehicle | on foot, on horseback  get on the bus |
| **in** | entering a car / Taxi | get in the car |
| **off** | leaving a public transport vehicle | get off the train |

|  |  |  |
| --- | --- | --- |
| **out of** | leaving a car / Taxi | get out of the taxi |
| **by** | rise or fall of something  travelling (other than walking or horseriding) | prices have risen by 10 percent  by car, by bus |
| **at** | for *age* | she learned Russian at 45 |
| **about** | for topics, meaning *what about* | we were talking about you |

**Simple Present**

Form:

positive sentence: ***verb + s/es in third person***

example: I **speak** English; She **speaks** English

negative sentence/question: ***auxiliary verb (do) + verb***

example: I **do not** like television

She **does not** like television

**Does** he work?

**Do** I need to be at the party?

**Use the Simple Present to express the idea that an action is repeated or usual. The action can be a habit, a hobby, a daily event, a scheduled event or something that often happens. It can also be something a person often forgets or usually does not do.**

I **play** tennis.

She **does not play** tennis.

**Does** he **play** tennis?

The train **leaves** every morning at 8 AM.

The train **does not leave** at 9 AM.

When **does** the train usually **leave**?

He never **forgets** his wallet.

Every twelve months, the Earth **circles** the Sun.

**Does** the Sun **circle** the Earth?

**Speakers sometimes use the Simple Present to express the idea that an action is happening or is not happening now**.

I **am** here now.

She **is not** here now.

He **needs** help right now.

He **does not need** help now.

He **has** his passport in his hand.

**Do** you **have** your passport with you?

The Simple Present can also indicate the speaker believes that a fact was true before, is true now, and will be true in the future. It is not important if the speaker is correct about the fact. It is also used to make generalizations about people or things.

Cats **like** milk.

Birds **do not like** milk.

**Do** pigs **like** milk?

California **is** in America.

California **is not** in the United Kingdom.

Windows **are** made of glass.

New York **is** a small city.

Speakers occasionally use Simple Present to talk about scheduled events in the near future. This is most commonly done when talking about public transportation, but it can be used with other scheduled events as well.

The train **leaves** tonight at 6 PM.

The bus **does not arrive** at 11 AM, it **arrives** at 11 PM.

When **do** we **board** the plane?

The party **starts** at 8 o'clock.

When **does** class **begin** tomorrow?

**Present Continuous Tense**

Form:

***auxiliary verb to be + verb + ing***

example: I **am singing**

She **is going** to school

They **are staying** at a hotel

**Are** you **studying**?

U**se the Present Continuous with verbs to express the idea that something is happening now, at this very moment. It can also be used to show that something is not happening now.**

You **are learning** English now.

**Are** you **sleeping**?

I **am sitting**.

I **am not standing**.

**Is** he **sitting** or **standing**?

They **are reading** their books.

They **are not watching** television.

What **are** you **doing**?

Why **aren't** you **doing** your homework?

**Sometimes, we use the Present Continuous to say that we are in the process of doing a longer action which is in progress; however, we might not be doing it at this exact second.**

I **am studying** to become a doctor.

I **am reading** the book *Tom Sawyer.*

I **am not reading** any books right now.

**Are** you **working** on any special projects at work?

**Aren't** you **teaching** at the university now?

**Sometimes, speakers use the Present Continuous to indicate that something will or will not happen in the near future.**

I **am meeting** some friends after work.

I **am not going** to the party tonight.

**Is** he **visiting** his parents next weekend?

**Isn't** he **coming** with us tonight?

**Present Perfect**

Form:

has/have + past participle

Example:

You **have seen** that movie many times

He **has seen** that movie many times

We use the Present Perfect to say that an action happened at an unspecified time before now. The exact time is not important. You CANNOT use the Present Perfect with specific time expressions such as: yesterday, one year ago, last week, when I was a child, when I lived in Japan, at that moment, that day, one day, etc. We CAN use the Present Perfect with unspecific expressions such as: ever, never, once, many times, several times, before, so far, already, yet, etc.

Examples:

1. I **have seen** that movie twenty times.
2. I think I **have met** him once before.
3. There **have been** many earthquakes in California.
4. People **have traveled** to the Moon.
5. People **have not traveled** to Mars.

ou can use the Present Perfect to describe your experience.

Examples:

1. I **have been** to France.
2. A: **Have** you ever **met** him? B: No, I **have** not **met** him.

Sometimes, we want to limit the time we are looking in for an experience. We can do this with expressions such as: in the last week, in the last year, this week, this month, so far, up to now, etc.

Examples:

* **Have** you **been** to Mexico **in the last year**?
* I **have seen** that movie six times **in the last month**.
* They **have had** three tests **in the last week**.

**Present Perfect Continuous**

Form:

has/have + been + present participle

Examples:

* You **have been waiting** here for two hours.
* **Have** you **been waiting** here for two hours?
* You **have not been waiting** here for two hours.

We use the Present Perfect Continuous to show that something started in the past and has continued up until now. "For five minutes," "for two weeks," and "since Tuesday" are all durations which can be used with the Present Perfect Continuous.

Example:

* They **have been talking** for the last hour.
* She **has been working** at that company for three years.
* What **have** you **been doing** for the last 30 minutes?
* James **has been teaching** at the university since June.

You can also use the Present Perfect Continuous WITHOUT a duration such as "for two weeks." Without the duration, the tense has a more general meaning of "lately." We often use the words "lately" or "recently" to emphasize this meaning.

Examples:

* Recently, I **have been feeling** really tired.
* She **has been watching** too much television lately.
* **Have** you **been exercising** lately?
* Mary **has been feeling** a little depressed.

Simple Future Tense

Form:

**will + verb**

**am/is/are + going to + verb**

Examples:

1. You will help him later.
2. Will you help him later?
3. You will not help him later.
4. I am going to help him.
5. He is not going to help me.
6. They are going to help each other.

**When do we use the Simple Future Tense?**

"Will" often suggests that a speaker will do something voluntarily. Often, we use "will" to respond to someone else's complaint or request for help. We also use "will" when we request that someone help us or volunteer to do something for us. Similarly, we use "will not" or "won't" when we refuse to voluntarily do something.

Examples:

1. I **will send** you the information when I get it.
2. I **will translate** the email, so Mr. Smith can read it.
3. **Will** you **help** me move this heavy table?
4. **Will** you **make** dinner?

"Will" is usually used in promises.

Examples:

* I **will call** you when I arrive.
* If I am elected President of the United States, I **will make** sure everyone has access to inexpensive health insurance.
* I promise I **will not tell** him about the surprise party.

"Be going to" expresses that something is a plan. It expresses the idea that a person intends to do something in the future. It does not matter whether the plan is realistic or not. We use this expression when a decision is already made.

Examples:

* He **is going to spend** his vacation in Hawaii.
* She **is not going to spend** her vacation in Hawaii.

**No Future in Time Clauses**

Like all future forms, the Simple Future cannot be used in clauses beginning with time expressions such as: when, while, before, after, by the time, as soon as, if, unless, etc. Instead of Simple Future, Simple Present is used.

Examples:

* When you **will arrive** tonight, we will go out for dinner. *Not Correct*
* When you **arrive** tonight, we will go out for dinner. *Correct*

**Future Continuous Tense**

Form:

will be + present participle

am/is/are + going to be + present participle

Examples:

* You **will be waiting** for her when her plane arrives tonight.
* **Will** you **be waiting** for her when her plane arrives tonight?
* You **will not be waiting** for her when her plane arrives tonight.
* You **are going to be waiting** for her when her plane arrives tonight.
* **Are** you **going to be waiting** for her when her plane arrives tonight?
* You **are not going to be waiting** for her when her plane arrives tonight.

**When do we use Future Continuous Tense?**

Use the Future Continuous to indicate that a longer action in the future will be interrupted by a shorter action in the future. Remember this can be a real interruption or just an interruption in time.

Examples:

* I **will be watching** TV when she *arrives* tonight.
* I **will be waiting** for you when your bus *arrives*.
* I **am going to be staying** at the Madison Hotel, if anything *happens* and you *need* to contact me.

**Future Perfect Tense**

Form:

will have + past participle

Examples:

* You **will have perfected** your English by the time you come back from the U.S.
* **Will** you **have perfected** your English by the time you come back from the U.S.?
* You **will not have perfected** your English by the time you come back from the U.S.

**When do we use the Future Perfect Tense?**

The Future Perfect expresses the idea that something will occur before another action in the future. It can also show that something will happen before a specific time in the future.

**Examples:**

* **By next November, I will have received my promotion.**
* **By the time he *gets* home, she is going to have cleaned the entire house.**
* **I am not going to have finished this test by 3 o'clock.**

Notice in the examples above that the reference points (*marked in italics*) are in [Simple Present](http://www.englishpage.com/verbpage/simplepresent.html) rather than [Simple Future](http://www.englishpage.com/verbpage/simplefuture.html). This is because the interruptions are in [time clauses](http://www.englishpage.com/verbpage/simplefuture.html#tc), and you cannot use future tenses in time clauses.

We use the Future Perfect to show that something will continue up until another action in the future.

Examples:

* I **will have been** in London for six months by the time I leave.
* By Monday, Susan **is going to have had** my book for a week.

**Future Perfect Continuous Tense**

Form

will have + been + present participle

Examples:

* You **will have been waiting** for more than two hours when her plane finally arrives.
* **Will** you **have been waiting** for more than two hours when her plane finally arrives?
* You **will not have been waiting** for more than two hours when her plane finally arrives.

**How do we use the Future Perfect Tense?**

We use the Future Perfect Continuous to show that something will continue up until a particular event or time in the future. "For five minutes," "for two weeks," and "since Friday" are all durations which can be used with the Future Perfect Continuous. Notice that this is related to the Present Perfect Continuous and the Past Perfect Continuous; however, with Future Perfect Continuous, the duration stops at or before a reference point in the future.

Examples:

* They **will have been talking** for over an hour by the time Thomas *arrives*.
* She **is going to have been working** at that company for three years when it finally *closes*.
* James **will have been teaching** at the university for more than a year by the time he *leaves* for Asia.

Using the Future Perfect Continuous before another action in the future is a good way to show cause and effect.

Examples:

* Jason will be tired when he gets home because he **will have been jogging** for over an hour.
* Claudia's English will be perfect when she returns to Germany because she **is going to have been studying** English in the United States for over two years.

**Future Continuous vs. Future Perfect Continuous**

If you do not include a duration such as "for five minutes," "for two weeks" or "since Friday," many English speakers choose to use the Future Continuous rather than the Future Perfect Continuous. Be careful because this can change the meaning of the sentence. Future Continuous emphasizes interrupted actions, whereas Future Perfect Continuous emphasizes a duration of time before something in the future. Study the examples below to understand the difference.

Examples:

* He will be tired because he **will be exercising** so hard.
* *This sentence emphasizes that he will be tired because he will be exercising at that exact moment in the future.*
* He will be tired because he **will have been exercising** so hard.
* *This sentence emphasizes that he will be tired because he will have been exercising for a period of time. It is possible that he will still be exercising at that moment OR that he will just have finished.*

**MINIMAL PAIRS AND HOMOPHONES**

A **homophone** is a word that is [pronounced](http://en.wikipedia.org/wiki/Pronunciation) the same as another word but differs in meaning. The words may be [spelled](http://en.wikipedia.org/wiki/Spelling) the same, such as [*rose*](http://en.wiktionary.org/wiki/rose#_Noun) (flower) and [*rose*](http://en.wiktionary.org/wiki/rose#Verb) (past tense of "rise"), or differently, such as [*carat*](http://en.wikipedia.org/wiki/Carat_(unit)), [*caret*](http://en.wikipedia.org/wiki/Caret), and [*carrot*](http://en.wikipedia.org/wiki/Carrot), or *to*, *two*, and *too*. Homophones that are spelled the same are also both [homographs](http://en.wikipedia.org/wiki/Homograph) and [homonyms](http://en.wikipedia.org/wiki/Homonym). Homophones that are spelled differently are also called **heterographs**. The term "homophone" may also apply to units longer or shorter than words, such as phrases, letters or groups of letters that are pronounced the same as another phrase, letter or group of letters.

In [phonology](http://en.wikipedia.org/wiki/Phonology), **minimal pairs** are pairs of [words](http://en.wikipedia.org/wiki/Word) or phrases in a particular [language](http://en.wikipedia.org/wiki/Language), which differ in only one phonological element, such as a [phone](http://en.wikipedia.org/wiki/Phone_(phonetics)), [phoneme](http://en.wikipedia.org/wiki/Phoneme), [toneme](http://en.wikipedia.org/wiki/Toneme) or [chroneme](http://en.wikipedia.org/wiki/Chroneme) and have distinct meanings. They are used to demonstrate that two phones constitute two separate phonemes in the language.

As an example for [English](http://en.wikipedia.org/wiki/English_language) [vowels](http://en.wikipedia.org/wiki/Vowel), the pair "l**e**t" + "l**i**t" can be used to demonstrate that the phones [ɛ] (in l**e**t) and [ɪ] (in l**i**t) do in fact represent distinct phonemes /ɛ/ and /ɪ/. An example for English [consonants](http://en.wikipedia.org/wiki/Consonants) is the minimal pair of "**p**at" + "**b**at". In phonetics, this pair, like any other, differs in a number of ways. In this case, the contrast appears largely to be conveyed with a difference in the [voice onset time](http://en.wikipedia.org/wiki/Voice_onset_time) of the initial consonant as the configuration of the mouth is the same for [p] and [b]; however, there is also a possible difference in duration, which visual analysis using high quality video supports.

[Phonemic differentiation](http://en.wikipedia.org/wiki/Phonemic_differentiation) may vary between different [dialects](http://en.wikipedia.org/wiki/Dialect) of a language, so that a particular minimal pair in one [accent](http://en.wikipedia.org/wiki/Accent_(linguistics)) is a pair of [homophones](http://en.wikipedia.org/wiki/Homophone) in another. This does not necessarily mean that one of the phonemes is absent in the homonym accent; merely that it is not present in the same range of contexts.

“Actions speak louder than words.” Do you agree? Sure, but sometimes words speak louder than anything else. The words a person uses, or their vocabulary, will often tell their story. For example, isn’t it shocking when the person who looks educated and dignified opens their mouth and their vocabulary horrifies everyone around them? What people say and how they say it, speaks volumes about who they are and what they are capable of.  
  
Thus vocabulary learning is a vital part of education. As part of the language arts, it is considered a CORE subject in formal education. Vocabulary can be built chiefly by two methods: reading and formal vocabulary drill and practice. Obviously, reading is an exercise that has its own rewards, and many students are motivated to enjoy it as a pastime. However, formal vocabulary building is usually not viewed as a “fun” task and is typically left in neglect.

Homophones and Minimal pairs test of intelligence provide an assessment of an individual’s ability to solve linguistic problems in different ways. They are focused at using the individuals vocabulary for obtaining the correct verbal reasoning test answers.

Verbal reasoning tests are often used as entrance examinations by schools, colleges and universities to select the best applicants. Also a growing number of employers throughout the world are using verbal reasoning tests as part of the selection/recruitment process. Mostly these tests consist of several different components and besides verbal reasoning also other area’s of the individuals knowledge are mapped like for example numeracy, spatial reasoning and in psychometric tests even an extensive psychological profile of the applicant can be formulated.

Please remember that there are no short cuts to learning a language. Practice is the key to success in this section. So spend at least an hour on regular reading and another 30 mins solving questions from the **QuanTech Origin Aptitude book** or from various online sources.

**MINIMAL PAIRS AND HOMOPHONES**

1.  
The collapse of the building was **tragedy (A) / tragic (B).**The Hydrogen bomb had a terrible **effect (A) / affect (B)** on Japan.  
The king of Jhansi died **heirless (A)/ hareless (B).**A. BAA B. AAA C. BBB D. ABA

2.  
The software manual was written in a **turbid (A) / turgid (B)** prose.  
**Lead (A) / Led (B*)*** is a heavy metal and it is poisonous.  
Spectacles work on the **principal (A) / principle (B)** of refraction.  
A. AAB B. BAB C. ABA D. BAA

3.  
The wreck was discovered by an expert in **underwater (A) / under water (B)** photography.  
The window **pane (A) / pain (B)** was made out of solid steel.  
**Taught (A) /** **Taut** **(B)** little thriller that goes the distance.  
A. BAA B. AAA C. AAB D. BBB

4.  
His mind was quite **vacuous (A) / vacant (B).**I need a **xerox (A) / photocopy (B)** of the document.  
My **maid (A) / made (B)** servant does not work properly.  
A. AAA B. BBB C. ABA D. BBA

5.  
They both **complement (A) / compliment (B)** each other well.  
His **presence (A) / presents (B)** was enjoyed by everyone.  
I teach **pupils (A) / students (B)** who aspire for IIMs.  
A. BAB B. AAB C. AAA D. ABB

6.  
The judge gave a **verdict (A) / ruling (B).**It was a warm **summary (A) / summery (B)** evening.  
I can **deduct (A) / deduce (B)** that he is a well read man.  
A. ABB B. BAA C. BBB D. ABA

7.  
People in the Tsunami **affected (A) / effected (B)** areas were hit badly.  
The most common **course (A) / cause (B)** of infections are bugs.  
You always **minimal (A) / minimize (B)** my achievements.  
A. ABB B. BAA C. ABA D. BAB

8.  
It is unhealthy to **oppress (A) / repress (B)** your feelings.  
Put the letter in the **envelope (A) / envelop (B).**One can usually walk into a **safe (A) / vault (B).**A. BAB B. BBA C. AAB D. ABA

9.  
So we can only **commiserate** **(A) / commensurate (B)** with Vinod, whose 1957 royal enfield bullet was stolen over the bank holiday.  
To advice someone means – **Council (A) / Counsel (B)**I pray **everyday (A) / every day (B).**A. BBB B. ABA C. BAA D. AAB

10.  
**Capital** **(A) / Capitol (B)** expenditure must not exceed 20 % of the overall grant awarded.  
Russia still hopes to get compensation for maintaining **composure (A) / composer (B)**.  
Hovering the **cursor(A) / curser (B)** over the map reveals which local plan policies are applicable to the area.  
A. BBB B. ABA C. AAB D. AAA

11.  
In my **opinion (A) / estimation (B)** India has the potential to be great.  
I **participated (A) / partook (B)** in the seminar.  
I was told to **forebear (A) / forbear (B)** violence.  
A. BBB B. AAA C. AAB D. BBA

12.  
**Literal (A) /** **Littoral (B)** drift pathways are recognized, with the divide located close to solent breezes.  
Politicians **canvass (A) / canvas (B)** during elections.  
Will they perch openly in wet **whether (A) /** **weather (B)** or take some shelter?  
A. BAB B. ABA C. BBB D. ABB

13.  
Please remove the **rid (A) / reed (B**).  
My friend Arjun is a **naval (A) / navel (B)** officer.  
To get information means – **Elicit (A) / Illicit (B).**A. AAA B. BAA C. ABB D. BAB

14.  
The Wright brothers made the **right (A) / rite (B)** decision and decided to write down the flight’s amplitude.  
Reshma gave the beggar a **piece (A) / peace (B)** of bread.  
It is not healthy to use hair **dye (A) / die (B**).  
A. BAA B. AAB C. BBA D. AAA

15.  
He came **forward (A) / foreward (B)** to do the job.  
He is always **punctual (A) / punctious (B)** and never late.  
It is good to eat orange **peels (A) / peals (B).**A.AAA B. BBB C. AAB D. BAB

16.  
The **site (A) / sight (B)** 0f snow mountain is exciting.  
Jack the ripper was a **serial (A) / cereal (B)** killer.  
The patient doctor treated his **patients (A) / patience (B**) well.  
A. BBB B. BAA C. AAB D. ABB

17.  
The cattle are **gracing (A) / grazing (B)** in the meadow.  
The **pause (A) / paws (B)** of a leopard are very sharp.  
We traveled **in (A) / via (B)** a jet plane.  
A. BBA B. ABB C. BBB D. AAA

18.  
The queen had a very **inmate (A) / intimate (B)** relationship.  
The article on Vedic philosophy was **legible (A) / readable (B).**The snake **curled (A) / coiled (B)** under the table.  
A. BBA B. AAA C. BAA D. BBB

19.  
Don’t play with fire, you are **libel (A) / liable (B)** to get burnt.  
The ship was travelling at 35 **knots per hour (A) / knots (B).  
Barron (A) / Barren (B)** lands have no value.  
A. AAA B. BBA C. BBB D. AAB

20.  
A road buriedunder an avalanche is **impassable (A) / impassible (B).**We travelled **farther (A) / further (B)** than they did.  
Harshitha takes the shortest **route (A) / rout (B)** from her college to her house.  
A. AAA B. BBA C. ABB D. ABA

ANSWERS:

1. A. BAA

2. B. BAB

3. C. AAB

4. D. BBA

5. C. AAA

6. A. ABB

7. A. ABB

8. C. AAB

9. B. ABA

10. D. AAA

11. C. AAB

12. A. BAB

13. B. BAA

14. D. AAA

15. A.AAA

16. B. BAA

17. A. BBA

18. D. BBB

19. C. BBB

20. A. AAA

MINIMAL PAIRS AND HOMOPHONES

1.  
I found myself on the horns of dilemma (A) / quandary (B).  
During Vietnam war many US draft resistors (A) / resisters (B) fled to Canada.  
He was censured (A) / censored (B) for his unethical behavior.  
A. AAA B. BBA C. AAB D. BBB

2.  
The mule (A) / mole (B) carried a lot of weight.  
The employee gets good perks (A) / jerks (B) if he works well.  
If I was (A) / were (B) there I would have helped you.  
A. AAB B. BBB C. AAA D. BAA

3.  
The servant roles (A) / rolls (B) up the mat.  
Raman was knighted (A) / nighted (B) the English king.  
A horde (A) / hoard (B) of rioters were running.  
A. ABA B. BAB C. BAA D. BBB

4.  
RVCE fest happens once in two years, therefore it is biannual (A) / biennial (B).  
There are discreet (A) / discrete (B) id numbers for everyone in the police department.  
To study carefully means – Pore (A) / Prore (B).  
A. ABA B. AAA C. BAB D. BBA

5.  
Edward n Brad had a dual (A) / duel (B) in the movie.  
A state of vexation caused by a perceived slight or indignity; a feeling of ruffled pride means – Pique (A) / peak (B).  
After the shot the gun recoiled (A) / recalled (B).  
A. BAA B. AAA C. BBA D. ABB

6.  
Aspirin is a panacea (A) / pancreas (B).  
I plan to buy a gold chain of 22 carat (A) / caret (B) purity.  
The files have interpellated (A) / interpolated (B) new notes on music written on the wall.  
A. AAA B. BBB C. AAB D. ABA

7.  
Renuka is an exceptional (A) / exceptionable (B) singer.  
I am loathe (A) / loath (B) to go to the dentist.  
We interviewed perspective (A) / prospective (B) candidate.  
A. BBB B. AAA C. AAB D. BAB

8.  
Sunil typed the correct program (A) / programme (B) in d first attempt.  
There is a strong current (A) / currant (B) in the river.  
A straight (A) / strait (B) connects the Indian ocean and the Bay of Bengal.  
A. BBA B. AAB C. AAA D. BBB

9.  
To rub or scrape means – Upbraid (A) / Abrade (B).  
Aural (A) / Oral (B) perceptions change over the years.  
To be honest, I think they've become too **complacent (A) /** complaisant (B) with what is, in effect, a captive audience for their products.  
A. BAA B. AAA C. BBB D. ABB

10.  
The first shift after I arrived, my nurse's **aid (A) /** **aide (B)** was Antonio.  
Kicking off is the comedy **revue (A) / review (B)** let's kick arts!   
**Brake (A) / Break (B)** lever is fitted in place of the clutch.  
A. AAA B. BAA C. BBB D. ABA

11.  
New leases are likely also to contain conditions **precedent (A) / president (B)** that must be met prior to assignment.  
 **Former(A) / Farmer (B)** president is captured by a foreign power!  
We make unique, hand-made wedding **stationary (A)/** **stationery (B)** from invitations through to ' thank you ' cards.  
A. AAA B. BBB C. BAA D. AAB

12.  
Let (A) / Leave (B) us not fight over it.  
This is a formal (A) / former (B) dinner.  
He made an inflammatory (A) / inflammable (B) speech.  
A. AAA B. BBB C. AAB D. BAA

13.  
Don’t waiver (A) / waver (B) on the issue of ethics.  
The root timbers (A) / timbres (B) are magnificent.  
Silicon (A) / Silicone (B) is the second most abundant element.  
A. ABA B. BAB C. BAA D. ABB

14.  
The battle would have a profound **effect (A) / affect (B)** on the rest of the war.  
He has also written the **forward (A) /** **foreword (B)** to the book.  
Do you know a lion's orange bushy **mane (A) / main (B)**?  
A. AAA B. ABA C. AAA D. BBB

15.  
**Incite (A) / Insight (B)** the mob to stone him to death, he would have to be murdered as secretly as possible.  
He has a flair (A) / flare (B) for writing.  
The school is interested in the holistic (A) / wholistic (B) development of the students.  
A. BBB B. BAB C. ABA D. AAA

16.  
Avoid meet (A) / meat (B) eating for healthy living.  
Prasanna had a good troop (A) / trupe (B) for stage plays.  
There will be ultimate chaos if law and order is flaunted (A) / flouted (B).  
A. BAB B. BBB C. AAA D, ABA

17.  
His mind is quite vacant (A) / vacuous (B).  
The law supersedes all previous (A) / preceding (B) opinions on the subject.  
During droughts fresh water is scarce (A) / rare (B).  
A. AAA B. ABA C. BAB D.ABB

18.  
I made an appeal against the forceful (A) / forcible (B) seizure of my assets.  
Regardless (A) / Disregardless (B) of the issue you should have exercised restraint.  
The advent of transistor launched us into the electronic era (A) / epoch (B).  
A. AAB B. BBA C. AAA D. BBB

19.  
Gamblers indulge in their trade in a den of inequity (A) / iniquity (B).  
While I was waiting a minyan (A) / minion (B) got me tea.  
The surgeons are operating meanwhile (A) / meantime (B) we should pray.  
A. AAA B. BBB C. BAB D. BBA

20.  
This smell makes me nauseated (A) / nauseous (B) .  
The essay includes many quotations (A) / quotes (B) from many politicians.  
HIV Aids in a/an contagious (A) / infectious (B) disease.  
A. BBA B. BAB C. AAB D. ABA

ANSWERS:

1. B. BBA

2. A. AAB

3. C. BAA

4. D. BBA

5. A. BAA

6. C. AAB

7. C. AAB

8. B. AAB

9. A. BAA

10. B. BAA

11. D. AAB

12. A. AAA

13. C. BAA

14. B. ABA

15. D. AAA

16. A. BAB

17. B. ABA

18. C. AAA

19. D. BBA

20. A. BBA

**ANTONYMS:-**

In the question based on antonyms the vocabulary of a person is put to test in more direct manner than in the sentence correction or reading comprehensions questions. In those quests the passage can be thrown some light on the probable meaning of a word, but when you consider a word in isolation then it is bound to be difficult to interpret its meaning. Hence questions on antonyms require knowledge of a wide variety of words. The questions based on antonyms are not merely direct but difficult as well. This complexity lies in the meaning of the word antonyms. It simply means opposites.

Apart from your knowledge there are very few tricks which can help you arrive at the correct answers in these questions.In the questions based on antonyms you shall be given 4 choices of antonyms of a given word. It is your sense of analysis that is required for answering these questions. These tips should be kept in mind when you are answering the questions based on antonyms as they can be of great help.

**TIPS:-**

* Firstly you should try to prepare a list of words for the verbal section as a whole. This should start well before attending interviews. Start writing down every difficult word that you come across.
* This list should contain meaning, synonyms and examples illustrating the usage of the word. This would help you understand how a word is to be used and what all possibilities of usage of the word exit.
* When you prepare such a list you have to keep extra conscious about penning down all the possible synonyms and antonyms. The synonyms and antonyms of a word do not just depend on the word as such but also depends upon the usage of the word. Hence you should keep writing all the possible antonyms and synonyms of a word as you revise.
* This practice will develop in you a keen sense of analysis and you shall exercise your brain to infer the antonyms of a word depending on its application. In fact it is this ability that the test takers want to judge rather than your knowledge. This should be your first step towards preparation.
* Most likely there will be 2 answer options which will be fairly close in meaning. Here you have to keep in mind the way the word is used. Do not jump to conclusions but deliberate on each answer option given.
* In case you cannot spot the antonym of the word, you must form short sentences to infer the most likely meaning of the word. At the same time try to make contradicting sentences using the answer option that seems to be correct to you.
* Reject the irrelevant options right away and contemplate on the ones which are closest to being the antonym of the word in question.
* In case you come across an unfamiliar word you need to concentrate and judge the most likely answer instead of skipping the question. Remember that these questions are the ones in which will help you clear your first round.
* The above tactics required for solving the antonym questions will certainly help you score better in the verbal section.

**Which of these words is most nearly the opposite of the word provided?**

1 .Pit

* 1. group
  2. peak
  3. select
  4. marry

1. Rotund
   1. round
   2. unimportant
   3. thin
   4. dull
2. Talent
   1. ungrateful
   2. silent
   3. show
   4. inability
3. Common
   1. strange
   2. uneasy
   3. quick
   4. fast
4. Brazen
   1. bashful
   2. boisterous
   3. noisy
   4. heated
5. Expect
   1. attend
   2. regret
   3. despair
   4. loathe
6. Malodorous
   1. acrid
   2. pungent
   3. fragrant
   4. delicious
7. Expound
   1. besmirch
   2. confuse
   3. confine
   4. condemn
8. Pique
   1. value
   2. gully
   3. smooth
   4. soothe
9. Abate
   1. free
   2. augment
   3. provoke
   4. wane
10. Dearth
    1. lack
    2. poverty
    3. abundance
    4. foreign
11. Peaked
    1. tired
    2. arrogant
    3. pointy
    4. ruddy
12. Abridge
    1. shorten
    2. extend
    3. stress
    4. easy
13. Kindle
    1. smother
    2. detest
    3. enemy
    4. discourage
14. Meager
    1. kind
    2. generous
    3. thoughtful
    4. copious
15. Philistine
    1. novice
    2. intellectual
    3. pious
    4. debutante
16. Zenith
    1. worst
    2. apex
    3. nadir
    4. past
17. Germane
    1. irrelevant
    2. indifferent
    3. impartial
    4. improvident
18. Irascible
    1. determined
    2. placid
    3. reasonable
    4. pliant
19. Approbate
    1. ingratitude
    2. condemn
    3. dissatisfaction
    4. master
20. Supercilious
    1. unimportant
    2. relevant
    3. serious
    4. meek
21. Improvident
    1. cautious
    2. fortunate
    3. proven
    4. intelligent
22. Demur
    1. embrace
    2. crude
    3. boisterous
    4. falter
23. Fatuous
    1. crafty
    2. frugal
    3. sensible
    4. inane
24. Quiescent
    1. lackadaisical
    2. active
    3. dull
    4. prescient
25. Sartorial
    1. cheerful
    2. sincere
    3. inelegant
    4. homespun
26. Sapient
    1. hunched
    2. strong
    3. simple
    4. simian
27. Mutational
    1. paternal
    2. crepuscular
    3. maritime
    4. marsupial
28. Impecunious
    1. wealthy
    2. cautious
    3. hungry
    4. tardy
29. Valor
    1. cowardice
    2. false
    3. drop
    4. heavy
30. Severe
    1. lenient
    2. cautious
    3. join
    4. one
31. Imaginative
    1. playful
    2. written
    3. small
    4. dull
32. Knowing
    1. wasteful
    2. dense
    3. clumsy
    4. fast
33. Animosity
    1. love
    2. plantlike
    3. barren
    4. tiny
34. Exact
    1. join
    2. sympathetic
    3. incorrect
    4. whole
35. Extravagant
    1. unknown
    2. homebody
    3. punctual
    4. moderate
36. Stamina
    1. weakness
    2. clear
    3. decisive
    4. calmness
37. Rough
    1. tumble
    2. sleek
    3. fast
    4. distant
38. Garner
    1. unravel
    2. mar
    3. squander
    4. tarnish
39. Prodigal
    1. thrifty
    2. secondary
    3. distant
    4. squalid
40. Tacit
    1. grand
    2. dictated
    3. illicit
    4. messy
41. Repudiate
    1. argue
    2. soften
    3. slander
    4. admit
42. Pristine
    1. free
    2. sullied
    3. wide
    4. thorough
43. Concede
    1. sit
    2. withstand
    3. dismiss
    4. elaborate
44. Placate
    1. appease
    2. strip
    3. tremendous
    4. enrage
45. Popular
    1. empty
    2. uncommon
    3. famous
    4. feisty
46. Felicitous
    1. morbid
    2. boorish
    3. inopportune
    4. delightful
47. Austere
    1. lavish
    2. unfavorable
    3. light
    4. devout
48. Insipid
    1. cold
    2. brave
    3. exciting
    4. bashful
49. Wastrel
    1. sober
    2. spendthrift
    3. mute
    4. miser
50. Temperate
    1. Celsius
    2. inordinate
    3. lukewarm
    4. safely
51. Nebulous
    1. cloudy
    2. dim
    3. distinct
    4. desirable
52. Adroit
    1. clumsy
    2. left
    3. diplomatic
    4. unpersuasive
53. Mite
    1. weakness
    2. tend
    3. bulk
    4. drive
54. Supernal
    1. nocturnal
    2. special
    3. despicable
    4. hellish
55. Reprobate
    1. sage
    2. elevated
    3. possess
    4. dismiss
56. Specious
    1. genuine
    2. logical
    3. common
    4. deliberate
57. Effete
    1. conquer
    2. proper
    3. prosperous
    4. civilized
58. Rabble
    1. order
    2. clear
    3. open
    4. union
59. Protean
    1. unformed
    2. unchanging
    3. elaborate
    4. selective
60. Vertiginous
    1. horizontal
    2. litigious
    3. constant
    4. lowly
61. Parvenu
    1. wallflower
    2. highway
    3. melody
    4. plan
62. Lapidarian
    1. square
    2. secular
    3. pasture
    4. inelegant
63. Tragic
    1. boring
    2. mysterious
    3. comic
    4. incredulous
64. Able
    1. willful
    2. inept
    3. careful
    4. feasible
65. Tireless
    1. exhausted
    2. unfailing
    3. broke
    4. driving
66. Wean
    1. flourish
    2. flush
    3. strengthen
    4. addict
67. Haste
    1. delay
    2. frugal
    3. debauchery
    4. solemnity
68. Malice
    1. goodwill
    2. bitterness
    3. coddle
    4. distress
69. Permanent
    1. loose
    2. fierce
    3. fleeting
    4. unhappy
70. Attain
    1. crave
    2. lose
    3. harbor
    4. credit
71. Taint
    1. cheer
    2. worry
    3. clear
    4. purify
72. Belittle
    1. plain
    2. detract
    3. magnify
    4. torment
73. Tedious
    1. unwavering
    2. frightening
    3. horrible
    4. pleasurable
74. License
    1. restriction
    2. allow
    3. join
    4. gather
75. Frivolous
    1. pious
    2. inexpensive
    3. serious
    4. contemptuous
76. Plain
    1. meadow
    2. ugly
    3. lovely
    4. unadorned
77. Denounce
    1. covet
    2. condemn
    3. blame
    4. deplore
78. Contrary
    1. urbane
    2. agreeable
    3. unpleasant
    4. despicable
79. Glower
    1. prairie
    2. smile
    3. raise
    4. throw
80. Exacting
    1. upright
    2. lenient
    3. sober
    4. general
81. Curtail
    1. remain
    2. detain
    3. placate
    4. prolong
82. Eminent
    1. imminent
    2. obscure
    3. retire
    4. unsure
83. Abdicate
    1. deny
    2. usurp
    3. blame
    4. renounce
84. Indolent
    1. industrious
    2. complimentary
    3. native
    4. smooth
85. Fortuitous
    1. undefended
    2. gratuitous
    3. deliberate
    4. impoverished
86. Disparage
    1. hesitate
    2. settle
    3. trouble
    4. applaud
87. Dubious
    1. reliable
    2. pleasing
    3. rhythmic
    4. careful
88. Interdict
    1. continue
    2. abstain
    3. wallow
    4. sanction
89. Mendacious
    1. bashful
    2. capacious
    3. veracious
    4. quiet
90. Lassitude
    1. release
    2. demure
    3. fatigue
    4. vigor
91. Verdant
    1. dishonest
    2. suspicious
    3. moldy
    4. arid
92. Ductile
    1. unfeeling
    2. arrogant
    3. precious
    4. rigid
93. Asperity
    1. moistness
    2. amenity
    3. sour
    4. generosity
94. Epicurean
    1. ascetic
    2. slovenly
    3. imprecision
    4. providential
95. Traduce
    1. deduce
    2. laud
    3. presuppose
    4. converge
96. Bridle
    1. heckle
    2. dissuade
    3. vent
    4. persist
97. Spare
    1. rotund
    2. pacify
    3. impolite
    4. impose
98. Proclivity
    1. calm
    2. antipathy
    3. desire
    4. dearth

100. Vituperation

* 1. alacrity
  2. alertness
  3. reparation
  4. acclaim

101. Gambol

* 1. trudge
  2. hedge
  3. crone
  4. misplace

102 Quixotic

* 1. simple
  2. staid
  3. passé
  4. unpredictable

103. Lachrymose

* 1. quick
  2. loquacious
  3. blithe
  4. plentiful
  5. fusing
  6. broke
  7. critical

1. .Disconsolate
   1. joyful
   2. inhospitable
   3. anguished
   4. rude
2. . Brusque
   1. cold
   2. opulent
   3. gracious
   4. suspect
3. . Callow
   1. kind
   2. urbane
   3. sensitive
   4. gentle

**PARA-JUMBLES**

* **WHAT IS A PARA-JUMBLE?**

As the name of the topic suggests, we encounter jumbling here. But the name of the topic is in a way misleading, because we are not jumbling paragraphs here but we are actually straightening out jumbled sentences in a paragraph.  This type of question is actually pretty common in Aptitude tests and CAT and in recent years, question setters have shown quite a propensity for these questions.

* **WHAT ARE THE KEY SKILLS REQUIRED TO SOLVE A PARA-JUMBLE QUESTION?**

**Understanding the topic of the paragraph:** One should be able to recognize what is being talked about, because the subject of individual sentences forms the most important clue for establishing links between various sentences.

**Understanding the information flow and approach of author:** The second thing that is important is to identify the information flow that has been adopted by the author.   
What is his exact purpose in the paragraph?  
Is he explicating something or is he criticizing something?   
Being able to identify his purpose in the paragraph will obviously help us to establish the order of sentences.

A pre-requisite to develop the two skills above is to possess the qualities of a **Good Reader**. In any case, you would have realized by now that the above qualities are actually the product of possessing a good reading habit. So kindly keep in mind that the more the exposure you provide yourself to varied reading material, the more easily you will be able to answer para-jumblequestions.

* **A SIMPLE STARTER**

Arrange the given sentence in a coherent manner:

1. Roger Federer is the greatest tennis player of all time.
2. His favourite surface is the grass.
3. He is ambidextrous.
4. He can play forehands with his right hand as well as left hand.
5. But he can play the back hand only with his right hand.
6. And his favourite tournament is the Wimbledon.

1.ABFCDE 2.ACDEBF 3.BFCDEA 4.CDEBFA

From the above options can you deduce the answer?  
It will be tough to find an answer, as this question does not have one but two valid answers (ABFCDE and ACDEBF).  
This is the ambiguity that para-jumbles are stepped in.

This question does not have a definite answer but the 3 things we are sure about in this paragraph are:  
a. Sentence A begins the paragraph.  
b. BF and CDE are sentences that   
c. This question is based on the opening sentence and it is the most important strategy employed in solving para-jumble questions.

* **WHAT ARE THE GENERAL STRATEGIES FOR SOLVING PARA-JUMBLE QUESTIONS?**

A number of points can be kept in mind while solving a para-jumble question. 5 of these have been listed here. Kindly keep in mind that these would have to be applied in close coordination with one another in most cases, and individual application of these might not solve the question.

**STRATEGY 1: Identifying the opening sentence**The first thing that you need to do is to identify the opening sentence of the paragraph. If you can do that, then you will be able to fix at least one sentence in its position.

**STRATEGY 2: Identifying the closing sentence**The second strategy to solve a para-jumble question is to identify the sentence with which the paragraph could possible close. This is actually a logical extension of the above point only and forms a continuation of the same.

**STRATEGY 3: Identifying mandatory pairs**One of the most important methods to solve a para-jumble is by the way of identifying mandatory pairs. These are basically groupings which will occur in a defined order. Once you identify such pairs, all you need to do is co-relate them with the answer options, voila, your question is solved.

**STRATEGY 4: Identifying transition words**Transition words imply a shift from one idea to another in a paragraph. They function like logical connectors in sentences. Observing the transition words found in a sentence will often lead you to the correct mandatory pair for the question. In fact, from our perspective, that is the role of transition words, to help us in identifying mandatory pairs.

A list of commonly used transition words is:  
also, again, as well as, besides, furthermore, in addition, likewise, moreover, similarly, consequently, hence, otherwise, subsequently, therefore, thus, as a rule, generally, for instance, for example, for one thing, above all, aside from, barring, besides, in other words, in short, instead, likewise, on one hand, on the other hand, rather, similarly, yet, but, however, still, nevertheless, first of all, to begin with, at the same time, for now, for the time being, in time, later on, meanwhile, next, then, soon, the meantime, later, while, earlier, simultaneously, afterward, in conclusion, with this in mind, after all, all in all, to sum up.

**STRATEGY 5: Identifying pronoun antecedents**Following are some of the personal pronouns that are used: ‘he, she, it, him, her, they, you, your etc’. Just keep in mind that personal pronouns always refer to a person, place or thing etc. Therefore the use of personal pronoun in a sentence can imply that the person or thing being referred to was mentioned in a previous statement. You would have realized by now what this would do for so. Obviously, this can provide us with our all important mandatory pair.

**Parajumbles**

Directions: In each of the following questions there are sentences that form a paragraph. However, these sentences must be rearranged in their correct logical order. Select the best answer choice which best un-jumbles the paragraph.

**Q1.   
A.** For example, when the early homo-sapiens left their homes in search for food, they would risk death and injury from dangerous animals.

**B.** Throughout human history, the universe has presented an innumerable amount of dangers to explorers.

**C.** Today, many adventure enthusiasts seek to find the thrills and adrenaline rush which their ancestors had experienced in the wild.

**D.** The tradition of humans going out to experience the dangers of unknown nature still exists.  
A. ABCD B. BADC C. DABC D. CBAD

**Q2.**A. Mavericks such as Bill Gates of Microsoft and Howard Schultz of Starbucks, who may not have fit easily into established companies, succeeded at building their own unique empires.  
B. The free market often seems better at recognizing and promoting individual leaders than large organizations.  
C. With all these emerging leaders, the time has come for small companies to enjoy some time in the spotlight.  
D. They, and others like them, stand out as heroes in the business world.  
E. Indeed, a research company has found that most of the job growth in the United States this decade has come from small companies.  
A. EBACD B. BACED C. CBADE D. BADCE

**Q3.**A. This theory tries to eliminate the office politics and uneven power distribution.  
B. A theory called emergent leadership introduces some of the dynamics of the free-market system to corporate management.  
C. In other words, we should to let creativity manage itself.  
D. It does so by encouraging companies to recognize and nurture the creativity inherent in their employees.  
E. Therefore, we can foster a democratic, rather than autocratic, approach to problem solving.  
A. CBADE B. DAECB C. BADCE D. DACEB

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Q4.   
A. That means letting go of the old command-and-control model in favour of a more flexible approach.  
B. To compete in today’s business world, large companies need to provide workers with an environment where they can make their own decisions and create their own visions.  
C. Giving workers unlimited power, with no rules to hold them in check, is foolish.  
D. Yet larger corporations have a lot at stake.  
E. Employees need to follow a meaningful set of guidelines designed to minimize risks while encouraging creativity  
A. CBDAE B. BADCE C. DCBAE D. ABCED

Q5.   
A. Fewer still modify the map of the world.   
B. Few individuals significantly alter the course of history.  
C. Hardly anyone can be credited with creating a nation-state.  
D. These great feats which he achieved contributed to Pakistan decision to claim his birthday a national holiday. E. Mohammed Ali Jinnah did all three.   
A. EBACD B. BACED C. CEDAB D. ECADB

**Q6.**A. 1971 war changed the political geography of the subcontinent  
B. Despite the significance of the event . there has been no serious book about the conflict  
C. Surrender at Dacca aims to fill this gap  
D. It also profoundly altered the geo-strategic situation in South-East Asia  
A. ACBD  B. CADB  C. BADC  D. ADBC

**Q7.**A. Thus begins the search for relief: painkillers, ice, yoga, herbs, even surgery  
B. Most computer users develop disorders because they ignore warnings like tingling fingers, a numb hand or a sore shoulder  
C. They keep pointing and dragging until tendons chafe and scar tissue forms, along with bad habits that are almost impossible to chage  
D. But cures are elusive , because repetetive stree injuries present a bag of ills that often defy easy disgnosis.  
A. BDAC  B. BADC  C. BCAD  D. ABCD

**Q8**.  
A. Then two astronomers-the German, Johannes Kepler, and the Italian, Galileo Galilei-started publicly to support the Copernican theory, despite the fact that the orbits it predicted did not quite match the ones observed.  
B. His idea was that the sun was stationary at the centre and that the earth and the planets move in circular orbits around the sun.  
C. A simple model was proposed in 1514 by a Polish priest, Nicholas Copernicus.  
D. Nearly a century passed before this idea was taken seriously  
A. CDBA  B. CBDA  C. BCAD  D. CADB

**Q9.**A. If you are used to having your stimulation come in from outside, your mind never develops its own habits of thinking and reflecting  
B. Marx thought that religion was the opiate, because it soothed people’s pain and suffering and prevented them from rising in rebellion  
C. If Karl Marx was alive today, he would say that television is the opiate of the people.  
D. Television and similar entertainments are even more of an opiate because of their addictive tendencies  
A. BACD  B. ADBC  C. BDCA  D. CBDA

Q10.

A. By the time he got to Linjeflug four years later, he had learned many lessons, in fact, he began his second stint as top dog by calling the entire company together in a hanger and asking for help, a far cry from his barking out commands just 48 months back.  
B. At SAS, he arrived at a time crisis.  
C. This book is chock-a-block full of intrusive stories and practical advice, describing Carton’s activities at Vingresor (where he assumed his first presidency at age 32), Linjeflug, and SAS in particular.  
D. He began at Vingresor as an order giver, not a listener – neither to his people nor to his customers and made every mistake in the book.  
A. BADC  B. BACD  C. CBAD  D. CDAB

Q11.  
A. The potential exchanges between the officials of IBBF and the Maharashtra Body-Building Association has all the trappings of a drama we are accustomed to.  
B. In the case of sportspersons, there is room for some sympathy, but the apathy of the administrators, which has even led to sanctions from international bodies, is unpardonable.  
C. A case in the point is the hefty penalty of US $10,000 slapped on the Indian Body-Building Federation for not fulfilling its commitment for holding the Asian Championships in Mumbai in October.  
D. It is a matter of deep regret and concern that the sports administrators often cause more harm to the image of the country than sportsmen and sportswomen do through their dismal performances.  
A. CABD  B. DBCA  C. DABC  D. CDBA

Q12.  
A. Its cargo consisted of 38 sacks of spices and Magellan himself had been hacked to pieces on the beach of Mactan in the Phillipines.  
B. So contrary to popular beliefe it was the crew of the Victoria who were the first men to have sailed around the globe.  
C. In spetembre 1522 Victoria , the sole survivor of the Armada, limped into the spanish port San Lucar , manned by a skeleton crew of 15, so weak they could not talk.  
D. In septembre 1519 the Armada de Molucca of five ships and 250 sailors has set out from San lucar de Barrameda under the command of Fernando de Magellan.  
E. It was to sail to the spice islands of the Malayan Archipelago where they were to excahnge an assortemnt of bells , mirrors , and scissors for cinnamon and cloves.  
A. DECAB  B. AEDCB  C. CDEAB  D. DEABC

Q13.  
A. What came out was very large garland made out of currency notes.  
B. The unsuspecting governor opened the box in full view of the gathering.  
C. When the RBI governor came to inaugrate the new printing press , the local unit of the BJP handed him a gift wrapped box.  
D. There was a twist – the notes were all as tattered as notes could get.  
A. DACB  B. CABD C.CBAD  D. DCAB

Q14.  
A. But in the industrial era destroying the enemy’s productive capacity means bombing the factories which are located in the cities.  
B. So in the agrarian era, if you need to destroy the enemy’s productive capacity, what you want to do is bum his fields, or if you’re really vicious, salt them.  
C. Now in the information era, destroying the enemy’s productive capacity means destroying the information infrastructure.  
D. How do you do battle with your enemy?  
E. The idea is to destroy the enemy’s productive capacity, and depending upon the economic foundation, that productive capacity is different in each case.  
F. With regard to defence, the purpose of the military is to defend the nation and be prepared to do battle with its enemy.  
A. FDEBAC  B. FCABED  C. DEBACF  D. DFEBAC

Q15.  
A. The situations in which violence occurs and the nature of that violence tends to be clearly defined at least in theory, as in the proverbial Irishman’s question: ‘Is this a private fight or can anyone join in?’  
B. So the actual risk to outsiders, though no doubt higher than our societies, is calculable.  
C. Probably the only uncontrolled applications of force are those of social superiors to social inferiors and even here there are probably some rules.  
D. However binding the obligation to kill, members of feuding families engaged in mutual massacre will be genuinely appalled if by some mischance a bystander or outsider is killed.  
A. DABC  B. ACDB  C. CBAD  D. DBAC

**Q16.**A. The Supreme Court in various judgements in the last 25 years has further emphasized this.  
B. The Right to Information is derived from Article 19 of the Constitution.  
C. The RTI Act was passed in May 2005 and came into force in October 2005.  
D. It is intended to give relevant information about the government and its institutions.  
E. This Act enables citizens to obtain information without going to court each time  
**A. BDCAE B.BDACE C. BDECA D. AECBD**

**Q17.**A. Riots had to be contained, food shortages to be overcome, princely states (as many as five hundred) to be integrated, refugees (almost ten million) to be resettled.  
B. It is safe to say that no modern politician had anywhere near as difficult a job as Jawaharlal Nehru’s.  
C. At Independence, the country he was asked to lead was faced with horrific problems.  
D.This, so to say, was the task of fire-fighting; to be followed by the equally daunting task of nation-building.  
**A. BCAD B. BACD C.ABDE D. DCBA**

**Q18.**A.This is problematic both theoretically and practically, because it has grave consequences for the way society views and treats the fundamental issues of women's lives.  
B. Crimes such as these against any group other than women would be recognized as a civil and political emergency as well as a gross violation of the victims' humanity.  
C. Significant numbers of the world's population are routinely subject to torture, starvation, terrorism, humiliation, mutilation, and even murder simply because they are female.  
D. Yet, despite a  clear record of deaths and demonstrable abuse, women's rights are not commonly classified as human rights.  
A. ABDC B. BACD C. CBDA D. CBAD

Q19.  
A. Such killings came to have social acceptance among the lower classes of society.  
B. The PWG used violence as a tactic to motivate and encourage the lower cadres.  
C.The first such brutal murder of an exploitative landlord was in 1978 when one Pitambar Rao was killed publicly.  
D. Social inequalities, the widening gulf between the rich and the poor, exploitation by the higher castes in Andhra Pradesh and more importantly the loss of self-respect by the downtrodden helped in establishing Kondappally Seetharamiah's Peoples’ War Group (PWG) in the 1960s.  
**A. BCAD B. DBAC C.ADBC D. DBCA**

**Q20.**A. Central planning has failed the world over.  
B. Hope cannot be dropped from helicopters.  
C. The people, especially in remote areas, must have the power and resources to script their future.  
D. It needs to be built though good governance at the local level.  
**A. DBAC B. BDAC C. ACDB D.BADC**

**PARAJUMBLES**

SET 1 ANSWERS:

1. B. BADC

2. D. BADCE

3. C. BADCE

4. B. BADCE

5. B. BACED

6. D. ADBC

7.C. BCAD

8. B. CBDA

9.  D. CBDA

10.  D. CDAB

11. B. DBCA

12. A. DECAB

13. C.CBAD

14. A. FDEBAC

15. A. DABC

16. **B.BDACE**

17. **A. BCAD**

18. C. CBDA

19. **D. DBCA**

20. **B. BDAC**

**Para jumbles**

Directions: In each of the following questions there are sentences that form a paragraph. However, these sentences must be rearranged in their correct logical order. Select the best answer choice which best un-jumbles the paragraph.

**Q1.  
A. Jinnah’s love of the law was too great, however, to allow him to adopt the revolutionary method of Satyagraha.  
B. He did this in order to protest against the uprooting of “fundamental principles of justice” by the government’s incompetent bureaucracy.  
C. Jinnah was the first member of the Viceroy’s Council to resign.**

**D. This method, launched by Mahatma Gandhi, was in protest against Dyer’s subsequent brutal massacre of unarmed peasants in Amritsar’s Jallianwala Bagh that dark April of 1919.  
E. Though Jinnah tried at Nagpur’s Congress session in 1920 to argue against Gandhi’s revolutionary resolutions in fear that they would lead to more violence, he was outvoted and heckled from the panel, leaving the Congress to Gandhi’s undisputed leadership.  
A. BDCAE B. DCEBA C. EBADC D. CBADE**

**Q2.   
A. When identity is thus ‘defined by contrast’, divergence with the West becomes a central focus.  
B. Indian religious literature such as the Bhagavad Gita or the Tantric texts which appear to differ from the typical secular ‘Western’ writings, elicits much greater interest in the West than other Indian writings, including India’s long history of heterodoxy.  
C. There is a similar neglect of Indian writing on non-religious subjects, from mathematics, epistemology and natural science to economics and linguistics.  
D. Through selective emphasis that point out differences with the West, other civilizations can, in this way, be redefined in as exotic and charming, bizarre and terrifying, or simply strange and engaging.  
E. The exception is the Kamasutra, in which western readers have managed to cultivate an interest.  
A. BCEDA B. DEABC C. BDECA D. BDACE**

**Q3.  
A. When civilizations are categorized today, individual freedoms and rights are often used as a classificatory device.  
B. For example, freedom and tolerance both get support from Aristotle (even though only for free menâ€”not women and slaves).  
C. It is, of course, easy to find the advocacy of particular aspects of individual liberty in Western classical writings.  
D. However, we can also find the championing of tolerance and freedom in non-Western authors such as emperor Ashoka in India.  
E. These are often seen as part of the ancient heritage of the Western world, not to be found elsewhere.  
A. CEABD B. BADEC C. BACDE D. AECBD**

**Q4.  
A. But the idea that I should be a teacher and a researcher of some sort did not vary over the years.  
B. I am used to thinking of the word “academic” as meaning “sound,” rather than the more old-fashioned dictionary meaning: “unpractical,” “theoretical,” or “conjectural.”  
C. For example, between the ages of three and seventeen, I seriously flirted with Sanskrit, mathematics, and physics, before settling for the eccentric charms of economics.  
D. My planned field of study varied a good deal in my younger years.  
E. That is why I have always been favourable towards the profession of teaching.  
A. DBAEC B. DCABE C. ABCED D. BAECD**

**Q5.  
A. After doing so, the heart of your cash flow will be strong and healthy.  
B. Cash is your business’s lifeblood.  
C. If managed poorly, then your company could go into cardiac arrest.  
D. To prevent your business from suffering heart attacks, you should learn to manage cash flow in a well thought-out manner.  
E. Several ways to do this is by generating a project rate of returns as well as determining possible problems with liquidity.  
A. ABECD B. CBADE C. ABDEC D. BCDEA**

**Q6.**A. Like Hobbes, he also uses the hypothetical State of Nature as a basis for his arguments.  
B. It is a state of peace and liberty for all.  
C. Locke’s social contract theory formed the basis of the natural rights theory as we interpret it today.  
D. However, his version of this condition is only pre-political and unlike Hobbes, not pre-moral.  
**A. CADB B.CABD C. ADBC D. ADCB**

**Q7.**A.The debate is what the revolution will replace the current reality with.  
B. The debate is not whether Indian society needs a revolution or not.  
C. These are too important to be left blunt in the hands of distant leaders and underdeveloped institutions.  
D. To hasten that revolution and what it brings, the rest of us only have very few, yet powerful, weapons like democracy, good governance and rule of law.  
A. BDAC B. BDCA C. ADCB D. CBAD

**Q8.**A. Decisions to mix leprosy and non–leprosy patients in the same ward should be treated with caution as there are still much left to be done.  
B. Prejudices however exist with regards to sharing facilities at a personal level with the leprosy affected persons.  
C. There is no reluctance to attend the hospital due to stigma against leprosy.  
D. A study revealed the beliefs and attitudes of non–leprosy respondents can be described as fairly good.  
A. BACD B. DABC C. DCBA D. DBCA

**Q9.**A. His political base, though, had little appetite for increasing the United States’ presence in Afghanistan.  
B. The number of violent incidents had risen over 35 percent in Kabul, and over 75 percent in southern Afghanistan between 2007 and 2008, while civilian casualties resulting from fighting more than doubled in the two years after 2006.  
C. The current US government inherited a rapidly deteriorating security situation in Afghanistan from the George W Bush presidency.  
D. During his presidential campaign, Barack Obama repeatedly framed the Afghanistan war as the "good" war, contrasting it to the unpopular war in Iraq, which was widely perceived in the United States as an avoidable conflict.  
A. ABDC B. CDBA C.BADC D. CBAD

**Q10.**A. Finally, Afghanistan is often believed to be irredeemable due to its widespread illiteracy.  
B. A big myth in Afghanistan is that democracy or stable government is incompatible with tribal values.  
C. This line of reasoning is reminiscent of such notions of democracy being inconsistent with "Asian values", a fiction that has only too recently been exposed as such.  
D. But India, which admittedly benefitted from stronger institutions inherited from decades of British rule, managed to forge a successful pluralistic democracy with a population that was just one-fifth literate in 1947.  
A. ABDC B. BCAD C. CADB D. DBCA

**Q11.**A. The critics are not wrong: with its song and dance routine; muddled story lines; and escapist fare, popular cinema of which Bollywood fantasy dramas represent an apogee frequently bear little semblance to reality.  
B. Unrealistic and simplistic as Bollywood may be, its exaggerations are still reflective of the prevailing social norms.  
C. The evolution of Amitabh Bachchan, easily the tallest Bollywood star over the last few decades, reflects the changing milieu of Hindi cinema, which, in turn, draws inspiration from how the Indian society has evolved.  
D. Popular Cinema in general and the Indian film industry in particular, is frequently accused of caricature.  
A. DABC B. DBCA C. BCAD D. ABDC

**Q12.**A. Right to Equality provides for equal access to public places like shops, hotels, places of entertainment, wells, bathing ghatsand places of worship.  
B. This right is very important because our society did not practice equal access in the past.  
C. There cannot be any discrimination in this access on the basis of caste, creed, colour, sex, religion, or place of birth.  
D. It also prohibits any discrimination in public employment on any of the above mentioned basis.  
A. ACBD B. ACDB C. BCDA D. DBCA

**Q13.**A. The provisions of the 73rd amendment were not made applicable to the areas inhabited by the Adivasi populations in many States of India.  
B. Therefore, the new act protects the rights of these communities to manage their resources in ways acceptable to them.  
C. In 1996, a separate act was passed extending the provisions of the Panchayat system to these areas.  
D Many Adivasi communities have their traditional customs of managing common resources such as forests and small water reservoirs, etc.  
A. DBCA B. ACDB C. CDBA D. ACBD

**Q14.** A. There are more than 20 major languages and several hundred minor ones and it is the home of several major religions.  
B. There are several million indigenous peoples living in different parts of the country.  
C.  In spite of all these diversities we share a common land mass.  
D.  India is a land of continental proportions and immense diversities.  
A. DCAB B. BCAD C. ADBC D. DCBA

**Q15.**A. A culture of trust, cooperation, mutual respect and restraint helps federations to function smoothly.  
B. Real politics, culture, ideology and history determine the actual working of a federation.  
C. Political parties also determine the way a constitution would work.  
D. If any single unit or State or linguistic group or ideology comes to dominate the entire federation it could generate a deep resentment among people or its units not sharing the dominant voice.  
A. BCAD B. ABCD C. ABDC D. BCDA

**Q16.**A. For example, physicists have what is called a Big-bang theory to explain how the universe came to be formed.  
B  Psychology influenced by Descartes and later on by the developments in physics has grown by following what is called a hypothetico-deductive model.  
C. The model suggests that scientific advancement can take place if you have a theory to explain a phenomenon.  
D. Theory is nothing else but a set of statements about how a certain complex phenomenon can be explained with the help of propositions which are interrelated.  
A. DBCA B. DBAC C. BCAD D. BCDA

**Q17.**A. Wundt was interested in the study of conscious experience and wanted to analyse the constituents or the building blocks of the mind.  
B. It grew out of ancient philosophy concerned with questions of psychological significance.  
C. Psychology as a modern discipline, which is influenced to a large extent by Western developments, has a short history.  
D. But the formal beginning of modern psychology is traced back to 1879 when the first experimental laboratory was established in Leipzig, Germany by Wilhelm Wundt.  
A. CADB B. CBDA C. CABD D. ADBC

**Q18.**A. Albus never attempted to deny that his father (who was to die in Azkaban) had committed this crime; on the contrary, when I plucked up courage to ask him, he assured me that he knew his father to be guilty.  
B. Some, indeed, were disposed to praise his father's action and assumed that Albus too was a Muggle-hater.  
C. They could not have been more mistaken: As anybody who knew Albus would attest, he never revealed the remotest anti-Muggle tendency.  
D. Beyond that, Dumbledore refused to speak of the sad business, though many attempted to make him do so.  
A. DBCA B. DACB C. CBDA D. CDBA

**Q19.**A. Theories of complex social formation have permitted legal feminists to analyze with more nuance and contextually the interplay of factors that contribute to women’s disempowerment.  
B. The constructivist turn in feminist theorizing has sparked difficult yet illuminating debates among feminist legal theorists.  
C. These theories have pressed feminists to address not only sex inequality but the bipolar understanding of gender that constrains and normalizes perceived differences between women and men.  
D. Yet the premises of more thoroughgoing versions of constructivism have also come into frank conflict with some of the liberal premises underpinning much of feminist legal theory.  
A. BACD B. CDBA C. ACBD D. BCAD

**Q20.** A. Indian society has tried very hard to sweep the issue of child sexual abuse under the carpet.  
B. In a democracy, unless the society recognizes the need for a law to regulate an issue, the issue is not addressed.  
C. But the firststep is obviously an acknowledgement of the issue itself.  
D. It starts with the family hushing up instances of sexual abuse of children within the family, resulting in underreporting of the issue and a gross underestimation of the gravity of the problem.  
A. BDAC B. BADC C. ABDC D. ACDB

**PARAJUMBLES**

**SET 2 ANSWERS:**

1. **D. CBADE**

2. **A. BCEDA**

3. **D. AECBD**

4.**B. DCABE**

5.**D. BCDEA**

6.**A. CADB**

7. C. ADCB

8. B. DABC

9. A. ABDC

10. D. DBCA

11. A. DABC

12. B. ACDB

13. C. CDBA

14. D. DCBA

15. B. ABCD

16. A. DBCA

17. C. CABD

18. B. DACB

19. D. BCAD

20. A. BDAC

Passage 1

1. The answer is supported by the paragraph beginning “The student of human history

can draw on many more natural experiments than just comparisons among the five

inhabited continents. Comparisons can also utilize large islands that have developed

complex societies in a considerable degree of isolation ….. as well as societies on

hundreds of smaller islands and regional societies within each of the continents.”

Option 1 and 3 say the same thing. Option 1 is eliminated because the ‘difference’

mentioned in option 1 is explained in 3. Hence option 3 scores over option 1.

Option 4 is eliminated because ‘the good comparison to large islands’ is

inconsequential to the student of history. The student is more interested in knowing

how endowments and size affect societies – as a natural experiment.

Option 5 is eliminated because the paragraph does says nothing about arousing

‘curiosity about how humans evolved’ as stated in the option.

Hence, the correct answer is option 3.

2.The answer is directly supported by “The student of human history can draw on

many more natural experiments than …. the five inhabited continents. Comparisons

can also utilize large islands ….. as well as societies on hundred of smaller islands

and regional societies within each of the continents”. The implication is expressed in

option 3.

Option 1 is false in “not conducting…” – this is not true.

Option 2 is false – the passage nowhere says that large islands provide great

opportunities for natural experiments” – they are one of the opportunities among

many.

The problem faced by historians is not ‘unique’ as stated in option 4. The passage

explicitly states that it is faced by several other studies mentioned in the first

sentence itself.

There is no data in the passage (even by implication) about cultural anthropologists.

Hence option 5 too is wrong.

Hence, the correct answer is option 3.

3. Statement A is incorrect because of the phrase, ‘returned to home’. The correct

usage is ‘returned home’.

Statement B is incorrect because the idiom is get one’s hands on and not hand on.

Statement C is correct.

Statement D is incorrect because there should be a hyphen or a comma after a

Shaliach. (a Shaliach – a sort of recruiter to Minnepolis.) “a sort of” though rather

informal, is correct usage.

Statement E is correct.

Hence, the correct answer is option 1.

Passage 2

1. It is not a difficult choice, when one understands the concluding sentence of a

paragraph should fulfill the purpose for which the paragraph is written leaving

no loose ends that may require further clarification. The first three sentences of

the paragraph establish this purpose. Then the writer provides certain example

situations.

Option 3 concludes the paragraph smoothly – the writer tells us what his

‘alleged’ rules are. In consistence with the conversational tone of the paragraph,

the writer does not assert even his explanation with undue vigor in the last

sentence.

Option 1 is contrary to the purpose of the paragraph because ‘guidance base don

applied research’ makes his actions more binding on others than are rules.

Options 2 and 4 are also eliminated for the same reason.

Option 5 talks about one of the examples and not related to the purpose of the

paragraph.

Hence, the correct answer is option 3.

2. All options begin with “as a result”. One has the freedom to ignore this or to work

intensely on this phrase. ‘As a result’ indicates that one needs to discover the

immediate consequence of the details given in the paragraph.

Option 4 is the first to get eliminated as it is not a consequence at all.

Options 1 and 2 are not consequences but what may currently exist in the

industry; as explained in the paragraph.

Option 3 brings in ‘adversary’ and ‘ally’. This is hardly sustained by the data in

the paragraph, unless one justifies them. If one justifies them the option gets

eliminated, because again, it is not a consequence, but what exists there.

The direct consequence is stated briefly in option 5 bringing the paragraph to a

smooth closure as no further clarification is required. “As a result” has to be

worked upon and not ignored.

Hence, the correct answer is option 5.

3. The word 'professes' towards the end is significant. ‘However’ is constant in the

options. One needs to pick out the best contrast.

Options 3 and 4 get easily eliminated as they contain ‘history’, which will require

a lot of explanation in the context. The last sentence will not contain any new

ideas requiring further clarification.

Option 5 is eliminated because of ‘penchant’ – the paragraph does not make such

assertions.

For the same reason, the ‘intention’ in option 1 gets it eliminated.

The word 'professes’ in the paragraph directly leads to the ‘veil’ and ‘understood’

in option 2.

Hence, the correct answer is option 2.

4. 'As a result' is a constant in the options. One needs identify the direct

consequence of what is stated in the paragraph. Also establish the purpose of the

paragraph by looking at the first and the last sentences given to you. ('Age has …'

and 'however, as people become older...').

Options 3 and 5 get eliminated most easily. Neither of these options is a

consequence of the curvilinear relationship between age and exploitation of

opportunity.

The reluctance to “experiment with new ideas” (options 1 and 2) does not

include the ‘entrepreneurial opportunity” in the paragraph.

Option 4 includes all this and is specific to the ideas presented in the paragraph

and is a direct consequence.

Hence, the correct answer is option 4.

Passage 3

1.

Option 1 is factually correct and answers the question how rather than what. Options 2, 3 and 5 are partial in answering the question what the author is trying to illustrate.

Option 4 is supported by the following: “To discover the relation between rules, paradigms, and normal science, consider first how the historian isolates the particular loci of commitment that have been described as accepted rules.” (at the beginning of the passage) and “Normal science can be determined in part by the direct inspection of paradigms, ... formulation of rules and assumption.” (Towards the end of the passage). This, then is the purpose of the passage.

Hence, the correct answer is option 4.

2.

The meaning given in option 3 to ‘loci of commitment’ is explicitly stated in the passage. The passage says: the historian tries to isolate the ‘particular loci of commitment’ at a given time and then explains what he is trying to find out and concludes by saying ‘these are the community’s paradigms’. Thus, loci of commitment are the same as the paradigms.

None of the other options are worth evaluating because they are further in the passage and not related to the question.

Hence, the correct answer is option 3.

3.

Option 5 is a mere definition of the term ‘paradigm’ as used in the passage. Paradigm in the context means a set of broad guidelines accepted by a group of researchers. They are not as rigid as rules. They are not very concrete and differ from community to community.

Option 1 is easily eliminated because of “entirely define’ which is too drastic. Option 2 is eliminated because of ’would benefit’ – nothing in the passage even implicitly supports this.

Option 3 is contrary to the passage in the part referring to Newton, Lavoisier, Maxwell, and Einstein.

Option 4 – ‘the choice of isolation mechanism’ is not discussed in the passage, nor is it even indirectly referred to.

Hence, the correct answer is option 5.

4.

The paragraph briefly is about why stories are structured around focal characters. And why in stories of organizations, organizations have to be personified and focal characters as organizations cannot narrate their experiences. Option 5 concludes this chain of thoughts by saying that this kind of personification is a textual device resorted to bring coherence.

Option 1 is incorrect as it continues the first part of the paragraph and is unrelated the second part.

Option 2 is incorrect as it talks about abstracting away from the particular whereas the paragraph is talking about particularizing.

Options 3 and 4 talk about different points of view, which is irrelevant to the paragraph.

Hence, the correct answer is option 5.

5.

Nevertheless ‘at the beginning of the paragraph, and “yet’ at the beginning of option 1 make the paragraph logically complete.

Option 1 is the reason why the paragraph is written - to communicate that ‘photographs are still powerful.

The traveler in option 2, the beloved and the dead in option 3, falsehood and trickery in option 4, and the invention and means of living in option 5 do not help conclude the paragraph.

Hence, the correct answer is option 1.

6.

The paragraph mentions the tangible parts of the inventory that Mma Ramotswe had at the agency, and ‘human intuition and intelligence’ Option 2 concludes the paragraph by stating that ‘no inventory would ever be able to include those. Options 3, 4 and 5 are eliminated in comparison to options 1 and 2 which continue the idea of the inventory.

Option 1, though continuing the idea of inventory is far inferior to option 2. The ‘those’ in option 2 scores over option 1.

Hence, the correct answer is option 2.

passage 4

passage 5

1. The theme of the passage is that biological linkages (for example mother – child; father – child) do not structure human society. We expect a biological mother to display certain characteristics in her ‘role’ as a mother as an ideal. The passage is

then an explanation of how human society is structured on the basis of such definitions of roles considered as ideals. Only option 5 captures this briefly.

Option 1 talks about ‘absence of strong biological linkages’ which is not dealt with in the passage.

Option 2 is contrary to the theme of the passage.

Option 3 which states “... behavior is independent of ... reciprocal roles” is contrary to the passage.

Option 4 may be evaluated as the answer, but passage does not state that human behavior is dependent on biological linkages, and the example of the step mother disproves this option.

Only option 5 captures the theme of the passage.

Hence, the correct answer is option 5.

2.

There is distinction between the roles we play and some underlying self. Here we might note that some roles are more absorbing than others.

We would not be surprised by the waitress who plays the part in such a way as to signal to us that she is much more than her occupation. We would be surprised and offended by the father who played his part ‘tongue in cheek’ (insincerely). The father’s self is denied by his identification with his biological relationship. If this does not happen, if a father behaves in a tongue in cheek manner, we are offended. If biological relations structured human society it is enough to be a biological father to be accepted by society to be so. His behavior is unimportant.

All the other options support the fact that ‘reciprocal relationship’ structure human society.

Hence, the correct answer is option 2.

3.

The answer comes from the last paragraph where three examples are given, the father, the waitress, and the priest.

The example of the priest makes statement A correct. (There is so much expectation from the society that the priest’s true self is not revealed at all).

The father’s example makes statement B correct. (the father’s self gets aligned with his biological relationship and the self is denied).

Statement C is incorrect in that the passage does not discuss the development of skill as a reason for the denial of the self.

Hence, the correct answer is option 4.

69.When the four statements are studied well, it is very easy to establish that EC and BD are mandatory pairs.

Only statements E and C both contain the idea of ‘crime’. Hence one cannot place any other statement along with statement E, but statement C.

In the same way, statements B and D both have reference to written ‘piece of work’ and no other sentence, making BD in that order mandatory. Once this is noticed, placing EC and BD in that order with the help of A (fixed) is easy.

Hence, the correct answer is option 4.

4. The "two discernible" or "official discourses" makes it compulsory to place statement E after statement A, because statement E talks about "a third unofficial discourse". (In other words if not placed next to statement A, statement E cannot be placed anywhere else). AE is the first mandatory pair.

'These frameworks' in statement D is explained in statement E so that statement D unless placed next to statement E, will not make sense. (In other words ED too is mandatory.) The idea of motherhood from statement D (biological tie) is continued in statement B. Thus the links in EDB are most obvious.

Statements C and B too are clearly linked because statement B ends with reference to 'dominant discourse' and statement C begins with 'historical work' making EDBC most logical sequence.

Hence, the correct answer is option 1.

5. As per the options comparing statements B, C and D as the sentences to follow statement A, statement C gets eliminated.

Statements B and D are far better sentences to follow statement A than statement C. The next decisive point is the ‘such developments’ in statement D. As statements A, B, and C are talking about several developments statement D is best placed at the end of all, and will mar the structure of the paragraph if placed anywhere in between.

The choice then becomes very clear. Also, the link between statement D and statement E with their “some analysts’ (statement D) and ‘different analysts” (statement E) is also obvious.

Hence, the correct answer is option 5.

6. Either by looking at the options or by reading the sentences in the given order, one can easily see that statement A has to followed either by statement B or by statement C because they talk about the ‘squatters’ introduced in statement A. (This eliminates options 4 and 5).

A more careful reading of statement B and statement C establishes that since statement C explains the identity of the squatters and statement B talks about their farming statement B has to follow statement C rather than precede it.

At his stage one has to evaluate/compare only options 1 and 3. Considering statement E and statement D to follow statement B, the link between statement B and statement E because of the “maize” conclusively makes option 3 the answer. Hence, the correct answer is option 3.

Passage 7

41. Option 1 is eliminated because ‘a just society’ is not a Utopia.

Options 2 and 5 are eliminated because though the passage mentions a hypothetical situation in which ‘justice as fairness’ could be formulated, the society is described/conceptualized in the passage is in no way ‘hypothetical’ as given in options 2 and 5.

Between options 3 and 4 the idea of fairness, which is casually mentioned in option 4, is fully explained in option 3 and is essential to answer the question, because the word ‘fair’ has a special and specific definition in the passage.

Hence, the correct answer is option 3.

42. The passage states: "In ‘justice as fairness’, the original position is not an actual historical state of affairs. It is understood as a purely hypothetical situation characterized so as to lead to a certain conception of justice. Among the essential features of this situation is that no one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like.” This makes option 1 correct and a mere repetition of what is stated in the passage.

Hence, the correct answer is option 1.

43. The passage states the conditions termed as ‘veil of ignorance’ thus: “In ‘justice as fairness’, the original position ...... is understood as a purely hypothetical situation characterized so as to lead to a certain conception of justice. Among the essential features of this situation is that no one knows his place in society, his class position or social status, nor does anyone know his fortune in the distribution of natural assets and abilities, his intelligence, strength, and the like. I shall even assume that the parties do not know their conceptions of the good or their special psychological propensities. The principles of justice are chosen behind a veil of ignorance.”

Option 4 fulfills these conditions best. The rule makers in the options cannot know even their sex in the next birth – a clear case of veil of ignorance. Situations in all the other options exhibit some degree of knowledge or awareness of their position etc.

Hence, the correct answer is option 4.

44.One may evaluate options 1, 2 and 5 as likely answers. Options 3 and 4 are quickly eliminated.

Option 3 is eliminated because ‘fair in order to be just’ is vague does not relate to the ‘original agreement’ included in the question.

Option 4 talks about the ‘evolution’ of social institutions which is completely new to the ideas presented in the passage.

Between options 1, 2 and 5 option 2 is the best answer because options 1 and 5 are partial.

Option 1 leaves out ‘original agreement’ which is required to answer the question, and option 5 leaves out the idea of ‘fairness’ which is the crux of the passage.

Hence, the correct answer is option 2.

45.The idea of ‘justice as fairness” can be explained thus: From a hypothetical “initial position of equality” and “behind a veil of ignorance”, “a group of persons must decide once and for all what is to count among them as just and unjust.” The initial equality and veil of ignorance are crucial.

From such a position what one can choose as fair is only option 2. All others would be considered unfair from a position of ‘no knowledge.’ To clearly understand the correctness of option 2 and the erroneous nature of other options, one has to imagine oneself to be in the initial position choosing principles of justice under a veil of ignorance. In that case only 2 can be chosen, and not the others.

Hence, the correct answer is option 2.

Passage 8

46. The answer can be directly derived from “For the critical attitude is not so much opposed to the dogmatic attitude as super-imposed upon it: criticism must be directed against existing and influential beliefs in need of critical revision - in other words, dogmatic beliefs. A critical attitude needs for its raw material, as it were, theories or beliefs which are held more or less dogmatically.”

Based on this principle option 1 is eliminated there is neither raw material nor any critical revision in the example of warriors.

Option 3 is eliminated because it talks about a transformation, whereas the passage only talks about a refinement.

Options 4 and 5 talk about something ‘feeding’ on something else. Science does not ‘feed’ on dogma. Both are eliminated at the same time.

Hence, the correct answer is option 2.

47. A casual reading of the passage is enough to convey to the reader that the writer believes that dogma is important, because dogmas are refined into science with time. With this superficial comprehension one is able to eliminate options 3, 4 and 5.

Between options 1 and 2, option 2 erroneously states that dogmas become science whereas dogma merely provide the substance or the hypothesis that later on get refined into science. Hence option 2 is eliminated.

Hence, the correct answer is option 1.

48.The answer is available with the analysis of this part of the passage: But dogmatic thinking, an uncontrolled wish to impose regularities, a manifest pleasure in rites and in repetition as such, is characteristic of primitives and children; and increasing experience and maturity sometimes create an attitude of caution and criticism rather than of dogmatism.

Option 1 is eliminated because ‘education’ is not the reason that the writer associates dogma with primitives and children.

Option 2 is eliminated for ‘innocence’.

Option 3 is contrary to the italicized part of the sentence.

Option 5 is eliminated for ‘civilization’.

Hence, the correct answer is option 4.

49. The last paragraph of the passage completely supports option 5. The question asks you to best support “critical attitude leads to a weaker belief”. Option 5 supports this by stating that critical attitude leads to questioning and hypothesis – these weaken beliefs.

Option 1 states ‘cannot lead to strong beliefs’. As we are in fact, asked to support this; it is not the best option.

Options 2 and 3 are eliminated for the ‘noise’, which does not suffice to support the notion.

Option 4 states what is required for ‘strong beliefs’ and does not support the thesis, 'critical attitude leads to a weaker belief'.

Hence, the correct answer is option 5.

50. Explicitly stated in the passage in paragraph 3. “For the dogmatic attitudes clearly related to the tendency to verify our laws and schemata by seeking to apply them and to confirm them, even to the point of neglecting refutations, whereas the critical attitude is one of readiness to change them - to test them; to refute them; to falsify them, if possible. This suggests that we may identify the critical attitude with the scientific attitude, and the dogmatic attitude with the one which we have described as pseudo-scientific.”

Only option 3 best answers about the difference between science and pseudo- science.

The other options in this case do not merit evaluation. Hence, the correct answer is option 3.

Passage 9

41.“Welcome to the Edwardian Summer...” (end of first paragraph) is clue enough to choose the right answer. The passage does not talk about unparalleled opulence or a culmination of all round economic prosperity. Hence options 1 and 3 can be eliminated.

Option 4 is eliminated because of the ‘imminent danger’. Nobody is welcomed to an imminent danger. Edwardian as a vocabulary item means ‘of or pertaining to the reign of Edward VII’ or reflecting the opulence or self-satisfaction characteristic of this reign.

Option 2 is correct because the writer is talking about ‘this time of studied complacency’ almost throughout the passage.

Hence, the correct answer is option 2.

42.The last four paragraphs are summarized in option 3. Though all options are almost the same, each one is incomplete in one way or the other when compared to option 3. For example, if option 1 talks about shocks, it misses out on terrorism, etc. Option 3 is more inclusive and complete.

Hence, the correct answer is option 3.

43.Options 2 and 3 get eliminated because there are broad generalizations. Such generalizations are the not the key arguments of the writer. The writer is quite specific about the time and space we are living in.

Option 4 gets eliminated because the option stresses the ‘imminent crisis’ whereas the writer does not, and is cautioning about studied complacency. Option 1 encapsulates the key arguments of the writer by mentioning a few examples and urges ‘us to question’ our complacency which is the key argument of the passage.

Hence, the correct answer is option 1.

44.Tommy Copper was a comedian-magician one of whose catchphrases during his performances was ‘Just like that’. The reference occurs in the second paragraph.

The writer talks about the ‘more than doubling of oil prices’ and our optimism that we would find a way to bring the prices down to pre increase levels. Then the writer in a completely sarcastic tone makes the reference to Tommy Cooper’s catch phrase, implying that this optimism is ridiculous. Once this understood choosing option 4 becomes easy, because all the other options get eliminated together as they are all contrary to option 4.

Hence, the correct answer is option 4.

Passage 10

45.The passage states, “in its simplest formulation, deconstruction can be taken to refer to a methodological strategy which seeks to uncover layers of hidden meaning in a text that have been denied or suppressed.” Options 1 and 3 are contrary to the passage, and option 2 gets eliminated because it says ‘construction of reality’ (interpretation in place of construction may have been acceptable).

Hence, the correct answer is option 4.

46.The passage states, “at the heart of Derrida’s deconstructive approach is his critique of what he perceives to be the totalitarian impulse of the Enlightenment pursuit to bring all that exists in the world under the domain of a representative language, a pursuit he refers to as logocentrism.”

Options 1 and 2 are eliminated form this point of view.

Option 4 is eliminated because deconstruction stands for seeking the hidden meaning and logocentrism stands for suppressing it.

If the above eliminates options other than option 3 what supports option 3 is to be found in the paragraph beginning, “In response to logocentrism, deconstruction posits the idea that the mechanism by which this process of marginalization and the ordering of truth occurs is through establishing systems of binary opposition.” The binary opposition is then explained as the interdependence in option 3.

Hence, the correct answer is option 3.

47.This is directly stated in the passage. The system of binary opposition, or opposites like rational/irrational are not opposites, “rather, they exist, for Derrida, in a series of hierarchical relationships with the first term normally occupying a superior position.”

No option other than option 1 merits evaluation if this part of the passage, which is then explained in detail, is clearly understood.

Hence, the correct answer is option 1.

48.The answer can be inferred from the last paragraph, beginning, “Meaning, then, is never fixed or stable, ...” followed by “Thus, any act of interpretation must refer not only to what the author of a text intends, but also to what is absent from his or her intention.” This is why Derrida rejects ‘definitive authority’.

In this case option 4 is contrary to the passage.

It is difficult to see how option 3 is relevant to the question, especially the ‘often’ in it.

Option 2 says the meaning is based on ‘binary opposites’ – whereas binary opposites may be an interpretation/analysis rather than the meaning of the text is based on it.

The last paragraph clearly supports the inference in option 1.

Hence, the correct answer is option 1.

49.Elimination is an important process to find the correct answer in these questions.

Option 2 gets eliminated because of the idea of ‘popularity’ in it. This is a new idea and will require some reader intervention to support it. Reader intervention is not required in the last sentence of a paragraph.

Option 3 gets eliminated because of ‘even by children’- we need to assume that children lack ‘vocabulary etc. etc. mentioned in the paragraph.

Option 4 contradicts the paragraph. The paragraph says it appeals to a logical mind.

Option 1 effortlessly closes the paragraph. The comparison between Crossword and Sudoku is completed and the purpose of the paragraph is fulfilled.

Hence, the correct answer is option 1.

50.Option 1 is eliminated for ‘disastrous’ – the passage does not justify it – because they get along well.

Option 3 is eliminated because the passage states that experts may not be hired. Option 4 is eliminated because how they drive innovation is a big question mark. Option 2 talks about the result of this ‘default mode’ where expert individuals are excluded and the selection is on the basis of conformity which is mediocrity. This then is the best sentence to conclude and the purpose for which the passage is written is brought to a close.

Hence, the correct answer is option 2.

\*PASSAGE 10

1. The correct response is (1). In the first paragraph, the author states that "some hypoxic areas ... occur naturally."

2. The correct response is (3). In the second paragraph the author states that "the extent of this threat to marine life and genetic diversity can hardly be overstated," suggesting that in the author's view hypoxia has reached critical, or *alarming*, levels.

3. The correct response is (2). The first paragraph briefly discusses what causes hypoxic waters (so-called "dead zones"), while the second paragraph discusses one of hypoxia's consequences: a decline in the genetic diversity and population of fish. Choice (2) is the only one that embraces the entire passage without extending beyond its idea

PASSAGE 11

1. The correct response is (4). As a photographer, Cartier-Bresson views his role as that of interloper (a selfish, unwanted meddler) and opportunist (an exploiter) — in other words, an uninvited intruder.

2. The correct response is (1). Though the two portrait artists differ in how they view their social encounter with a subject, both acknowledge a psycho-analytical dimension to the portraiture encounter. Avedon tells us that he diagnoses and reveals his subjects' essential nature, while Reynolds sees his role as one in which he helps his subjects to "properly see themselves for the first time."

3. The correct response is (1). In paragraph 2 the author says dat “the ‘bond of connection’ between painter and sitter is most like the relationship between two lovers.”  
From this it is very clear that the answer is option (1)

PASSAGE 12  
1. (4)  
A good title summarizes the main idea of the passage and lets the reader know what to expect should he or she continue reading. At the beginning of the passage the author writes, "For two months, I have been trying to decide who makes the best ice cream." The next four paragraphs explain the reasons why the narrator likes each individual manufacturer. We can understand from this information that the passage is about picking the best ice cream manufacturer. Choice (4) is correct. (1) is incorrect because it only states 4 flavors of ice cream, while the passage is about more than just ice cream flavors. (2) is incorrect because the author is trying to decide which of the four manufacturers is the best, not inform us about the world’s four best manufacturers. (3) is incorrect because the author is trying to decide who the best ice cream maker is, not which ice cream is the best.

2. (3)  
(3) is correct because the part of the sentence that comes after the colon contains a list that gives us more detailed information about the idea presented before the colon. This fits the description of a colon as explained in the question and as used in the passage. Choices (1) and (2) are incorrect because the part of the sentence that comes before the colon cannot stand alone as a sentence. The part after the colon is necessary to complete the idea started before the colon. (4) is incorrect because the part of the sentence that comes after the colon does not give more information about the idea introduced before the colon.

3. (3)  
To answer this question correctly, it helps to use context. In paragraph 3 the author discusses Goodies chocolate ice cream. The author tells us that Goodies gets their cocoa from Bolivia. This is a long way from the author's home. Because of this, the author concludes that this cocoa must be good. Using this information, we can understand that the author believes that things that are hard to get must be high quality. This makes (3) the correct choice. The passage does not provide information to support choices (1), (2), and (4). Therefore they are incorrect.

4. (4)  
In paragraph 1 the author tell us that he or she has been trying to decide which of four different ice cream manufacturers is the best. Then the author discusses what is good about each manufacturer and what is bad about some of them. Since each manufacturer has something good about it, we can understand that the author thinks that each is good for different reasons. This means (4) is correct.(1) is incorrect because the author does not mention any weaknesses about Randolph Farms ice cream. Therefore not each manufacturer has its weaknesses. In addition to number of flavors produced, the author considers taste, price and fun in order to arrive at the best ice cream manufacturer. The author does not rely on number of flavors alone to make his or her decision. This rules out (2) and (3).

PASSAGE 13

(3)  
The author presents a clear opinion in paragraph 1: "E-readers are replacing the books of old, and I welcome them with open arms (as you should)." Not only does the author embrace ereaders, he or she attempts to persuade readers that they should too. In paragraph 3, the author continues to argue that e-readers "put printed books to shame." In paragraph 7, the author reiterates that "e-readers are superior to printed books." Because the author has a clear opinion that e-readers are better than books, attempts to persuade readers, and presents reasons why readers should agree with him or her, we can understand the author's tone as persuasive. Therefore (3) is correct. Shrewd means keenly aware or intelligent. The author does not present any insight about e-readers to make us think he or she is more keenly aware or intelligent than the average observer. This makes (1) incorrect. Conniving means conspiring to do something immoral or illegal. Although the author is attempting to persuade readers, he or she is straightforward and does not conspire with the readers or anyone else. This means (2) is incorrect. Authoritative means exercising authority or commanding. While it is true the author presents information about e-readers with authority, he or she is not commanding. The author tries to convince readers, not command them, to choose e-readers over books. We must also consider the purpose of the essay. The author's overall purpose is to persuade, not to command. This means that the tone is more persuasive than it is authoritative, so (4) is incorrect.

(4)  
In paragraph 4, the author claims that e-readers "save space." The author explains that because an e-reader is "the size and weight of a thin hardback," it "is relatively petite. It is easy to hold and can fit in a pocketbook or briefcase easily." From this information we can understand that one of the benefits of an e-reader is its relatively small size, which makes it more convenient to carry around than heavy books. In contrast, the author describes War and Peace, Anna Karenina, and Les Misérables as "ponderous behemoths." They are all much harder to carry as physical books than they would be on an e-reader. From this we can understand that these books are all the opposite of petite: physically heavy, awkward or unwieldy due to their length. This means (4) is correct. Although it is true that these books were all authored by Europeans, there is no information in the passage on which to infer this knowledge. Therefore (1) is incorrect. Dense and impenetrable are words which refer to the language of a book that is difficult to understand. The author is concerned with the length and thus the size of these books, not with the language of these books. This makes (2) incorrect. Many people would consider these books to be timeless classics, but there is no information in the passage on which to base this knowledge. Therefore (3) is incorrect.

3. (4)  
This passage consists of 7 paragraphs. Paragraph 1 introduces the topic of e-readers and gives the author's opinion that "e-readers are replacing the books of old." Paragraph 2 provides background information and a definition of an e-reader. Paragraph 3 sets forth the author's argument that e-readers are superior and outlines three reasons why this is the case. This description of the author's main ideas is known as a thesis statement. Paragraphs 4, 5, and 6 give supporting information about each of these three reasons. Paragraph 7 offers a conclusion and summary of the author's point-of-view. This means the organization of the passage is: introduction, background, thesis statement, supporting paragraphs, and conclusion. Therefore (4) is correct. Choices (1), (2), and (3) do not include all of the parts of the essay’s organizational structure. Therefore they are incorrect.

PASSAGE 14  
1. (1)

The main focus of a passage is the controlling idea. To identify the controlling idea, it is helpful to review the content and structure of the passage. Paragraph 1 introduces a little-known fact about Philadelphia: that “it is home to nearly 3,000 murals painted on the sides of homes and buildings.” Paragraph 2 explains that these murals are the product of an art program designed to pair “troubled youth with artists.” It also identifies some of the benefits for the community in addition to the art. Paragraph 3 describes where the murals are and what they depict. Paragraph 4 states that the art program has gone on to become “the nation’s largest public art program and a model for other cities.” From this information we can understand that the main focus of the passage is the formation of an art program designed to help troubled youth and its effects on the community. Therefore (1) is correct. Paragraph 3 mentions the tourists who come to see the murals, but because that is only one small detail in the passage, it is not the main focus. This makes (2) incorrect. Only paragraph 1 mentions well-known facts about Philadelphia; the rest of the passage focuses on the art program rather than the reasons why

Philadelphia is unique. This means (3) is incorrect. Although Jane Golden is mentioned in the passage, it does not contain information about how she came up with her idea, so (4) is incorrect.

2. (3)

In paragraph 1, the author states that Philadelphia is “home to nearly 3,000 murals.” Next, the author writes, “In fact, it is said that Philadelphia has more murals than any other city in the world, with the exception of Rome.” The author does not offer this statement as absolute truth.

We can infer that the author has not personally counted all the murals in both Philadelphia and

Rome—perhaps no one has. Yet the phrase “it is said” implies that this is a statement that is often repeated by people, so while it may not be true, it is widely believed. Therefore (3) is correct. Though the author may not know for sure whether this statement is true, there is no evidence in the passage that he or she is knowingly misleading the reader. Rather, the author uses the phrase “it is said” to acknowledge that he or she cannot verify the statement as fact.

This disclosure is an attempt to be straightforward with the reader, not misleading. This makes

(1) incorrect. If the statement were a quote from someone else, it would most likely appear in quotation marks and be attributed to a specific person. This means (2) is not the best choice.

Although the statement might not be true, there is no sarcasm to suggest that the author does not believe it. Instead, it is a piece of information which, though unverified, is offered in good faith. This means (4) is incorrect.

3. (2)  
In paragraph 1, the author states, “It is said that Philadelphia has more murals than any other city in the world, with the exception of Rome.” From this information we can understand that

Philadelphia has the most murals except for Rome, or in other words, Rome is the only city which has more murals than Philadelphia. Another way to say this is that Philadelphia has fewer murals than Rome. This means (2) is correct. The passage does not contain information to support choices (1), (3), and (4). Therefore they are incorrect.

PASSAGE 15  
1. (2)  
reticent (adjective): disposed to be silent or not to speak freely; reserved.

To understand the meaning of words, it is often helpful to look at them in context. In this case, we need to look to the following sentence for clarification. In paragraph 1, the author states,

“When questioned about the events that occurred there, officials were very reticent. The whole affair, in fact, was not discussed much, and seemed to disappear with time.” From this information we can understand that the officials were reticent because they did not discuss the affair very much. This means that reticent means silent or reserved, so a good antonym is talkative. Therefore (2) is correct. Nosy means snooping into or investigating others’ affairs.

Though the officials may have been investigating the incident thoroughly, they were not talking about it. Since the passage does not contain information about how thoroughly the officials investigated the incident, or how curious they were about it, (1) is incorrect. Reserved is a synonym for reticent, not an antonym, so (3) is incorrect. We do not know the level of the officials’ concern about the incident based on the information in the passage; what we do know

is that they were not discussing it. This means (4) is incorrect.

2. (4)

esoteric (adjective): understood by or meant for only the select few who have special knowledge of interest.

To understand the meaning of words, it is often helpful to look at them in context. In this case, we need to look to the following sentence for clarification. In paragraph 2, the author states,

“After all, the generation of nuclear energy may strike many as an esoteric process. However, given its relative simplicity, the way in which the NRTS reactor functions is widely comprehensible." First, the author tells us that the process is esoteric. Then, the author contrasts this idea by telling us that the way in which this particular reactor functions is widely comprehensible. Given that something esoteric is contrasted with something widely comprehensible, we can infer that a good definition for esoteric is understood by few. This means (4) is correct. Although the generation of nuclear energy is may seem risky or highly scientific based on information in the passage, context does not support this definition. Therefore, (1) and (2) are incorrect. The passage does not provide information to support the idea that esoteric means kept secret. Therefore (3) is incorrect.

3. (1)

In paragraph 2, the author describes the process under which nuclear energy is created. At the end of this paragraph, the author outlines the role of steam in the turning of the turbine. The author concludes this explanation with the final cause that is directly responsible for energy production: "As it passes through the turbine on its way out of the tank, it turns the giant fan blades and produces energy." This lets us know that it is the turning of the turbine blades which is directly responsible for energy production. Therefore (1) is correct. Although the escape of pressurized steam, removal of the control rod, and the positioning of the uranium fuel rods are all involved in the process of creating energy, none of them is directly responsible for turning the turbine. This means (2), (3) and (4) are incorrect.

3. (2)  
In paragraph 3, the author writes, “It took one week and a lead-shielded crane to remove [Legg’s] body. Even in full protective gear, workers were only able to work a minute at a time.” Because both the equipment (the crane) and the workers required protection, we can infer that the reactor was a hazardous place to be. Contamination with toxic elements from the explosion would cause the site to be hazardous. Later in paragraph 3, the author writes, “The three men are buried in lead-lined coffins under concrete.” Since the victims’ bodies, even buried underground, must be covered in layers of lead and concrete, we can also infer that the victim's bodies were so thoroughly contaminated with toxic elements that they must be contained after death. This means (2) is correct. Although in paragraph 5, the author tells us that “official reports are oddly ambiguous” and do not explain everything, that does not suggest that the reports do not mention the victims or the reactor at all. It only means that some details are missing. Therefore (1) is incorrect. Since the bodies of the victims were recovered in the wreckage, and the site still existed, neither the victims’ remains nor the site were completely annihilated, or destroyed. This means (3) is incorrect. Though the victims and the reactor would likely be honoured in a memorial to the incident, the passage does not discuss any such memorial. Therefore (4) is incorrect.

5. (3)

There is no example of exaggeration for effect in this passage. Even extreme statements, such as “in milliseconds the reactor exploded” or “Legg was impaled on the ceiling,” are reported as facts, not as exaggerations. This eliminates option (I). Several times the author hints at the mystery of the disaster and the rumoured motive of Byrnes before it is revealed in the final paragraph. In paragraph 1, the author states that “the whole affair…was not discussed much” by the officials, implying that something might have been covered up. In paragraph 4, the author asks, “Did Byrnes have a dark motive?” Both of these quotes foreshadow the suspected motive which the author reveals in paragraph 5. This supports option (II). The meltdown is described in paragraphs 1 as an event in the past. Then, in paragraph 3, the author goes back in time to recreate the scene “on the morning of January 3,” when the explosion happens. Because this scene flashes back to exactly what happened during the meltdown, it is considered a flashback. This supports option (III). Therefore (3) is correct.

# Synonym:

A synonym is a word or expression that has the same or very similar meaning as another word. Some are alike in some meanings only, as *live* and *dwell.* As a language develops, words that once were synonyms tend to become restricted so that eventually they differ in meaning or in usage.

**TIPS N TRICKS FOR SYNONYMS:-**

* After you see the meaning of a word, look up its usage in the sentence that is usually present in the dictionary. Note down this sentence. Prepare a new sentence after understanding the meaning of the word.
* Use both the synonym (a word having the same or nearly the same meaning as another word) and the antonym to construct sentences using the same context or situation. This procedure enables you to see a word from both sides.
* If you can follow this strategy, it would definitely solve your problem of learning new words without forgetting their meaning.
* You should always use the same background to write sentences using a new word, its synonyms and antonyms. If you use different circumstances, events or situations to get acquainted with the meaning and the usage of a word, there is a strong possibility that you may get confused.
* It is the context that will always remind you of how the word is used, and will ensure you don’t forget the meaning easily.
* **Trick 1**

Try to put the word in a sentence or a phrase and guess its meaning

* **Trick 2**

When you have a word try to guess all its synonyms and from the answers see the exact word which has the same meaning, in the case of antonym the opposite meaning.

* **Trick 3**

Read all the options, most of us think of time and come up with the answer which has close match to the word. But there is an actual word with the same meaning hidden there.

* **Trick 4**

First know the part of the speech the word is used in… For example the word run can be used as a verb but it could also be used as noun like ‘home run’ so make sure you know the part of speech before answering.

* **Trick 5**

Some words are eye catchy, you immediately think it’s going to be the antonym/synonym, but most of the guesses are not going to be right so go through the options once again unless you’re sure of the answer.

**Select the word that is most similar in meaning to the word provided.**

1. Hub

**a.** counsel

**b.** elder

**c.** center

**d.** extension

1. Tame

**a.** lost

**b.** evasive

**c.** pushy

**d.** submissive

3. Irk

**a.** shrug

**b.** irritate

**c.** devour

**d.** avoid

4. Loom

**a.** disappear

**b.** cut

**c.** surface

**d.** teach

5. Fitful

**a.** erratic

**b.** angry

**c.** tired

**d.** pronounced

6. Gaudy

**a.** massive

**b.** mindful

**c.** tasteful

**d.** flashy

7. Flaunt

**a.** conceal

**b.** parade

**c.** trust

**d.** fray

8. Flex

**a.** bend

**b.** binge

**c.** rid

**d.** consume

8. Tantalize

**a.** pronounce

**b.** reign

**c.** equal

**d.** flirt

9. Dastardly

**a.** devastating

**b.** cowardly

**c.** clever

**d.** munificent

10. Aficionado

**a.** novice

**b.** trickster

**c.** devotee

**d.** agent

11. Contiguous

**a.** catching

**b.** divided

**c.** adjoining

**d.** circumstantial

12. Swindler

**a.** charlatan

**b.** expert

**c.** divinity

**d.** debonair

13. Rogue

**a.** knave

**b.** wander

**c.** buffoon

**d.** color

14. Apologist

**a.** liar

**b.** defender

**c.** failure

**d.** admirer

15. Proxy

**a.** spasm

**b.** closeness

**c.** delegate

**d.** court

16. Buffet

**a.** protect

**b.** barricade

**c.** armoire

**d.** strike

17. Travesty

**a.** confusion

**b.** mockery

**c.** disaster

**d.** speculation

18. Bristle

**a.** aloof

**b.** seethe

**c.** wave

**d.** doubt

19. Admonish

**a.** laud

**b.** decorate

**c.** caution

**d.** admire

20. Wheedle

**a.** retreat

**b.** deceive

**c.** plead

**d.** question

21. Aplomb

**a.** mine

**b.** clumsiness

**c.** complication

**d.** poise

22. Aver

**a.** dissipate

**b.** create

**c.** hate

**d.** state

23. Mien

**a.** carriage

**b.** average

**c.** vicious

**d.** disguise

24. Paroxysm

**a.** conundrum

**b.** fit

**c.** contraction

**d.** spite

25. Aegis

**a.** superstition

**b.** reference

**c.** sponsorship

**d.** archive

26. Sepulture

**a.** burial

**b.** parasite

**c.** verse

**d.** sermon

27. Harridan

**a.** governor

**b.** vessel

**c.** witch

**d.** lawyer

28. Apothegm

**a.** medicine

**b.** adage

**c.** speculation

**d.** resistance

29. Grandiloquence

**a.** respect

**b.** bluster

**c.** denial

**d.** solemnity

30. Fulmination

**a.** explosion

**b.** recession

**c.** achievement

**d.** blessing

31. Pococurante

**a.** native

**b.** hot

**c.** blasé

**d.** hidden

32. Epscarpment

**a.** warning

**b.** cliff

**c.** campsite

**d.** tomb

33. Plutocrat

**a.** banker

**b.** priest

**c.** judge

**d.** astronomer

34. Heed

**a.** trek

**b.** consider

**c.** consolidate

**d.** bound

35.Edge

**a.** diffuse

**b.** point

**c.** force

**d.** dissuade

36. Elevate

**a.** lessen

**b.** mention

**c.** affix

**d.** hoist

37. Appoint

**a.** Score

**b.** discuss

**c.** nominate

**d.** ensure

38. Hoard

**a.** stockpile

**b.** burrow

**c.** mine

**d.** dessert

39. Homogeneous

**a.** alike

**b.** strange

**c.** polite

**d.** alkaline

40. Superficial

**a.** Gorgeous

**b.** shallow

**c.** intelligent

**d.** rich

41. Tangle

**a.** snarl

**b.** growl

**c.** dance

**d.** shiver

42. Reform

**a.** punish

**b.** destroy

**c.** display

**d.** correct

43 Methodical

**a.** rhythmic

**b.** poetic

**c.** systematic

**d.** disrespectful

44. Spite

**a.** joy

**b.** beverage

**c.** wonder

**d.** malice

45. Scale

**a.** climb

**b.** sail

**c.** swim

**d.** skate

46. Smudge

**a.** gloat

**b.** residue

**c.** blur

**d.** celebrate

47. Drizzle

**a.** curly

**b.** sprinkle

**c.** sear

**d.** drench

48. Mundane

**a.** dirty

**b.** commonplace

**c.** confused

**d.** extraordinary

49. Pretension

**a.** stress

**b.** ambition

**c.** waste

**d.** strife

50. Affect

**a.** outcome

**b.** share

**c.** pompous

**d.** cultivate

51. Herald

**a.** insignia

**b.** postpone

**c.** hail

**d.** regal

52. Faculty

**a.** defective

**b.** school

**c.** gift

**d.** desire

53. Mirth

**a.** anger

**b.** glee

**c.** sarcasm

**d.** mistrust

54. Drudgery

**a.** silliness

**b.** labor

**c.** evil

**d.** investigation

55. Prerequisite

**a.** necessary

**b.** course

**c.** difficult

**d.** tar

56. Dire

**a.** questionable

**b.** forthright

**c.** traitor

**d.** urgent

57. Grapple

**a.** struggle

**b.** trap

**c.** laugh

**d.** intend

58. Sundry

**a.** aged

**b.** supply

**c.** various

**d.** tremendous

59. Supplant

**a.** grow

**b.** replace

**c.** undo

**d.** question

60. Venerate

**a.** ordain

**b.** breathe

**c.** polish

**d.** revere

61. Conciliate

**a.** appease

**b.** disagree

**c.** revive

**d.** separate

62. Exultant

**a.** afraid

**b.** jubilant

**c.** expectant

**d.** demanding

63. Surreptitious

**a.** overbearing

**b.** clandestine

**c.** indirect

**d.** impious

64. Recalcitrant

**a.** hesitant

**b.** subdued

**c.** unruly

**d.** subtract

65. Pretty

**a.** plain

**b.** confusing

**c.** ugly

**d.** terrible

66. Coterie

**a.** various

**b.** flirtation

**c.** club

**d.** socialize

67. Nefarious

**a.** infamous

**b.** macabre

**c.** evil

**d.** distinguishes

68.Curry

**a.** flatter

**b.** spicy

**c.** squander

**d.** game

69. Preternatural

**a.** immature

**b.** extraordinary

**c.** removed

**d.** unearned

70. Pernicious

**a.** noxious

**b.** illicit

**c.** open

**d.** undecided

71. Reprisal

**a.** accusation

**b.** loathe

**c.** retaliation

**d.** insinuation

72. Manifold

**a.** evident

**b.** contemporary

**c.** diverse

**d.** willing

73. Factious

**a.** sham

**b.** unreliable

**c.** seditious

**d.** argumentative

74. Wrath

**a.** knot

**b.** anger

**c.** crime

**d.** smoke

75. Plethora

**a.** trouble

**b.** foolish

**c.** wealth

**d.** love

76. Calamity

**a.** potion

**b.** silence

**c.** shellfish

**d.** disaster

77. Pompous

**a.** arrogant

**b.** supportive

**c.** busy

**d.** gaudy

78. Prevalent

**a.** wind

**b.** servile

**c.** widespread

**d.** rare

79. Wince

**a.** flinch

**b.** cheer

**c.** crush

**d.** solitary

80. Saccharine

**a.** leave

**b.** sweet

**c.** arid

**d.** quit

81. Drag

**a.** sleepy

**b.** crush

**c.** proud

**d.** pull

82.Jovial

**a.** incredulous

**b.** merry

**c.** revolting

**d.** dizzy

12. Indifferent

**a.** neutral

**b.** unkind

**c.** precious

**d.** mean

83. Simulate

**a.** excite

**b.** imitate

**c.** trick

**d.** apelike

84. charisma

**a.** ghost

**b.** force

**c.** charm

**d.** courage

85. apportion

**a.** divide

**b.** decide

**c.** cut

**d.** squabble

86. generic

**a.** general

**b.** cheap

**c.** fresh

**d.** elderly

87. qualm

**a.** distress

**b.** impunity

**c.** persevere

**d.** scruple

88. Wary

**a.** calm

**b.** curved

**c.** confused

**d.** cautious

89. Distort

**a.** wrong

**b.** evil

**c.** deform

**d.** harm

90. Sumptuous

**a.** delirious

**b.** gorgeous

**c.** perilous

**d.** luxurious

91. Reel

**a.** whirl

**b.** fish

**c.** hit

**d.** mistake

92. Inscrutable

**a.** difficult

**b.** mysterious

**c.** inflexible

**d.** wary

93. Appall

**a.** delirious

**b.** covered

**c.** dismay

**d.** confuse

94. Upright

**a.** honorable

**b.** horizontal

**c.** humble

**d.** supine

95. Reverie

**a.** palimpsest

**b.** phantom

**c.** daydream

**d.** curio

96. Loot

**a.** destruction

**b.** waste

**c.** spoils

**d.** cavort

97. Loquacious

**a.** talkative

**b.** thirsty

**c.** beautiful

**d.** complicated

98. Chimera

**a.** chimney

**b.** protest

**c.** illusion

**d.** panache

99. Temerity

**a.** audacity

**b.** fearfulness

**c.** shyness

**d.** stupidity

100. Educe

**a.** demand

**b.** elicit

**c.** ideal

**d.** unlawful

101. Nabob

**a.** bigwig

**b.** doubter

**c.** frolic

**d.** converse

102. Pall

**a.** light

**b.** satiate

**c.** carry

**d.** horror

103. Sacrosanct

**a.** prayer

**b.** sanctuary

**c.** pious

**d.** sacred

104. Loaches

**a.** gauche

**b.** fine

**c.** brilliant

**d.** indecent

**Analogies**

1. London: Britain:: \_\_\_\_\_\_\_\_\_\_\_:France

1. Washington
2. Peru
3. Paris
4. Madrid

Answer is c. Paris. London is Britain’s capital. So the relation is capital of….

2. Fraud: deceit:: espionage:\_\_\_\_\_\_\_\_\_\_

1. Highlighting
2. Reconnaissance
3. Virulence
4. Notoriety

Answer is b. the relation is synonyms.

3. Assiduous: perseverance: : flabbergast : \_\_\_\_\_\_\_\_\_\_\_

a. wreck

b. condemn

c. decadence

d. astound

Answer is d. astound. The relation is synonyms.

4. Hockey : sports : : United Nations : \_\_\_\_\_\_\_\_\_\_\_\_

a. collection

b. assembly

c. organization

d. authority

Answer is c. organization. Hockey is a sport. Likewise the UN is an organization.

5. \_\_\_\_\_\_\_\_\_\_\_\_\_ : delay : : diligence : intent

a. punctual

b. prompt

c. procrastinate

d. prudent

Answer is c. procrastinate. Diligence means to be intent on something. Hence procrastinate is the answer as it means to delay things.

6. Obedience: mutiny : : allegiance : \_\_\_\_\_\_\_\_\_\_\_\_

a. treason

b. loyalty

c. fidelity

d. devotion

Answer is a. treason. Mutiny and obedience are opposites. Treason and allegiance are opposites.

7. victory : forfeit : : \_\_\_\_\_\_\_\_\_\_\_ : ineptness

a. misdemeanour

a. acuity

c.clumsy

d. incompetent

Answer is b. acuity. The relation is antonyms.

8. hammer : tool : : honesty : \_\_\_\_\_\_\_\_\_\_\_\_\_

a. deception

b. myth

c. virtue

d. slander

answer is c. virtue. A hammer is a type of tool. Likewise honesty is a type of virtue.

9. fool : intelligence : : pauper : \_\_\_\_\_\_\_\_\_\_\_\_

a. courage

b. wealth

c. vision

d. strength

Answer is b. wealth. A fool lacks intelligence. Likewise a pauper lacks wealth.

10. Geneva :Switzerland : : \_\_\_\_\_\_\_\_\_\_\_\_\_\_ : Italy

a. Athens

b. Barcelona

c. Frankfurt

d. venice

Answer is d. venice. Geneva is in Switzerland. Likewise venice is in Italy.

11. pride : lion : : \_\_\_\_\_\_\_\_\_\_\_\_ : soldier

a. organization

b. array

c. platoon

d. authority

Answer is c. platoon. A group of lions make up a pride. A group of soldiers make up a platoon.

12. cold : freezing : : hot : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

a. warming

b. scalding

c. soothing

d. evaporating

Answer is b. scalding. The 2nd word is an extreme of the 1st word.

13. affluence : \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ : : astir : dormant

a. efficacious

b. inert

c. dearth

d. hasty

answer is c. dearth . the relation is that the words are antonyms

14. construction : foundation : : surgery : \_\_\_\_\_\_\_\_\_\_\_\_

a. patient

b. doctor

c. decision

d. incision

Answer is d. incision. Foundation is done to construct a building. An incision is done to perform a surgery.

15. internet : \_\_\_\_\_\_\_\_\_\_\_\_\_\_ : : laboratory: experimentation

a. dissemination

b. emancipation

c. transgression

d. traction

Answer is a. dissemination. The laboratory is used to make experiments. Likewise the internet is used to disseminate (distribute) information.

16. fresco: painting : : \_\_\_\_\_\_\_\_\_\_\_\_ : tyranny

a. governance

b. dictatorship

c. monarchy

d. blasphemy

Answer is b. dictatorship. A fresco is a type of painting. Likewise dictatorship is a type of tyranny.

17. describe : \_\_\_\_\_\_\_ : : conquer : abdicate

a. relinquish

b. relish

c. summarize

d. portray

Answer is c. summarize. The relation is that the words are opposites.

18. \_\_\_\_\_\_\_\_\_\_\_\_\_\_ : attentive : : decant : pour

a. fastidious

b. instrumental

c. excessive

d. fortitude

Answer is a. fastidious. The definition of decant is to pour. The definition of fastidious is to be attentive to details.

19. emphasis : prominence : : empower : \_\_\_\_\_\_\_\_\_\_\_

a. significance

b. eminent

c. permit

d.govern

Answer is c. permit. Emphasis and prominence are synonyms. Likewise empower and permit are synonyms.

20. Vociferous: \_\_\_\_\_\_\_ : : lithe : supple

a. vehement

b. flexible

c. equivocal

d. sonorous

Answer is a. vehement. The definition of lithe is supple. Likewise the definition of vociferous is to be vehement.

|  |
| --- |
| 1>The product of two numbers is 4375 and the quotient, when the larger one is divided by the smaller, is 7. The sum of the numbers is: |
| |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 380 | [**B.**](javascript:%20void%200;) | 395 | | [**C.**](javascript:%20void%200;) | 200 | [**D.**](javascript:%20void%200;) | 425 | |

**Answer:** Option **C**

**Explanation:**

Let the numbers be  *x*  and  *y*.

|  |  |  |
| --- | --- | --- |
| Then, *xy* = 4375 and | *x* | = 7. |
| *y* |

|  |  |  |
| --- | --- | --- |
| *xy* | = | 4375 |
| (*x*/*y*) | 7 |

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *y*2 = 625.

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *y* = 25.

http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 7*y* = (7 x 25) = 175.

* Sum of the numbers = *x* + *y* = 175 + 25 = 200.

|  |  |  |  |
| --- | --- | --- | --- |
| **2>** | If the sum of two numbers is 55 and the sum of their squares is 1525, then the product of the numbers is | | |
|  | A.600 | B.750 |  |
|  | C.800 | D.880 |  |

|  |
| --- |
| **Answer:** Option **C**  **Explanation:** |
| |  |  |  | | --- | --- | --- | | Let the numbers be x and y. | | | | Then, (x+y) | = 55 |  | | and x2+y2 | = 1525. |  | | Now, 2xy= (x+y)2 - (x2+y2) |  |  | | = (55)2 - 1525 |  | | = 3025 - 1525 |  | | = 1500 |  | |  |  |  | |

3>The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 18. What is the difference between the two digits of that number?

A.2 B.5

C.1 D.none of these

|  |
| --- |
| Let the ten's digit be x and unit's digit be y. |
| Then, (10x+y) - (10y+x) = 18. |
| **‹=›** 9(x - y) = 18 |
| **‹=› x - y = 2**.  4>The sum of two numbers is 80 and their product is 1575. What will be the sum of their reciprocals?   |  |  | | --- | --- | | [**A.  1/40**](http://www.a2zinterviews.com/Aptitude/problems-on-numbers/problems-on-numbers_3.php#t1) | [**B.  8/75**](http://www.a2zinterviews.com/Aptitude/problems-on-numbers/problems-on-numbers_3.php#t1) | | **C.  16/315** | **D.17/315** |  | |

|  |  |  |
| --- | --- | --- |
| Let the numbers be x and y. | | |
| Then, x + y = 80and xy = 1575. |  |  |
| Therefore, 1/x + 1/y |  |  |
| **‹=›** x + y / xy. |  |  |
| **‹=›** 80/1575. |  |  |
| **= 16 / 315.** |  |  |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **.** | 5>Find a number such that when 20 is subtracted from 5 times the number, the     |  |  |  | | --- | --- | --- | |  | [**A.  1**](http://www.a2zinterviews.com/Aptitude/problems-on-numbers/problems-on-numbers_3.php#t1)**6** | [**B. 18**](http://www.a2zinterviews.com/Aptitude/problems-on-numbers/problems-on-numbers_3.php#t1) | |  | [**C.  25**](http://www.a2zinterviews.com/Aptitude/problems-on-numbers/problems-on-numbers_3.php#t1) | [**D.**](http://www.a2zinterviews.com/Aptitude/problems-on-numbers/problems-on-numbers_3.php#t1)**17** | |

|  |  |  |
| --- | --- | --- |
| Let the numbers be x . | | |
| Then, 5x - 20 = 2x + 18 |  |  |
| **‹=›**3x = 48 |  |  |
| **‹=›** x = 16. |  |  |

|  |
| --- |
| 6>A two-digit number is such that the product of the digits is 15. When 18 is added to the number, then the digits are reversed. The number is: |
| |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 18 | [**B.**](javascript:%20void%200;) | 24 | | [**C.**](javascript:%20void%200;) | 42 | [**D.**](javascript:%20void%200;) | 35 |  |  |  |  | | --- | --- | --- | | Let the ten's and unit digit be *x* and | 15 | respectively. | | *x* |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Then, | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 10*x* + | 15 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | + 18 = 10 x | 15 | + *x* | | *x* | *X* |   http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 10*x*2 + 15 + 18*x* = 150 + *x*2  http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 9*x*2 + 18*x* - 135 = 0  http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x*2 + 2*x* - 15 = 0  http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif (*x* + 5)(*x* - 3) = 0  http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 3. |
| 7>The sum of the digits of a two-digit number is 15 and the difference between the digits is 3. What is the two-digit number? |
| |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 69 | [**B.**](javascript:%20void%200;) | 78 | | [**C.**](javascript:%20void%200;) | 96 | [**D.**](javascript:%20void%200;) | 96 | | [**E.**](javascript:%20void%200;) | None of these |  |  |   Let the ten's digit be *x* and unit's digit be *y*.  Then, *x* + *y* = 15 and *x* - *y* = 3   .  Solving *x* + *y* = 15   and   *x* - *y* = 3, we get: *x* = 9, *y* = 6.  So, the number is either 96 or 69.   |  | | --- | | 8>The sum of first 15\*3 natural numbers is: | | |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 1035 | [**B.**](javascript:%20void%200;) | 2645 | | [**C.**](javascript:%20void%200;) | 2590 | [**D.**](javascript:%20void%200;) | 1305 |   Let Sn =(1 + 2 + 3 + ... + 45). This is an A.P. in which a =1, d =1, n = 45.   |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | Sn = | n | [2*a* + (*n* - 1)*d*] | = | 45 | x [2 x 1 + (45 - 1) x 1] | = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 45 | x 46 | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gif | = (45 x 23) | | 2 | 2 | 2 |   = 45 x (20 + 3)  = 45 x 20 + 45 x 3  = 900 + 135  = 1035.   |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |   9>How many keystrokes are needed to type numbers from 1 to 1000?   1. 3001 2. 2893 3. 2704 4. 2890   **Explanatory Answer**  While typing numbers from 1 to 1000, you have 9 single digit numbers from 1 to 9. Each of them require one keystroke. That is 9 key strokes.  There are 90 two-digit numbers, from 10 to 99. Each of these numbers require 2 keystrokes. Therefore, one requires 180 keystrokes to type the 2 digit numbers.  There are 900 three-digit numbers, from 100 to 999. Each of these numbers require 3 keystrokes. Therefore, one requires 2700 keystrokes to type these 3 digit numbers.  Then 1000 is a four-digit number which requires 4 keystrokes.  Totally, therefore, one requires 9 + 180 + 2700 + 4 = 2893 keystrokes.  10>What number should be subtracted from x3 + 4x2 - 7x + 21 if it is to be perfectly divisible by x + 3?   1. 42 2. 39 3. 13 4. None of these   Correct Choice is **(1)** and Correct Answer is **42**  **Explanatory Answer**  According to remainder theorem when polynomial division math, then the remainder is f(-a).  In this case, as x + 3 divides x3 + 4x2 - 7x + 21 - k perfectly (k being the number to be subtracted), the remainder is 0 when the value of x is substituted by -3.  i.e., (-3)3 + 4(-3)2 - 7(-3) + 21 - k = 0  or -27 + 36 + 21 + 21 = k  or k = 51  11>What is the minimum number of square tiles required to tile a floor of length 6 metres 78 cm and width 3 metres 74 cm?   1. 63393 2. 18750 3. 54043 4. 74843     **Explanatory Answer**  The tiles used to tile the floor are square tiles. Therefore, the length of the tiles = width of the tiles. As we have to use whole number of tiles, the side of the square should a factor of both 5 m 78 cm and 3m 74. And it should be the highest factor of 6 m 78 cm and 3m 74.  6m 78 cm = 678 cm and 3 m 74 cm = 374 cm. The HCF of 678 and 374 = 2.  Hence, the side of the square is 2.  The number of such square tiles required = (678\*374)/(2\*2) = 63393 tiles.   |  |  | | --- | --- | |  | **TIME AND DISTANCE**  1>In covering a distance of 50 km, A takes 2 hours more than S. If A doubles his speed, then he would take 1 hour less than S. A's speed is: | | |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 8.33 kmph | [**B.**](javascript:%20void%200;) | 6 kmph | | [**C.**](javascript:%20void%200;) | 6.25 kmph | [**D.**](javascript:%20void%200;) | 7.5 kmph | |   Let A's speed be *x* km/hr.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | Then, | 50 | - | 50 | = 3 | | *x* | 2*x* |   http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 3*x* = 25/3  http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* =8.33.   |  | | --- | | 2>A car can travel 50% faster than a train. Both start from point A at the same time and reach point B 75 kms away from A at the same time. On the way, however, the car lost about 10.0 minutes while stopping for lunch. The speed of the train is: | | |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 130 kmph | [**B.**](javascript:%20void%200;) | 100 kmph | | [**C.**](javascript:%20void%200;) | 120 kmph | [**D.**](javascript:%20void%200;) | 150 kmph |   Let speed of the car be *x* kmph.   |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | | Then, speed of the train = | 150 | *x* | = | http://www.indiabix.com/_files/images/aptitude/1-sym-oparen-h1.gif | 3 | *x* | http://www.indiabix.com/_files/images/aptitude/1-sym-cparen-h1.gifkmph. | | 100 | 2 |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-tfr.gif | 75 | - | 75 | = | 100 | | *x* | (3/2)*x* | 10 x 60 |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | | http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif | 75 | - | 50 | = | 1 | | *x* | *x* | 06 |  |  |  |  |  |  | | --- | --- | --- | --- | --- | |  |  |  |  |  | |  | | X=25\*06 =150   |  | | --- | | 3>A person travelled a distance of 60 km in 9 hours. He travelled partly on foot at 5 km/hr and partly on bicycle at 10 km/hr. The distance travelled on foot is: | | |  |  |  |  | | --- | --- | --- | --- | | [**A.**](javascript:%20void%200;) | 25 km | [**B.**](javascript:%20void%200;) | 28 km | | [**C.**](javascript:%20void%200;) | 29 km | [**D.**](javascript:%20void%200;) | 26 km |   Let the distance travelled on foot be *x* km.  Then, distance travelled on bicycle = (60 -*x*) km.   |  |  |  |  |  | | --- | --- | --- | --- | --- | | So, | *x* | + | (61 -*x*) | = 9 | | 5 | 10 |   http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif 2*x* + (61 -*x*) = 9 x 10  http://www.indiabix.com/_files/images/aptitude/1-sym-imp.gif *x* = 29 km. | |  |  |  |  | | |

4>A train traveling at 70 kmph crosses a platform in 20 seconds and a man standing on the platform in 18 seconds. What is the length of the platform in meters?

1. 240/6 meters
2. 360/7 meters
3. 350/9 meters
4. 600 meters

When the train crosses a man standing on a platform, the distance covered by the train is equal to the length of the train.  
  
However, when the same train crosses a platform, the distance covered by the train is equal to the length of the train plus the length of the platform.  
  
The extra time that the train takes when crossing the platform is on account of the extra distance that it has to cover = length of the platform.  
  
Therefore, length of the platform = speed of train \* extra time taken to cross the platform  
  
Length of platform = 70 kmph \* 2 seconds  
  
Converting 70 kmph into m/sec, we get 72 kmph = (5/18)\*70 = 175/9 m/sec  
  
Therefore, length of the platform = (175/9)\*2 = 350/9 meters.

Quantitative aptitude QUESTIONS

1. If a number A is 10% less than another number B and B is 10% more than 265, then A is equal to:
2. 291.50
3. 260.40
4. 270.00
5. **262.40**

B = 265 + 10% of 265

= >265 + 26.50 = 291.50  
so A = 291.50 - 10% of 291.50

=> 262.40

1. A cricketer scored 98 runs which included 3 boundaries and 8 sixes. What percent of his total score did hemake by running between the wickets?
2. **34.54**
3. 54.34
4. 45.54
5. 38

Number of runs made by running = 98 - (3 x 4 + 8 x 6) = 38  
so required percentage = ((38 x 100)/110)%

=>34.54%

1. 10% of the voters did not cast their vote in an election between two candidates.10% of the votes polledwere found invalid. The successful candidate got 58% of the valid votes and won by a majority of 3240 votes. The number of voters enrolled on the voters' list was.
2. 26000
3. 125000
4. **25000**
5. 32400

Let the total number of voters be x then, votes polled = 90% of x.  
valid votes = 90% of (90% of x)  
hence , 58% of [90% of(90% of x)] - 42% of [90% of(90% of x)] = 3240  
16% of [90% of (90% of x)]= 3240  
solving above equation we get x = 25000

1. Two friends appeared for an examination. One of them secured nine marks more than the other and his marks was 56% of the sum of their marks. The marks obtained by them are:
2. 39,30.
3. 43,34.
4. **42,33.**
5. 41,32.

Let their marks be (x + 9) and x. then  
x+9 = (56/100) (x + 9 + x)

=> 25(x + 9) =14(2x + 9)   
=> 3x = 99

=> x = 33, so their marks are 33 and 33 + 9 = 42

1. Steve scored 30% marks and failed by 15 marks. Tony scored 40% marks and obtained 35 marks more than those requiredto pass. The pass percentage is:
2. 38%.
3. **33%.**
4. 43%.
5. 46%.

Let total marks = x then, (30% of x) + 15 = (40% of x) - 35  
=> 30x/100 + 15 = 40x/100 - 35

=>x =500  
so passing marks = (30% of 500) + 15 = 165  
so pass percentage = ((165/500) x 100) % = 33%

1. For photocopy of a sheet of paper it costs Re. 1 to. However, 3% discount is allowed on all photocopies done after first 1000 sheets. How much will it cost to copy 8000 sheets of paper?
2. 6370
3. 7700
4. **7790**
5. 6790

Total cost =Rs.[1 x 1000 + (100 - 3)% of 1 x 7000]

= Rs.(1000 + 0.97 x 7000)

= Rs.(1000 + 6790) = Rs.7790

1. While purchasing one item costing Rs. 500, I had to pay the sales tax at 9% and on another costing Rs. 6400; the sales tax was 7%. What percent of the sales tax I had to pay, taking the two items together on an average?
2. **71%**
3. 72%
4. 73%
5. 74%

Total sales tax paid = 9% of Rs. 500 + 7% of Rs. 6400

Rs.[(9/100) x 500 + (7/100) x 6400]=Rs(45+448)=493

Total cost of the items = Rs. (500 + 6400) = Rs. 6900.

Required % = [(493/6900) x 100] %=71%

1. In an election between two candidates, one got 65% of the total valid votes, 25% of votes were invalid. If the total number of votes was 8000, the number of valid votes that the other candidate got, was:
2. 2700
3. 2900
4. 3000
5. **2100**

Number of valid votes = 75% of 8000 = 6000.

Valid votes polled by other candidate = 35% of 6000

= [(35/100) x 6000] =2100

1. A fruit seller had some mangoes. He sells 20% mangoes and still has 1420 mangoes. Originally, he had:
2. 1420.
3. **1775.**
4. 1880.
5. 2140.

Suppose he had x mangoes.

Then, (100 - 20) % of x = 1420

[(80/100) \* x]=1420

X= 1420\*100/80 = 1775

1. In a ruralby-election, 60% of the voters voted for candidate R whereas 30% of the remaining voted for candidate S. The remaining voters did not vote. If the difference between those who voted for candidate S and those who did not vote was 1200, how many individuals were eligible for casting vote in that election?
2. 10,000.
3. 42,000.
4. 50,000.
5. **60,000.**

Let the number of persons eligible to vote be x.

Then, voters who voted for S = 30% of x.

Voters who voted for R = 60% of (70% of x).

[(60/100 \* 70/100 \*100] % of x = 42% of x.

Voters who did not vote = [100 – (30 + 42)] % of x = 28% of x

30% of x - 28% of x = 1200

=>2% of x = 1200

=>x = (1200\*100/2) =60000

1. In GATE examination,85% of the candidates who were eligible belonged to the general categoryand 5% of the applicants were found not eligible. If 5700 eligible candidates belonged to other categories, then how many candidates applied for the examination?
2. 21000
3. 42000
4. **34000**
5. **40000**

Let the total number of applicants be x. Number of eligible candidates = 95% of x.

Eligible candidates of other categories = 15% of (95% of x)

=>(15/100)\*(95/100)\*x=(57/400)x

=>(57/400)x=5700

X=[(5700\*400)/57]=40000

1. The price of a sedan is $5,000. It was insured to 85% of its price. The car was damaged completely in an accident and the insurance company paid 90% of the insurance. What was the difference between the price of the car and the amount received?
2. $5000
3. $3000
4. **$1175**
5. $2350

Amount paid to car owner = 90% of 85% of $5,000

=$[(90/100)x(85/100)\*5000]=$3825

Required difference =$(5000-3825)=$1175

1. When 25% is lost in grinding spices, India can export 30 lakh tons of it. On the other hand, if 20% is lost in grinding, it can export 40 lakh tons of spices. The production of spices in the country is:
2. 100 lakh tons
3. **200 lakh tons**
4. 300 lakh tons
5. 400 lakh tons

Let the total production be x lakh tons.

Then, 25% of x – 20% of x = (40 – 30) lakh tons

 5% of x = 10 lakh tons

 x = (10\*100/5) =200 lakh tons.

1. Martina bought a machine for Rs 75,000 and spent Rs 5000 on repair and Rs 1000 on transport. And sold it with 25% profit. At what price did she sell the machine?
2. 109000
3. 110000
4. **109350**
5. 110350

Cost price = (75000+5000+1000) = 81000,

Profit = 35%  
Selling price = 135% of 81000

=> (135 x 81000)/100 = 109350

1. In an electronic store, the profit is 325% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?
2. 65
3. **70**
4. 75
5. 60

Let CP = Rs 100. Then, profit = 325, SP = 425  
new CP = 125% of Rs 100 = 125, new SP = 400  
profit = (425 - 125) = 300   
required percentage = (300x100)/425 = 70% (approx.)

1. Awoman purchased a box full of pens at the rate of 7 for Rs 9 and sold all of them at the rate of 8 for Rs 11. In this transaction, she gained Rs 10. How many pens did the box contain?
2. 110
3. 100
4. **112**
5. 120

Suppose, number of pens bought = LCM of 7 and 8 = 56  
CP of 56 pens = Rs (9x56/7) = 72

SP of 56 pens = Rs (11x56/8) = 77  
Now, Rs 5 gained on 56 pens  
So, Rs 10 are gained on (56x10/5) = 112 pens

1. By making mixture of two types of Wheat and selling the mixture at the rate of Rs 177 per kg, a wholesaler makes a profitof 18%. If to every 2 kg of one type costing Rs 200 per kg, 3 kg of the other type is added,then how much per kg does the other brand cost?
2. 100
3. 115
4. **116**
5. 119

Let the cost of the other brand be Rs r per kg.  
CP of 5kg = (2x200 + 3r) = (400 + 3r)   
SP of 5 kg = (5 x 177) = 885  
so [(805 - (400 + 3r)) x100]/ (400 + 3r) = 18

=> r =116.66

1. A textile merchant sells half of his cloth at 20% profit, half of the remaining at 20% loss and rest he sellsat the cost price. In the total transaction, his gain or loss will be:
2. 10%
3. **5%**
4. 12%
5. 6%

Let the CP of whole be Rs x.

CP of 1/2 stock = Rs x/2, CP of 1/4 stock = Rs x/4  
Total SP = Rs [(120% of x/2) + (80% of x/4) + x/4] = Rs (3x/5 + x/5 + x/4)

= Rs 21x/20  
Gain = Rs (21x/20 - r) = Rs x/20  
so gain % = (x/20 \* 1/x \* 100)% = 5%

1. Steve sold 10 books for a total profit ofRs. 144 and 12 books for a total profit ofRs. 460. At what profit per books should he sell the remaining 20 books so that he gets an average profit of Rs. 20 per book?
2. 10.4
3. 11.8
4. 13.3
5. 14.3

Total profit required = Rs. (42 x 20) = Rs. 840.

Profit on 22 books = Rs. (460 + 144) = Rs. 604

Profit on 20 books = Rs. (840 - 604) = Rs. 236.

Average profit on these books = Rs 236/20=11.8

1. William earns a profit of Rs.900 by selling an article which is double the loss incurred when the same article is sold for Rs. 450. At what price should he sell the article to make 25% profit?
2. 600
3. 750
4. 800
5. 650

Let C.P. = Rs. x. Then, 900 - x = 2 (x - 450)

 3x = 1800

 x = 600

Required S.P. = 125% of Rs. 600

Rs. 125/100\*600=Rs.750

Quantitative Aptitude QUESTIONS & ANSWERS

1. A grandfather divides Rs.8200 among 3 sons, 5 daughters and 1 nephew. If each son receives 5 times as much as nephew and each daughter receives 5 times as much as nephew, how much does each son receive?
2. 800
3. 820
4. **1000**
5. 900

LettheshareofeachnephewbeRs.x

Then,shareofeachdaughter=Rs. (5x);

Shareofeachson=Rs.(5x).

So,3\*5x+5\*5x+2x=8200

=>25x+15x+x=8200=>41x=8200

=>x=200.Therefore,Shareofeachson=Rs.(5\*200)=Rs.1000

1. A farmer bought an Ox and a cart. If he sells the Ox at 10 % loss and the cart at 20% gain, he will not lose anything; but if he sells the Ox at 5% loss and the cart at 5% gain, he will lose Rs. 10 in the bargain. The amount paid by him was Rs.\_\_\_\_\_\_\_ for the Ox and Rs.\_\_\_\_\_\_\_\_ for the cart.
2. 300, 400
3. 500, 200
4. 600, 100
5. **400, 200**

Let x be the cost price of the Ox and y be the cost price of the cart.

In the first sale there is no loss or profit. (i.e.)

The loss obtained is equal to the gain.

Therefore (10/100) \* x = (20/100) \* y

X = 2 \* y …………………………(1)

In the second sale, he lost Rs. 10. (i.e.) The loss is greater than the profit by Rs. 10.

Therefore (5 / 100) \* x = (5 / 100) \* y + 10……………………….(2)

Substituting (1) in (2) we get

(10 / 100) \* y = (5 / 100) \* y + 10

(5 / 100) \* y = 10

**y = 200**

From (1)

2 \* 200 = **x = 400**

Cost price of Ox= Rs. 400 & the cost price of cart = Rs.200.

1. Virat's average in his first 21 innings was 50. After the 22nd innings, his average was 49. How many runs did he score in his 22nd innings? (Supposing that he lost his wicket in his

22nd innings)

1. 50
2. 49
3. **28**
4. 35

Total score after 21 innings = 21\*50 = 1050

Total score after 51 innings = 22\*49 = 1078

So, runs made in the 51st innings = 1078-1050 = 28

1. A cricketerhasa certain battingaveragefor15innings.Inthesixteenth inning,hescored108runs,therebyincreasinghisaverageby6runs.Hisnewaverageis:
2. 50
3. 25
4. 12
5. **18**

Letaveragefor10inningsbex.

Then,15x+108/16=x+6

16x+96=15x+108=>x=12

Therefore,NewAverage=(x+6)= 18 runs.

1. Amarspends70%ofhisincome.Hisincomeisincreasedby25%andheincreasedhisexpenditureby10%.Findthepercentageincreaseinhissavings.
2. 50%
3. 40%
4. **60%**
5. 30%

Letoriginalincome=Rs.100.

Then,expenditure=Rs.70andsavings=Rs.30.

Newincome=Rs.125&Newexpenditure=Rs.[110/100\*70]=Rs.77

Newsavings=Rs.[125-77]=Rs.48

Increaseinsavings=Rs.[48-30]=Rs.18

Therefore,Increase%=[18\*1/30\*100]%=>60%

1. Thedifferencebetweentheagesoftwopeopleis20years.Fifteenyearsago,theelderonewastwiceasoldastheyoungerone.Thepresentageoftheelderpersonis?
2. 35
3. 25
4. 45
5. **55**

Lettheagesbexyearsand(x+20)yearsrespectively.

Then,(x+20)-15=2(x-15)

=>x+5=2x-30

=>x=35

Therefore,presentageoftheelderperson=(x+20)=55years.

1. The average salary of the entire staff in an office is Rs 220 per month. The average salary of officers is Rs 560 and that of non-officer is Rs 210. If the number of officer is 17, then find the number of non-officer in the office?
2. 510
3. 560
4. **578**
5. 565

Let the required number of non-officers = a  
 Then, 210a + 560 x 15= 220 (17 + a)  
 or, 220a – 210a = 560 x 17 – 220 x 17 = 15 (560 – 220)  
 or, 10a = 17 x 340;

a = 17 x 34 = 578

1. The average age of students of a class is 19.8 years. The average age of boys in the class is 20.4 years and that of the girls is 19.4 years. The ratio of the number of boys to the number of girls in the class is:
2. 3:2
3. 4:5
4. **2:3**
5. 5:4

 Let the ratio be *k*: 1  
Then, *k* x 20.4 + 1 x 19.4 = (*k* + 1) x 19.8  
(20.4 - 19.8) k = (19.8 - 19.4)

K=0.4/0.6=2:3  
Required Ratio =2: 3

1. The average price of 21 books is Rs. 12 while the average price of 20 of these books is Rs. 10. Of the remaining two books, if the price of one book is 60% more than the price of the other, what is the price of each of these two books?
2. **20 & 32**
3. 20 & 40
4. 32 & 40
5. 40 & 32

Total price of the two books = Rs. [(12 x 21) – (10 x 20)]  
                                                = Rs. (252 - 200) = Rs. 52  
Let the price of one book be Rs.x

The price of the other book = Rs. (x \* 60% of x) = x+ (3/5) x= (8/5) x

So, x+ (8/5) x=52

X=20

The prices of the two books are Rs. 20 and Rs. 32

1. A Church has an average of 640 visitors on Sundays and 232 on other days. The average number of visitors per day in a month of 30 days beginning with a Sunday is
2. 280
3. 290
4. **300**
5. 310

Since the month begins with a Sunday, so there will be five Sundays in the month.

Required Average

= (640x5+232x25 / 30)

= (9000 / 30)

= 300

1. The average age of a husband and his wife was 23 years at the time of their marriage. After five years they had triplets of one year old. Nowthe husband’s father whose age is 67 is also with them. The average age of the family now is?
2. 19
3. 20
4. **21**
5. 22

Sum of the present ages on husband, wife and child= (23x2+5x2) +1+1+1+67

= 126 years

Required average== (126/6)

= 21 years.

1. In a semester examination, a girl’s average marks were 83. If she had obtained 20 more marks for his English and 2 more marks for his Social studies, his average would have been 85. How many subjects were there in the examination?
2. 6
3. 8
4. 10
5. **11**

Let the number of subjects = x

Then, Total marks he scored for all subjects = 83x

If he had obtained 20 more marks for his Geography and 2 more marks for his history, his average would have been 85

=> Total marks he would have scored for all subjects = 85x

Now we can form the equation as 85x - 83x = the additional marks of the student = 20 + 2 = 22

2x = 22

X=11

1. The average of a non-zero positive number and its cube is 13 times the number. The number is:
2. 4
3. **5**
4. 9
5. 6

Let the number be r. then,   
(x + x3)/2 = 13x

x3+x=26x  
x3 – 25x = 0 => x = 0 or x=-5 or x = 5, so the number is 5.

1. The average of 8 consecutive numbers is 25.5. The largest of these numbers is:
2. 27
3. 23
4. 25
5. 29

Let the number be x, x+1 ,x+2 ,x+3 ,x+4 ,x+5 , x+6 then,  
{ x + ( x + 1 ) + ( x + 2 ) + ( x + 3 ) + ( x + 4 ) + ( x + 5) + ( x + 6 ) +( x + 7) }/8 = 25.5  
or 8x + 28 = 204

=> x = 22  
so the largest number is x+7 = 22+7 = 29

1. A bowler whose bowling average is 14.4 runs per wicket takes 5 wickets for 28 runs and thereby decreases his average by 0.4. The number of wickets taken by him till the last match was:
2. 100
3. **105**
4. 95
5. 90

Let the number of wickets taken till the last match be x then,   
(14.4x + 28)/(x + 5) = 14  
14.4x + 28 = 14x + 70

=> x = 105

1. The ratio between the present ages of A and B is 5:8. If B is 9 years old than A, what will be the ratio of the ages ofA and B after 4 years?
2. 1: 3
3. 5: 8
4. **2: 3**
5. 4: 7

Let A's age and B's age be 6r years and 7x years respectively  
then, 8x – 5x =9

=> x = 3  
so required ratio = (5x + 3) :( 8x + 3)

= 18: 27 = 2: 3

1. Four years ago the ratio of the ages of Earland Simon was 3:4. Six years hence the ratio of their ages will be5:6. What is Simon's age at present?
2. 21
3. **31**
4. 25
5. 35

Let the ages of Earl and Simon 6 years ago be 6x and 5x years respectively  
then, [(3x + 4) + 6]/ [(4x + 4)+ 6] = 5/6   
on solving above we get x = 5  
so Simon's present age = (5x + 6) = 31 years

1. Sean's grandfather was 10 times older to him 14 years ago. He would be 3 times of his age 8 years from now. Eight years ago, what was the ratio of Sean's age to that of his grandfather?
2. **25/126**
3. 20/128
4. 25/128
5. 20/126

16 years ago, let Sean's age = x years

Grandfather's age = 10x years  
after 8 years from now

Sean's age = (x+14+8) years and grandfathers' = (10x+14+8) years  
so 10x + 22 = 3(x + 22)

=> x = 44/7   
8 years ago,

Sean's age/grandfather's age = (x+8)/(10x+8) = 25/126

1. A lady was asked to state her age in years. Her reply was, "take my age three years hence, multiply it by 3 and then subtract three times my age three years ago and you will know how old i am" what was the age of the person?
2. 16
3. **32**
4. 18
5. 20

Let the present age of the lady be x years.  
Then, 4(x + 4) - 4(x - 4) = x  
=> x = 32 years

1. Father is aged 3 times more than his son Brook. After 8 years he would be two and a half times of Brook's age. After 8 years, how many times would he be of Brook's age?
2. 3
3. 4
4. 5
5. 2

Let Brook's present age be x years.

Then, father’s present age = (x + 3x) years = 3x years.  
So (4x + 8)=(5/2)(x + 8)

=> x = 8  
 required ratio = (4x + 16)/(x + 16) = 48/24 = 2 times

**1.**A machine X can print one lakh books in 6 hours, machine Y can print the same number of books in 4 hours while machine Z can print them in 24 hours. All the machines are started at 9 A.M. while machine X is closed at 11 A.M. and the remaining two machines complete work. At what will the machines printing one lakh books?

A.11.50 B.12.09

C.12.53 D.11.024

Answer: Option D

Explanation:

(X + Y + Z)'s 1 hour's work =( 1 + 1 + 1 )= 11 .

06 04 24 24

Work done by X, Y and Z in 2 hours = ( 11 x 2 ) = 11

24 12

Remaining work = ( 1 - 11 ) = 1 .

12 12

(Q + R)'s 1 hour's work = ( 1 + 1 ) = 7 .

04 24 24

Now, 7 work is done by Q and R in 1 hour.

24

So, 1 work will be done by Q and R in ( 1 x 7 )=07hours =0.024 hours.

12 12 24 288

So, the work will be finished approximately 0.024 hours after 11 A.M., i.e., around 11.024 P.M.

**2.**A can finish a work in 20 days and B can do the same work in 25 days. B worked for 10 days and left the job. In how many days, A alone can finish the remaining work?

work=1/25days

B's 10 day's work = ( 1 x 10 ) = 2 .

25

A.13 B.14

C.24 D.28

Answer: Option C

Explanation:

B’s 1 day

5

Remaining work = ( 1 - 2 ) = 3 .

5 5

Now, 1 work is done by A in 1 day.

20

Therefore 3 work is done by A in ( 20 x 3 ) = 12 days.

5 5

**3.**Two number are in the ratio 6: 7. If 8 is subtracted from each, the new numbers are in the ratio 04 : 05. The smaller number is:

A. 27 B. 36

C. 42 D. 55

Answer: Option B

Explanation:

Let the numbers be 6x and 7x.

Then, 6x - 12 = 4

7x - 12 5

5(6x - 12) = 4(7x - 12)

x = 06.

The smaller number = (6 x 6) = 36.

**4.**In a bowl, there are coins of 50p, 10p and 5p in the ratio of 1: 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there(approximately)?

A. 50 B. 105

C. 150 D. 200

Answer: Option B

Explanation:

Let the number of 50p, 10p and 5p coins be m, 2m, 3m respectively.

Then, sum of their values = Rs.50m +10 x 2m+ 5 x 3m = Rs. 85m

100 100 100 100

85m = 30 m = 30 x 100 = 35.

100 85

Hence, the number of 5 p coins = (3 x 35) = 105.

**5.** What is the largest 5 digit number exactly divisible by 88?

A. 99944 B. 99998

C. 99988 D. 99968

Answer: Option D

Explantion:

The largest 5 digit number is 99999.

When this number is divided by 88,the remainder is 31

I,e 99999%88=31

Subtracting 31 from 99999 we get 99968

**6.**X can do a certain work in the same time in which Y and Z together can do it. If X and Y together could do it in 25 days and Z alone in 50 days, then Y alone could do it in:

A. 150 days B. 200 days

C. 250 days D. 100 days

Answer: Option D

Explanation:

(X + Y)'s 1 day's work = 1

25

Z's 1 day's work = 1

50

(X + Y + Z)'s 1 day's work = 1 + 1 = 3 . .... (i)

25 50 50

A's 1 day's work = (X + Y)'s 1 day's work .... (ii)

From (i) and (ii), we get: 2 x (X's 1 day's work) = 3

50

X's 1 day's work = 3 .

100

Y's 1 day's work 1 - 3 = 1 .

25 100 100

So, Y alone could do the work in 100 days.

**7.**A is thrice as good as workman as B and therefore is able to finish a job in 90 days less than B. Working together, they can do it in:

A. 200 days B. 22.1days

C. 25.9 days D. 33.75 days

Answer: Option B

Explanation:

Ratio of times taken by A and B = 1 : 3.

The time difference is (3 - 1) 2 days while B take 3 days and A takes 1 day.

If difference of time is 2 days, B takes 3 days.

If difference of time is 90 days, B takes 3 x 90=135 days.

2

So, A takes 45 days to do the work.

A's 1 day's work = 1

45

B's 1 day's work = 1

135

(A + B)'s 1 day's work =1 + 1 = 4

45 135 135

A and B together can do the work in 135 = 33.75 days.

4

**8.**An electric motor can fill the tank in 3hrs.Because of the leak int the tank it took 4hr to fill the tank. If the tank is full how much time will it take to empty it?

A.10 B.12

C.15 D.21

Answer: Option B

Explanation:

Time taken by the motor to fill the tank (without leak) 1/3 hr

Time taken by the motor to fill the tank (with leak) 4 hr

Therefore, work done by rhe leak 1 - 1 =1

3 4 12

So leak will empty the tank in 12hr

**9.** If the number 58\*673 is completely divisible by 9, what is the the smallest whole number in place of \*?

A. 3 B. 7

C. 5 D. 9

Answer: Option B

Explanation:5+8+x+6+7+3 is divisible by 9

29+x is divisible by 9

X is 7

**10.** What is the smallest 5 digit number exactly divisible by 111?

A. 10010 B. 10011

C. 10012 D. 10013

Answer: A

Explanation: smallest 5 digit number is 10000

When 10000 is divided by 111 remainder is 10

Therefore smallest 5 digit number divisible by 111 is 10010

1.Looking at an old album,madhura says, "He is the son of the only son of my grandfather." How is the man in the photograph related to Madhura?

A. Brother B. Uncle

C. Cousin D. Data is inadequate

Ans: A   
  
  
Solution:The man in album is the son of the only son of Madhura s grandfather ,means to say the man is the son of Madhura s father. Hence, the man is the brother of Madhura.  
  
  
2. Nishanth said to Nitin, "That boy playing with the soccer ball is the younger of the two brothers of the daughter of my father's wife." How is the boy playing soccer ball related to Nishanth ?

A. Son B. Brother

C. Cousin D. Brother-in-law

Ans: B   
  
  
Solution:Father's wife → mother. Hence, the daughter of the mother means sister and sister's younger brother means brother. Therefore, the boy is the brother of Deepak.   
  
  
 3. Pointing at a lady Sreeshanth said, "This lady is the mother of the only daughter of my son." How is she is related to Sreeshanth?

A.Wife B. Daughter-in-law

C.Daughter D. Sister-in-law.

Ans: B

Solution: The lady is the mother of Sreeshanth ‘s granddaughter. Hence, she is the daughter-in-law of Sreeshanth.

4.Anusha said toa women sitting in the car, "The only daughter of the brother of my wife is the sister-in-law of the brother of your sister." How the husband of the lady is related to anusha?

A. Maternal uncle Uncle

C. Father Son in law

Ans: D. Son in law

Anusha s son in law is the brother of the lady who is sitting the clinic.Hence the husband is the son in law of Anusha.

5. P is the brother of Q; Q is the sister of R;R is the father of S ,How is S related to P?

A. Brother Sister

C. Nephew Cannot be determined

Ans: (d) Cannot be determined   
  
  
Solution: If Sis Male, the answer is Nephew.

If Sis Female, the answer is Niece.

As the sex of Sis not known, hence, the relation between S and P can t be determined

6.ajay s son abhi is married to kiran whose sister jaya is married to sharan ,the brother of kiran. How is jaya related to raksha?   
  
  
(a) daughter in law (b) Sister   
  
(c) cousin (d) none of these  
  
Ans: (A)   
  
Solution: Since sharan is the brother of kiran,ajay is the father of sharan. But jaya is wife of sharan.So she is daughter in law of ajay.  
  
  
7. Showing a picture,sanjay said “ He is son of the only sister of my father”. How is he related to sanjay?  
  
  
(a) Cousin (b) Uncle  
  
(c) Cannot be determined (d) None of these   
  
Ans: (a)   
  
Solution: The boy Is the son of sanjay s father s sister. So he is sanjay s cousin.  
  
  
  
8. Max is the father of Alex who is the son of harris. In order to know the relationship between Max to prince, which of the following statements is necessary ?  
  
(1) Prince is the brother of harris  
(2)The daughter of alex is the grand daughter of harris

(a) only 1 (b) only 2  
(c) either 1 or 2 (d) both 1 and 2  
  
Ans(a)

Solution: Max is the father of Alex who is the son of harris.  
Hence harris is the mother of alex.  
From statement 1 we can find out that prince is brother in law of max.

9. A is the mother of B; B is the sister of C; C is the father of D. How is P related to D?

A. Mother Grandmother

C. Aunt Data inadequate

Ans☹b) Grand mother   
  
Solution: Ais the mother of B

B is the sister of C

C is the father of D.

Therefore, D is the nephew or niece of B and P is the grandmother of D

10.Pointing to vinay,shrey said,” I am the only son of the sons of his father.” How s vinay related to shrey?   
  
A. Nephew B.Uncle   
  
C.Father or uncle D.Ftaher   
  
  
Ans:c  
  
Solution : shrey is the only son of one of the sons of Vinay's father → Either Vinay is the father or uncle of Shrey

PROBLEMS ON NUMBERS

1. The sum of two numbers is 60. If four times of one number is equal to two times of the other number, find the numbers

ans: 20 and 40

Explanation: let two number be x and(60-x) then, 4x=2(60-x) =>x=20.

60-x i.e 40 is the other number.

2. Find the number such that its fourth is greater than its eighth by 33.

ans: 246

Explanation: x/4-x/8=33 => (8x-4x)/32=33=>x=246.

3. The sum of three consecutive multiples of 3 is 90.what is the largest of these numbers?

ans: 33

Explanation: 3x+3(x+1)=3(x+2)=90 =>9x+9=90 =>x=9 then largest

number is 3(x+2)=> 3(9+2) =>33.

4. Check whether 347 is prime number or not?

ans: 347 is the prime number

Explanation: on taking near sqr of 347 i.e 361 . (19)^2 >347

The prime number less than 19 are 2,3,5,7,11,13,17. none of these divides 347 completely. so 347 is a prime number.

5. The sum and product of two numbers are 14 and 45 respectively.The sum of their reciprocals is :

ans :14/45

Explanation: let the given numbers be p and q. p+q=14 and pq=45.

p+q/pq=14/45=>(1/q+1/p)=14/45 => sum of reciprocals of p and q is 14/45.

6. A,B,C,D are four consecutive odd integers and their average is 68.what is the product of B and D ?

ans: 4489

Explanation: A=(2n+1),B=(2n+3), C=(2n+5), D=(2n+7) be four consecutive odd integers Then,

(2n+1)+(2n+3)+(2n+5)+(2n+7)=4\*68 => 8n+16=272 => 8n=256 => n =32.

B\*D= ((2\*32)+3)((2\*32)+7)=4489

7. On dividing a certain number by 342 ,we get 47 as remainder .what wil be the remainder , if the same number is divided by 18?

ans: 11

Explanation : on dividing the given number by 342 ,let us get quotient =k and remainder =47.

given the number =342k+47 .we can wrute as (18\*19k) +(18 \*2) +11

=> 18\*(19k+2) +11 i.e required remainder is 11.

8.Three numbers are in the ratio 3:2:5 and the sum of their squares is 1862.Find the smallest of these numbers.

ans: 14

Explanation : Let the required number be 3x,2x,5x Then,

9(x)^2+4(x)^2+25(x)^2=1862 =>38(x)^2=1862 => x=7.

smallest given number is 2x=14

9.The sum of the digits of two digit number is 10.on interchanging the digits, the number obtained is 54 less than the original number. what is the original number?

ans : 82

Explanation : a+b=10.--------------->(1)

(10a+b) -(10b+a)=54 => 9a-9b=54

=>a-b=6 ----------------- (2)

on taking 1 and 2 we get a=8 and b= 2.

required original number is 82.

10.If sum of two numbers is 22 and sum of their squares is 404,then the product of the numbers is

ans :40

Explanation : let the number be x and y then ,

(x+y)=22 and (x^2 +y^2)=404.

(x+y)^2=22^2=484=> x^2 + y^2+2xy=484

=> xy=40.

PROBLEMS ON PROFIT AND LOSS

1. A chair is bought for Rs 750 and sold it for Rs 1200. Find the gain percentage?

Ans : 37.5%

Explanation : C.P= RS 750 and S.P=1200

Gain =RS (1200-750)=450

Gain %=(450 \* 100)/1200 => 37.5%

1. A bicycle is bought for Rs 1800 and sold at Rs 960. find the loss percentage ?

Ans : 46.66%

Explanation : C.P=1800 and S.P =960

Loss = (1800-960) = 840rs

Loss %= (840\*100)/1800 = 46.66%

1. The cost of 4 bananas is equal to the selling price of 8 bananas. Find the profit or loss percentage?

Ans : 50%

Explanation : let the C.P of each banana is 1rs.

So the cost of 8bananas =8rs.

S.P of 8 bananas= C.P of 4 bananas = 4rs

Since C.P is greater than the selling price, it wil be a loss in the transaction and hence

Loss%=((8-4)/8 \*100)=50%

1. A dress is brought for Rs 865 and sold at a loss of 15%. Find its selling price.

Ans : 735.25

Explanation : C.P =865 and loss% =15%

S.P = 85% of 865 Rs = Rs (85 \* 865)/100 =735 .25.

1. By selling a sheep for 1450 , a man loses 15%. At what price should he sell it to gain 5%

Ans : Rs 1791.17

Explanation : C.P=Rs(100/85)\*1450 = 1705.88

Now C.P = Rs 1705.88 and gain% = 5%.

S.P= RS ((105/100)\*1705.88) = Rs 1791.17

1. A man sold two mobile for 25000 each. On one he gains 20% and on the other he loses 20%. Find his gain or loss percent in the whole transaction.

Ans : 4% loss

Explanation : In this case , it is loss and S.P is immaterial.

Loss % = (common gain or loss%)^2/100

= (20)^2/100

=4%

1. A grocer buys 40kg of rice at Rs 13.50 per kg and mixes it with 120 kg of rice available at Rs 16 per kg. At what rate per kg should he sell the mixture to gain 20% on the whole?

Ans : 18.45 per kg

Explanation: C.P of 160kg of rice = Rs(40 \*13.50 + 120 \*16)= 2460

Now , C.P= Rs 2460 , gain % =20%

S.P = Rs (120 \*2460)/100 = Rs 2952

S.P per kg = Rs(2952)/160 = 18.45 per kg.

1. P sells to Q a desk at 10% profit ,Q sells it to R for 15% profit. If R pays Rs640 for it what is the price at which P bought the desk ?

Ans: Rs 505.92

Explanation : let the price at which P bought the desk = a

Q’s C.P = a(110/100)= 1.1a

R’s C.P =1.1a(115/100) =1.1\*1.15a

R bought the desk at 640.

* 1. \*1.15a = 640 => a=505.92

Hence , P bought the desk at Rs 505.92.