Analytical/ logical- Cause& Effect statements

Directions to Solve
In each of the following questions, two statements numbered I and II are given. There may be cause and effect relationship between the two statements. These two statements may be the effect of the same cause or independent causes. These statements may be independent causes without having any relationship. Read both the statements in each question and mark your answer as

(A) If statement I is the cause and statement II is its effect;
(B) If statement II is the cause and statement I is its effect;
(C) If both the statements I and II are independent causes;
(D) If both the statements I and II are effects of independent causes; and
(E) If both the statements I and II are effects of some common cause.

The prices of petrol and diesel in the domestic market have remained unchanged for the past few months.
The crude oil prices in the international market have gone up substantially in the last few months.
A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option D

Explanation:

The prices of petrol and diesel being stagnant in the domestic market and the increase in the same in the international market must be backed by independent causes.

The government has recently fixed the fees for professional courses offered by the unaided institutions which are much lower than the fees charged last year.

The parents of the aspiring students launched a severe agitation last year protesting against the high fees charged by the unaided institutions.

A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option B

Explanation:

The parents' protest against high fees being charged by the institutions led the government to interfere and fix the fees at a more affordable level.

The Reserve Bank of India has recently put restrictions on few small banks in the country. The small banks in the private and co-operative sector in India are not in a position to withstand the competitions of the bigger in the public sector.

A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option B

Explanation:

The inability of the small banks to compete with the bigger ones shall not ensure security and good service to the customers, which is an essential concomitant that has to be looked into by the Reserve Bank. I seems to be a remedial step for the same.

Statements:

All the schools in the area had to be kept closed for most part of the week.
Many parents have withdrawn their children from the local schools.
A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option D

Explanation:

Closing the schools for a week and the parents withdrawing their wards from the local schools are independent issues, which must have been triggered by different individual causes.

Statements:

India has surpassed the value of tea exports this year over all the earlier years due to an increase in demand for quality tea in the European market.
There is an increase in demand of coffee in the domestic market during the last two years.

A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option C

Explanation:

The two statements discuss two separate statistical and generalised results.

Statements:

There is unprecedented increase in the number of young unemployed in comparison to the previous year.
A large number of candidates submitted applications against an advertisement for the post of manager issued by a bank.

A. Statement I is the cause and statement II is its effect
B. Statement II is the cause and statement I is its effect
C. Both the statements I and II are independent causes
D. Both the statements I and II are effects of independent causes
E. Both the statements I and II are effects of some common cause

Answer: Option A

Explanation:

An increase in the number of unemployed youth is bound to draw in huge crowds for a single vacancy.

Statements:

The police authority has recently caught a group of house breakers.
The citizens group in the locality have started night vigil in the area.
A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option E

Explanation:

Both the statements are clearly backed by a common cause, which is clearly an increase in the number of thefts in the locality.
View

Statements:

Majority of the students in the college expressed their opinion against the college authority's decision to break away from the university and become autonomous.
The university authorities have expressed their inability to provide grants to its constituent colleges.

A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option B

Explanation:

Clearly, the university's decision to refuse grant to the colleges must have triggered the college authority to become autonomous.

Statements:

The literacy rate in the district has been increasing for the last four years.
The district administration has conducted extensive training programme for the workers involved in the literacy drive.

A.	Statement I is the cause and statement II is its effect
B.	Statement II is the cause and statement I is its effect
C.	Both the statements I and II are independent causes
D.	Both the statements I and II are effects of independent causes
E.	Both the statements I and II are effects of some common cause

Answer: Option B

Explanation:

Clearly, the increase in the literacy rate may be attributed directly to the stringent efforts of the district administration in this direction.

Statements:

The school authority has asked the X Std. students to attend special classes to be conducted on Sundays.
The parents of the X Std. students have withdrawn their wards from attending private tuitions conducted on Sundays.

A.   Statement I is the cause and statement II is its effect
B.   Statement II is the cause and statement I is its effect
C.   Both the statements I and II are independent causes
D.   Both the statements I and II are effects of independent causes
E.   Both the statements I and II are effects of some common cause

Answer: Option A

Explanation:

It seems quite evident that the parents have instructed their wards to abstain from private tuitions on Sundays and attend special classes organised by the school.

Directions for questions 1-5: In each of the following questions, two statements are given. There may be cause and effect relationship between them. Read both the statements and mark your answers accordingly. Choose:

A) If 2 is the effect of 1

B) If 1 is the effect of 2

C) If both 1 & 2 are effects of the same cause

D) If both 1 & 2 are independent causes

E) If both 1 & 2 are effects of independent causes

(1) There is tremendous increase in temperature during this summer, thereby damaging crops greatly.
(2) The prices of vegetables have increased considerably this summer.

A) If 2 is the effect of 1
B) If 1 is the effect of 2
C) If both 1 & 2 are effects of the same cause
D) If both 1 & 2 are independent causes
E) If both 1 & 2 are effects of independent causes

- ANSWER: Option (A)

(1) There is a possibility of snowfall in Kashmir in the next 48hours.
(2) The handloom industries in Kashmir increased their production by 50%.

A) If 2 is the effect of 1
B) If 1 is the effect of 2
C) If both 1 & 2 are effects of the same cause
D) If both 1 & 2 are independent causes
E) If both 1 & 2 are effects of independent causes

- ANSWER: Option (E)

(1) Most of the trains were canceled due to water logging.
(2) The water level of all the tanks supplying water to the city has increased.

A) If 2 is the effect of 1
B) If 1 is the effect of 2
C) If both 1 & 2 are effects of the same cause
D) If both 1 & 2 are independent causes
E) If both 1 & 2 are effects of independent causes

- ANSWER: Option (C)

(1) Ten new hospitals opened in Patna at the beginning of this year.
(2) There is a considerable reduction in the number of malaria cases in Patna.

A) If 2 is the effect of 1
B) If 1 is the effect of 2
C) If both 1 & 2 are effects of the same cause
D) If both 1 & 2 are independent causes
E) If both 1 & 2 are effects of independent causes

- ANSWER: Option (E)

(1) Mihir studies in standard eighth.
(2) Mihir failed in standard eighth.

A) If 2 is the effect of 1
B) If 1 is the effect of 2
C) If both 1 & 2 are effects of the same cause
D) If both 1 & 2 are independent causes
E) If both 1 & 2 are effects of independent causes

- ANSWER: Option (E)

- Directions for following questions : Choose

- A) If 1 is the immediate cause and 2 is its effect.

- B) If 2 is the immediate cause and 1 is its effect.

- C) If 1 is the effect but 2 is not its direct cause.

- D) If 2 is the effect but 1 is not its direct cause.

- E) If both 1 & 2 are effects of independent causes.

(1) The date of examination in the A-Z school has been preponed.
(2) Some of the students have already started studying.

A) If 1 is the immediate cause and 2 is its effect.
B) If 2 is the immediate cause and 1 is its effect.
C) If 1 is the effect but 2 is not its direct cause.
D) If 2 is the effect but 1 is not its direct cause.
E) If both 1 & 2 are effects of independent causes.

(1) Ajay has become bankrupt.
(2) Ajay lost his job.

A) If 1 is the immediate cause and 2 is its effect.
B) If 2 is the immediate cause and 1 is its effect.
C) If 1 is the effect but 2 is not its direct cause.
D) If 2 is the effect but 1 is not its direct cause.
E) If both 1 & 2 are effects of independent causes.

(1) Mansi is suffering from severe cold.
(2) Mansi got wet in the rains.

A) If 1 is the immediate cause and 2 is its effect.
B) If 2 is the immediate cause and 1 is its effect.
C) If 1 is the effect but 2 is not its direct cause.
D) If 2 is the effect but 1 is not its direct cause.
E) If both 1 & 2 are effects of independent causes.

(1) There is an increasing demand of coffee in the international market.
(2) India has surpassed the value of coffee exports this year over all the earlier years.
A) If 1 is the immediate cause and 2 is its effect.
B) If 2 is the immediate cause and 1 is its effect.
C) If 1 is the effect but 2 is not its direct cause.
D) If 2 is the effect but 1 is not its direct cause.
E) If both 1 & 2 are effects of independent causes

- (1) Even the poor people and labourers have started sending their children to school.

- (2) Education in today's date is a must. It helps children learn, grow up, earn and handle their responsibilities wisely.

- A) If 1 is the immediate cause and 2 is its effect.

- B) If 2 is the immediate cause and 1 is its effect.

- C) If 1 is the effect but 2 is not its direct cause.

- D) If 2 is the effect but 1 is not its direct cause.

- E) If both 1 & 2 are effects of independent causes

- (1) Aisha doubts if she'll pass in her exams.

- (2) Aisha did not prepare for her exams seriously.

- A) If 1 is the immediate cause and 2 is its effect.

- B) If 2 is the immediate cause and 1 is its effect.

- C) If 1 is the effect but 2 is not its direct cause.

- D) If 2 is the effect but 1 is not its direct cause.

- E) If both 1 & 2 are effects of independent causes

In the following the questions choose the word which best expresses the meaning of the given word.

- CORPULENT

- A. Lean

- B. Gaunt

- C. Emaciated

- D. Obese

- EMBEZZLE

- A. Misappropriate

- B. Balance

- C. Remunerate

- D. Clear

- VENT

- A. Opening

- B. Stodge

- C. End

- D. Past tense of go

- BRIEF

- A. Limited

- B. Small

- C. Little

- D. Short

- AUGUST

- A. Common

- B. Ridiculous

- C. Dignified

- D. Petty

- CANNY

- A. Obstinate

- B. Handsome

- C. Clever

- D. Stout

- Give the antonym of MILITARY

- A.Civil

- B.Militant

- C.Civility

- D.Coup

- Choose the word which is most opposite in meaning to the word EMBRACE

- A.Disobey

- B.Contradict

- C.Reject

- D.Obscure

- Find the most opposite meaning of SUBVERSION

- A.Destabilisation

- B.Clarity

- C.Compliance

- D.Sanity

- Find opposite meaning of UNDER REIN

- A.Under wrap

- B.Without target

- C.Let loose

- D.No clout

- Find most opposite word of COERCIVE

- A.Progressive

- B.Promoting

- C.Opinionated

- D.Gentle

Quantitative-Ratios& Proportions, Partnership
Analytical/ logical- Coded language
Verbal- Vocabulary (synonyms)

Tips And Tricks and Shortcuts on Ratio And Proportion

- If x : y and z : a, then it can be solved as (x*z)/(y*a).

- If x/y=z/a=b/c, then each of these ratios is equal to (x+z+e)⁄(y+a+f)

- If x/y=z/a, then y/x=a/z (Invertenao)

- If x/y=z/a, then x/z=y/a (Alterenao)

- If x/y=z/a, then (x+y)/y=(z+a)/a (Componendo)

- If x/y=z/a, then (x-y)/y=(z-a)/a (Dividenao)

- If x/y=z/a, then (x+y)/(x-y)=(z+a)/(z-a) (Componendo and Dividendo)

- Four numbers x, y, z ana a are said to be in proportion if x : y = z : a. If on the other hand, x : y = y : z = z : a, then the four numbers are said to be in continued proportion.

- Let us consider the ratios, x : y = y : z. Here y is called the mean proportional and is equal to the square root of the product of x and z i.e. $y^2 = x*z \Rightarrow y = \sqrt{xz}$

- If the three ratios, x : y, y : z, z : a is known, we can find x : a by the multiplying these three ratios x/a = x/y * y/z * z/a

- If x, y, z, and a are four terms and the ratios x : y, y : z, z : a are known, then one can find the ratio x : y : z : a.

1. Find the combined ratio of (5 : 6), (7 : 9), (10 : 11).

A. 56/157
B. 65/99
C. 21/31
D. 1/5

Correct answer – 65/99

Solution:

If we compound two or more ratio, then, a : b and c : d will become ac : bd. Therefore, (5 : 6), (7 : 9), (10 : 11) = 5/6 * 7/9 * 10/11 = 350/594

= 65/99

2. Rupees 812.5 is divided among Suhas, Ragini, and Gautam in such a way that 3-times Suhas's share, 2-times Ragini's share and 4 times Gautam's share is equal. Calculate their individual share.

A. 246, 369, 184.5
B. 224, 350, 180.5
C. 375,250, 187.5
D. 285, 384, 195.5

Correct answer – 375, 250, 187.5

Solution:

Let the Ragini, Suhas, and Gautam share be x, y, and z

Given, 2x = 3y = 4z.

Given, x + y + z = 812.5

Here, we will assign values of x and z in terms of y.

Therefore, y + 3y/2 + 3y/4 = 812.5

13y = 812.5*4

13y = 3250

y= 250

x = 375

z = 187.5

Therefore, individual shares are Suhas -375, Ragini – 250, Gautam – 187.5

3.Geeta has 1800 rupees in the denomination of 5 paisa, 25 paisa, and 75 paisa in ratio 6 : 3 : 1. Calculate how many 25 paisa coins he has.

A. 2800
B. 2000
C. 3500
D. 3000

Correct answer – 3000

Solution:

Let the number of 5 paisa coins be 6x

Let the number of 25 paisa coins be 3x

Let the number of 75 paisa coins be x

Then, 5*6x/100 + 25*3x/100 + 75x/100 = 1800

=> 180x/100 = 1800

Therefore, x = 1800*100/180

x = 1000

Hence, 25 paisa coins = 3*1000 = 3000

4.A mixture of sugar and water is in the ratio 3 : 2. A man adds 9 liters of water, and the mixture comes in the ratio of 3 : 5. Find the quantity of sugar in the new mixture.

A. 9
B. 15
C. 12
D. 10

Correct answer – 9

Solution:

Let water be 2x, and sugar is 3x.

Given, 3x/2x+9 = 3/5

5x = 2x + 9

3x = 9

x = 3

Therefore, quantity of sugar = 3 * 3 = 9 liters

Tricks To Solve Partnership Problems

When two or more persons join hands for a business to attain profits is called Partnership and the persons are called partners. Every partner invests some amount of money for a certain time to help the partnership firm to get profits. There are two types of partnership:

1. Simple partnership: If all partners invest their different amounts of capital (money) for the same period or the same capital for a different period, then such a partnership is called a simple partnership.

2. Compound partnership: If all the partners invest their different capitals (money) for different periods, then such a partnership is called a compound partnership. In Compound partnership partnersâ€™ profit not only depend on their investments but also on the time period.

Profit/Loss = time period

$P1 : P2 : P3 : \ldots\ldots\ldots Â = T1 : T2 : T3 : \ldots\ldots..$ (When capital investment is the same for the different time periods)

Profit/Loss = Capital investment — Time period

$P1 : P2 : P3 : \ldots\ldots.. = X1T1 : X2T2 : X3T3 : \ldots\ldots..$

(When capital investment X1, X2, X3 is different for the different time period)

1. Question

Two friends A and B started a business by investing Rs.1500 and Rs. 7500 respectively. After 1 year find the ratio of their profits.

A) 1:5

B) 2:5

C) 1:4

D) 2:7

E) none of these

Answer :- A

Explanation :-

Investment of A/Investment of B = Profit of A/profit of B

=> Profit of A / profit of B = 1500/7500 = 1:5

Thus, the required ratio = 1:5

Tricks :-

Ratio of profit ,A:B =1500 : 7500 = 1 : 5

2.Question

A and B two friends started a business jointly. The investment of B is equal to 1/3 times the investment of A. Find the profit share of B in the annual profit of 32000.

A) 7000

B) 8000

C) 9000

D) 10000

E) None of these

Answer :- B

Explanation :-

Let the share of A = 3x

Then, the share of B = 3x * 1/3 = x

Profit of A/Profit of B = Investment of A/Investment of B

Hence, ratio of their profit = 3x/x = 3:1

According to the question,

3x + x = 32000

=> 4x = 32000

=> x = 32000/4 = 8000

Thus, A's share= x = Rs. 8000

Tricks:- Investment ratio of A : B = 1 : 1/3 = 3 : 1

B's share = 1/4 X 32000 = 8000

3.Question

P, Q and R three partners start a business with an investment of â,¹ 50000 each. P withdraw his capital after 9 months, Q after 6 months and R remains in partnership for 12 months. Find the ratio of their profits.

A) 1:3:5

B) 2:1:4

C) 3:2:5

D) 3:2:4

Answer:- D

Explanation:-

The ratio of profit of P, Q and R will be in the ratio of the time period of their investment. (Investment same)

So. P's profit: Q's profit : R's profit

= 9:6:12

= 3: 2:4

Thus, the correct answer is D.

4. Question

Akash and Bikash invested 4000 and 800 for a period of 2 yr. After 2 yr, they earned 6000. What will be the shares of Akash and Bikash out of this total earning?

A) Rs. 5000,1000

B) Rs. 4000, 2000

C) Rs. 3500, 2500

D) Rs. 1000, 5000

E) Rs. 2000, 4000

Answer :- A

Explanation :-
Akash's share: Bikash's share= Akash's investment: Bikash's investment =
4000: 800 = 5:1
Now, let A's share= 5x
and B's share= x
According to the question,
5x + x = 6000
=> 6x = 6000
=> x = 1000
Clearly, share of B =x = 1000
and share of A = 5x = 5 x 1000 = 5000
Here ,the correct answer is A.

5. Question
A man starts a business in 2000 and a woman joins him after 6 months with Rs. 8000. Find the ratio of their profits after one year.
A) 2 : 3
B) 3 : 4
C) 1 : 3
D) 1 : 2
E) None of these

Answer:- D
Explanation:-
Here, Man invested for 12 months and the Woman invested 6 months later. It means the woman invested for (12 – 6) = 6 months.
The ratio of profit of man and woman = Capital invested x Time period of investment
So, Man's share: Woman's share
= (2000 x 12) : (8000 X 6)
= 1 : 2
Here, the correct answer is D.

6. Question

Three friends started a business. A invests 2000 for a year, B invests 4000 for 9 months. C invests an amount of 10000 in the business for 2 months only. At the end of the year, they make a profit of 11200. Find the profits of A, B and C.

A) 3000 ; 5400 ; 2800
B) 3200 ; 5100 ; 2900
C) 3360 ; 2700 ; 5140
D) 3360 ; 5040 ; 2800
E) none of these

Answer :- D

Explanation :-

Profit = Capital investment x time period

A's profit : B's profit: C's profit = 2000 x 12: 4000 x 9: 10000 x 2

= 2 x 12 : 4 x 9 : 10 x 2

= 6:9:5

Let, A's profit = 6x, B's profit= 9x; C's profit = 5x

According to the question,

6x + 9x + 5x =11200

x = 11200/20 = 560

A's profit= 6x = 6 x 560 = Rs. 3360

B's profit= 9x = 9 x 560 = 5040

C's profit= 5x = 5 x 560 = 2800

7. Question

A, B and C three partners invest a certain amount in a business for time periods in the ratio of 5:3:8. At the end of the business terms, they got the profits in the ratio of 10:6:24. Find the ratio of Capitals of A, B and C.

A) 2 : 2 : 3

B) 2 : 3 : 2

C) 3 : 1 : 3

D) 4 : 2 : 1

E) none of these

Answer :- A

Explanation :-

Here, t1:t2 : t3 = 5 : 3 : 8

And P1: P2 : P3 = 10 : 6: 24

Ratio of Capitals (Investment)

= P1/t1: P2/t2 : P3/t3

= 10/5 : 6/3 : 24/8

= 2 : 2 : 3

Analytical/ logical- Coded language

Types of Coding and Decoding Questions in Aptitude Tests

https://www.faceprep.in/logical-reasoning/types-of-coding-and-decoding-questions-asked-in-aptitude-tests/

https://www.simplilearn.com/tutorials/programming-tutorial/coding-decoding-reasoning

https://www.tutorialride.com/coding-decoding-questions/coding-decoding-logical-reasoning-questions-and-answers.htm

https://www.jagranjosh.com/general-knowledge/tricks-to-solve-codingdecoding-questions-1521441116-1

https://www.examsegg.com/coding-and-decoding-aptitude-questions-with-answers-pdf.html

https://placement.freshersworld.com/logical-reasoning-questions-and-answers/coding-decoding/3311187523

https://www.geeksforgeeks.org/coding-decoding/

https://www.sawaal.com/aptitude-reasoning/verbal-reasoning-mental-ability/coding-decoding-questions-and-answers.html

1. If EDUCATION is written as 5421312091514
then how is CAT written?

a. 13120
b. 312
c. 3120
d. 31209

Answer: c. 3120

Explanation:

Alphabets and their positions

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Check Alphabets and their Positions

2. In a code language QUEEN is written as OVCFL, then KING is written as

a. IJLH
b. MKOF
c. PHIK
d. FOKM

2. In a code language QUEEN is written as OVCFL, then KING is written as

a. IJLH

b. MKOF

c. PHIK

d. FOKM

Answer

Answer: a. IJLH

Explanation:

Alphabet Series - A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

The coding follows the rule -2, +1, -2, +1, etc.

That means Q -2 = O

U+1=V

E-2=C, etc.

3. In a code language, BROKE is written as DOSFK, START is written as UQEMZ, then INDIA is written as

a. KHDKG
b. KKHDG
c. DHGKK
d. KHGKD

3. In a code language, BROKE is written as DOSFK, START is written as UQEMZ, then INDIA is written as

a. KHDKG

b. KKHDG

c. DHGKK

d. KHGKD

Answer
iter

Answer: b. KKHDG

Explanation:

Alphabet Series - A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

The coding follows the rule +2, -3, +4, -5, +6, etc.

That means B+2=D

R-3=O

O+4=S, etc.

4. If DOOR = 25, LOWER=37, TOWER=18, then OVER = ?

a. 81

b. 45

re

c. 60

d. 06

Answer

Answer: d. 06

Explanation:

Alphabets and their positions

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

Rule=add positions of alphabets and then reverse the result

DOOR = 4+15+15+18 = 52 = reverse 52 to give 25

Example: In a certain code '415' means 'milk is hot'; '18' means 'hot soup'; and '895' means 'soup is tasty'. What number will indicate the word 'tasty'?

Example: In a certain code '415' means 'milk is hot'; '18' means 'hot soup'; and '895' means 'soup is tasty'. What number will indicate the word 'tasty'?

Solution: The code for 'hot' is 1.

So, the code of 'soup' is 8.

Now the code of 'is' is 5.

Hence, we can say that the code of 'tasty' is 9.

4. If DOOR = 25, LOWER=37, TOWER=18, then OVER = ?

a. 81
b. 45
c. 60
d. 06

5. n a certain code, TEACHER is written as VGCEJGT. How is CHILDREN written in that code?
(a) EJKNEGTP
(b) EGKNFITP
(c) EJKNFGTO
(d) EJKNFTGP

Solution: Each alphabet in the word "TEACHER " is moved two steps forward to obtain the corresponding alphabet of the code.
T E A C H E R
V G C E J G T
(Each alphabet is increasing by 2)
Similarly, we have
C H I L D R E N
E J K N F T G D

6

If 'sky' is called as 'star', 'star' is called as 'cloud', 'cloud' is called as 'earth', 'earth' is called as 'tree', and 'tree' is called as 'book', then where do the birds fly?

(a) Cloud

(b) Sky

(c) Star

(d) Data Inadequate

Solution:Â Birds fly in the sky. The code for sky is star. Therefore, birds fly in the 'star'.

7. In a certain language, 'sun shines brightly' is written as 'ba lo sul' 'houses are brightly lit' as 'kado ula ari ba' and 'light comes from sun' as 'dopi kup lo nro'. What is the code for sun and brightly?

(a) ba sul

(b) sul lo

(c) lo ba

(d) ba nro

Solution: In the first and third statements, the common word is 'sun' and the common codeword is 'lo'. So, 'lo' is the code for 'sun'. In the first and second statements, the common word is 'brightly' and the common code word is 'ba'. So, 'ba' is the code for 'brightly'. Hence, the answer is (c).

Numerical code values assigned to words

Example:

If ROSE is coded as 6821, CHAIR is coded as 73456, and PREACH is coded as 961473, then what will be the code for SEARCH?

(a) 246173   (b) 214673   (c) 214763   (d) 216473

Solution: The alphabets are coded as shown:

ROSECHAIR

682173456

Therefore, in SEARCH, S is coded as 2, E is coded as 1, A is coded as 4, R is coded as 6, C is coded as 7, H is coded as 3. Thus, the code for SEARCH is 214673.

Analogy - Number and Alphabet

Analogy means "The Relation". The number analogy represents the relation between the given numbers and according to the directions given, we can select the number with the given relation. The relation can be of any type and of any arithmetic operations, and hence, the test-taker has to sort the relation between the given numbers first and has to find the solution.

Number series represents "What next?". A series of numbers will be given and we have to find the number in place of the question mark. It also deals with the number analogy.

Example 1:

42 : 20 :: 64 : ?

(a) 31   (b) 32   (c) 33   (d) 34

Solution: The relationship is (2x + 2) : x. Therefore, the answer is 31.

Example 2) WHISPER : SPEAK

(a) brush : touch

(b) skip : walk

(c) listen : hear

(d) request : ask

Solution: (a) brush : touch

To 'whisper' means 'to speak softly in a low voice'. Similarly, to 'brush' means 'to touch slightly and briefly'. Since it follows the same relationship.

VERBAL-
VOCABULARY(SYNONYMS)

https://www.indiabix.com/verbal-ability/synonyms/

http://www.theonlinetestcentre.com/synonyms.html

https://www.faceprep.in/verbal-ability/synonyms-test/

https://www.examsbook.com/synonyms-questions-and-answers

https://www.allindiaexams.in/english/synonyms

https://www.fresherslive.com/online-test/synonyms-and-antonyms-questions-and-answers

https://www.examveda.com/competitive-english/practice-mcq-question-on-synonyms/

Quantitative- Time & work

Analytical/ logical- Syllogism

Verbal- Vocabulary (antonyms)

Time & work

- https://byjus.com/govt-exams/time-work-questions/

- https://www.indiabix.com/aptitude/time-and-work/

- https://www.tutorialspoint.com/quantitative_aptitude/aptitude_time_work_examples.htm

- https://testbook.com/learn/maths-time-and-work/

- https://www.geeksforgeeks.org/time-and-work/

- https://unacademy.com/content/bpsc/study-material/data-analysis/time-and-work/

- https://www.sscadda.com/time-and-work/

- https://byjusexamprep.com/time-and-work-questions-for-cat-i

Q 1. A builder appoints three construction workers Akash, Sunil and Rakesh on one of his sites. They take 20, 30 and 60 days respectively to do a piece of work. How many days will it take Akash to complete the entire work if he is assisted by Sunil and Rakesh every third day?

1. 10 days
2. 15 days
3. 25 days
4. 30 days
5. 45 days

Q 1. A builder appoints three construction workers Akash, Sunil and Rakesh on one of his sites. They take 20, 30 and 60 days respectively to do a piece of work. How many days will it take Akash to complete the entire work if he is assisted by Sunil and Rakesh every third day?

    1. 10 days
    2. 15 days
    3. 25 days
    4. 30 days
    5. 45 days

Answer: (2) 15 days

Solution:

Total work done by Akash, Sunil and Rakesh in 1 day = $\{(1/20) + (1/30) + (1/60)\}$ = 1/10

Work done along by Akash in 2 days = $(1/20) \times 2$ = 1/10

Work Done in 3 days (1 day of all three together + 2 days of Akash's work) = $(1/10) + (1/10)$ = 1/5

So, work done in 3 days = 1/5

Time taken to complete the work = 5×3 = 15 days

Q 2. To complete a piece of work, Samir takes 6 days and Tanvir takes 8 days alone respectively. Samir and Tanvir took Rs.2400 to do this work. When Amir joined them, the work was done in 3 days. What amount was paid to Amir?

1. Rs. 300
2. Rs. 400
3. Rs. 800
4. Rs. 500
5. Rs. 100

Q 2. To complete a piece of work, Samir takes 6 days and Tanvir takes 8 days alone respectively. Samir and Tanvir took Rs.2400 to do this work. When Amir joined them, the work was done in 3 days. What amount was paid to Amir?

    1. Rs. 300
    2. Rs. 400
    3. Rs. 800
    4. Rs. 500
    5. Rs. 100

Answer: (1) Rs.300

Solution:

Total work done by Samir and Tanvir = $\{(1/6) + (1/8)\} = 7/24$

Work done by Amir in 1 day = $(1/3) - (7/24) = 1/24$

Amount distributed between each of them = $(1/6) : (1/8) : (1/24) = 4:3:1$

Amount paid to Amir = $(1/24) \times 3 \times 2400 = $ Rs.300

Q 3. Dev completed the school project in 20 days. How many days will Arun take to complete the same work if he is 25% more efficient than Dev?

1. 10 days
2. 12 days
3. 16 days
4. 15 days
5. 5 days

Q 3. Dev completed the school project in 20 days. How many days will Arun take to complete the same work if he is 25% more efficient than Dev?

1. 10 days
2. 12 days
3. 16 days
4. 15 days
5. 5 days

Answer: (3) 16 days

Solution:

Let the days taken by Arun to complete the work be x

The ratio of time taken by Arun and Dev = 125:100 = 5:4

5:4 :: 20:x

$\Rightarrow$ x = {(4×20) / 5}

$\Rightarrow$ x = 16

Q 4. Time taken by A to finish a piece of work is twice the time taken B and thrice the time taken by C. If all three of them work together, it takes them 2 days to complete the entire work. How much work was done by B alone?

1. 2 days
2. 6 days
3. 3 days
4. 5 days
5. Cannot be determined

Q 4. Time taken by A to finish a piece of work is twice the time taken B and thrice the time taken by C. If all three of them work together, it takes them 2 days to complete the entire work. How much work was done by B alone?

   1. 2 days
   2. 6 days
   3. 3 days
   4. 5 days
   5. Cannot be determined

Answer: (2) 6 days

Solution:

Time taken by A = x days

Time taken by B = x/2 days

Time Taken by C = x/3 days

$\Rightarrow \{(1/x) + (2/x) + (3/x) = 1/2$

$\Rightarrow 6/x = 1/2$

$\Rightarrow x = 12$

Time taken by B = x/2 = 12/2 = 6 days

Q 5. Sonal and Preeti started working on a project and they can complete the project in 30 days. Sonal worked for 16 days and Preeti completed the remaining work in 44 days. How many days would Preeti have taken to complete the entire project all by herself?

1. 20 days
2. 25 days
3. 55 days
4. 46 days
5. 60 days

Q 5. Sonal and Preeti started working on a project and they can complete the project in 30 days. Sonal worked for 16 days and Preeti completed the remaining work in 44 days. How many days would Preeti have taken to complete the entire project all by herself?

1. 20 days
2. 25 days
3. 55 days
4. 46 days
5. 60 days

Answer: (5) 60 days

Solution:

Let the work done by Sonal in 1 day be x

Let the work done by Preeti in 1 day be y

Then, x+y = 1/30 $---$ (1)

$\Rightarrow$ 16x + 44y = 1 $---$ (2)

Solving equation (1) and (2),

x = 1/60

y = 1/60

Thus, Preeti can complete the entire work in 60 days

Syllogism

https://www.indiabix.com/verbal-reasoning/syllogism/introduction

https://byjus.com/govt-exams/syllogism-logical-reasoning/

https://www.hitbullseye.com/Difficult-Syllogism-Questions.php

https://www.smartkeeda.com/Reasoning_Aptitude/Logical_Reasoning/Syllogism_Quiz/newest/all/passage/Syllogism_Quiz_6

https://www.fresherslive.com/online-test/syllogism-questions-and-answers

https://www.tutorialride.com/syllogism-questions/syllogism-logical-reasoning-questions-and-answers.htm

https://www.examsbook.com/syllogism-questions-with-answers

https://www.toppr.com/guides/reasoning-ability/syllogism/syllogism-practice-questions/

https://testbook.com/objective-questions/mcq-on-syllogism--5eea6a0e39140f30f369e4bb

https://leverageedu.com/blog/syllogism-questions/

Statements:

No tree is a flower

Some trees are fruits

Conclusions:

(I) Fruits that are trees are not flowers.

(II) No fruit is a flower.

a. Only conclusion I follows

b. Only conclusion II follows

c. Either conclusion I or II follows

d. Neither conclusion I nor II follows

Statements:

No tree is a flower

Some trees are fruits
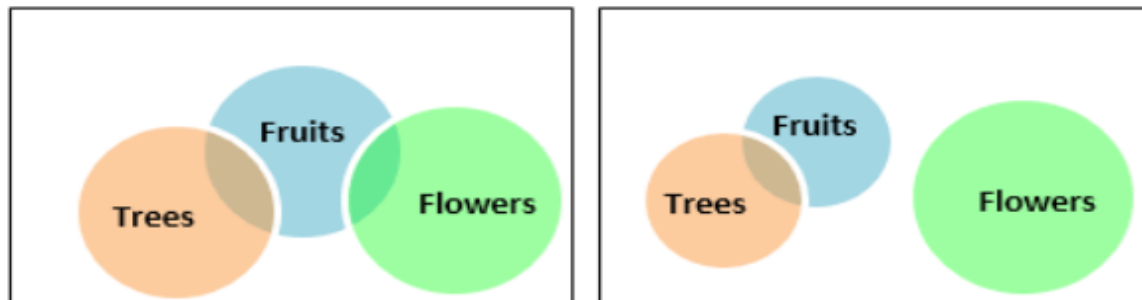
Conclusions:

(I) Fruits that are trees are not flowers.

(II) No fruit is a flower.

a. Only conclusion I follows

b. Only conclusion II follows

c. Either conclusion I or II follows

d. Neither conclusion I nor II follows

Answer

Answer: a. Only conclusion I follows

Explanation:

2. Considering given statements as true, select a logical conclusion based on the given statements.

Statements:

Lady's Finger is tastier than cabbage

Cauliflower is tastier than Lady's Finger

Cabbage is not tastier than peas

a. Peas are as tasty as lady's finger

b. Peas are as tasty as cauliflower and lady's finger

c. Peas is not tastier than lady's finger

d. Cauliflower is tastier than cabbage

e. None of the above options

Statements:

Lady's Finger is tastier than cabbage

Cauliflower is tastier than Lady's Finger

Cabbage is not tastier than peas

a. Peas are as tasty as lady's finger

b. Peas are as tasty as cauliflower and lady's finger

c. Peas is not tastier than lady's finger

d. Cauliflower is tastier than cabbage

e. None of the above options

Answer

Answer: d. Cauliflower is tastier than cabbage

Browser

Explanation:

> means tastier

Cauliflower>Lady's Finger > Cabbage

Peas > Cabbage. Peas can be placed anywhere before cabbage.

So only d follows.

3. Considering given statements as true, select a logical conclusion based on the given statements.

Statements:

Some A are B.

Some C are A.

Conclusions:

(I) Some C are B.

(II) Some B are A.

a. Only conclusion I follows

b. Only conclusion II follows

c. Either conclusion I or II follows

d. Neither conclusion I nor II follows

Statements:

Some A are B.

Some C are A.

Conclusions:

(I) Some C are B.

(II) Some B are A.

a. Only conclusion I follows

b. Only conclusion II follows

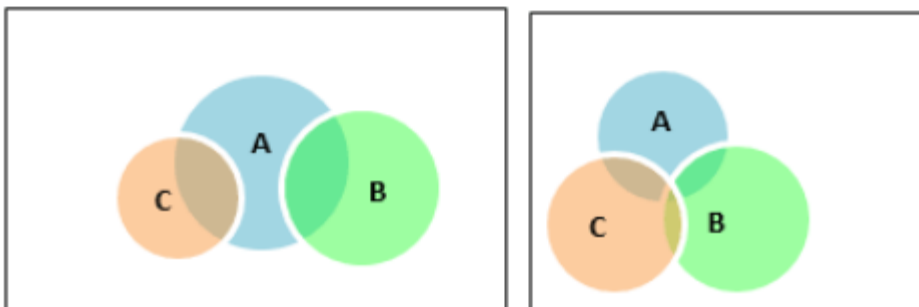c. Either conclusion I or II follows

d. Neither conclusion I nor II follows

Answer

Answer: b. Only conclusion II follows

Explanation:

From given Venn diagrams, we can say that conclusion (II) follows.

Also, drawing all possible Venn diagrams show that satisfying conditions in given statements, conclusion I is not always true.

4. Considering given statements as true, select a logical conclusion based on the given statements.

Statements:

Some cats are animals.

All plants are animals.

All animals are plants.

Conclusions:

I. Some cats are plants.

II. All plants are animals.

III. All animals are cats.

IV. All plants are cats.

a. Only II and III follow

b. Only II follows

c. Only I, II and IV follow

d. Only I and II follow

e. None of the above options

Statements:

Some cats are animals.

All plants are animals.

All animals are plants.

Conclusions:

I. Some cats are plants.

II. All plants are animals.

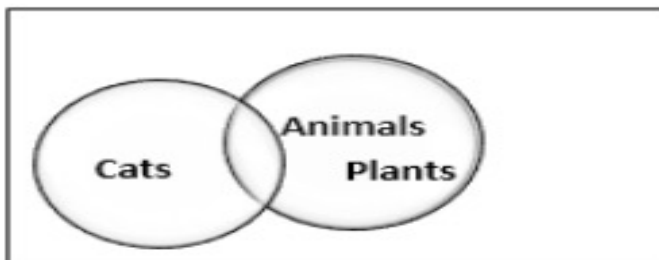III. All animals are cats.

IV. All plants are cats.

a. Only II and III follow

b. Only II follows

c. Only I, II and IV follow

d. Only I and II follow

e. None of the above options

Answer

Answer: d. Only I and II follow

Explanation:

Plants and animals will have same circle.

Statements:
All goats are lions.
No lion is tiger.
Some tigers are horses.

Conclusions:
I. Some horses are goats.
II. No horse is goat.

A	if only conclusion I follows

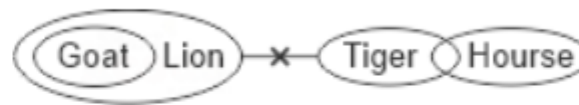| B	if only conclusion II follows

C	if either conclusion I or conclusion II follows

D	if neither conclusion I nor conclusion II follows

E	if both conclusion I and conclusion II follow

Correct Option: C

Venn Diagram Method:

Analytical Method:

All goats are lions (A) + No lion is tiger (E) + Some tigers are horses (I) = (A + E) + I = E + I = O* = Some horses are not goats.

Therefore, none of the conclusions follows. But conclusion I and II form I-E type of complementary pair. Therefore, conclusion I or II follows.

Note: Kindly refer to the complete video tutorial Deduction Method | Video No 3 to learn how E+I gives us an O type conclusion and that further gives us a complementary pair.

Hence, option C is correct.

Statements:

Some Bottles are Charger.

Some Charger is Mobile.

Conclusions:

I. Some Bottles are Mobile.

II. All Mobile are Bottles.

1. Only conclusion I follows

2. Only conclusion II follows

3. Both conclusion I and II follow

4. Neither conclusion I nor II follows

5. Not Attempted

Option 4 : Neither conclusion I nor II follows

The least possible diagram for the given statements is as follows:

Conclusions:

I. Some Bottles are Mobile → **False** (there is no direct relation between Bottles and Mobile, it is possible but not definite. So, it is false)

II. All Mobile are Bottles → **False** (there is no direct relation between Mobile and Bottles, it is possible but not definite. So, it is false)

Hence, **Neither conclusion I nor II follows.**

Statements :

All passion fruits are custard apples.

Some custard apples are bananas.

Conclusions :

I. Some custard apples are passion fruits.

II. All bananas are custard apples.

1. Neither conclusion I nor II follows

2. Both the conclusions follow

3. Only conclusion II follows

4. Only conclusion I follows

5. Not Attempted
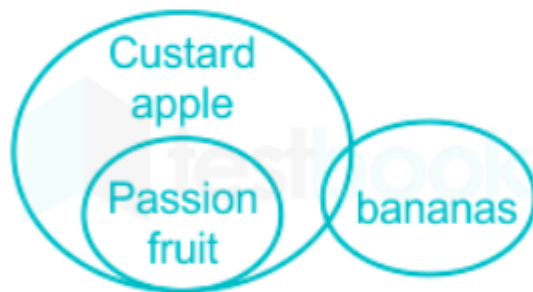
Option 4 : Only conclusion I follows

Syllogism MCQ Question 2 Detailed Solution

Statements:

All passion fruits are custard apples.

Some custard apples are bananas.

The least possible diagram for the given statements is as follows

Conclusions:

I. Some custard apples are passion fruits → True (Because all passion fruits are custard apples so definitely some custard apples are also passion fruits)

II. All bananas are custard apples → False (Because some custard apples are bananas so all bananas are custard apples is false)

Hence, **"Only conclusion I follows"**.

Verbal Ability :: Antonyms

https://www.indiabix.com/verbal-ability/antonyms/

https://www.examsbook.com/antonyms-questions-and-answers

http://www.theonlinetestcentre.com/antonyms3.html

https://www.fresherslive.com/online-questions/verbal-ability-test/antonyms

https://www.tutorialride.com/antonyms/antonyms-verbal-ability-questions-and-answers.htm

https://www.faceprep.in/verbal-ability/antonyms-questions-and-answers/

https://www.allindiaexams.in/english/antonyms

https://meritnotes.com/general-english/antonyms-online-test/1-812/

https://prepinsta.com/instagram/

Aptitude - Number System

Numbers

In Decimal number system, there are ten symbols namely 0,1,2,3,4,5,6,7,8 and 9 called digits. A number is denoted by group of these digits called as numerals.

Face Value

Face value of a digit in a numeral is value of the digit itself. For example in 321, face value of 1 is 1, face value of 2 is 2 and face value of 3 is 3.

Place Value

Place value of a digit in a numeral is value of the digit multiplied by 10n where n starts from 0. For example in 321:

- Place value of 1 = 1 x 100 = 1 x 1 = 1
- Place value of 2 = 2 x 101 = 2 x 10 = 20
- Place value of 3 = 3 x 102 = 3 x 100 = 300

> 0th position digit is called unit digit and is the most commonly used topic in aptitude tests.

Types of Numbers

1. **Natural Numbers** - n > 0 where n is counting number; [1,2,3...]

2. **Whole Numbers** - n ≥ 0 where n is counting number; [0,1,2,3...].

> 0 is the only whole number which is not a natural number.
>
> Every natural number is a whole number.

3. **Integers** - n ≥ 0 or n ≤ 0 where n is counting number;...,-3,-2,-1,0,1,2,3... are integers.

- **Positive Integers** - n > 0; [1,2,3...]
- **Negative Integers** - n < 0; [-1,-2,-3...]
- **Non-Positive Integers** - n ≤ 0; [0,-1,-2,-3...]

- **Non-Negative Integers** - n ≥ 0; [0,1,2,3...]

  0 is neither positive nor negative integer.

4. **Even Numbers** - n / 2 = 0 where n is counting number; [0,2,4,...]

5. **Odd Numbers** - n / 2 ≠ 0 where n is counting number; [1,3,5,...]

6. **Prime Numbers** - Numbers which is divisible by themselves only apart from 1.

   1 is not a prime number.

   To test a number p to be prime, find a whole number k such that k > √p. Get all prime numbers less than or equal to k and divide p with each of these prime numbers. If no number divides p exactly then p is a prime number otherwise it is not a prime number.

   Example: 191 is prime number or not?

   Solution:
   Step 1 - 14 > √191
   Step 2 - Prime numbers less than 14 are 2,3,5,7,11 and 13.
   Step 3 - 191 is not divisible by any above prime number.
   Result - 191 is a prime number.

   Example: 187 is prime number or not?
   Solution:
   Step 1 - 14 > √187
   Step 2 - Prime numbers less than 14 are 2,3,5,7,11 and 13.
   Step 3 - 187 is divisible by 11.
   Result - 187 is not a prime number.

7. **Composite Numbers**- Non-prime numbers > 1. For example, 4,6,8,9 etc.

   1 is neither a prime number nor a composite number.

   2 is the only even prime number.

8. **Co-Primes Numbers** - Two natural numbers are co-primes if their H.C.F. is 1. For example, (2,3), (4,5) are co-primes.

Divisibility

Following are tips to check divisibility of numbers.

1. **Divisibility by 2** - A number is divisible by 2 if its unit digit is 0,2,4,6 or 8.

   Example: 64578 is divisible by 2 or not?

   Solution:

   Step 1 - Unit digit is 8.

   Result - 64578 is divisible by 2.

   Example: 64575 is divisible by 2 or not?

   Solution:

   Step 1 - Unit digit is 5.

   Result - 64575 is not divisible by 2.

2. **Divisibility by 3**- A number is divisible by 3 if sum of its digits is completely divisible by 3.

   Example: 64578 is divisible by 3 or not?

   Solution:

   Step 1 - Sum of its digits is 6 + 4 + 5 + 7 + 8 = 30

   which is divisible by 3.

   Result - 64578 is divisible by 3.

   Example: 64576 is divisible by 3 or not?

   Solution:

   Step 1 - Sum of its digits is 6 + 4 + 5 + 7 + 6 = 28

   which is not divisible by 3.

   Result - 64576 is not divisible by 3.

3. **Divisibility by 4**- A number is divisible by 4 if number formed using its last two digits is completely divisible by 4.

   Example: 64578 is divisible by 4 or not?

   Solution:

   Step 1 - number formed using its last two digits is 78

   which is not divisible by 4.

   Result - 64578 is not divisible by 4.

   Example: 64580 is divisible by 4 or not?

   Solution:

Step 1 - number formed using its last two digits is 80

which is divisible by 4.

Result - 64580 is divisible by 4.

4. **Divisibility by 5**- A number is divisible by 5 if its unit digit is 0 or 5.

Example: 64578 is divisible by 5 or not?

Solution:

Step 1 - Unit digit is 8.

Result - 64578 is not divisible by 5.

Example: 64575 is divisible by 5 or not?

Solution:

Step 1 - Unit digit is 5.

Result - 64575 is divisible by 5.

5. **Divisibility by 6**- A number is divisible by 6 if the number is divisible by both 2 and 3.

Example: 64578 is divisible by 6 or not?

Solution:

Step 1 - Unit digit is 8. Number is divisible by 2.

Step 2 - Sum of its digits is 6 + 4 + 5 + 7 + 8 = 30

which is divisible by 3.

Result - 64578 is divisible by 6.

Example: 64576 is divisible by 6 or not?

Solution:

Step 1 - Unit digit is 8. Number is divisible by 2.

Step 2 - Sum of its digits is 6 + 4 + 5 + 7 + 6 = 28

which is not divisible by 3.

Result - 64576 is not divisible by 6.

6. **Divisibility by 8**- A number is divisible by 8 if number formed using its last three digits is completely divisible by 8.

Example: 64578 is divisible by 8 or not?

Solution:

Step 1 - number formed using its last three digits is 578

which is not divisible by 8.

Result - 64578 is not divisible by 8.

Example: 64576 is divisible by 8 or not?

Solution:

Step 1 - number formed using its last three digits is 576

which is divisible by 8.

Result - 64576 is divisible by 8.

7. **Divisibility by 9** - A number is divisible by 9 if sum of its digits is completely divisible by 9.

Example: 64579 is divisible by 9 or not?

Solution:

Step 1 - Sum of its digits is 6 + 4 + 5 + 7 + 9 = 31

which is not divisible by 9.

Result - 64579 is not divisible by 9.

Example: 64575 is divisible by 9 or not?

Solution:

Step 1 - Sum of its digits is 6 + 4 + 5 + 7 + 5 = 27

which is divisible by 9.

Result - 64575 is divisible by 9.

8. **Divisibility by 10**- A number is divisible by 10 if its unit digit is 0.

Example: 64575 is divisible by 10 or not?

Solution:

Step 1 - Unit digit is 5.

Result - 64578 is not divisible by 10.

Example: 64570 is divisible by 10 or not?

Solution:

Step 1 - Unit digit is 0.

Result - 64570 is divisible by 10.

9. **Divisibility by 11**- A number is divisible by 11 if difference between sum of digits at odd places and sum of digits at even places is either 0 or is divisible by 11.

Example: 64575 is divisible by 11 or not?

Solution:

Step 1 - difference between sum of digits at odd places

and sum of digits at even places = (6+5+5) - (4+7) = 5

which is not divisible by 11.

Result - 64575 is not divisible by 11.

Example: 64075 is divisible by 11 or not?

Solution:

Step 1 - difference between sum of digits at odd places

and sum of digits at even places = (6+0+5) - (4+7) = 0.

Result - 64075 is divisible by 11.

Tips on Division

1. If a number n is divisible by two co-primes numbers a, b then n is divisible by ab.

2. (a-b) always divides $(a^n - b^n)$ if n is a natural number.

3. (a+b) always divides $(a^n - b^n)$ if n is an even number.

4. (a+b) always divides $(a^n + b^n)$ if n is an odd number.

Division Algorithm

When a number is divided by another number then

Dividend = (Divisor x Quotient) + Reminder

Series

Following are formulaes for basic number series:

1. $(1+2+3+...+n) = (1/2)n(n+1)$

2. $(1^2+2^2+3^2+...+n^2) = (1/6)n(n+1)(2n+1)$

3. $(1^3+2^3+3^3+...+n^3) = (1/4)n^2(n+1)^2$

Basic Formulaes

These are the basic formulae:

$(a + b)^2 = a^2 + b^2 + 2ab$

$(a - b)^2 = a^2 + b^2 - 2ab$

$(a + b)^2 - (a - b)^2 = 4ab$

$(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$

$(a^2 - b^2) = (a + b)(a - b)$

$(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$

$(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$

$(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$

$(a^3 + b^3 + c^3 - 3abc) = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$

Number System	

Q.No		
1	**Which of the following is a prime number?** A- 187 B- 811 C- 341 D- 437	
	Explanation Step 1. Find a whole number k such that $k^2 > n$ for each number. $14^2 > 187$. $30^2 > 811$. $19^2 > 341$. $21^2 > 437$. Step 2. Get all prime numbers which are < k 14 - 2 , 3, 5, 7, 11, 13 30 - 2 , 3, 5, 7, 11, 13, 17, 19, 23, 29 19 - 2 , 3, 5, 7, 11, 13, 17 21 - 2 , 3, 5, 7, 11, 13, 17, 19 Step 3. Check divisiblity of each number with prime numbers which are < k. 187 is divisible by 11. 811 is not divisible by any prime number. 341 is divisible by 11. 437 is divisible by 19. Result: 811 is the prime number.	

2	**Which of the following is the output of 6894 x 99 ?** A- 685506 B- 682506 C- 683506 D- 684506	
	Explanation 6894 x 99 = 6894 x (100 - 1) = 6894 x 100 - 6894 x 1 = 689400 - 6894 = 682506	
3	**Which of the following is the output of 685798 x 125 ?** A- 8224750 B- 8225750 C- 8225950 D- 8224760	
	Explanation 685798 x 125 = 685798 x 5^3 = 685798 x $(10/2)^3$ = $(685798 \times 10^3) / 2^3$ = 685798000 / 8 = 85724750	
4	**Which of the following is the output of 43986 x 625 ?** A- 27491450	

	B- 27491350	
	C- 27491250	
	D- 27491750	
	Explanation	
	43986 x 625 = 43986 x 5^4 = 43986 x $(10/2)^4$ = $(43986 \times 10^4) / 2^4$ = 439860000 / 16 = 27491250	
5	**Which of the following is the output of 869 x 738 + 869 x 262 ?** A- 262000 B- 738000 C- 969000 D- 869000	
	Explanation	
	869 x 738 + 869 x 262 = 869 x (738 + 262) = 869 x 1000 = 869000	
6	**Which of the following is the output of 936 x 587 - 936 x 487 ?** A- 93600 B- 58700	

	C- 48700 D- 100	
	Explanation 936 x 587 - 936 x 487 = 936 x (587 - 487) = 936 x 100 = 93600	
7	**Which of the following is the output of 1496 x 1496 ?** A- 3338016 B- 2238016 C- 2248016 D- 2258016	
	Explanation 1496 x 1496 = 14962 = (1500-4)^2 = 1500^2 + 4^2 - 2 x 1500 x 4 = 2250000 + 16 - 12000 = 2238016	
8	**Which of the following is the output of 1607 x 1607 ?** A- 2581449 B- 2583449 C- 2582449 D- 2584449	

	Explanation	
	1607 x 1607	
	= 16072	
	= (1600+7)^2	
	= 1600^2 + 7^2 + 2 x 1600 x 7	
	= 2560000 + 49 +22400	
	= 2582449	
9.	**Which of the following is the output of 596 x 596 - 104 x 104 ?** A- 377700 B- 366600 C- 355500 D- 344400	
	Explanation	
	596 x 596 - 104 x 104	
	= 596^2 - 104^2	
	= (596 + 104) x (596 - 104)	
	= 700 x 492	
	= 344400	
10	**Which of the following is the output of 57 x 57 + 43 x 43 + 2 x 57 x 43 ?** A- 10000 B- 5700 C- 4300 D- 1000	
	Explanation	
	57 x 57 + 43 x 43 + 2 x 57 x 43	

	= (57 + 43)2 = (100)2 = 10000 (a + b)2 = a2 + b2 + 2ab.	
11	**Which of the following is the output of 93 x 93 + 73 x 73 - 2 x 93 x 73 ?** A- 200 B- 400 C- 300 D- 100	
	Explanation 93 x 93 + 73 x 73 - 2 x 93 x 73 = $(93 - 73)^2$ = $(20)^2$ = 400 $(a - b)^2 = a^2 + b^2 - 2ab$.	
12	**Which of the following is the output of (578 x 578 x 578 + 432 x 432 x 432) / (578 x 578 - 578 x 432 + 432 x 432) ?** A- 2000 B- 4000 C- 3000 D- 1000	
	Explanation (578 x 578 x 578 + 432 x 432 x 432) / (578 x 578 - 578 x 432 + 432 x 432) Let's have a = 578, b = 432	

	Now expression is $(a^3 + b^3) / (a^2 - ab + b^2)$ $= a + b$ $= 578 + 432$ $= 1000$ $a^3 + b^3 = (a + b)(a^2 - ab + b^2)$.	
13	**Which of the following is the output of (141 x 141 x 141 - 58 x 58 x 58) / (141 x 141 + 141 x 58 + 58 x 58) ?** A- 83 B- 100 C- 90 D- 73	
	Explanation (141 x 141 x 141 - 58 x 58 x 58) / (141 x 141 + 141 x 58 + 58 x 58) Let's have a = 141, b = 58 Now expression is $(a^3 - b^3) / (a^2 + ab + b^2)$ $= a - b$ $= 141 - 58$ $= 83$ $a^3 - b^3 = (a - b)(a^2 + ab + b^2)$.	
14	**Which of the following is the output of ((637 + 478)2 - (637 - 478)2) /(637 x 478) ?** A- 4 B- 6 C- 8	

	D- 24	
	Explanation $((637 + 478)^2 - (637 - 478)^2)/(637 \times 478)$ Let's have a = 637, b = 478 Now expression is $((a + b)^2 - (a - b)^2) / ab$ $= (a^2 + b^2 + 2ab - (a^2 + b^2 - 2ab)) / ab$ $= (a^2 + b^2 + 2ab - a^2 - b^2 + 2ab) / ab$ $= 4ab / ab$ $= 4$	
15	**Which of the following is the output of $((964 + 578)^2 + (964 - 578)^2)$ $/(964 \times 964 + 578 \times 578)$?** A- 4 B- 6 C- 8 D- 2	
	Explanation $((964 + 578)2 + (964 - 578)2) /(964 \times 964 + 578 \times 578)$ Let's have a = 964, b = 578 Now expression is $((a + b)^2 + (a - b)^2) / (a^2 + b^2)$ $= (a^2 + b^2 + 2ab + (a^2 + b^2 - 2ab)) / (a^2 + b^2)$ $= (a^2 + b^2 + 2ab + a^2 + b^2 - 2ab) / (a^2 + b^2)$ $= 2(a^2 + b^2) / (a^2 + b^2)$ $= 2$	
16	**On dividing a number by 342, 47 is the remainder. What will be remainder if same number is divided by 18?** **Dividend = (Divisor x Quotient) + Reminder**	

A- 11

B- 6

C- 8

D- 2

Explanation

Let's quotient is a and given number be b.

b = 342a + 47

= (18 x 19)a + 36 + 11

= (18 x 19)a + (18 x 2) + 11

= 18 x (19a + 2) + 11

Thus, if same number is divided by 18, remainder will be 11.

17 | **What will be unit digit in $(3157)^{754}$?**

A- 8

B- 9

C- 7

D- 6

Explanation

unit digit in $(3157)754$

= unit digit in $(7)^{754}$

= unit digit in $(7^4)^{188}$ x 7^2

= unit digit in (1 x 49)

= 9

Thus Unit digit in (3157)754 is 9.

We've used following formulae here:

Unit digit in 71 = 7

	Unit digit in 72 = 9	
	Unit digit in 73 = 3	
	Unit digit in 74 = 1	
	Unit digit in 75 = 7	
	Unit digit in 76 = 9	
	Unit digit in 77 = 3	
	Unit digit in 78 = 1	
	So pattern is 7-9-3-1. This pattern works for all numbers. So Unit digit in $((7)4)n$ will be 1.	
18	**What will be unit digit in 658 x 539 x 436 x 312?** A- 8 B- 9 C- 4 D- 6	
	Explanation Multiply unit digits of each number. Unit digit in 658 x 539 x 436 x 312 = Unit digit in 8 x 9 x 6 x 2. = Unit digit in 864. = 4.	

Unit-1

1. Which one of the following is not a prime number?
    A. 31
    B. 61
    C. 71
    D. 91
Answer: D

---

2. $(112 \times 5^4) = ?$

    A. 67000
    B. 70000
    C. 76500
    D. 77200
Answer: 70000

---

3. It is being given that $(2^{32} + 1)$ is completely divisible by a whole number. Which of the following numbers is completely divisible by this number?

    A. $(2^{16} + 1)$
    B. $(2^{16} - 1)$
    C. (7×2^{23})
    D. $(2^{96} + 1)$
Answer: $(2^{96} + 1)$

---

4. What least number must be added to 1056, so that the sum is completely divisible by 23?

    A. 2
    B. 3
    C. 18
    D. 21

Answer: 2

---

5. $1397 \times 1397 = ?$

    A. 1951609
    B. 1981709
    C. 18362619
    D. 2031719

Answer: 1951609.

6. How many of the following numbers are divisible by 132?
264, 396, 462, 792, 968, 2178, 5184, 6336

    A. 4
    B. 5
    C. 6
    D. 7

Answer: 4

7. (935421 x 625) = ?

    A. 575648125
    B. 584638125
    C. 584649125
    D. 585628125

Answer: =584638125

8. The largest 4 digit number exactly divisible by 88 is:

    A. 9944
    B. 9768
    C. 9988
    D. 8888

Answer: 9944.

9. Which of the following is a prime number?

    A. 33
    B. 81
    C. 93
    D. 97

Answer: 97

10. What is the unit digit in $\{(6374)^{1793} \times (625)^{317} \times (341^{491})\}$?

    A. 0
    B. 2
    C. 3
    D. 5

Answer: 0

11. Find the greatest number that will divide 43, 91 and 183 so as to leave the same remainder in each case.

    A. 4
    B. 7
    C. 9
    D. 13

Answer: 4

12.The H.C.F. of two numbers is 23 and the other two factors of their L.C.M. are 13 and 14. The larger of the two numbers is:

    A. 276
    B. 299
    C. 322
    D. 345

Answer: 322

---

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

    A. 4
    B. 10
    C. 15
    D. 16

Answer: 16

---

14. Let N be the greatest number that will divide 1305, 4665 and 6905, leaving the same remainder in each case. Then sum of the digits in N is:

    A. 4
    B. 5
    C. 6
    D. 8

Answer: 4

---

15. The greatest number of four digits which is divisible by 15, 25, 40 and 75 is:

    A. 9000
    B. 9400
    C. 9600
    D. 9800

Answer: 9600

16. The product of two numbers is 4107. If the H.C.F. of these numbers is 37, then the greater number is:

    A. 101
    B. 107
    C. 111
    D. 185

Answer: 111

---

17. Three number are in the ratio of 3: 4 : 5 and their L.C.M. is 2400. Their H.C.F. is:

    A. 40

B. 80
C. 120
D. 200

Answer: 40

---

18. The G.C.D. of 1.08, 0.36 and 0.9 is:

A. 0.03
B. 0.9
C. 0.18
D. 0.108

Answer: 0.18

---

19. The product of two numbers is 2028 and their H.C.F. is 13. The number of such pairs is:

A. 1
B. 2
C. 3
D. 4

Answer: 2

---

20. The least multiple of 7, which leaves a remainder of 4, when divided by 6, 9, 15 and 18 is:

A. 74
B. 94
C. 184
D. 364

Answer: 364

21.Find the lowest common multiple of 24, 36 and 40.

A. 120
B. 240
C. 360
D. 480

Answer: 360

22.The least number which should be added to 2497 so that the sum is exactly divisible by 5, 6, 4 and 3 is:

A. 3
B. 13
C. 23

D. 33

Answer: 23

23.The least number which when divided by 5, 6 , 7 and 8 leaves a remainder 3, but when divided by 9 leaves no remainder, is:

    A. 1677
    B. 1683
    C. 2523
    D. 3363

Answer: 1683

24.A, B and C start at the same time in the same direction to run around a circular stadium. A completes a round in 252 seconds, B in 308 seconds and c in 198 seconds, all starting at the same point. After what time will they again at the starting point ?

    A. 26 minutes and 18 seconds
    B. 42 minutes and 36 seconds
    C. 45 minutes
    D. 46 minutes and 12 seconds

Answer: 46 min. 12 sec.

25.The H.C.F. of two numbers is 11 and their L.C.M. is 7700. If one of the numbers is 275, then the other is:

    A. 279
    B. 283
    C. 308
    D. 318

Answer: 308

26.What will be the least number which when doubled will be exactly divisible by 12, 18, 21 and 30 ?

    A. 196
    B. 630
    C. 1260
    D. 2520

Answer: 630

27.The ratio of two numbers is 3 : 4 and their H.C.F. is 4. Their L.C.M. is:

A. 12
B. 16
C. 24
D. 48

Answer: 48

28.The smallest number which when diminished by 7, is divisible 12, 16, 18, 21 and 28 is:

A. 1008
B. 1015
C. 1022
D. 1032

Answer: 1015

29.252 can be expressed as a product of primes as:

2 x 2 x 3 x 3 x 7

2 x 2 x 2 x 3 x 7

3 x 3 x 3 x 3 x 7

2 x 3 x 3 x 3 x 7

Answer: 2 x 2 x 3 x 3 x 7.

30.A and B together have Rs. 1210. If $\frac{4}{15}$ of A's amount is equal to $\frac{2}{5}$ of B's amount, how much amount does B have?

A. Rs. 460
B. Rs. 484
C. Rs. 550
D. Rs. 664

Answer: 484

30.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

Answer: 4:5

31. 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

Answer: Rs. 2000.

---

32. 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

Answer: 2 : 3 : 4.

---

33. In a mixture 60 litres, the ratio of milk and water 2 : 1. If this ratio is to be 1 : 2, then the quantity of water to be further added is:

    A. 20 litres
    B. 30 litres
    C. 40 litres
    D. 60 litres

Answer: 60

---

34. 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

Answer: 21:22

---

35. 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

    Answer: Rs. 38,000

36. If 0.75 : x :: 5 : 8, then x is equal to:

    A. 1.12
    B. 1.20
    C. 1.25
    D. 1.30

Answer: 1.20

37. 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

Answer: 30

38. If Rs. 782 be divided into three parts, proportional to $\frac{1}{2} : \frac{2}{3} : \frac{3}{4}$, then the first part is:

    A. Rs. 182
    B. Rs. 190
    C. Rs. 196
    D. Rs. 204

Answer: Rs 204

39. 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

    Answer: 23 : 33 : 60

40. 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

Answer: 5:3

41. A and B invest in a business in the ratio 3 : 2. If 5% of the total profit goes to charity and A's share is Rs. 855, the total profit is:
   A. Rs. 1425
   B. Rs. 1500
   C. Rs. 1537.50
   D. Rs. 1576
Answer: 1500

---

42. A, B and C jointly thought of engaging themselves in a business venture. It was agreed that A would invest Rs. 6500 for 6 months, B, Rs. 8400 for 5 months and C, Rs. 10,000 for 3 months. A wants to be the working member for which, he was to receive 5% of the profits. The profit earned was Rs. 7400. Calculate the share of B in the profit.
   A. Rs. 1900
   B. Rs. 2660
   C. Rs. 2800
   D. Rs. 2840

Answer: 2660

---

43. A, B and C enter into a partnership in the ratio $\frac{7}{2} : \frac{4}{3} : \frac{6}{5}$. After 4 months, A increases his share 50%. If the total profit at the end of one year be Rs. 21,600, then B's share in the profit is:
   A. Rs. 2100
   B. Rs. 2400
   C. Rs. 3600
   D. Rs. 4000
Answer: Rs.4000

44.A, B, C subscribe Rs. 50,000 for a business. A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35,000, A receives:
   A. Rs. 8400
   B. Rs. 11,900
   C. Rs. 13,600
   D. Rs. 14,700
Answer: 14,700

---

45. Three partners shared the profit in a business in the ratio 5 : 7 : 8. They had partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments?
   A. 5 : 7 : 8
   B. 20 : 49 : 64
   C. 38 : 28 : 21
   D. None of these
   Answer: 20 : 49 : 64

46.A starts business with Rs. 3500 and after 5 months, B joins with A as his partner. After a year, the profit is divided in the ratio 2 : 3. What is B's contribution in the capital?

Rs. 7500

Rs. 8000

Rs. 8500

Rs. 9000

Answer: Rs.9000

47.A and B entered into partnership with capitals in the ratio 4 : 5. After 3 months, A withdrew $\frac{1}{4}$ of his capital and B withdrew $\frac{1}{5}$ of his capital. The gain at the end of 10 months was Rs. 760. A's share in this profit is:

Rs. 330

Rs. 360

Rs. 380

Rs. 430

Answer: Rs.330

---

48. A and B started a partnership business investing some amount in the ratio of 3 : 5. C joined then after six months with an amount equal to that of B. In what proportion should the profit at the end of one year be distributed among A, B and C?

    A. 3 : 5 : 2
    B. 3 : 5 : 5
    C. 6 : 10 : 5
    D. Data inadequate

Answer: 10:5

49.A, B, C rent a pasture. A puts 10 oxen for 7 months, B puts 12 oxen for 5 months and C puts 15 oxen for 3 months for grazing. If the rent of the pasture is Rs. 175, how much must C pay as his share of rent?

Rs. 45

Rs. 50

Rs. 55

Rs. 60

Answer: Rs.45

50.A and B started a business in partnership investing Rs. 20,000 and Rs. 15,000 respectively. After six months, C joined them with Rs. 20,000. What will be B's share in total profit of Rs. 25,000 earned at the end of 2 years from the starting of the business?

Rs. 7500

Rs. 9000

Rs. 9500

Rs. 10,000
Answer: Rs.7500

51.A can do a work in 15 days and B in 20 days. If they work on it together for 4 days, then the fraction of the work that is left is :

    A. $\frac{1}{4}$

    B. $\frac{1}{10}$

    C. $\frac{7}{15}$

    D. $\frac{8}{15}$

    Answer: $\frac{8}{15}$

52.A can lay railway track between two given stations in 16 days and B can do the same job in 12 days. With help of C, they did the job in 4 days only. Then, C alone can do the job in:

    A. $9\frac{1}{5}$

    B. $9\frac{2}{5}$

    C. $9\frac{3}{5}$

    D. 10

Answer: $9\frac{3}{5}$

53.A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

    A. 12 days
    B. 15 days
    C. 16 days
    D. 18 days

Answer:15 days

---

54. A is thrice as good as workman as B and therefore is able to finish a job in 60 days less than B. Working together, they can do it in:

    A. 20 days

B. 25 days

C. 30 days

D. $22\frac{1}{2}$

Answer: $22\frac{1}{2}$

---

55. A alone can do a piece of work in 6 days and B alone in 8 days. A and B undertook to do it for Rs. 3200. With the help of C, they completed the work in 3 days. How much is to be paid to C?

A. Rs. 375

B. Rs. 400

C. Rs. 600

D. Rs. 800

Answer: Rs. 400

56. Two pipes A and B can fill a cistern in $37\frac{1}{2}$ minutes and 45 minutes respectively.

Both pipes are opened. The cistern will be filled in just half an hour, if the B is turned off after:

A. 5 min.

B. 9 min.

C. 10 min.

D. 15 min.

Answer: 9 min

57. A tank is filled by three pipes with uniform flow. The first two pipes operating simultaneously fill the tank in the same time during which the tank is filled by the third pipe alone. The second pipe fills the tank 5 hours faster than the first pipe and 4 hours slower than the third pipe. The time required by the first pipe is:

A. 6 hours

B. 10 hours

C. 15 hours

D. 30 hours

Answer: 15 hours

58. A tank is filled in 5 hours by three pipes A, B and C. The pipe C is twice as fast as B and B is twice as fast as A. How much time will pipe A alone take to fill the tank?

A. 20 hours

B. 25 hours

C. 35 hours

D. Cannot be determined

Answer: 35 hours

59. Two pipes A and B together can fill a cistern in 4 hours. Had they been opened separately, then B would have taken 6 hours more than A to fill the cistern. How much time will be taken by A to fill the cistern separately?

    A. 1 hour
    B. 2 hours
    C. 6 hours
    D. 8 hours

    Answer: 6 hours

60. Two pipes A and B can fill a tank in 20 and 30 minutes respectively. If both the pipes are used together, then how long will it take to fill the tank?

    A. 12 min
    B. 15 min
    C. 25 min
    D. 50 min

    Answer: 12 min

61. If a person walks at 14 km/hr instead of 10 km/hr, he would have walked 20 km more. The actual distance travelled by him is:
    A. 50 km
    B. 56 km
    C. 70 km
    D. 80 km

    Answer: 50Km

62. A man complete a journey in 10 hours. He travels first half of the journey at the rate of 21 km/hr and second half at the rate of 24 km/hr. Find the total journey in km.
    A. 220 km
    B. 224 km
    C. 230 km
    D. 234 km

    Answer: 224Km

63. In covering a distance of 30 km, Abhay takes 2 hours more than Sameer. If Abhay doubles his speed, then he would take 1 hour less than Sameer. Abhay's speed is:

A. 5 kmph
B. 6 kmph
C. 6.25 kmph
D. 7.5 kmph
Answer: 5Kmph

64.A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train?
A. 120 metres
B. 180 metres
C. 324 metres
D. 150 metres

Answer: 150meters

65.A train 125 m long passes a man, running at 5 km/hr in the same direction in which the train is going, in 10 seconds. The speed of the train is:
A. 45 km/hr
B. 50 km/hr
C. 54 km/hr
D. 55 km/hr

Answer: 50 km/hr

66. The length of the bridge, which a train 130 metres long and travelling at 45 km/hr can cross in 30 seconds, is:

A. 200 m
B. 225 m
C. 245 m
D. 250 m

Answer: 245 m

67. A train passes a station platform in 36 seconds and a man standing on the platform in 20 seconds. If the speed of the train is 54 km/hr, what is the length of the platform?

A. 120 m
B. 240 m
C. 300 m
D. None of these

Answer: 240m