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RBE Mock Form(English)

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By Shubham Jain

# Top Quality Exam-focused Batch

## Maths Special BATCH

By Shubham Jain  
(Cleared SSC CGL 2 times)

### Complete Arithmetic & Advanced Maths

#### Highlights:

- A) Basic to High Level Batch.  
(no previous knowledge required).
- B) Exam Oriented approaches.
- C) Chance to learn from already selected person.
- D) **SSC Exams Focused Batch** (Useful for DSSSB, Bank, State Exams, CSAT, etc. as well)
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4. SSC MTS 2020-21 Tier-1
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6. SSC Steno 2020-21 Tier-1
7. SSC CGL 2019 Tier-2
8. SSC CPO Tier-2 (2018 to 2020)
9. SSC Selection Post phase ix
10. SSC CPO 2020
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- 1) SSC CGL 2020 Tier-1 question papers
- 2) SSC CHSL 2020 Tier-1 question papers
- 3) SSC MTS 2020 Tier-1 question papers
- 4) SSC Stenographer 2020 Question papers
- 5) DSSSB junior clerk question papers
- 6) SSC CGL 2019 Tier-2 question papers
- 7) SSC CPO 2018, 2019 , 2020 Tier-2 Question papers
- 8) SSC GD 2021 all 63 shifts compilation
- 9) RRB NPTC subject-wise compilations

**Other pdfs available in the telegram channel:**

- 1) SSC CGL 2019 Tier-1 and Tier-2 question papers
- 2) SSC CHSL 2019 question papers
- 3) SSC CPO 2018,2019 and 2020 question papers
- 4) SSC Stenographer 2019 question papers
- 5) RRB NTPC Latest Question papers (132 + shifts compilation)**
- 6) SSC Selection post phase vii and phase viii question papers.
- 7) UP SI 2021 all 54 Shifts
- 8) SSC CGL 2018, 2019 and 2020 chapter-wise quant question paper pdfs
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# Some videos and Playlists you must watch:-



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Toppers' Interviews

<https://youtube.com/playlist?list=PL5SDIP42gG0j1-eCqfU8w6RS2bp5oGtbb>



SSC CGL Job Description  
(Interview of selected persons)  
<https://youtube.com/playlist?list=PL5SDIP42gG0iv-YvGN5CLE-tV81gYrKU>



Number System crash course

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50+ Calculation Tricks

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Time, Speed & distance Crash course

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Complete Trigonometry

<https://youtu.be/FowPgf5ZwEg>



Divisibility Rules

<https://youtu.be/kyN6OWon4ag>



Profit and Loss

<https://youtu.be/l35S8i9o7a0>



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[21 Apr S2 \(12:30 to 1:30 PM\)](#)

[21 Apr S3 \(4 to 5 PM\)](#)



# RBE- Revolution By Education



By: Shubham Jain  
(Selected as GST Inspector)  
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**11/04/2022-> (9:00 AM - 10:00 AM)**

**Q.1)-**

If  $4\sin^2 \theta = 3(1 + \cos\theta)$ ,  $0^\circ < \theta < 90^\circ$ , then what is the value of  $(2\tan\theta + 4\sin\theta - \sec\theta)$ ?

1.  $15\sqrt{3} + 3$     2.  $4\sqrt{15} - 3$     3.  $15\sqrt{3} - 4$     4.  $3\sqrt{15} - 4$

**Q.2)-**

If  $(x + 6y) = 8$ , and  $xy = 2$ , where  $x > 0$ , what is the value of  $(x^3 + 216y^3)$ ?

1. 476    2. 288    3. 368    4. 224

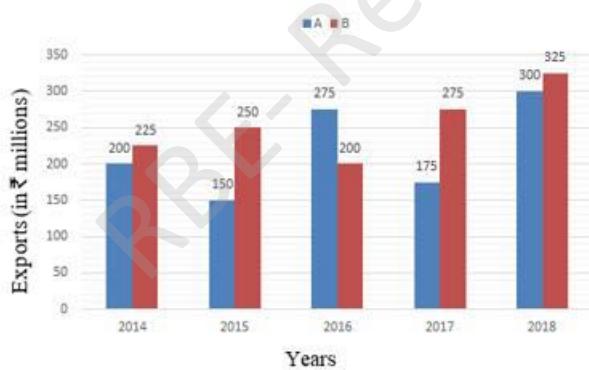
**Q.3)-**

A sold a mobile phone to B at a gain of 25% and B sold it to C at a loss of 10%. If C paid ₹5,625 for it, how much did A pay (in ₹) for the phone?

1. 4,800    2. 4,500    3. 5,100    4. 5,000

**Q.4)-**

The following bar graph shows exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



What is the ratio of the total exports of cars of type A in 2014 and 2017 to the total exports of cars of type B in 2015 and 2016?

1. 5 : 6    2. 10 : 9    3. 11 : 10    4. 3 : 2

**Q.5)-**

The lengths of the three sides of a right-angled triangle are  $(x - 1)$  cm,  $(x + 1)$  cm and  $(x + 3)$  cm, respectively. The hypotenuse of the right-angled triangle (in cm) is:

1. 12    2. 7    3. 6    4. 10

**Q.6)-**

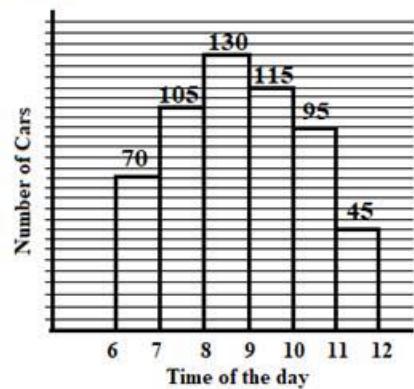
The average weight of P and his three friends is 55 kg. If P is 4 kg more than the average weight of his three friends, what is P's weight (in kg)?

1. 62    2. 54    3. 60    4. 58

**Q.7)-**

The number of cars passing the road near a colony from 6 am to 12 noon has been shown in the following histogram.

What is the ratio of the number of cars passed between 6 am and 8 am to the number of cars passed between 9 am and 11 am?



1. 14 : 23    2. 7 : 4    3. 21 : 19    4. 5 : 6

**Q.8)-**

Find the value of the following expression:

$$372 \div 56 \times 7 - 5 + 2$$

1.  $43\frac{1}{2}$     2.  $2\frac{93}{98}$     3.  $-2\frac{95}{98}$     4. 58

**Q.9)-**

The ratio of the monthly incomes of A and B is 11 : 13 and the ratio of their expenditures is 9 : 11. If both of them manage to save ₹4,000 per month, then find the difference in their incomes (in ₹).

1. 3,000    2. 2,500    3. 3,200    4. 4,000

**Q.10)-**

An equilateral triangle ABC is inscribed in a circle with centre O. D is a point on the minor arc BC and  $\angle CBD = 40^\circ$ . Find the measure of  $\angle BCD$ .

1.  $20^\circ$    2.  $50^\circ$    3.  $30^\circ$    4.  $40^\circ$

**Q.11)-**

AB is a diameter of a circle with centre O. A tangent is drawn at point A. C is a point on the circle such that BC produced meets the tangent at P. If  $\angle APC = 62^\circ$ , then find the measure of the minor arc AC.

1.  $28^\circ$    2.  $62^\circ$    3.  $56^\circ$    4.  $31^\circ$

**Q.12)-**

The value of  $\frac{\sin 23^\circ \cos 67^\circ + \sec 52^\circ \sin 38^\circ + \cos 23^\circ \sin 67^\circ + \cosec 52^\circ \cos 38^\circ}{\cosec^2 20^\circ - \tan^2 70^\circ}$  is:

1. 4   2. 0   3. 3   4. 2

**Q.13)-**

Monthly expenditure of a family on different heads is shown in the following pie chart.

The amount spent on Children Education, Transport and Rent is what percentage of the total earnings?

**Expenditure on different Heads**



1. 50%   2. 55%   3. 45%   4. 40%

**Q.14)-**

If  $x + y + 3 = 0$ , then find the value of  $x^3 + y^3 - 9xy + 9$ .

1. 18   2. -36   3. -18   4. 36

**Q.15)-**

A motorboat whose speed is 20 km/h in still water takes 30 minutes more to go 24 km upstream than to cover the same distance downstream. If the speed of the boat in still water is increased by 2 km/h, then how much time will it take to go 39 km downstream and 30 km upstream?

- 1.** 3 h 10 m    **2.** 3 h 40 m    **3.** 2 h 50 m    **4.** 2 h 40 m

**Q.16)-**

A solid cube of side 8 cm is dropped into a rectangular container of length 16 cm, breadth 8 cm and height 15 cm which is partly filled with water. If the cube is completely submerged, then the rise of water level (in cm) is:

- 1.** 6    **2.** 2    **3.** 4    **4.** 5

**Q.17)-**

Some students (only boys and girls) from different schools appeared for an Olympiad exam. 20% of the boys and 15% of the girls failed the exam. The number of boys who passed the exam was 70 more than that of the girls who passed the exam'. A total of 90 students failed. Find the number of students that appeared for the exam.

- 1.** 420    **2.** 350    **3.** 500    **4.** 400

**Q.18)-**

In a  $\triangle ABC$ , points P, Q and R are taken on AB, BC and CA, respectively, such that  $BQ = PQ$  and  $QC = QR$ . If  $\angle BAC = 75^\circ$ , what is the measure of  $\angle PQR$  (in degrees)?

- 1.** 75    **2.** 40    **3.** 30    **4.** 50

**Q.19)-**

The angle of elevation of the top of an unfinished tower at a point distant 78 m from its base is  $30^\circ$ . How much higher must the tower be raised (in m) so that the angle of elevation of the top of the finished tower at the same point will be  $60^\circ$ ?

- 1.**  $78\sqrt{3}$     **2.**  $26\sqrt{3}$     **3.** 80    **4.**  $52\sqrt{3}$

**Q.20)-**

An item costs ₹400. During a festival sale, a company offers a sale discount that offers  $x\%$  off on its regular price along with a discount coupon of 10%. The price of the item after using both the sale discount and the discount coupon, is ₹216. What is the value of  $x$ ?

- 1.** 40    **2.** 35    **3.** 25    **4.** 30

**Q.21)-**

LCM of two numbers is 56 times their HCF, with the sum of their HCF and LCM being 1710. If one of the two numbers is 240, then what is the other number?

- 1.** 1680    **2.** 171    **3.** 210    **4.** 57

**Q.22)-**

Find the greatest number 23a68b, which is divisible by 3 but NOT divisible by 9.

1. 238689    2. 239688    3. 239685    4. 237687

**Q.23)-**

A certain sum is deposited for 4 years at a rate of 10% per annum on compound interest compounded annually. The difference between the interest at the end of 2 years and that at the end of 4 years is ₹5,082. Find the sum (in ₹).

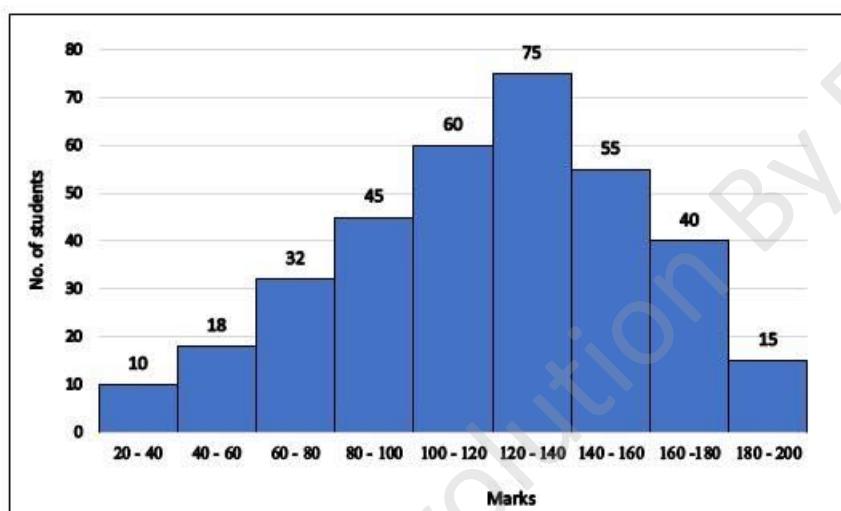
1. 50,820    2. 10,164    3. 25,500    4. 20,000

**Q.24)-**

The given histogram represents the marks of students in Mathematics test of a certain class.

The total number of students is 350.

Study the graph and answer the question that follows.



What is the ratio of the total number of students who scored 140 marks and above to the total number of students who scored marks between 60 to 120?

1. 9 : 11    2. 137 : 110    3. 11 : 9    4. 110 : 137

**Q.25)-**

A can finish a piece of the work in 16 days and B can finish it in 12 days. They worked together for 4 days and then A left. B finished the remaining work. For how many total number of days did B work to finish the work completely?

1. 8    2. 4    3. 9    4. 6

### Answer key

Q.1	4	Q.2	4	Q.3	4	Q.4	1	Q.5	4
Q.6	4	Q.7	4	Q.8	1	Q.9	4	Q.10	1
Q.11	1	Q.12	3	Q.13	1	Q.14	3	Q.15	1
Q.16	3	Q.17	3	Q.18	3	Q.19	4	Q.20	1

Q.21    3              Q.22    3              Q.23    4              Q.24    4              Q.25    3              5



# RBE- Revolution By Education



By: Shubham Jain  
(Selected as GST Inspector)  
Your life, Your hard work, Your success.



**11/04/2022-> (12:30 PM - 1:30 PM)**

**Q.1)-**

Monthly expenditure of a family on different heads is shown in the following pie chart. The family earns ₹1,08,000 every month.

The money (in ₹) spent on Misc. Expenses is how much more than that spent on Children Education?

**Expenditure on different Heads**



1. 1,800    2. 1,350    3. 1,200    4. 1,500

**Q.2)-**

A vertical pole and a vertical tower are on the same level of ground in such a way that from the top of the pole, the angle of elevation of the top of the tower is  $60^\circ$  and the angle of depression of the bottom of the tower is  $30^\circ$ . If the height of the tower is 76 m, then find the height (in m) of the pole.

1. 19    2. 57    3. 38    4.  $19\sqrt{3}$

**Q.3)-**

The profit earned by selling an article for ₹832 is equal to the loss incurred when the article is sold for ₹448. What will be the selling price of the article if it is sold at a 10% loss?

1. ₹640    2. ₹540    3. ₹625    4. ₹576

**Q.4)-**

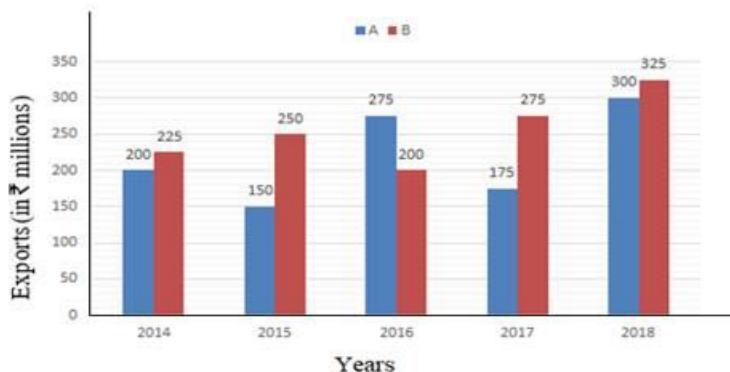
In the first 10 overs of a cricket game, the run rate was only 7.2. What should be the average run rate in the remaining 40 overs to reach the target of 272 runs?

1. 6    2. 4    3. 5    4. 7

**Q.5)-**

The given bar graph shows exports of cars of type A and B (in ₹ millions) from 2014 to 2018. Study the graph and answer the question that follows.

Exports of Cars of Type A and B (in ₹ millions) from 2014 to 2018.



The total exports of cars of type B in 2014 to 2017 is what per cent more than the total exports of cars of type A in 2015 to 2018? (Correct to one decimal place)

1. 4.9%
2. 5.6%
3. 7.2%
4. 6.5%

**Q.6)-**

The given histogram shows the daily wages (in ₹) of workers in a factory.

Study the histogram and answer the question that follows.



The number of workers with daily wages less than ₹180 is what percentage of the number of workers with daily wages more than ₹190? Express your answer correct to one decimal place.

1. 74.8%
2. 85.6%
3. 75.8%
4. 86.7%

**Q.7)-**

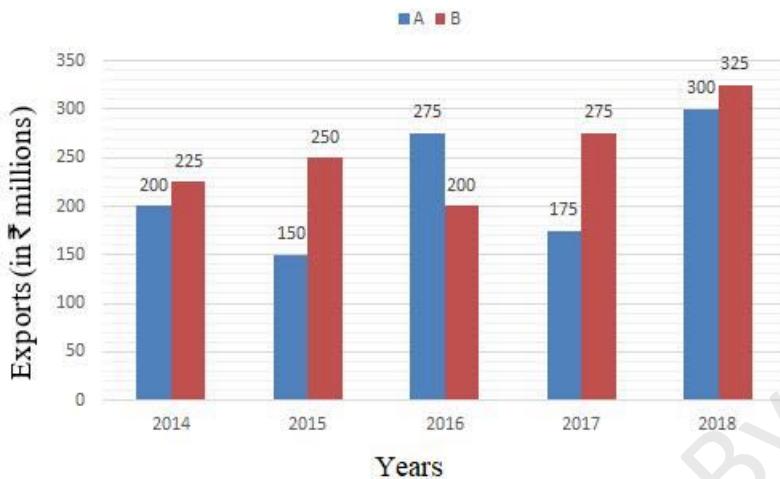
X, Y and Z can do a piece of work in 46 days, 92 days and 23 days, respectively. X started the work. Y joined him after 2 days. If Z joined them after 8 days from the beginning, then for how many days did X work?

1. 18    2. 13    3. 21    4. 16

**Q.8)-**

Study the given bar graph and answer the question that follows.

The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



In which year were the exports of cars of type A ₹55 million less than the average exports (per year) of cars of type B over the five years?

1. 2014    2. 2015    3. 2017    4. 2016

**Q.9)-**

A car runs first 275 km at an average speed of 50 km/h and the next 315 km at an average speed of 70 km/h. What is the average speed (in km/h) for the entire journey?

1. 59    2. 58.5    3. 60    4. 62

**Q.10)-**

If  $\cos(A - B) = \frac{\sqrt{3}}{2}$  and  $\sec A = 2$ ,  $0^\circ \leq A \leq 90^\circ$ ,  $0^\circ \leq B \leq 90^\circ$ , then what is the measure of B?

1.  $90^\circ$     2.  $30^\circ$     3.  $60^\circ$     4.  $0^\circ$

**Q.11)-**

An alloy contains 40% of silver, 30% of copper and 30% of nickel. How much silver (in kg) should be added to 25 kg of the alloy so that the new alloy contains 50% of silver?

1. 20    2. 10    3. 12    4. 5

**Q.12)-**

What is the height (in cm) of an equilateral triangle whose each side is 8 cm?

1.  $3\sqrt{5}$    2.  $4\sqrt{2}$    3.  $4\sqrt{3}$    4.  $3\sqrt{2}$

**Q.13)-**

Find the value of the following expression:

$$980 \div 35 \times 16 + 4 - 2 \times 2$$

1. 556   2.  $\frac{15}{2}$    3. 448   4.  $\frac{7}{4}$

**Q.14)-**

The length and the breadth of a rectangle are made to increase and decrease, respectively, by 8% and 10%. What is the percentage increase or decrease in its area?

1. Decrease by 1.8%   2. Decrease by 2.8%   3. Increase by 1.8%   4. Increase by 2.8%

**Q.15)-**

How many numbers are there from 500 to 650 (including both) which are neither divisible by 3 nor by 7?

1. 87   2. 21   3. 121   4. 99

**Q.16)-**

A sum invested at compound interest amounts to ₹7,800 in 3 years and ₹11,232 in 5 years. What is the rate per cent?

1. 15%   2. 18%   3. 20%   4. 26%

**Q.17)-**

A pole 23 m long reaches a window which is  $3\sqrt{5}$  m above the ground on one side of a street. Keeping its foot at the same point, the pole is turned to the other side of the street to reach a window  $4\sqrt{15}$  m high. What is the width (in m) of the street?

1. 22   2. 39   3. 35   4. 17

**Q.18)-**

A, B and C started a business in partnership. Initially, A invested ₹29,000, while B and C invested ₹25,000 each. After 4 months, A withdrew ₹3,000. After 2 more months, C invested ₹12,000 more. Find the share of C (in ₹) in the profit of ₹33,200 at the end of the year.

1. 10,000   2. 10,800   3. 11,067   4. 12,400

**Q.19)-**

If  $(4x + 2y)^3 + (4x - 2y)^3 = 16(Ax^3 + Bxy^2)$ , then what is the value of  $\frac{1}{2}(\sqrt{A^2 + B^2})$ ?

1. 8    2. 7    3. 5    4. 3

**Q.20)-**

Find the greatest number which divides 108, 124 and 156, leaving the same remainder.

1. 16    2. 10    3. 18    4. 12

**Q.21)-**

O is the centre of a circle with diameter 20 cm. T is a point outside the circle and TA is a tangent to a circle. If OT is = 26 cm, what is the length (in cm) of the tangent TA?

1. 20    2. 26    3. 24    4. 18

**Q.22)-**

Simplify the following expression:

$$\frac{(a^2 - 4b^2)^3 + 64(b^2 - 4c^2)^3 + (16c^2 - a^2)^3}{(a - 2b)^3 + (2b - 4c)^3 + (4c - a)^3}$$

1.  $-(a + 2b)(b + 2c)(4c + a)$     2.  $4(a + 2b)(b + 2c)(4c + a)$     3.  $(a + 2b)(b + 2c)(4c + a)$     4.  $2(a + 2b)(b + 2c)(4c + a)$

**Q.23)-**

What is the value of:

$$8\sqrt{3} \sin 30^\circ \tan 60^\circ - 3 \cos 0^\circ + 3 \sin^2 45^\circ + 2 \cos^2 30^\circ$$

1. 12    2. 15    3. 9    4. 18

**Q.24)-**

The width of the path around a square field is 4.5 m and its area is  $105.75 \text{ m}^2$ . Find the cost of fencing the path at the rate of ₹100 per metre.

1. ₹400    2. ₹550    3. ₹600    4. ₹275

**Q.25)-**

In a circle with centre O, chords PR and QS meet at the point T, when produced, and PQ is a diameter. If  $\angle ROS = 42^\circ$ , then the measure of  $\angle PTQ$  is

1.  $59^\circ$     2.  $69^\circ$     3.  $58^\circ$     4.  $48^\circ$

### Answer key

Q.1	4	Q.2	1	Q.3	4	Q.4	3	Q.5	2
Q.6	1	Q.7	1	Q.8	1	Q.9	1	Q.10	2
Q.11	4	Q.12	3	Q.13	3	Q.14	2	Q.15	1
Q.16	3	Q.17	2	Q.18	4	Q.19	3	Q.20	1
Q.21	3	Q.22	4	Q.23	1	Q.24	2	Q.25	2

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# Maths Special BATCH

By Shubham Jain  
(Cleared SSC CGL 2 times)

## Complete Arithmetic & Advanced Maths

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(Selected as GST Inspector)  
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**11/04/2022-> (4:00 PM - 5:00 PM)**

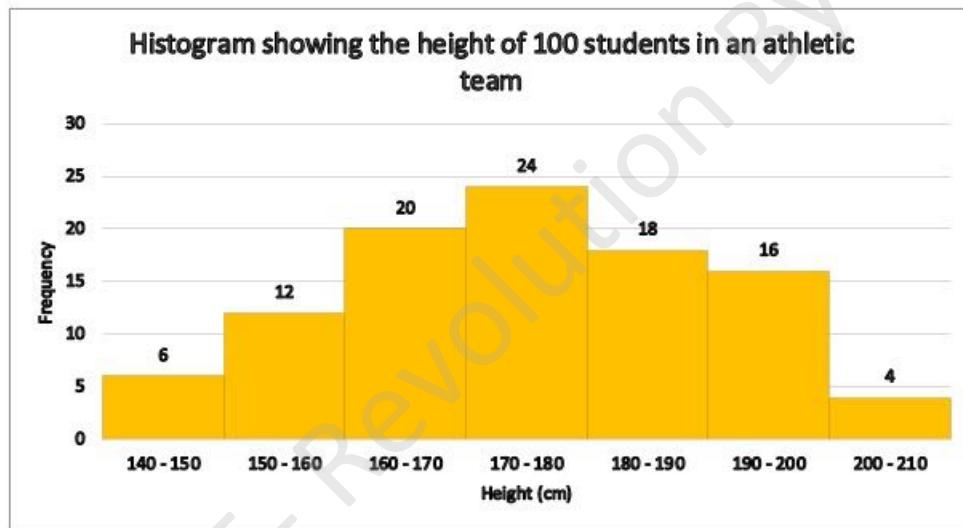
**Q.1)-**

The reduction of 15% in the price of salt enables a person to buy 2 kg more for ₹272. The reduced price of salt per kg (in ₹) is:

1. 22.16    2. 24.25    3. 20.40    4. 25.00

**Q.2)-**

Study the given histogram that shows the height (in cm) of 100 students in an athletic team and answer the question that follows.



Express the number of students with height less than 170 cm as the percentage (correct to one decimal place) of the number of students with height more than 160 cm.

1. 73.5%    2. 53.7%    3. 29.1%    4. 46.3%

**Q.3)-**

In  $\triangle ACD$ , B and E are two points on side AC and AD respectively, such that BE is parallel to CD.  $CD = 9 \text{ cm}$ ,  $BE = 6 \text{ cm}$ ,  $AB = 5 \text{ cm}$  and  $ED = 2 \text{ cm}$ . What are the measures of the lengths (in cm) of AE and BC?

1. 2.5, 4    2. 3, 4    3. 4, 3    4. 4, 2.5

**Q.4)-**

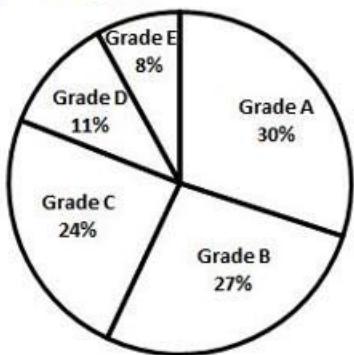
If  $\sec A = \frac{17}{8}$ , given that  $A < 90^\circ$ , what is the value of the following?  $\frac{34 \sin A + 15 \cot A}{68 \cos A - 16 \tan A}$

1. 30    2. 38    3. 23    4. 19

**Q.5)-**

Performance of 1800 students in grades has been shown in the following pie chart.

In which two grades taken together is the number of students 54 less than the number of students in grades B and E taken together?



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

**Q.6)-**

A boatman can row his boat in still water at a speed of 9 km/h. He can also row 44 km downstream and 35 km upstream in 9 hours. How much time (in hours) will he take to row 33 km downstream and 28 km upstream?

1. 7    2. 6    3. 5    4. 8

**Q.7)-**

If p is the third proportional to 8, 20 and q is the fourth proportional to 3, 5, 24, then find the value of  $(2p + q)$ .

1. 90    2. 104    3. 126    4. 140

**Q.8)-**

A person sold an article at a loss of 18%. Had he sold it for ₹960 more, he would have gained 12%. If the article is sold for ₹3,840, then how much is the profit percentage?

1. 20%    2. 21%    3. 24%    4. 15%

**Q.9)-**

Simplify the following expression:

$$\frac{3\frac{1}{2} + 5\frac{1}{3} \div 1\frac{1}{3} \times 5\frac{1}{4} - 5\frac{1}{2}}{1\frac{1}{2} \times 1\frac{2}{3} - 6\frac{1}{2}} \div 7 \times 2$$

1.  $29\frac{9}{32}$     2.  $\frac{13}{147}$     3.  $-\frac{5}{28}$     4.  $-1\frac{5}{14}$

**Q.10)-**

A kite is attached to a string. Find the length of the string (in m) when the height of the kite is 90 m and the string makes an angle of  $30^\circ$  with the ground.

1. 180    2.  $90\sqrt{3}$     3. 45    4.  $60\sqrt{3}$

**Q.11)-**

In  $\triangle LMN$ , the bisectors of  $\angle L$  and  $\angle N$  intersect at an angle of  $112^\circ$ . What is the measure (in degrees) of  $\angle M$ ?

1. 62    2. 44    3. 60    4. 72

**Q.12)-**

A can finish a piece of work in 48 days and B can finish it in 60 days. They work together for 12 days and then A goes away. In how much time (in days and hours) will B finish 25% of the remaining work?

1. 8 days 8 hours    2. 8 days 6 hours    3. 6 days 4 hours    4. 6 days 6 hours

**Q.13)-**

The average of 52, 71, 43, 22, a, and b is 55 and the average of 42, 45, 49, 51, 42, c, and d is 53. What is the average of a, b, c, and d?

1. 54    2. 54.7    3. 142    4. 71

**Q.14)-**

If the 7-digit number  $x8942y4$  is divisible by 56, what is the value of  $(x^2 + y)$  for the largest value of y, where x and y are natural numbers?

1. 70    2. 55    3. 44    4. 33

**Q.15)-**

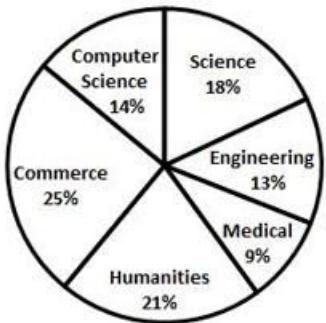
A 35 cm high bucket in the form of a frustum is full of water. Radii of its lower and upper ends are 12 cm and 18 cm, respectively. If water from this bucket is poured in a cylindrical drum, whose base radius is 20 cm, then what will be the height of water (in cm) in the drum?

1. 18.25    2. 20.50    3. 16.25    4. 19.95

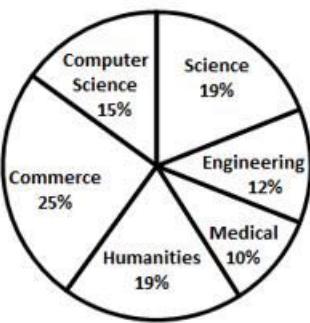
**Q.16)-**

The following pie-charts show the number of students studying in different departments of an institute during the academic years 2019 and 2020. The total number of students was 2000 and 2400 in academic years 2019 and 2020, respectively.

What is the percentage increase or decrease in the number of students of Engineering in 2020 as compared to 2019? (correct to 2 decimal places)



Academic year 2019



Academic year 2020

1. 10.77%    2. 11.77%    3. 10.25%    4. 10.55%

**Q.17)-**

A sum of money was borrowed and paid back in two equal annual instalments of ₹980, allowing 4% compound interest. The sum (in ₹, to the nearest tens) borrowed was:

1. 1,760    2. 1,850    3. 2,050    4. 1,960

**Q.18)-**

If  $x = 4 + \sqrt{15}$ , what is the value of  $\left(x^2 + \frac{1}{x^2}\right)$ ?

1. 54    2. 62    3. 72    4. 48

**Q.19)-**

AB is the diameter of a circle with centre O. C and D are two points on the circumference of the circle on either side of AB, such that  $\angle CAB = 42^\circ$  and  $\angle ABD = 57^\circ$ . What is difference (in degrees) between the measures of  $\angle CAD$  and  $\angle CBD$ ?

1. 105 and 75    2. 81 and 99    3. 75 and 105    4. 99 and 81

**Q.20)-**

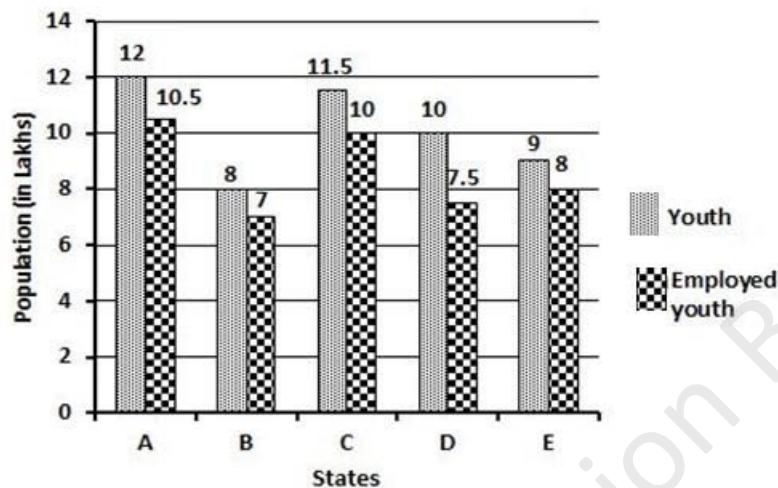
If  $\tan^2 A + 2\tan A - 63 = 0$  Given that  $0 < A < \frac{\pi}{2}$  what is the value of  $(2\sin A + 5\cos A)$ ?

1.  $\frac{19}{\sqrt{50}}$     2.  $\frac{15}{\sqrt{50}}$     3.  $15\sqrt{50}$     4.  $19\sqrt{50}$

**Q.21)-**

The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

Which state has the maximum number of unemployed youth?



1. E    2. B    3. A    4. D

**Q.22)-**

If  $a^2 + b^2 + c^2 = 6.25$  and  $(ab + bc + ca) = 0.52$ , what is the value of  $(a + b + c)$ , if  $(a + b + c) < 0$ ?

1. -2.7    2. -2.8    3.  $\pm 2.7$     4.  $\pm 2.8$

**Q.23)-**

What is the greatest number by which when 156, 181 and 331 are divided, the remainder is 6 in each case?

1. 25    2. 26    3. 17    4. 13

**Q.24)-**

In a manufacturing unit, it was noted that the price of raw material has increased by 25% and the labour cost has gone up from 30% of the cost of raw material to 38% of the cost of the raw material. What percentage of the consumption of raw material be reduced to keep the cost the same as that before the increase?

1. 20.7%    2. 25.5%    3. 30.2%    4. 24.6%

**Q.25)-**

Two circles touch each other externally at T. RS is a direct common tangent to the two circles touching the circles at P and Q.  $\angle TPQ = 42^\circ$ .  $\angle PQT$  (in degrees) is:

1. 42    2. 60    3. 45    4. 48

### Answer key

Q.1	3	Q.2	4	Q.3	4	Q.4	4	Q.5	1
Q.6	1	Q.7	4	Q.8	1	Q.9	4	Q.10	1
Q.11	2	Q.12	2	Q.13	4	Q.14	2	Q.15	4
Q.16	1	Q.17	2	Q.18	2	Q.19	3	Q.20	1
Q.21	4	Q.22	1	Q.23	1	Q.24	4	Q.25	4

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By: Shubham Jain  
(Selected as GST Inspector)  
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**12/04/2022-> (9:00 AM - 10:00 AM)**

**Q.1)-**

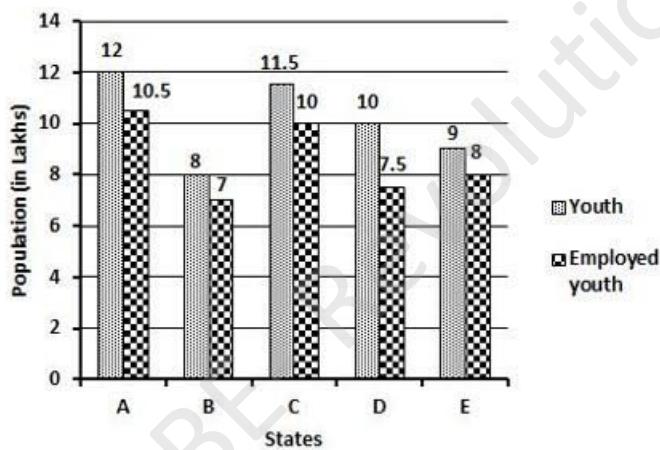
The ratio of the speeds of two trains is 2 : 7. If the first train runs 250 km in 5 hours, then the sum of the speeds (in km/h) of both the trains is:

1. 175    2. 225    3. 150    4. 250

**Q.2)-**

The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

What is the ratio of the number of youth in states A, C and E taken together to the number of employed youth in states B, C and D taken together?



1. 57 : 49    2. 8 : 7    3. 65 : 49    4. 65 : 59

**Q.3)-**

The average of 9 consecutive numbers is 20. The smallest of these numbers is:

1. 16    2. 10    3. 12    4. 20

**Q.4)-**

Find the value of  $70^3 + 20^3 - 90^3$ .

1. -300000    2. -378000    3. 0    4. 378000

**Q.5)-**

What is the remainder when the product of 335, 608 and 853 is divided by 13?

1. 7    2. 11    3. 12    4. 6

**Q.6)-**

Find the value of the following expression:

$$\frac{5 - 35 \div 5 \times 15 + 5}{12 - 2}$$

1. - 9.5    2. - 2.5    3. 11.5    4. - 13.5

**Q.7)-**

A, B and C can do a work in 8, 10 and 12 days, respectively. After completing the work together, they received ₹5,550. What is the share of B (in ₹) in the amount received?

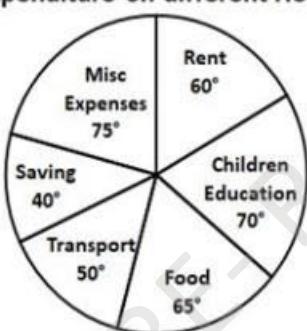
1. 1,500    2. 1,850    3. 1,696    4. 1,800

**Q.8)-**

Monthly expenditure of a family on different heads is shown in the following pie chart.

What is the percentage of family earnings spent on rent?

**Expenditure on different Heads**



1.  $15\frac{3}{4}$     2. 15    3.  $16\frac{1}{3}$     4.  $16\frac{2}{3}$

**Q.9)-**

The difference between the two perpendicular sides of a right-angled triangle is 17 cm and its area is  $84 \text{ cm}^2$ . What is the perimeter (in cm) of the triangle?

1. 49    2. 56    3. 40    4. 36

**Q.10)-**

If  $x + y + z = 11$ ,  $xy + yz + zx = -6$ , and  $x^3 + y^3 + z^3 = 1604$ , then the value of  $xyz$  is:

1. 5    2. 1    3. 25    4. 4

**Q.11)-**

A tangent is drawn from a point P to a circle, which meets the circle at T such that  $PT = 10.5$  cm. A secant PAB intersects the circle in points A and B. If  $PA = 7$  cm, what is the length (in cm) of the chord AB?

1. 8.45    2. 8.5    3. 8.75    4. 7.75

**Q.12)-**

If  $3 \sec^2 \theta + \tan \theta - 7 = 0, 0^\circ < \theta < 90^\circ$ , then what is the value of  $\left( \frac{2 \sin \theta + 3 \cos \theta}{\cosec \theta + \sec \theta} \right)$  ?

1.  $\frac{5}{2}$     2.  $4\sqrt{2}$     3.  $\frac{5}{4}$     4. 10

**Q.13)-**

The marked price of an article is ₹625. After allowing a discount of 32% on the marked price, there was a profit of ₹25. The profit percentage (correct to the nearest integer) is:

1. 5%    2. 7%    3. 6%    4. 4%

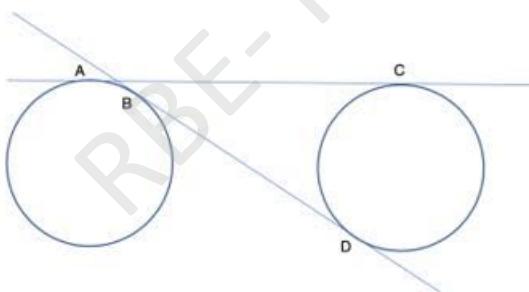
**Q.14)-**

A trader sells an article for ₹425 and loses 15%. At what price (in ₹) should he sell the article to earn 5% profit?

1. 445    2. 525    3. 505    4. 510

**Q.15)-**

Two common tangents AC and BD touch two equal circles each of radius 7 cm, at points A, C, B and D, respectively, as shown in the figure. If the length of BD is 48 cm, what is the length of AC?



1. 30 cm    2. 50 cm    3. 48 cm    4. 40 cm

**Q.16)-**

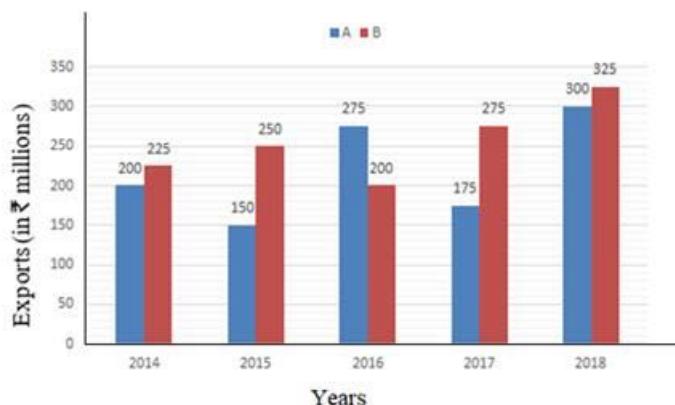
If  $\cot B = \frac{12}{5}$ , what is the value of  $\sec B$ ?

1.  $\frac{13}{5}$     2.  $\frac{12}{13}$     3.  $\frac{13}{12}$     4.  $\frac{5}{12}$

**Q.17)-**

The given bar graph shows exports of cars of type A and B (in ₹ millions) from 2014 to 2018. Study the graph and answer the question that follows.

Study the graph and answer the question that follows.



What is the ratio of the total exports of cars of type A in 2014 and 2018 to the total exports of cars of type B in 2015 and 2017?

1. 20 : 21    2. 5 : 4    3. 10 : 9    4. 13 : 12

**Q.18)-**

The bisector of  $\angle B$  in  $\triangle ABC$  meets AC at D. If  $AB = 12$  cm,  $BC = 18$  cm and  $AC = 15$  cm, then the length of AD (in cm) is:

1. 5    2. 6    3. 12    4. 9

**Q.19)-**

Which is the smallest multiple of 7, which leaves 5 as remainder in each case, when divided by 8, 9, 12 and 15?

1. 2525    2. 1085    3. 365    4. 725

**Q.20)-**

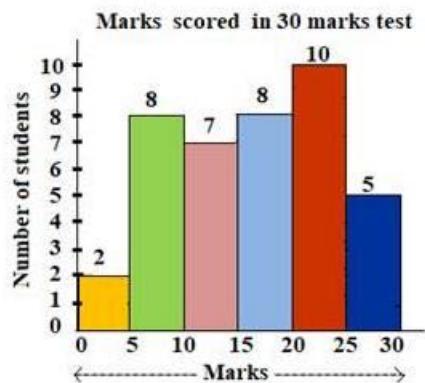
At present, A is younger than B by 8 years. If 4 years ago, their ages were in the ratio 1 : 2, then what is the present age of B (in years)?

1. 11    2. 12    3. 20    4. 18

**Q.21)-**

The following histogram shows the marks scored by 40 students in a test of 30 marks. A student has to score a minimum of 10 marks to pass the test.

How many students have scored less than two-third of the total marks?



1. 32    2. 17    3. 25    4. 35

**Q.22)-**

On simple interest, a certain sum becomes ₹59,200 in 6 years and ₹72,000 in 10 years. If the rate of interest had been 2% more, then in how many years would the sum have become ₹76,000?

1. 10    2. 7    3. 8    4. 9

**Q.23)-**

The price of petrol shot up by 5%. Before the hike, the price was ₹82 per litre. A man travels 3045 km every month and his car gives a mileage of 15 km per litre. What is the increase in the monthly expenditure (to the nearest ₹) on the man's travel due to the hike in the petrol prices?

1. 944    2. 859    3. 758    4. 832

**Q.24)-**

What is the difference in the volume (in  $\text{cm}^3$ ) of a sphere of radius 7 cm and that of a cone of radius 7 cm and height 10 cm? (Use  $\pi = \frac{22}{7}$ )

1. 704    2. 205    3. 924    4. 1078

**Q.25)-**

A vertical pole and a vertical tower are on the same level ground in such a way that, from the top of the pole, the angle of elevation of the top of the tower is  $60^\circ$  and the angle of depression of the bottom of the tower is  $30^\circ$ . If the height of the pole is 24 m, then find the height of the tower (in m).

1.  $24(\sqrt{3} + 1)$     2.  $24\sqrt{3}(\sqrt{3} + 1)$     3. 96    4. 72

## Answer key

Q.1	2	Q.2	3	Q.3	1	Q.4	2	Q.5	1
Q.6	1	Q.7	4	Q.8	4	Q.9	2	Q.10	3
Q.11	3	Q.12	3	Q.13	3	Q.14	2	Q.15	2
Q.16	3	Q.17	1	Q.18	2	Q.19	2	Q.20	3
Q.21	3	Q.22	4	Q.23	4	Q.24	3	Q.25	3

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By: Shubham Jain  
(Selected as GST Inspector)  
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12/04/2022-> (12:30 PM - 1:30 PM)

Q.1)-

The value of  $40 \div 5 \text{ of } 2 \times [18 \div 6 \times (12 - 9) \text{ of } 5 - (3 - 8)] \div 25$  is:

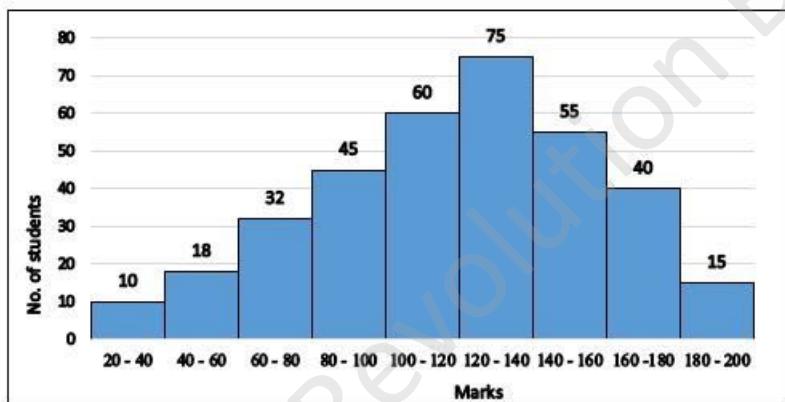
1. 7    2. 8    3. 5    4. 4

Q.2)-

The given histogram represents the marks of students in Mathematics test of a certain class.

The total number of students is 350 and the maximum marks of the test are 200.

Study the graph and answer the question that follows.

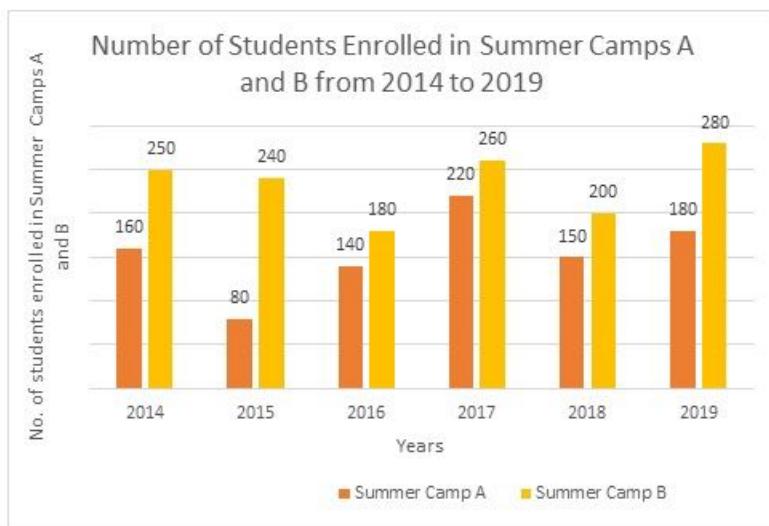


What is the class average (correct up to one place of decimal) of mathematics test?

1. 123.7    2. 115.8    3. 119.3    4. 127.3

Q.3)-

The following bar chart shows the number of students enrolled in two Summer Camps A and B from 2014 to 2019. Study the chart carefully and answer the question that follows.



The number of students enrolled in Camp A in 2016 and 2019 together is what percentage of the number of students enrolled in Camp B in 2015 and 2017 together?

1. 60%
2. 75%
3. 80%
4. 64%

**Q.4)-**

If 8A5146B is divisible by 88, then what is the value of  $B - A$ ?

1. 2
2. 1
3. 0
4. -1

**Q.5)-**

In  $\Delta ABC$ ,  $\angle A = 88^\circ$ . If I is the incentre of the triangle, then the measure of  $\angle BIC$  is:

1.  $56^\circ$
2.  $68^\circ$
3.  $112^\circ$
4.  $134^\circ$

**Q.6)-**

If the volume of a sphere is equal to that of a cylinder having the same radius, then find the ratio of the radius to the height of the cylinder.

1.  $3 : 4$
2.  $1 : 2$
3.  $3 : 5$
4.  $2 : 3$

**Q.7)-**

If  $a + b + c = 6$ ,  $a^2 + b^2 + c^2 = 32$ , and  $a^3 + b^3 + c^3 = 189$ , then the value of  $abc - 3$  is:

1. 2
2. 0
3. 3
4. 1

**Q.8)-**

Sides AB and AC of  $\triangle ABC$  are produced to points D and E, respectively. The bisectors of  $\angle CBD$  and  $\angle BCE$  meet at P. If  $\angle A = 78^\circ$ , then the measure of  $\angle P$  is:

1.  $55^\circ$    2.  $56^\circ$    3.  $61^\circ$    4.  $51^\circ$

**Q.9)-**

What is the average of all the prime numbers between 70 and 90?

1. 81.6   2. 80   3. 79   4. 78.66

**Q.10)-**

The angle of elevation of the top of a tall building from the points M and N at the distances of 72 m and 128 m, respectively, from the base of the building and in the same straight line with it, are complementary. The height of the building (in m) is:

1. 96   2. 90   3. 80   4. 84

**Q.11)-**

The simple interest on a certain sum is one-eighth of the sum when the number of years is equal to half of the rate percentage per annum. Find the simple interest (in ₹) on ₹15,000 at the same rate of simple interest for 8 years.

1. 5,000   2. 5,800   3. 5,250   4. 6,000

**Q.12)-**

$\frac{11}{5}$  of a number A is 22% of a number B. The number B is equal to 2.5% of a third number C. If the value of C is 5500, then the sum of 80% of A and 40% of B is:

1. 48   2. 75   3. 66   4. 88

**Q.13)-**

In a quadrilateral ABCD, the bisectors of  $\angle C$  and  $\angle D$  meet at point E. If  $\angle CED = 57^\circ$  and  $\angle A = 47^\circ$ , then the measure of  $\angle B$  is:

1.  $57^\circ$    2.  $67^\circ$    3.  $77^\circ$    4.  $47^\circ$

**Q.14)-**

A shopkeeper marks his goods at a price 20% higher than their cost price and allows 10% discount on every item. Find his gain percentage.

1. 10%   2. 8%   3. 9%   4. 10.5%

**Q.15)-**

A and B started their journeys from X to Y and Y to X, respectively. After crossing each other, A and B completed remaining parts of their journeys in  $6\frac{1}{8}$  hours and 8 hours, respectively. If the speed of A is 32 km/h, then the speed, in km/h, of B is:

1. 28    2. 25    3. 21    4. 30

**Q.16)-**

A can complete 25% of a work in 15 days. He works for 15 days and then B alone finishes the remaining work in 30 days. In how many days will A and B working together finish 50% of the same work?

1. 25    2. 24    3. 20    4. 12

**Q.17)-**

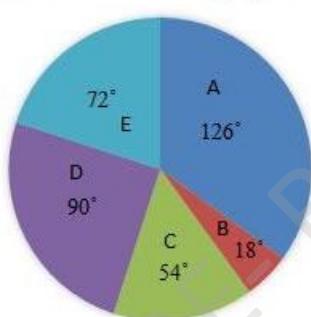
A and B start a business. A invests  $33\frac{1}{3}\%$  of the total capital and B invests the remaining. If the total profit at the end of the year is ₹1,62,000, then B's share (in ₹) is:

1. 54,000    2. 1,12,000    3. 1,08,000    4. 1,20,000

**Q.18)-**

The breakup of the total number of employees of a company working in different offices (A to E), in degrees, is given in the pie chart.

Total number of employees = 2400.



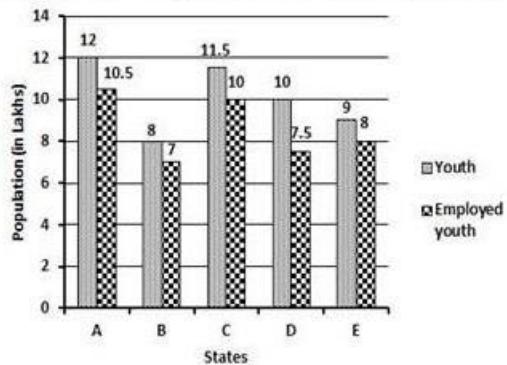
In which office is the number of employees 600?

1. E    2. D    3. A    4. C

**Q.19)-**

The following bar graph shows the number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

In which state(s) is the number of youth more than the average number of youth in the five states?



1. A    2. A, C    3. A, C, D    4. A, C, D, E

**Q.20)-**

A cyclic quadrilateral ABCD is drawn in a circle with centre O. A and C are joined to O. If  $\angle ABC = 2p$  and  $\angle ADC = 3p$ , what is the measure (in degrees) of the  $\angle AOC$  reflex?

1. 210    2. 245    3. 216    4. 200

**Q.21)-**

Six bells begin to toll together and toll, respectively, at intervals of 3, 4, 6, 7, 8 and 12 seconds. After how many seconds, will they toll together again?

1. 176    2. 168    3. 186    4. 167

**Q.22)-**

The cost prices of two articles A and B are in the ratio 4 : 5. While selling these articles, the shopkeeper gains 10% on article A and 20% on article B and the difference in their selling prices is ₹480. The difference in the cost price (in ₹) of articles B and A is;

1. 350    2. 250    3. 300    4. 400

**Q.23)-**

If  $a^2 + b^2 + 49c^2 + 18 = 2(b - 28c - a)$  then the value of  $(a + b - 7c)$  is:

1. 3    2. 2    3. 4    4. 1

**Q.24)-**

The value of  $1 + \sqrt{\frac{\cot \theta + \cos \theta}{\cot \theta - \cos \theta}}$ , if  $0^\circ < \theta < 90^\circ$ , is equal to:

1.  $1 - \sec \theta + \tan \theta$     2.  $1 + \sec \theta - \tan \theta$     3.  $1 - \sec \theta - \tan \theta$     4.  $1 + \sec \theta + \tan \theta$

Q.25)-

The value of  $\left(\frac{1-\cot\theta}{1-\tan\theta}\right)^2 - 1$  when  $0^\circ < \theta < 90^\circ$ , is equal to:

1.  $\sin^2 \theta - 1$     2.  $\sec^2 \theta + 1$     3.  $\cos^2 \theta - 1$     4.  $\cot^2 \theta - 1$

### Answer key

Q.1	2	Q.2	3	Q.3	4	Q.4	2	Q.5	4
Q.6	1	Q.7	2	Q.8	4	Q.9	3	Q.10	1
Q.11	4	Q.12	3	Q.13	2	Q.14	2	Q.15	1
Q.16	4	Q.17	3	Q.18	2	Q.19	2	Q.20	3
Q.21	2	Q.22	3	Q.23	3	Q.24	4	Q.25	4

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By: Shubham Jain  
(Selected as GST Inspector)  
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**12/04/2022-> (4:00 PM - 5:00 PM)**

**Q.1)-**

If  $2k \sin 30^\circ \cos 30^\circ \cot 60^\circ = \frac{\cot^2 30^\circ \sec 60^\circ \tan 45^\circ}{\cosec^2 45^\circ \cosec 30^\circ}$ , then find the value of  $k$ .

- 1. 3    2.  $\frac{3}{2}$     3. 1    4. 6

**Q.2)-**

$\tan^2 A + 5 \sec A = 13$ , where  $0 < A < 90^\circ$ . Solve for A (in degrees).

- 1. 60    2. 30    3. 45    4. 0

**Q.3)-**

In  $\triangle ABC$ , AD is perpendicular to BC and AE is the bisector of  $\angle BAC$ . If  $\angle ABC = 58^\circ$  and  $\angle ACB = 34^\circ$ , then find the measure of  $\angle DAE$ .

- 1.  $22^\circ$     2.  $12^\circ$     3.  $15^\circ$     4.  $11^\circ$

**Q.4)-**

A and B are two prime numbers such that  $A > B$  and their LCM is 209. The value of  $A^2 - B$  is:

- 1. 361    2. 372    3. 339    4. 350

**Q.5)-**

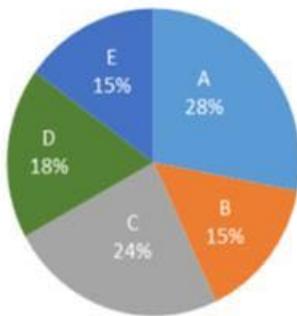
Five men and 2 boys can do in 30 days as much work as 7 men and 10 boys can do in 15 days. How many boys should join 40 men to do the same work in 4 days?

- 1. 12    2. 10    3. 14    4. 15

**Q.6)-**

The given pie chart shows the percentage of students in five schools and the table shows the ratio of boys and girls in each school.

Study the pie chart and table and answer the question that follows.



The below table shows the ratio of girls and boys in the given five schools.

School	Girls : Boys
A	3 : 4
B	2 : 3
C	5 : 3
D	1 : 2
E	4 : 1

If the total number of girls from all five schools is represented as a pie chart, then what will be the measure of the sector angle (to the nearest integer) corresponding to school B?

1.  $32^\circ$    2.  $42^\circ$    3.  $58^\circ$    4.  $48^\circ$

**Q.7)-**

In a circle with centre O, AC and BD are two chords. AC and BD meet at E, when produced. If AB is a diameter and  $\angle AEB = 36^\circ$ , then the measure of  $\angle DOC$  is:

1.  $124^\circ$    2.  $136^\circ$    3.  $112^\circ$    4.  $108^\circ$

**Q.8)-**

The average of 15 numbers is 30, while the average of 13 of these numbers is 32. If the remaining two numbers are equal, then what is each of the two numbers?

1. 16   2. 31   3. 34   4. 17

**Q.9)-**

A journey of 900 km is completed in 11 h. If two-fifth of the journey is completed at the speed of 60 km/h, at what speed (in km/h) is the remaining journey completed?

1. 84   2. 72   3. 108   4. 90

**Q.10)-**

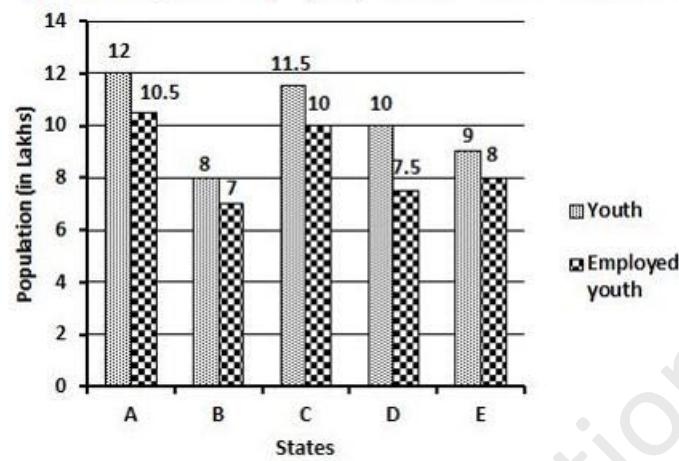
A, B and C invested ₹40,000, ₹48,000 and ₹80,000, respectively, for a business at the start of a year. After six months, for the remaining time of the year, A added ₹4,000, B added ₹4,000 while C withdrew ₹4,000 every month. If the total profit is ₹6,72,000, then what is C's share (in ₹)?

1. 2,11,200
2. 1,96,750
3. 2,80,320
4. 1,80,480

#### **Q.11)-**

The following bar graph shows the number of youth (in lakhs) and the number of employed youth (in lakhs) in five states A, B, C, D and E.

Which state(s) has employed youth less than 80% of its total youth population?



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

#### **Q.12)-**

A person's salary was decreased by 50% and subsequently increased by 50% and then again increased by 100%. How much percentage does he lose or gain?

1. Loss of 40%
2. Gain of 25%
3. Loss of 10%
4. Gain of 50%

#### **Q.13)-**

A dealer allows his customers a discount of 18% and still gains 24%. If an article costs ₹1,560 to the dealer, what is its marked price (to the nearest ₹)?

1. 2,359
2. 2,565
3. 2,024
4. 2,168

#### **Q.14)-**

How many small solid spheres each of 5 mm radius can be made out of a metallic solid cone whose base has radius 21 cm and height 30 cm?

1. 25000
2. 26460
3. 32000
4. 18260

#### **Q.15)-**

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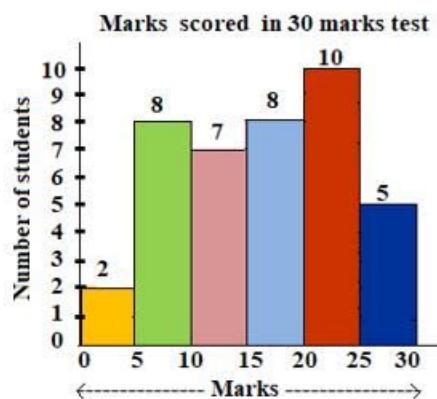
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The following histogram shows the marks scored by 40 students in a test of 30 marks. A student has to score a minimum of 10 marks to pass the test.

What is the percentage of students who scored 20 or more marks? (correct to one decimal place)



1. 55%    2. 57.5%    3. 37.5%    4. 15%

**Q.16)-**

If  $8k^6 + 15k^3 - 2 = 0$ , then the positive value of  $\left(k + \frac{1}{k}\right)$  is:

1.  $2\frac{1}{2}$     2.  $2\frac{1}{8}$     3.  $8\frac{1}{2}$     4.  $8\frac{1}{8}$

**Q.17)-**

The angles of a triangle are  $(8x - 15)^\circ$ ,  $(6x - 11)^\circ$  and  $(4x - 10)^\circ$ . What is the value of  $x$ ?

1. 16    2. 12    3. 15    4. 18

**Q.18)-**

Aditya sells two wrist watches from his personal collection for ₹12,600 each. On the first watch, he gains 26% and, on the second, he loses 10%. Find the overall gain or loss percentage.

1. Gain of 12%    2. Gain of 16%    3. Gain of 5%    4. Loss of 5%

**Q.19)-**

If 8A5146B is divisible by 88, then what is the value of  $B^A$ ?

1. 81    2. 12    3. 15    4. 64

**Q.20)-**

In a circle, ABCD is a cyclic quadrilateral. AC and BD intersect each other at P. If AB = AC and  $\angle BAC = 48^\circ$ , then the measure of  $\angle ADC$  is

1.  $114^\circ$     2.  $104^\circ$     3.  $112^\circ$     4.  $132^\circ$

**Q.21)-**

If  $x - y + z = 0$ , then find the value of  $\frac{y^2}{2xz} - \frac{x^2}{2yz} - \frac{z^2}{2xy}$ .

1.  $-\frac{3}{2}$     2.  $\frac{3}{2}$     3.  $-6$     4.  $\frac{1}{2}$

**Q.22)-**

From a point P on a level ground, the angle of elevation of the top of a tower is  $30^\circ$ . If the tower is  $110\sqrt{3}$  m high, what is the distance (in m) of point P from the foot of the tower?

1. 110    2. 115    3. 220    4. 330

**Q.23)-**

The value of  $\frac{2}{7} - \frac{3}{8} - \left[ 2\frac{1}{4} \div 3\frac{1}{2} \text{ of } 1\frac{1}{3} + \left\{ 1\frac{17}{40} - \left( 3 - 1\frac{1}{5} - \frac{3}{8} \right) \right\} \right]$  is:

1.  $-\frac{4}{7}$     2.  $\frac{4}{7}$     3.  $-\frac{2}{7}$     4.  $\frac{2}{7}$

**Q.24)-**

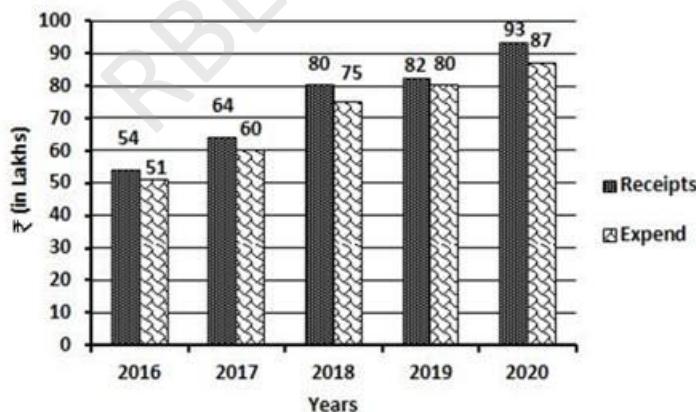
A certain sum on simple interest becomes ₹49,600 in 3 years and ₹56,000 in 5 years. If the rate of interest had been 2% more, then in how many years would the sum have doubled?

1. 20    2. 10    3. 8    4. 12

**Q.25)-**

The following bar graph shows receipts and expenditure of a business firm over 5 years. Gain = Receipts – Expenditure.

What is the increase percentage in receipts from 2017 to 2018?



1. 20    2. 6.6    3. 25    4. 2.5

## Answer key

Q.1	1	Q.2	1	Q.3	2	Q.4	4	Q.5	2
Q.6	2	Q.7	4	Q.8	4	Q.9	3	Q.10	3
Q.11	3	Q.12	4	Q.13	1	Q.14	2	Q.15	3
Q.16	1	Q.17	2	Q.18	3	Q.19	4	Q.20	1
Q.21	2	Q.22	4	Q.23	1	Q.24	2	Q.25	3

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By: Shubham Jain  
(Selected as GST Inspector)  
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**13/04/2022-> (9:00 AM - 10:00 AM)**

**Q.1)-**

A tea seller used to make 50% of profit by selling tea at ₹9 per cup. When the cost of ingredients increased by 25%, he started selling tea at ₹10 per cup. What is his profit percentage now?

- 1.  $33\frac{2}{3}$
- 2. 25
- 3. 30
- 4.  $33\frac{1}{3}$

**Q.2)-**

A train covers a distance of 225 km in  $2\frac{1}{2}$  hours with a uniform speed. The time taken, in hours, to cover a distance of 450 km with the same speed is:

- 1. 6
- 2. 4
- 3. 3
- 4. 5

**Q.3)-**

In a circle of diameter 20 cm, chords AB and CD are parallel to each other. BC is diameter. If AB is 6 cm from the centre of the circle, what is the length (in cm) of the chord CD?

- 1. 12
- 2. 8
- 3. 16
- 4. 20

**Q.4)-**

13, a, b, c are four distinct numbers and the HCF of each pair of numbers (13, a); (13, b); (13, c) is 13, where a, b, c are each less than 60 and  $a < b < c$ . What is the value of  $\frac{a+c}{b}$ ?

- 1. 3.5
- 2. 4.5
- 3. 5
- 4. 2

**Q.5)-**

A cylindrical vessel of diameter 32 cm is partially filled with water. A solid metallic sphere of radius 12 cm is dropped into it. What will be the increase in the level of water in the vessel (in cm)?

- 1. 2.25
- 2. 9
- 3. 27
- 4. 72

**Q.6)-**

What is the value of x, if

$$5\left(1 - \frac{x}{5}\right) - (5 - x) - \frac{1}{200} \text{ of } (20 - x) = 0.08?$$

1. 36    2. 18    3. 24    4. 9

**Q.7)-**

A kite flying at a height of 120 m is attached to a string which makes an angle of  $60^\circ$  with the horizontal. What is the length (in m) of the string?

1.  $75\sqrt{3}$     2.  $84\sqrt{3}$     3.  $90\sqrt{3}$     4.  $80\sqrt{3}$

**Q.8)-**

If the length of a diagonal of a square is  $(a+b)$ , then the area of the square is:

1.  $a^2 + b^2$     2.  $\frac{1}{2}(a^2 + b^2)$     3.  $\frac{1}{2}(a^2 + b^2) + ab$     4.  $a^2 + b^2 + 2ab$

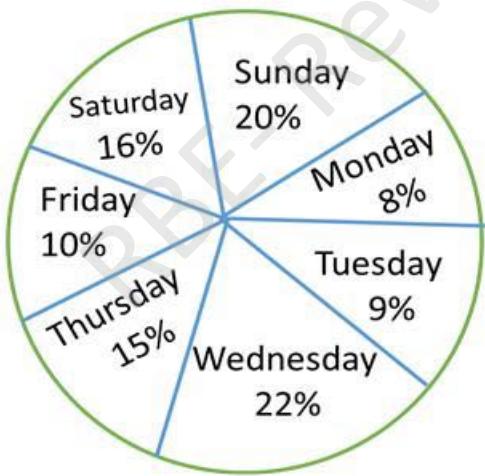
**Q.9)-**

In a factory with 400 employees, the ratio of the number of male employees to that of female employees is 5 : 3. There are 87.5% regular employees in the factory. If 92% of male employees are regular employees, then what is the percentage of regular female employees?

1. 87.5%    2. 78%    3. 85%    4. 80%

**Q.10)-**

The given pie chart represents the percentage-wise distribution of the total number of vanilla cakes and chocolate cakes sold every day. The total number of cakes sold in a week = 10500. Study the pie chart and answer the question that follows.



The ratio of vanilla cakes sold to chocolate cakes sold on Friday is 4:3. If the price of one vanilla cake is ₹9 and that of one chocolate cake is ₹10, then the total amount earned (in ₹) by selling all vanilla cakes and chocolate cakes on Friday is:

1. 8,900    2. 11,000    3. 9,900    4. 10,000

**Q.11)-**

In  $\Delta ABC$ , D is a point on side BC such that  $\angle ADC = \angle BAC$ . If CA = 12 cm, CD = 8 cm, then CB (in cm) = ?

1. 18    2. 10    3. 12    4. 15

**Q.12)-**

A, B and C start a business. A invests  $33\frac{1}{3}\%$  of the total capital, B invests 25% of the remaining and C, the rest. If the total profit at the end of the year is ₹2,19,000, then A's share (in ₹) is:

1. 65,000    2. 71,000    3. 73,000    4. 79,000

**Q.13)-**

A shopkeeper allows 28% discount on the marked price of an article and still makes a profit of 20%. If he gains ₹3,080 on the sale of one article, then what is the selling price (in ₹) of the article?

1. 10,884    2. 14,880    3. 18,840    4. 18,480

**Q.14)-**

If the 9-digit number  $7x79251y8$  is divisible by 36, What is the value of  $(10x^2 - 3y^2)$  for the largest possible value of y?

1. 490    2. 289    3. 192    4. 298

**Q.15)-**

If  $5 \sin \theta - 4 \cos \theta = 0$ ,  $0^\circ < \theta < 90^\circ$ , then the value of  $\frac{5 \sin \theta + 2 \cos \theta}{5 \sin \theta + 3 \cos \theta}$  is:

1.  $\frac{4}{7}$     2.  $\frac{2}{7}$     3.  $\frac{3}{7}$     4.  $\frac{6}{7}$

**Q.16)-**

If  $x + y + z = 18$ ,  $xyz = 81$  and  $xy + yz + zx = 90$ , then the value of  $x^3 + y^3 + z^3 + xyz$  is:

1. 1321    2. 1250    3. 1296    4. 1225

**Q.17)-**

Simple interest on a certain sum is one-fourth of the sum and the interest rate percentage per annum is 4 times the number of years. If the rate of interest increases by 2%, then what will be the simple interest (in ₹) on ₹5,000 for 3 years?

1. 2,000    2. 1,800    3. 300    4. 1,500

**Q.18)-**

Find the value of the following expression:

$$\frac{\tan^3 45^\circ + 4 \cos^3 60^\circ}{2 \operatorname{cosec}^2 45^\circ - 3 \sec^2 30^\circ + \sin 30^\circ}$$

1.  $\frac{3}{4}$     2.  $1 + \sqrt{2}$     3.  $\frac{4}{3}$     4. 3

**Q.19)-**

In a triangle ABC, D and E are points on BC such that  $AD = AE$  and  $\angle BAD = \angle CAE$ . If  $AB = (2p + 3)$ ,  $BD = 2p$ ,  $AC = (3q - 1)$  and  $CE = q$ , then find the value of  $(p + q)$ .

1. 4.5    2. 2    3. 3.6    4. 3

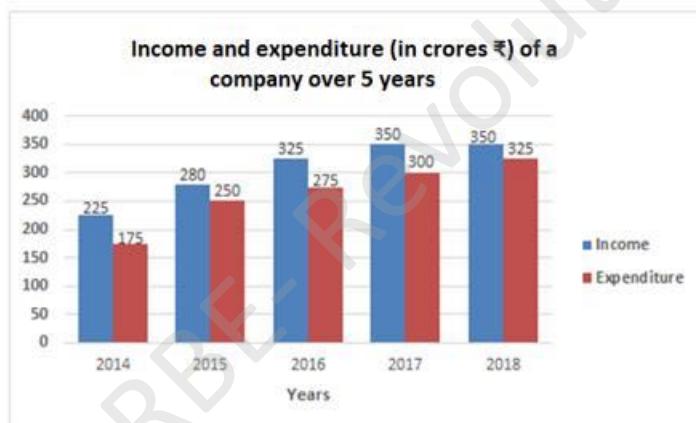
**Q.20)-**

If 4 men and 6 boys can do a work in 8 days and 6 men and 4 boys can do the same work in 7 days, then how many days will 5 men and 4 boys take to do the same work?

1. 6    2. 8    3. 5    4. 7

**Q.21)-**

The given bar graph shows the income and expenditure (in crores ₹) of a company over 5 years, from 2014 to 2018. Study the bar graph and answer the question that follows.



In which of the following years is the ratio of expenditure to income the minimum?

1. 2016    2. 2017    3. 2014    4. 2018

**Q.22)-**

The average of five numbers is 30. If one number is excluded, the average becomes 31. What is the excluded number?

1. 30    2. 31    3. 24    4. 26

**Q.23)-**

Chords AB and CD of a circle, when produced, meet at the point P. If AB = 6.3 cm, BP = 4.5 cm, and CD = 3.6 cm, then the length (in cm) of PD is

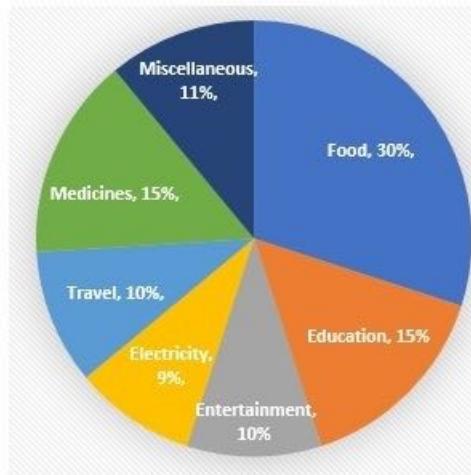
1. 4.8 cm
2. 3.1 cm
3. 3.5 cm
4. 5.4 cm

**Q.24)-**

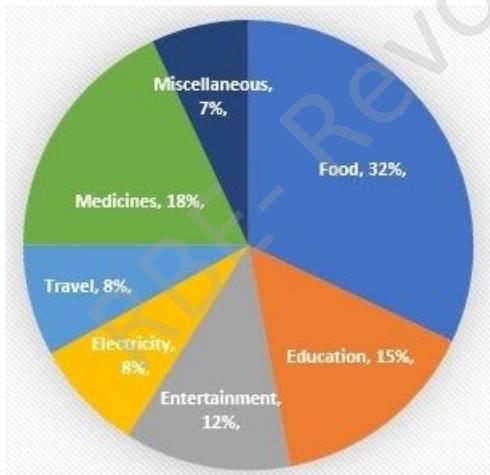
The given pie charts show the monthly household expenditure of Family A and Family B under various heads. The monthly expenditures incurred for Family A and Family B are ₹50,000 and ₹75,000, respectively.

Study the charts carefully and answer the question that follows.

Monthly Household Expenditure of ₹50,000 under various heads of Family A



Monthly household expenditure of ₹75,000 under various heads for Family B



If the monthly expenditures of both families are combined together then the expenditures on Entertainment of both families together will be what percentage of the total monthly expenditures of both families? Express your answer to the nearest integer.

1. 11%
2. 23%
3. 22%
4. 10%

**Q.25)-**

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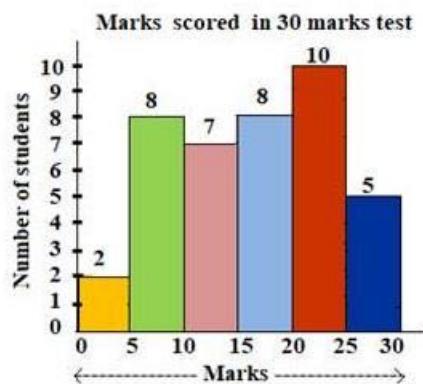
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The following histogram shows the marks scored by 40 students in a test of 30 marks. A student has to score a minimum of 10 marks to pass the test.

How many students have passed the test and obtained less than 50% marks?



1. 17    2. 7    3. 10    4. 15

#### Answer key

Q.1	4	Q.2	4	Q.3	3	Q.4	4	Q.5	2
Q.6	1	Q.7	4	Q.8	3	Q.9	4	Q.10	3
Q.11	1	Q.12	3	Q.13	4	Q.14	4	Q.15	4
Q.16	3	Q.17	2	Q.18	4	Q.19	4	Q.20	2
Q.21	3	Q.22	4	Q.23	4	Q.24	1	Q.25	2

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(Selected as GST Inspector)  
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**13/04/2022-> (12:30 PM - 1:30 PM)**

**Q.1)-**

If  $x + y + z = 18$ ,  $xyz = 81$  and  $xy + yz + zx = 90$ , then find the value of  $\sqrt[4]{x^3 + y^3 + z^3 + xyz}$ .

1. 6    2. 10    3. 12    4. 9

**Q.2)-**

If  $2\sqrt{2}x^3 - 3\sqrt{3}y^3 = (\sqrt{2}x - \sqrt{3}y)(Ax^2 - Bxy + Cy^2)$ , then the value of  $(A^2 + B^2 + C^2)$  is:

1. 11    2. 16    3. 18    4. 19

**Q.3)-**

The average of sixteen numbers is 48. The average of the first six of these numbers is 45 and that of the last seven numbers is 53. The seventh and the eighth numbers are, respectively, 3 and 7 greater than the ninth number. What is the average of the ninth and seventh numbers?

1. 42    2. 41.5    3. 39    4. 40.5

**Q.4)-**

A sum of ₹4,620 is to be paid back in 2 equal annual instalments. How much is each instalment (in ₹) if the interest is compounded annually at 10% per annum?

1. 2,662    2. 2,420    3. 2,552    4. 2,750

**Q.5)-**

What will be the total cost (in ₹) of polishing the curved surface of a wooden cylinder at rate of ₹50 per  $m^2$ , if its diameter is 70 cm and height is 6 m?

(Take  $\pi = \frac{22}{7}$ )

1. 612    2. 675    3. 660    4. 624

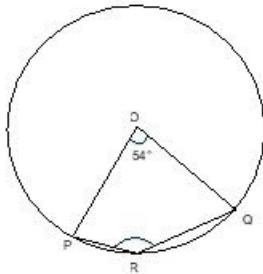
**Q.6)-**

In  $\triangle ABC$ ,  $AB = 7$  cm,  $BC = 10$  cm, and  $AC = 8$  cm. If  $AD$  is the angle bisector of  $\angle BAC$ , where  $D$  is a point on  $BC$ , then  $DC$  (in cm) = ?

1.  $\frac{11}{3}$     2.  $\frac{17}{3}$     3.  $\frac{14}{3}$     4.  $\frac{16}{3}$

**Q.7)-**

In the given figure, O is the centre of the circle.  $\angle POQ = 54^\circ$ . What is the measure (in degree) of  $\angle PRQ$ ?

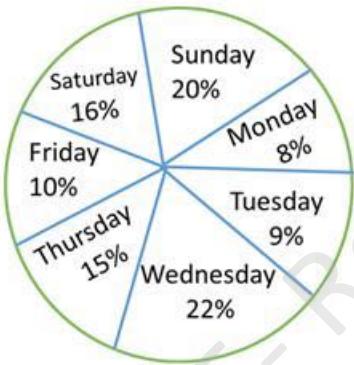


1. 137    2. 235    3. 207    4. 153

**Q.8)-**

Study the given pie chart and answer the question that follows.

The pie chart represents the percentage-wise distribution of the total number of Vanilla cakes and Chocolate cakes sold everyday in a week. The total number of cakes sold in a week = 10500.



The ratio of the number of Vanilla cakes sold to the number of Chocolate cakes sold on Saturday is 4 : 3. the selling price of one Vanilla cake is ₹8 and that of one Chocolate cake is ₹15, then the total amount earned (in ₹) by selling all Vanilla cakes and Chocolate cakes on Saturday is:

1. 10,488    2. 14,880    3. 18,480    4. 20,000

**Q.9)-**

The expression  $(\cos^6 \theta + \sin^6 \theta - 1)(\tan^2 \theta + \cot^2 \theta + 2) + 3$  is equal to:

1. 0    2. -1    3. 2    4. 1

**Q.10)-**

A and B are two prime numbers such that A > B and their LCM is 209. The value of  $B^2 - A$  is:

1. 102    2. 109    3. 121    4. 111

**Q.11)-**

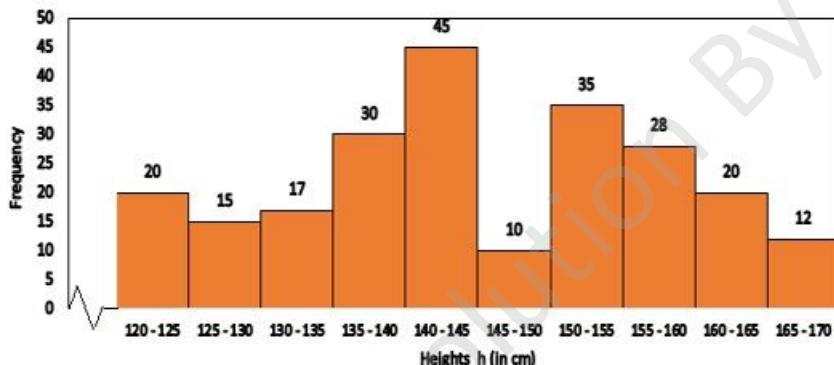
A shopkeeper marks an article at a price 20% higher than its cost price and allows 10% discount. Find his gain percentage.

1. 8%    2. 10%    3. 9.5%    4. 9%

**Q.12)-**

The given histogram shows the heights of 232 students of an athletic club and their numbers. Study the histogram carefully and answer the questions that follows.

**Histogram showing the heights of children of an athletic club and their numbers.**



What is the average height (in cm) of 32 tallest students of the athletic club?

Express your answer correct to one place of decimal.

1. 164.4    2. 165.4    3. 167.4    4. 166.4

**Q.13)-**

A spends 65% of his income. His income is increased by 20.1% and the expenditure is increased by 20%. By what per cent (correct to one decimal place) does his saving increase or decrease?

1. Decrease by 18.9%    2. Increase by 20.3%    3. Decrease by 17.7%    4. Increase by 21.5%

**Q.14)-**

P and Q start a shop with a capital of ₹1,50,000 and ₹4,50,000, respectively. After a year, out of the profit of ₹1,60,000, P gets his share of profit plus some money that is not a part of the profit, as his salary. If P gets a total of ₹70,000, what is the salary (in ₹) he received?

1. 25,000    2. 50,000    3. 30,000    4. 40,000

**Q.15)-**

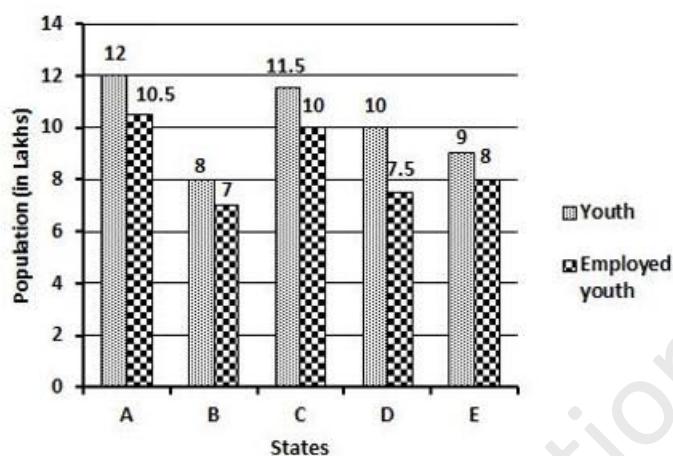
If 8A5146B is divisible by 88, then what is the value of AB ?

1. 9    2. 20    3. 15    4. 12

**Q.16)-**

The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

How many youth (in lakhs) are unemployed in states A and C taken together?

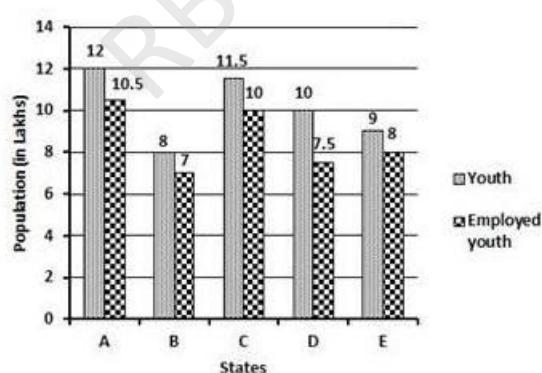


1. 3    2. 2.25    3. 2.8    4. 2.85

**Q.17)-**

The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

The number of employed youth in state B is what percentage of the number of employed youth in state E?



1. 87%    2. 85%    3. 88.5%    4. 87.5%

**Q.18)-**

Telegram (Previous year papers PDFs [SSC,Railway,DSSSB,UP SI]):

[https://t.me/RBE\\_S](https://t.me/RBE_S)

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YouTube (Free lectures and job updates):

<https://youtu.be/HIRRafUmCmk>

From a point P on a level ground, the angle of elevation of the top of the tower is  $30^\circ$ . If the distance of point P from the foot of the tower is 510 m, then 50% of the height of the tower (in m) is:

1.  $\frac{85\sqrt{3}}{3}$     2. 85    3.  $85\sqrt{3}$     4.  $150\sqrt{3}$

**Q.19)-**

Chords AB and CD of a circle intersect externally at P. If AB = 7 cm, CD = 1 cm and PD = 5 cm, then the length of PB (in cm) is:

1. 10    2. 3    3. 5    4. 8

**Q.20)-**

The value of  $\frac{48.3 \times [(4.95)^2 + 4.95 \times 13.25]}{[(12.55)^2 - (5.65)^2] \times 19.8}$  is:

1. 175    2. 1.75    3. 0.175    4. 17.5

**Q.21)-**

A train covers a distance of 225 km in  $2\frac{1}{2}$  hours at a uniform speed. The time taken by the train (in hours) to cover a distance of 630 km at the same speed is:

1. 6    2. 7    3. 5    4. 4

**Q.22)-**

A man bought toffees at 3 for a rupee. How many toffees for a rupee must he sell to gain 50%?

1. 2    2. 1    3. 4    4. 3

**Q.23)-**

In  $\Delta ABC$ , D is a point on side BC such that  $\angle ADC = \angle BAC$ . If CA = 15 cm and CD = 9 cm, then CB (in cm) = ?

1. 12    2. 25    3. 15    4. 10

**Q.24)-**

If  $5 \sin \theta - 4 \cos \theta = 0$ ,  $0^\circ < \theta < 90^\circ$ , then the value of  $\frac{5 \sin \theta - \cos \theta}{5 \sin \theta + 3 \cos \theta}$  is:

1.  $\frac{6}{7}$     2.  $\frac{3}{7}$     3.  $\frac{4}{7}$     4.  $\frac{2}{7}$

**Q.25)-**

A tyre has 3 punctures. The first puncture alone would have made the tyre flat in 9 minutes, the second alone would have done it in 18 minutes, the third alone would have done it in 6 minutes. If the air leaks out at a constant rate, then how long (in minutes) does it take for all the punctures together to make it flat?

1. 6    2. 3    3. 4    4. 2

#### Answer key

Q.1	1	Q.2	4	Q.3	4	Q.4	1	Q.5	3
Q.6	4	Q.7	4	Q.8	3	Q.9	1	Q.10	1
Q.11	1	Q.12	1	Q.13	2	Q.14	3	Q.15	4
Q.16	1	Q.17	4	Q.18	3	Q.19	2	Q.20	2
Q.21	2	Q.22	1	Q.23	2	Q.24	2	Q.25	2

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(Cleared SSC CGL 2 times)

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## RBE- Revolution By Education



By: Shubham Jain  
(Selected as GST Inspector)

Your life, Your hard work, Your success.



13/04/2022-> (4:00 PM - 5:00 PM)

Q.1)-

If  $x + y + z = 2$ ,  $xy + yz + zx = -11$ , and  $xyz = -12$ , then what is the value of  $x^3 + y^3 + z^3$ ?

1. 42    2. 38    3. 36    4. 40

Q.2)-

If the nine-digit number  $9m2365n48$  is completely divisible by 88, what is the value of  $(m^2 \times n^2)$ , for the smallest value of n, where m and n are natural numbers?

1. 32    2. 64    3. 20    4. 36

Q.3)-

The base of a triangle is increased by 40%. By what percentage (correct to two decimal places) should its height be increased so that the area increases by 60%?

1. 15.54%    2. 20.01%    3. 14.29%    4. 18.62%

Q.4)-

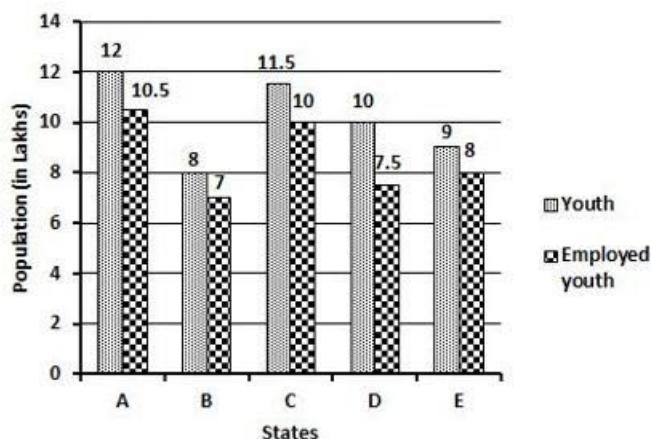
The sides PQ and PR of  $\Delta PQR$  are produced to points S and T, respectively. The bisectors of  $\angle SQR$  and  $\angle TRQ$  meet at point U. If  $\angle QUR = 69^\circ$ , then the measure of  $\angle P$  is:

1.  $21^\circ$     2.  $69^\circ$     3.  $42^\circ$     4.  $31^\circ$

Q.5)-

The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

What is the percentage of employed youth in states A and E taken together?



1.  $88\frac{1}{21}$
2.  $82\frac{8}{21}$
3.  $88\frac{2}{21}$
4.  $88\frac{8}{21}$

**Q.6)-**

If Seema invests ₹17,650 in an account that yields 8.5% p.a. simple interest, then how much (to nearest ₹) will she have after 5 years?

1. 21,551
2. 21,155
3. 25,115
4. 25,151

**Q.7)-**

An isosceles  $\triangle MNP$  is inscribed in a circle. If  $MN = MP = 16\sqrt{5}$  cm, and  $NP = 32$  cm, what is the radius (in cm) of the circle?

1.  $20\sqrt{5}$
2. 18
3.  $18\sqrt{5}$
4. 20

**Q.8)-**

The average of 46 numbers is 50.5. The average of the first 25 numbers is 45 and that of the last 18 numbers is 56. The 28<sup>th</sup> number is 67. If the 26<sup>th</sup> and 27<sup>th</sup> numbers are excluded, then what is the average of the remaining numbers?

1. 51
2. 51.5
3. 50
4. 50.4

**Q.9)-**

What is the least number which when decreased by 7 is divisible by 15, 24, 28 and 32?

1. 10087
2. 10067
3. 10077
4. 10097

**Q.10)-**

A shopkeeper allows 28% discount on the marked price of an article and still makes a profit of 30%. If he gains ₹30.90 on the sale of one article, then what is the marked price (to the nearest ₹) of the article?

1. 186    2. 103    3. 194    4. 134

**Q.11)-**

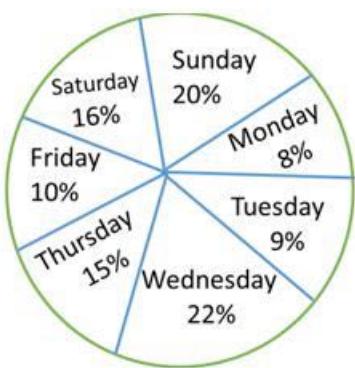
Find the value of  $(1.6)^3 - (0.9)^3 - (0.7)^3$ .

1. 3.24    2. -3.24    3. 3.024    4. -3.024

**Q.12)-**

Study the given pie-chart and answer the question that follows.

The chart represents the percentage-wise distribution of total number of vanilla cakes and chocolate cakes sold every day in a week. Total number of cakes sold in a week = 10500.



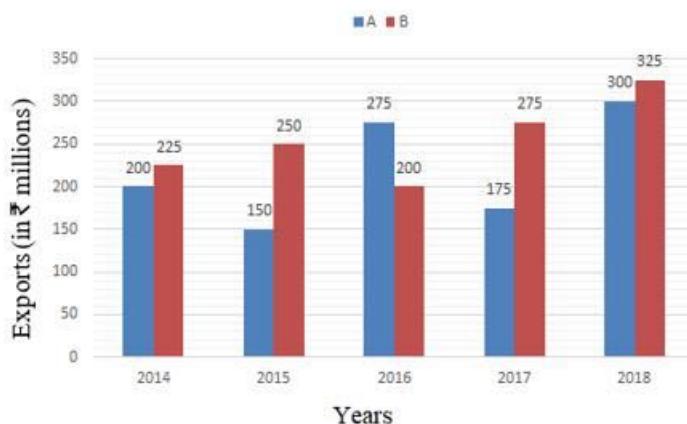
The ratio of vanilla cakes sold to chocolate cakes sold on Friday is 4 : 3. If the selling price of one vanilla cake is ₹9 and that of one chocolate cake is ₹10, then the total amount earned (in ₹) by selling all the vanilla cakes and chocolate cakes on Friday is:

1. 10,000    2. 11,000    3. 8,900    4. 9,900

**Q.13)-**

Study the given bar graph and answer the question that follows.

The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.

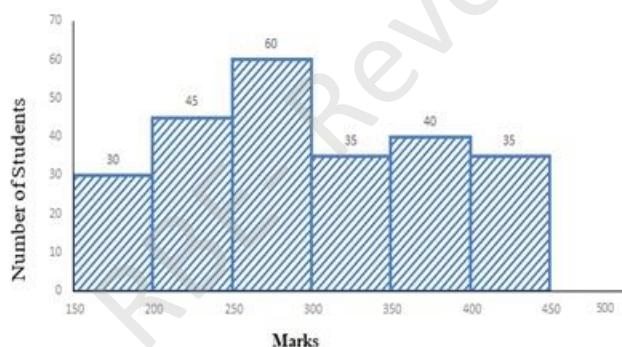


What is the ratio of the total exports of cars of type A in 2016 and 2018 to the total exports of cars of type B in 2015 and 2017?

1. 13 : 12    2. 5 : 4    3. 10 : 9    4. 23 : 21

#### Q.14)-

Study the given histogram that shows the marks obtained by students in an examination and answer the question that follows.



The number of students who obtained less than 200 marks is what percentage less than the number of students who obtained 400 or more marks (correct to one decimal place)?

1. 17.8%    2. 11.9%    3. 21.6%    4. 14.3%

#### Q.15)-

If  $\sin^2 \theta - \cos^2 \theta - 3\sin\theta + 2 = 0$ ,  $0^\circ < \theta < 90^\circ$ , then what is the value of  $1 + \sec\theta + \tan\theta$ ?

1.  $-1 - \sqrt{3}$    2.  $-1 + \sqrt{3}$    3.  $1 + \sqrt{3}$    4.  $1 - \sqrt{3}$

**Q.16)-**

Person A can do one-fifth of the work in 3 days, while B's efficiency is half of that of A. In how many days A and B working together can do half of the work?

1. 5   2. 7   3. 4   4. 6

**Q.17)-**

What is the value of  $p$ , if  $25(3 + 4p) \div 12$  of  $5 - 3 \times 8 = 6$  ?

1.  $17\frac{1}{4}$    2. 69   3. 72   4.  $15\frac{1}{3}$

**Q.18)-**

A, B and C start a business. A invests  $33\frac{1}{3}\%$  of the total capital, B invests 25% of the remaining, and C invests the rest. If the total profit at the end of the year is ₹1,86,000, then A's share of the profit (in ₹) is:

1. 62,000   2. 59,000   3. 61,000   4. 64,000

**Q.19)-**

The curved surface area of a right circular cylinder is  $616 \text{ cm}^2$  and the area of its base is  $38.5 \text{ cm}^2$ . What is the volume (in  $\text{cm}^3$ ) of the cylinder? (Take  $\pi = \frac{22}{7}$ )

1. 1243   2. 1408   3. 1078   4. 1155

**Q.20)-**

Let  $x \text{ cm}^2$  be the surface area and  $y \text{ cm}^3$  be the volume of a sphere such that  $y = 14x$ . What is the radius (in cm) of the sphere?

1. 51   2. 102   3. 42   4. 68

**Q.21)-**

The length of the shadow on the ground of a tall tree of height 45 m is  $15\sqrt{3}$  m. What is the angle (in degrees) of elevation of the sun?

1.  $60^\circ$    2.  $90^\circ$    3.  $45^\circ$    4.  $30^\circ$

**Q.22)-**

A shopkeeper bought 40 pieces of an article at a rate of ₹50 per item. He sold 35 pieces with 20% profit. The remaining 5 pieces were found to be damaged and he sold them with 10% loss. Find his overall profit percentage.

1. 30%    2. 10%    3. 32.5%    4. 16.25%

**Q.23)-**

$$(\sec\theta - \tan\theta)^2 (1 + \sin\theta)^2 \div \cos^2\theta = ?$$

1. 1    2. -1    3.  $\cot^2\theta$     4.  $\cos^2\theta$

**Q.24)-**

Let  $\Delta ABC \sim \Delta PQR$  and  $\frac{\text{ar}(\Delta ABC)}{\text{ar}(\Delta PQR)} = \frac{64}{169}$ . If  $AB = 10$  cm,  $BC = 7$  cm and  $AC = 16$  cm, then  $PR$  (in cm) is equal to:

1. 26    2. 13    3. 21    4. 15

**Q.25)-**

A person travels  $5x$  distance at a speed of 5 km/h,  $x$  distance at a speed of 5 km/h, and  $4x$  distance at a speed of 6 km/h, and takes a total of 112 minutes. What is the total distance (in km) travelled by the person?

1. 9    2. 12    3. 10    4. 8

### Answer key

Q.1	2	Q.2	2	Q.3	3	Q.4	3	Q.5	3
Q.6	4	Q.7	4	Q.8	3	Q.9	1	Q.10	1
Q.11	3	Q.12	4	Q.13	4	Q.14	4	Q.15	3
Q.16	1	Q.17	1	Q.18	1	Q.19	3	Q.20	3
Q.21	1	Q.22	4	Q.23	1	Q.24	1	Q.25	3



**18/04/2022-> (9:00 AM - 10:00 AM)**

**Q.1)-**

What is the amount (in ₹) of a sum of ₹32,000 at 20% per annum for 9 months, compounded quarterly?

1. 32,000    2. 35,087    3. 30,876    4. 37,044

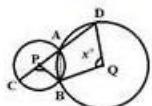
**Q.2)-**

Exactly midway between the foot of two towers P and Q, the angles of elevation of their tops are  $45^\circ$  and  $60^\circ$ , respectively. The ratio of the heights of P and Q is:

1.  $1 : \sqrt{3}$     2.  $3 : 1$     3.  $1 : 3$     4.  $\sqrt{3} : 1$

**Q.3)-**

In the following figure, P and Q are centres of two circles. The circles are intersecting at points A and B. PA produced on both the sides meets the circles at C and D. If  $\angle CPB = 100^\circ$ , then find the value of  $x$ .



1. 110    2. 100    3. 120    4. 115

**Q.4)-**

If  $\left(x^2 + \frac{1}{x^2}\right) = 23$ ,  $x > 0$  What is the value of  $\left(x^3 + \frac{1}{x^3}\right) = ?$

1. 140    2. -140    3. -110    4. 110

**Q.5)-**

The greatest number that divides 126, 224 and 608 leaving remainders 2, 7 and 19, respectively, is:

1. 31    2. 27    3. 21    4. 37

**Q.6)-**

A hemispherical depression of diameter 4 cm is cut out from each face of a cubical block of sides 10 cm. Find the surface area of the remaining solid (in  $\text{cm}^2$ ).

(Use  $\pi = \frac{22}{7}$ )

1.  $900\frac{4}{7}$     2.  $713\frac{1}{7}$     3.  $675\frac{3}{7}$     4.  $112\frac{4}{7}$

**Q.7)-**

A circle is inscribed in  $\Delta ABC$ , touching AB, BC and AC at the points P, Q and R, respectively. If  $AB - BC = 4 \text{ cm}$ ,  $AB - AC = 2 \text{ cm}$ , and the perimeter of  $\Delta ABC = 32 \text{ cm}$ , then AC (in cm) = ?

1.  $\frac{26}{3}$     2.  $\frac{32}{3}$     3.  $\frac{35}{3}$     4.  $\frac{38}{3}$

**Q.8)-**

If  $A = 60^\circ$ , what is the value of:

$$\frac{[8 \cos A + 7 \sec A - \tan^2 A]}{10 \sin^{\frac{A}{2}}} ?$$

1. 3    2. 15    3. 5    4. 10

**Q.9)-**

If  $\sec^2 \theta + \tan^2 \theta = 3\frac{1}{2}$ ,  $0^\circ < \theta < 90^\circ$ , then  $(\cos \theta + \sin \theta)$  is equal to

1.  $\frac{9+2\sqrt{5}}{6}$     2.  $\frac{2+\sqrt{5}}{3}$     3.  $\frac{1+\sqrt{5}}{3}$     4.  $\frac{1+\sqrt{5}}{6}$

**Q.10)-**

A man, a woman and a boy can complete a work in 3, 4 and 12 days, respectively. How many boys must assist one man and one woman to complete the same work in one day?

1. 5    2. 9    3. 7    4. 4

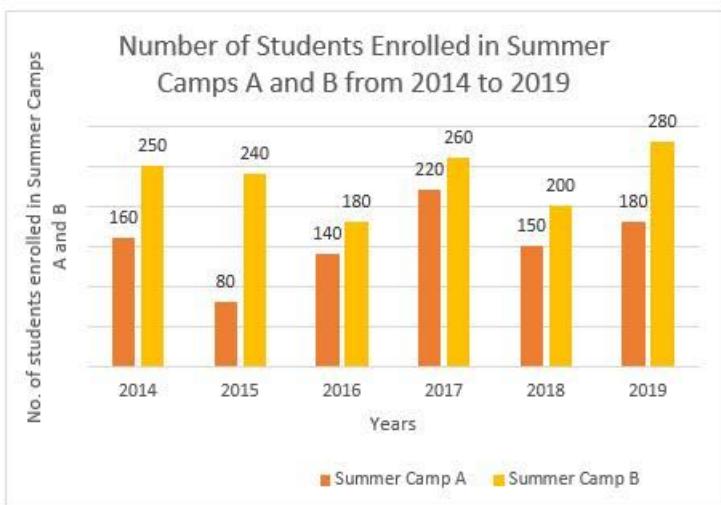
**Q.11)-**

Two poles of heights 10 m and 17 m are fixed to a level ground. The distance between the bottom of the poles is 24 m. What is the distance (in m) between their tops?

1. 27    2. 25    3. 24    4. 30

**Q.12)-**

The following bar chart shows the number of students enrolled in two Summer Camps A and B from 2014 to 2019. Study the chart carefully and answer the question that follows.



What is the ratio of the students enrolled in Camp A in 2014, 2016 and 2017 to the students enrolled in Camp B in 2015, 2018 and 2019?

1. 18 : 13    2. 13 : 18    3. 15 : 22    4. 22 : 15

**Q.13)-**

If  $a + b - c = 5$  and  $ab - bc - ac = 10$ , then find the value of  $a^2 + b^2 + c^2$ .

1. 15    2. 45    3. 5    4. 40

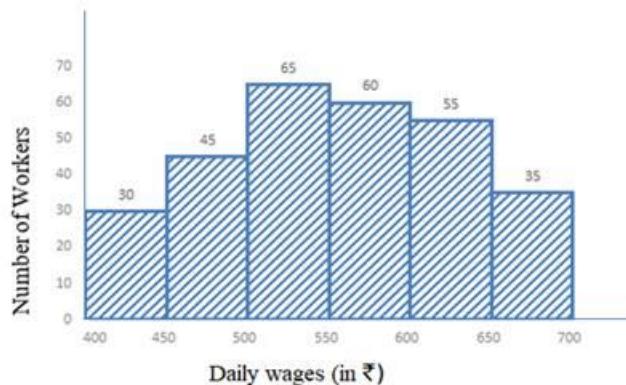
**Q.14)-**

Shyam drives his car 30 km at a speed of 45 km/h and, for the next 1 h 20 m, he drives it at a speed of 51 km/h. Find his average speed (in km/h) for the entire journey.

1. 48    2. 49    3. 47    4. 48.5

**Q.15)-**

Study the given histogram and answer the question that follows.



What is the difference between the total number of workers whose daily wages are less than ₹450 and the total number of workers whose daily wages are ₹650 and above?

1. 4    2. 10    3. 8    4. 5

**Q.16)-**

A shopkeeper allows a 28% discount on the marked price of an article and still makes a profit of 30%. If he gains ₹39.90 on the sale of one article, then what is the marked price (to the nearest ₹) of the article?

1. 200    2. 133    3. 173    4. 240

**Q.17)-**

A boat can cover a distance of 56 km downstream in 3.5 hours. The ratio of the boat in still water and the speed of stream is 3 : 1. How much time (in hours) will the boat take to cover a distance of 41.6 km downstream?

1. 2.6    2. 2.1    3. 1.5    4. 1.8

**Q.18)-**

A shopkeeper bought a table for ₹4,600 and a chair for ₹1,800. He sells the table with 10% gain and the chair with 6% gain. Find the overall gain percentage.

1.  $\frac{1}{16}$     2.  $7\frac{3}{4}$     3. 8    4.  $8\frac{7}{8}$

**Q.19)-**

The price of an item is reduced by 20%. As a result, customers can get 2 kg more of it for ₹360. Find the original price (in ₹) per kg of the item.

1. 45    2. 36    3. 40    4. 48

**Q.20)-**

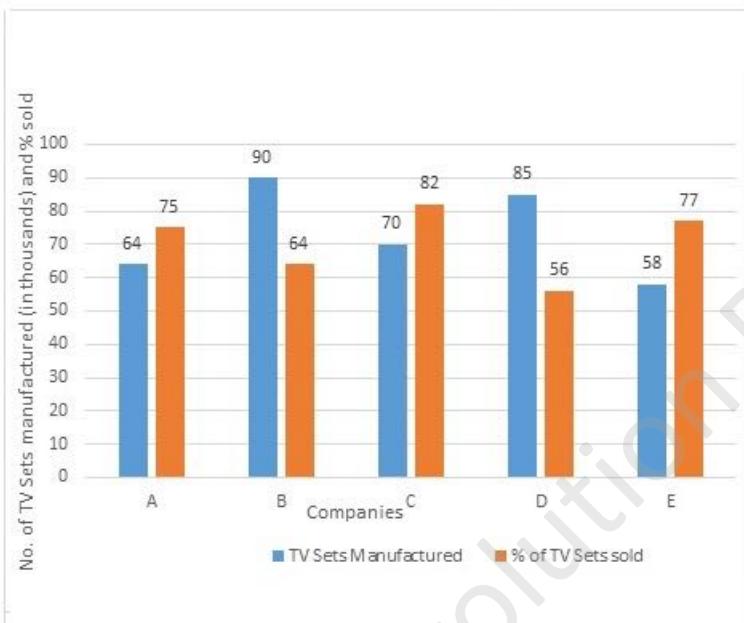
The sum of three numbers is 98. If the ratio of the first to the second is 2 : 3 and that of the second to the third is 5 : 8, then the third number is:

1. 20    2. 48    3. 30    4. 49

**Q.21)-**

The given bar chart represents the Televisions Sets (TV) manufactured (in thousands) and the respective percentage of those TV Sets sold by five different companies A, B, C, D and E in 2015.

Study the chart carefully and answer the question that follows.



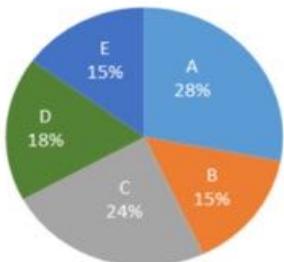
What is the ratio of the number of TV sets sold by company A to that of company B in 2015?

1. 5 : 6    2. 5 : 4    3. 6 : 5    4. 4 : 5

**Q.22)-**

The given pie chart shows the percentage of students in five schools and the table shows the ratio of boys and girls in each school.

Study the pie chart and table and answer the question that follows.



The below table shows the ratio of girls and boys in the given five schools.

School	Girls : Boys
A	3 : 4
B	2 : 3
C	5 : 3
D	1 : 2
E	4 : 1

What is the ratio of the number of boys in school C to the number of girls in school E?

1. 3 : 4    2. 4 : 3    3. 1 : 2    4. 2 : 1

**Q.23)-**

In a  $\triangle ABC$ , the bisector of  $\angle A$  meets BC at D. If  $AB = 9.6$  cm,  $AC = 11.2$  cm and  $BD = 4.8$  cm, the perimeter (in cm) of  $\triangle ABC$  is:

1. 31.2    2. 28.6    3. 30.4    4. 32.8

**Q.24)-**

Find the greatest number 234a5b, which is divisible by 22, but NOT divisible by 5.

1. 234850    2. 234751    3. 234652    4. 234058

**Q.25)-**

The value of  $\frac{\frac{46+\frac{3}{4}of32-6}{37-\frac{3}{4}of(34+6)}}{}$  is:

1.  $\frac{34}{7}$     2.  $\frac{44}{7}$     3.  $\frac{54}{7}$     4.  $\frac{64}{7}$

**Answer key**

Q.1	4	Q.2	1	Q.3	2	Q.4	4	Q.5	1
Q.6	3	Q.7	2	Q.8	1	Q.9	2	Q.10	1
Q.11	2	Q.12	2	Q.13	3	Q.14	2	Q.15	4
Q.16	4	Q.17	1	Q.18	4	Q.19	1	Q.20	2
Q.21	1	Q.22	1	Q.23	1	Q.24	3	Q.25	4



18/04/2022-> (12:30 PM - 1:30 PM)

**Q.1)-**

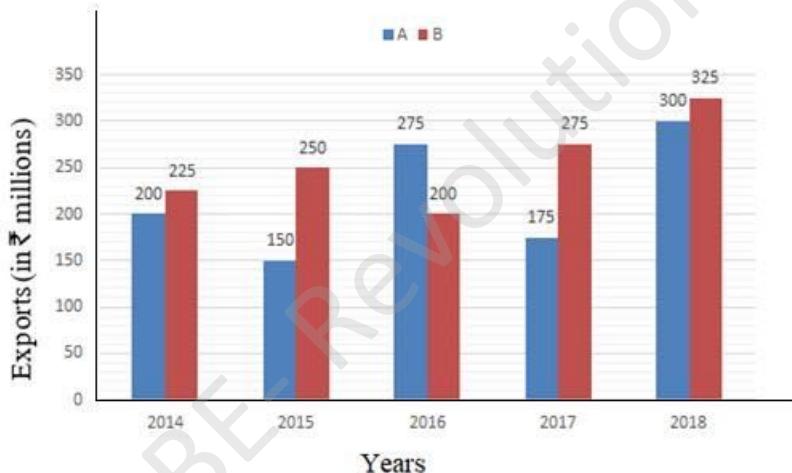
If a positive number 'k' when multiplied by 30% of itself gives a number which is 170% more than the number 'k', then the number 'k' is equal to:

1. 7    2. 5    3. 6    4. 9

**Q.2)-**

The given bar graph shows exports of cars of type A and B (in ₹ millions) from 2014 to 2018. Study the graph and answer the question that follows.

Exports of Cars of Type A and B (in ₹ millions) during 2014 to 2018.



In which year are the exports of cars of type A ₹20 million less than the average exports (per year) of cars of type B?

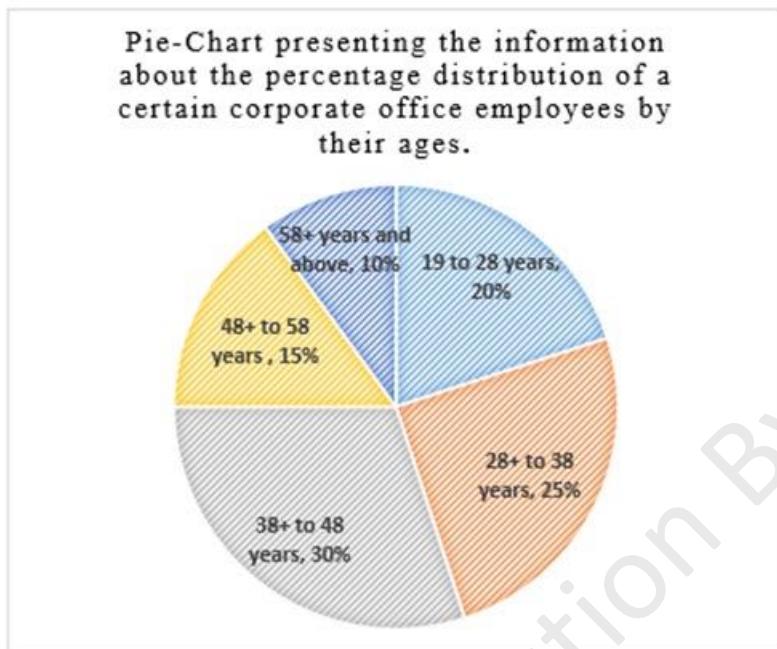
1. 2016    2. 2015    3. 2014    4. 2017

**Q.3)-**

The following pie chart shows the distribution of percentage of a certain corporate office employees in various age-groups.

Total number of employees of the corporate office = 2500

Study the chart carefully and answer the question that follows.



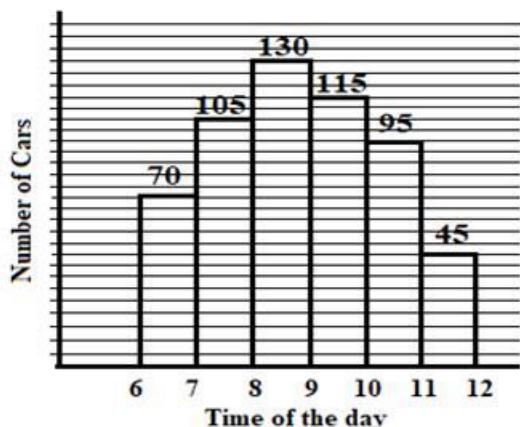
What is the central angle (in degrees) corresponding to the age groups 38+ to 48 years and 58+ years and above, taken together?

1. 120    2. 144    3. 36    4. 108

Q.4)-

The number of cars passing the road near a colony from 6 am to 12 noon has been shown in the following histogram.

During which hour(s) is the number of cars passed more than the average number of cars passed from 6 am to 11 am?



1. 7–8 am, 8–9 am, 9–10 am    2. 8–9 am    3. 8–9 am, 9–10 am    4. 7–8 am, 8–9 am, 9–10 am, 10–11 am

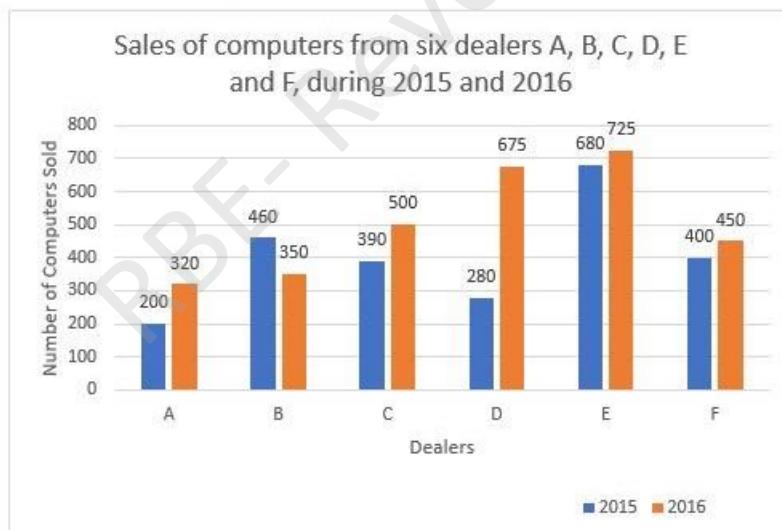
**Q.5)-**

What is the greatest four-digit number which on being divided by 6, 7 and 8 leaves 4, 5 and 6 as remainders, respectively?

1. 9921    2. 9920    3. 9912    4. 9910

**Q.6)-**

The given bar graph shows the sales of computers from six dealers A, B, C, D, E and F, during two consecutive years 2015 and 2016. Study the graph and answer the question that follows.



What is the ratio of the total sales from dealers A, B and C taken together for the year 2015 to the sales from dealers D, E and F taken together for the year 2016?

1. 25 : 39    2. 39 : 25    3. 37 : 21    4. 21 : 37

**Q.7)-**

A railway engine passes two bridges of lengths 400 m and 235 m in 100 seconds and 60 seconds, respectively. Twice the length of the railway engine (in m) is:

1. 12.5    2. 12    3. 24    4. 25

**Q.8)-**

A river 6 m deep and 35 m wide is flowing at the rate of 2.5 km/h, the amount of water that runs into the sea per minute is:

1.  $7580 \text{ m}^3$     2.  $8570 \text{ m}^3$     3.  $7850 \text{ m}^3$     4.  $8750 \text{ m}^3$

**Q.9)-**

If  $a^2 + b^2 + 49c^2 + 18 = 2(b - 28c - a)$ , then the value of  $(a - b - 7c)$  is:

1. 2    2. 1    3. 3    4. 4

**Q.10)-**

The sides AB and AC of  $\Delta ABC$  are produced to points D and E, respectively. The bisectors of  $\angle CBD$  and  $\angle BCE$  meet at P. If  $\angle A = 88^\circ$ , then the measure of  $\angle P$  is:

1.  $46^\circ$     2.  $56^\circ$     3.  $61^\circ$     4.  $51^\circ$

**Q.11)-**

Joseph deposited a total of ₹52,500 in a bank in the names of his two daughters aged 15 years and 16 years in such a way that they would get equal amounts when they become 18 years old. If the bank gives 10% compound interest compounded annually, then what is the amount (in ₹) that Joseph had deposited in the name of his younger daughter?

1. 25,500    2. 26,000    3. 24,500    4. 25,000

**Q.12)-**

The cost prices of two articles A and B are in the ratio 4 : 5. While selling these articles, the shopkeeper gains 10% on article A and 20% profit on article B, and the difference in their selling prices is ₹480. Find 30% of the total cost price (in ₹) of both the articles.

1. 1,000    2. 900    3. 810    4. 1,250

**Q.13)-**

If  $2\sqrt{2}x^3 - 3\sqrt{3}y^3 = (\sqrt{2}x - \sqrt{3}y)(Ax^2 - Bxy + Cy^2)$ , then the value of  $\sqrt{(A^2 + B^2 + C^2)}$  is:

1.  $\sqrt{11}$     2.  $\sqrt{21}$     3.  $\sqrt{19}$     4.  $\sqrt{17}$

**Q.14)-**

In  $\Delta ABC$ ,  $AB = 7$  cm,  $BC = 10$  cm, and  $AC = 8$  cm. If  $AD$  is the angle bisector of  $\angle BAC$ , where  $D$  is a point on  $BC$ , then  $\frac{DC}{4}$  (in cm) is equal to:

- 1.  $\frac{4}{3}$
- 2.  $\frac{11}{3}$
- 3.  $\frac{14}{3}$
- 4.  $\frac{7}{3}$

**Q.15)-**

The expression  $(\cos^6 \theta + \sin^6 \theta - 1)(\tan^2 \theta + \cot^2 \theta + 2) + 1$  is equal to:

- 1. 1
- 2. 0
- 3. -2
- 4. -1

**Q.16)-**

The value of  $2 - \sqrt{\frac{\cot \theta + \cos \theta}{\cot \theta - \cos \theta}}$ , when  $0^\circ < \theta < 90^\circ$  is equal to:

- 1.  $2 - \sec \theta - \tan \theta$
- 2.  $2 + \sec \theta - \tan \theta$
- 3.  $2 - \sec \theta + \tan \theta$
- 4.  $2 + \sec \theta + \tan \theta$

**Q.17)-**

If a nine digit number  $468x5138y$  is divisible by 72, then the value of  $\sqrt{4x+3y}$  is:

- 1. 9
- 2. 6
- 3. 8
- 4. 12

**Q.18)-**

A poster is on top of a building. A person is standing on the ground at a distance of 50 m from the building. The angles of elevation to the top of the poster and bottom of the poster are  $45^\circ$  and  $30^\circ$ , respectively. What is 200% of the height (in m) of the poster?

- 1.  $\frac{50}{3}(3 - \sqrt{3})$
- 2.  $\frac{100}{3}(3 - \sqrt{3})$
- 3.  $\frac{25}{3}(3 - \sqrt{3})$
- 4.  $\frac{75}{3}(3 - \sqrt{3})$

**Q.19)-**

The ratio of the profits of P and Q is 5 : 8. What is their investment ratio, if their investment time period ratio is 3 : 5?

- 1. 13 : 25
- 2. 12 : 25
- 3. 24 : 25
- 4. 25 : 24

**Q.20)-**

A shopkeeper announces a discount of 48% and then by a further discount of 15%. What is the final sale price (in Rs, to the nearest rupee) of a sofa costing Rs 29600 and what is the discount (in Rs)?

- 1. 13280, 16517
- 2. 16517, 13280
- 3. 16517, 13083
- 4. 13083, 16517

**Q.21)-**

The average of eight consecutive odd numbers is 28. The sum of the smallest and the largest number is:

1. 45    2. 56    3. 52    4. 48

**Q.22)-**

The value of  $15 + 6.3 \div 7 - 3 \times 1.3 - 2$  is:

1. 7    2. -10    3. 9    4. 10

**Q.23)-**

A can complete work in 25 days and B can complete the same work in 20 days. They started the work together but B left after 4 days and A continued to work. In how many days will the entire work be completed?

1. 22    2. 25    3. 20    4. 28

**Q.24)-**

AB is a chord of a circle with centre O, while PAQ is the tangent at A. R is a point on the minor arc AB. If  $\angle BAQ = 70^\circ$ , then find the measure of  $\angle ARB$ .

1.  $125^\circ$     2.  $145^\circ$     3.  $70^\circ$     4.  $110^\circ$

**Q.25)-**

The circumference of the base of a right circular cylinder is 62.8 cm and its volume is  $8792 \text{ cm}^3$ . What is the curved surface area (in  $\text{cm}^2$ ) of the cylinder? (Take  $\pi = 3.14$ )

1. 1570.2    2. 1695.6    3. 1632.8    4. 1758.4

### Answer key

Q.1	3	Q.2	1	Q.3	2	Q.4	1	Q.5	4
Q.6	4	Q.7	4	Q.8	4	Q.9	1	Q.10	1
Q.11	4	Q.12	3	Q.13	3	Q.14	1	Q.15	3
Q.16	1	Q.17	2	Q.18	2	Q.19	4	Q.20	4
Q.21	2	Q.22	4	Q.23	3	Q.24	4	Q.25	4



# RBE- Revolution By Education



By: Shubham Jain  
(Selected as GST Inspector)  
Your life, Your hard work, Your success.



18/04/2022-> (4:00 PM - 5:00 PM)

**Q.1)-**

Find the value of the following expression:

$$\frac{3 \div 1 \times 2 + 5 - 2}{3 \times 3 - 2}$$

1.  $\frac{9}{7}$     2.  $\frac{4}{3}$     3.  $\frac{4}{7}$     4.  $\frac{19}{3}$

**Q.2)-**

Monthly expenditure of a family on different heads is shown in the following pie chart. The family earns ₹1,08,000 every month.

How much (in ₹) does the family spend on food and transport?

Expenditure on different Heads



1. 34,000    2. 34,500    3. 34,800    4. 35,250

**Q.3)-**

If the volume of a sphere is  $4,851 \text{ cm}^3$ , then what is its diameter (in cm)?

(Take  $\pi = \frac{22}{7}$ )

1. 21    2. 12    3. 18    4. 16

**Q.4)-**

From the top of a 195-m high cliff, the angles of depression of the top and bottom of a tower are  $30^\circ$  and  $60^\circ$ , respectively. Find the height of the tower (in m).

1. 65    2. 195    3. 130    4.  $195\sqrt{3}$

**Q.5)-**

The average of a set of 18 consecutive integers is 22.5. What is the largest integer in the set?

1. 13    2. 17    3. 31    4. 14

**Q.6)-**

A sum of ₹17,200 is lent out at simple interest in two parts for 2 years at 8% p.a. and 10% p.a., respectively. If the total interest received after 2 years is ₹3,008, then the money lent (in ₹) at the rate of 8% p.a. is:

1. 9,200    2. 10,800    3. 6,400    4. 9,800

**Q.7)-**

A circle with centre O has radius 15 cm. D is a point on the circle such that a 24 cm long chord AB is bisected by OD at point C. Find the length of CD (in cm).

1. 9    2. 10    3. 4    4. 6

**Q.8)-**

A shopkeeper earns a profit of 17% on selling a book at 10% discount on the printed price. If the cost price is ₹500, then the printed price (in ₹) is:

1. 650    2. 585    3. 615    4. 750

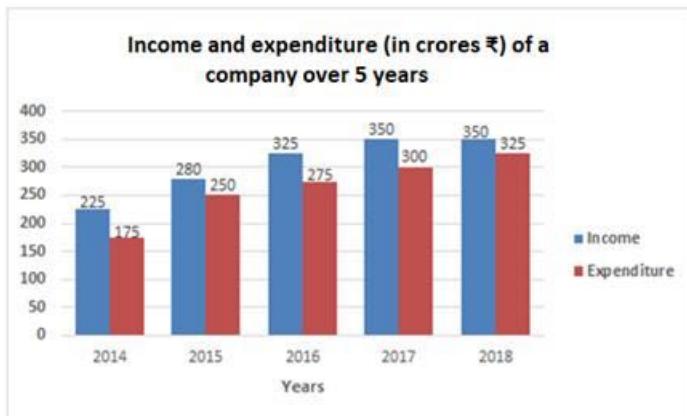
**Q.9)-**

LCM of two numbers is 22 times their HCF. If one of the numbers is 132 and the sum of LCM and HCF is 276, then what is the other number?

1. 30    2. 20    3. 24    4. 25

**Q.10)-**

The given bar graph shows the income and expenditure (in crores ₹) of a company over 5 years, from 2014 to 2018. Study the bar graph and answer the question that follows.



In which of the following years is the ratio of income to expenditure the minimum?

1. 2014
2. 2017
3. 2018
4. 2016

**Q.11)-**

Anup can row 33 km downstream and 35 km upstream in 8 hours. He can also row 44 km downstream and 28 km upstream in the same time. How much time (in hours) will he take to row 55 km downstream and 14 km upstream?

1. 8
2. 6
3. 9
4. 7

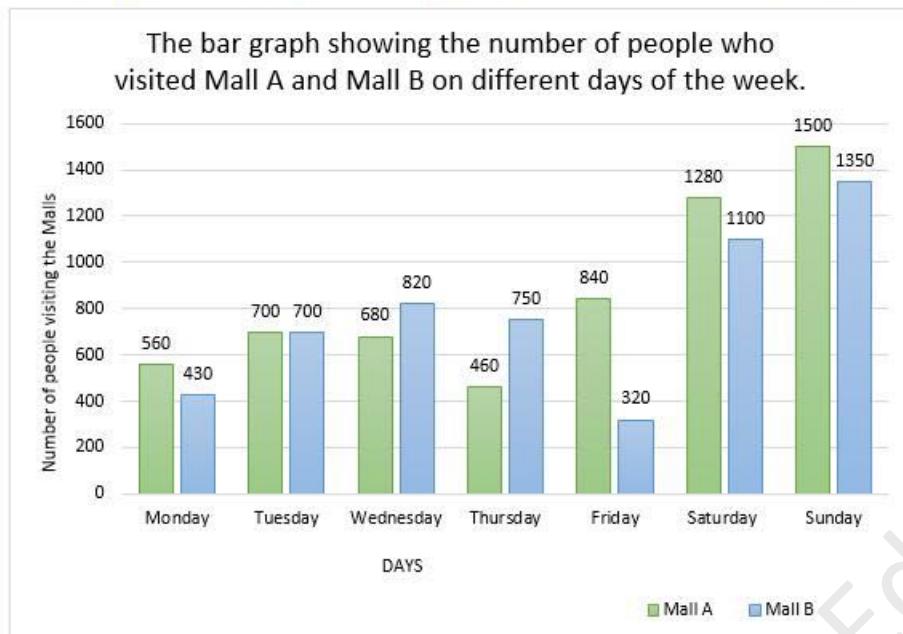
**Q.12)-**

Three years ago, the ratio of the age of father to that of his son was 8 : 3. After 4 years, their ages will be in the ratio 11 : 5. What is the present age (in years) of the father?

1. 52
2. 55
3. 51
4. 48

**Q.13)-**

The bar graph shows the number of people who visited Mall A and Mall B on different days of a week.



The total number of people visiting Mall A on Monday, Tuesday, Friday and Sunday is what percentage of the total number of people visiting Mall B on Tuesday, Thursday, Saturday and Sunday? Express your answer correct to one place of decimal.

1. 95.7%    2. 86.5%    3. 82.4%    4. 92.3%

**Q.14)-**

A can do a certain work in 15 days, while B can do the same work in 21 days. If they work together, then in how many days will the same work be completed?

1.  $8\frac{3}{4}$     2.  $6\frac{3}{4}$     3.  $9\frac{3}{4}$     4.  $7\frac{3}{4}$

**Q.15)-**

In  $\triangle PQR$ , S is a point on the side QR such that PS is the bisector of  $\angle QPR$ . If  $PQ = 12$  cm,  $QS = 3$  cm and  $QR = 7$  cm, then what is the length of side PR?

1. 15 cm    2. 14 cm    3. 18 cm    4. 16 cm

**Q.16)-**

If  $\sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{3}$ , then what is the value of  $x^4 + \frac{1}{x^4}$ ?

1. 7    2. 527    3. 531    4. 623

**Q.17)-**

The area of similar triangles PQR and MNT are  $196 \text{ cm}^2$  and  $169 \text{ cm}^2$  respectively. If the longest side of the larger  $\triangle PQR$  be 28 cm then what is the length (in cm) of the longest side of the smaller  $\triangle MNT$ ?

- 1.** 27    **2.** 25    **3.** 26    **4.** 24

**Q.18)-**

If  $A = 10^\circ$ , what is the value of:

$$\frac{12 \sin 3A + 5 \cos(5A - 5^\circ)}{9 \sin \frac{9A}{2} - 4 \cos(5A + 10^\circ)}$$

- 1.**  $\frac{6\sqrt{2} + 5}{(9 + 2\sqrt{2})}$     **2.**  $\frac{6\sqrt{2} - 5}{(9 - 2\sqrt{2})}$     **3.**  $\frac{6\sqrt{2} + 5}{(9 - 2\sqrt{2})}$     **4.**  $\frac{(9 - 2\sqrt{2})}{6\sqrt{2} + 5}$

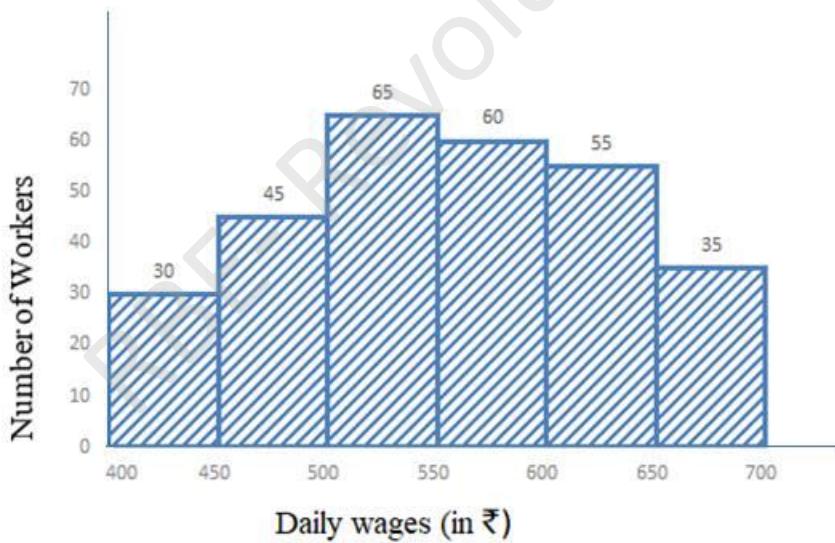
**Q.19)-**

AB is a diameter of a circle with centre O. The tangent at a point C on the circle and AB, when produced, meet at the point P. If  $\angle APC = 38^\circ$ , then what is the measure of  $\angle PCB$ ?

- 1.**  $19^\circ$     **2.**  $23^\circ$     **3.**  $26^\circ$     **4.**  $29^\circ$

**Q.20)-**

Study the given histogram and answer the question that follows.



The total number of workers whose daily wages are less than ₹500 is what percentage more than the total number of workers whose daily wages are ₹650 and above (correct to one decimal place)?

- 1.** 114.3%    **2.** 110.5%    **3.** 111.8%    **4.** 101.2%

**Q.21)-**

In an election between two candidates, 5% of the registered voters did not cast their vote. 10% of the votes were found to be either invalid or of NOTA. The winning candidate received 60% votes in his favour and won the election by 17271 votes. Find the number of registered voters.

1. 100000    2. 90525    3. 101000    4. 102500

**Q.22)-**

The area of a cardboard (in  $\text{cm}^2$ ) needed to make a closed box of size  $20 \text{ cm} \times 10 \text{ cm} \times 8 \text{ cm}$  will be:

1. 960    2. 690    3. 880    4. 750

**Q.23)-**

A manufacturer who marks the price of an article at ₹1,800, sells it to a dealer at a discount of 15%. The dealer gets a further discount of 8% on his net payment for paying in cash. What amount (to the nearest rupee) does the dealer pay to the manufacturer?

1. 1,408    2. 1,530    3. 1,500    4. 1,378

**Q.24)-**

If  $2 \sin^2 \theta + 3 \cos \theta = 3$ ,  $0^\circ < \theta < 90^\circ$ , then the value of ( $\sec^2 \theta + \cot^2 \theta$ ) is

1.  $4\frac{1}{3}$     2.  $4\frac{1}{2}$     3.  $3\frac{2}{3}$     4.  $3\frac{1}{3}$

**Q.25)-**

A number 'n' when divided by 6 leaves remainder 2. What will be the remainder when  $(n^2 + n + 2)$  is divided by 6?

1. 6    2. 2    3. 4    4. 0

### Answer key

Q.1	1	Q.2	2	Q.3	1	Q.4	3	Q.5	3
Q.6	2	Q.7	4	Q.8	1	Q.9	3	Q.10	3
Q.11	4	Q.12	3	Q.13	4	Q.14	1	Q.15	3
Q.16	2	Q.17	3	Q.18	3	Q.19	3	Q.20	1
Q.21	3	Q.22	3	Q.23	1	Q.24	1	Q.25	2



19/04/2022-> (9:00 AM - 10:00 AM)

**Q.1)-**

If  $x + y + z = 7$ ,  $xy + yz + zx = 8$ , then what is the value of  $x^3 + y^3 + z^3 - 3xyz$ ?

1. 200    2. 150    3. 125    4. 175

**Q.2)-**

A sum of ₹18,000 becomes ₹21,780 after 2 years on compound interest compounded annually. What will be the compound interest (in ₹) on the same sum for the same period if the rate of interest increases by 5%?

1. 1,845    2. 4,670    3. 5,805    4. 5,500

**Q.3)-**

A invested 30% more than B. B invested 40% less than C, who invested ₹8,000. The average of the total amount invested by all of them together (to the nearest ₹) is:

1. 6,347    2. 6,417    3. 6,215    4. 6,143

**Q.4)-**

If  $a^3 + b^3 = 218$  and  $a + b = 2$ , then the value of  $\sqrt{1 - ab}$  is:

1. 5    2. 3    3. 4    4. 6

**Q.5)-**

From the body of a solid cube of edge 7 cm, a solid sphere is removed. The volume of the remaining solid was found to be  $163\frac{1}{3}$  cm<sup>3</sup>. What is the diameter (in cm) of the sphere? (Take  $\pi = \frac{22}{7}$ )

1. 10    2. 7    3. 5    4. 8

**Q.6)-**

A takes 3 hours more than B to walk 'd' km. If A doubles his speed, then he can make it in 1 hour less than B. How much time (in hours) does A require to walk 'd' km?

1. 5    2. 9    3. 8    4. 4

**Q.7)-**

The length of the shadow on the ground of a tall tree of height 30 m is  $10\sqrt{3}$  m. What is the angle (in degrees) of elevation of the sun?

1. 60    2. 15    3. 30    4. 45

**Q.8)-**

A shopkeeper offers his customers a discount of 10%. On an item marked at a price of ₹400, which was a little damaged, he offered additional discount of 10%. At what price (in ₹) is the item available to customers?

1. 340    2. 324    3. 320    4. 300

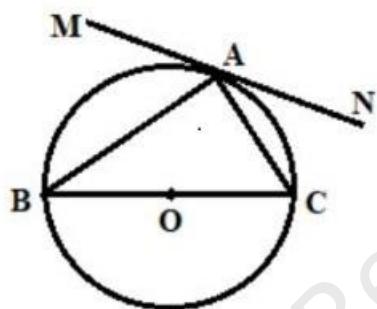
**Q.9)-**

The profit earned by selling an article for ₹832 is equal to the loss incurred when the article is sold for ₹448. What should be the selling price (in ₹) to make a profit of 10%?

1. 750    2. 715    3. 640    4. 704

**Q.10)-**

In the following figure, MN is a tangent to a circle with centre O at point A. If BC is a diameter and  $\angle ABC = 42^\circ$ , then find the measure of  $\angle MAB$ .

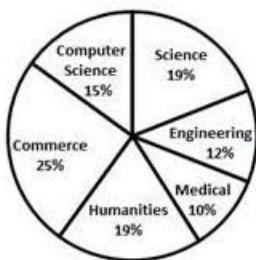
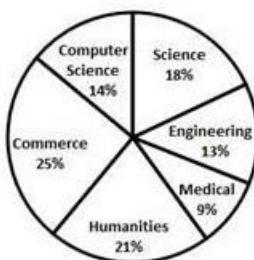


1.  $84^\circ$     2.  $48^\circ$     3.  $42^\circ$     4.  $45^\circ$

**Q.11)-**

The following pie charts show the number of students studying in different departments of an institute during the academic years 2019 and 2020. The total number of students was 2000 and 2400 in academic years 2019 and 2020, respectively.

Students studying humanities in 2019 and 2020 taken together is what percentage of the total number of students studying during the two years taken together? (correct to 2 decimal places)



**Academic year 2019      Academic year 2020**

1. 18.75%    2. 19.91%    3. 19.19%    4. 18.52%

**Q.12)-**

Of the three numbers, second is one-third of first and is also three-fourth of the third number. If the average of three numbers is 112, then what is the smallest number?

1. 63    2. 45    3. 84    4. 189

**Q.13)-**

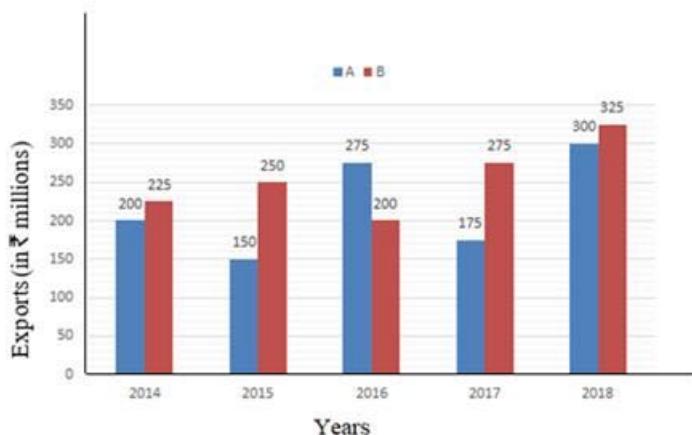
A man started off a business with a certain capital amount. In the first year, he earned 60% profit and donated 50% of the total capital (initial amount + profit). He followed the same procedure with the remaining capital after the second and the third year. If at the end of the three years, he is left with ₹15,360, what was the initial amount (in ₹) with which the man started his business?

1. 20,000    2. 30,000    3. 25,000    4. 32,000

**Q.14)-**

Study the given bar graph and answer the question that follows.

The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



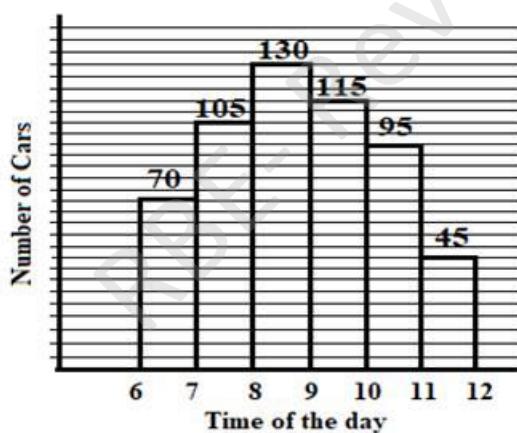
What is the ratio of the total exports of cars of type A in 2016 and 2018 to the total exports of cars of type B in 2014 and 2017?

1. 10 : 9    2. 11 : 10    3. 25 : 16    4. 23 : 20

**Q.15)-**

The number of cars passing the road near a colony from 6 am to 12 noon has been shown in the following histogram.

What is the maximum change percentage in the number of cars as compared to the previous hour? (correct to 2 decimal places)



1. Decrease of 52.63%    2. Decrease of 58.5%    3. Increase of 55.56%    4. Increase of 58.5%

**Q.16)-**

If  $A = 60^\circ$ , what is the value of:

$$\frac{10 \sin \frac{A}{2} + 8 \cos A}{7 \sin \frac{3A}{2} - 12 \cos A}?$$

1. 10    2. 12    3. 9    4. 7

**Q.17)-**

If  $3 \sin^2 \theta + 4 \cos \theta - 4 = 0, 0^\circ < \theta < 90^\circ$ , then the value of  $(\operatorname{cosec}^2 \theta + \cot^2 \theta)$  is

1.  $\frac{5}{4}$     2.  $\frac{25}{3}$     3.  $\frac{4}{3}$     4.  $\frac{17}{9}$

**Q.18)-**

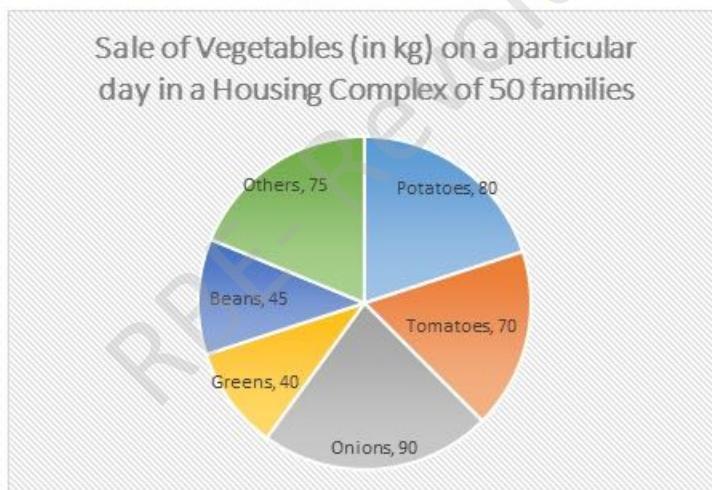
Three numbers are in the proportion of  $3 : 8 : 15$  and their LCM is 8280. What is their HCF?

1. 60    2. 69    3. 75    4. 57

**Q.19)-**

A vegetable vendor supplies vegetables to a housing complex of 50 families. On a particular day, the break-up sale of vegetables is represented in the form of a pie chart as shown.

Study the pie chart carefully and answer the question that follows.



What is the ratio of the central angle corresponding to the sale of potatoes, tomatoes and beans together to the central angle corresponding to the combined sale of onions and others?

1. 13 : 15    2. 13 : 11    3. 11 : 13    4. 15 : 13

**Q.20)-**

The value of

$$\frac{\left[\frac{3}{8} - \left\{\frac{3}{8} - \left(\frac{5}{8} - \frac{3}{8}\right)\right\}\right] \text{ of } 4.8 - 0.9}{4\frac{1}{6} \div 2.5 \times 0.2 \div \frac{1}{5} \text{ of } 50 + \left(\frac{3}{4} - \frac{1}{8}\right)}$$
 is:

1.  $\frac{30}{79}$     2.  $\frac{42}{79}$     3.  $\frac{36}{79}$     4.  $\frac{24}{79}$

**Q.21)-**

In a  $\triangle ABC$ , D, E and F are the mid-points of side BC, CA and AB respectively. If BC = 14.4 cm, CA = 15.2 cm and AB = 12.4 cm, what is the perimeter (in cm) of the  $\triangle DEF$ ?

1. 42    2. 28    3. 21    4. 35

**Q.22)-**

14 men can complete a work in 15 days. If 21 men are employed, then in how many days will they complete the same work?

1. 10    2. 14    3. 12    4. 15

**Q.23)-**

PQ and RS are two parallel chords of a circle of length 14 cm and 48 cm, respectively, and lie on the same side of the centre O. If the distance between the chords is 17 cm, what is the radius (in cm) of the circle?

1. 28    2. 24    3. 25    4. 20

**Q.24)-**

Let  $\triangle ABC \sim \triangle PQR$  and (Area of  $\triangle ABC$ ) : (Area of  $\triangle PQR$ ) = 121 : 64. If QP = 14.4 cm, PR = 12 cm and AC = 18 cm, then what is the length of AB?

1. 32.4 cm    2. 21.6 cm    3. 19.8 cm    4. 16.2 cm

**Q.25)-**

If each of the two numbers  $5^{16}$  and  $5^{25}$  are divided by 6, the remainders are  $R_1$  and  $R_2$ , respectively. What is the value

of  $\frac{R_1 + R_2}{R_2}$  ?

1.  $\frac{1}{6}$     2.  $\frac{5}{6}$     3.  $\frac{1}{5}$     4.  $\frac{6}{5}$

---

### Answer key

Q.1	4	Q.2	3	Q.3	1	Q.4	4	Q.5	2
-----	---	-----	---	-----	---	-----	---	-----	---

Q.6	3	Q.7	1	Q.8	2	Q.9	4	Q.10	2
Q.11	2	Q.12	1	Q.13	2	Q.14	4	Q.15	1
Q.16	3	Q.17	1	Q.18	2	Q.19	2	Q.20	3
Q.21	3	Q.22	1	Q.23	3	Q.24	3	Q.25	4

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By: Shubham Jain  
(Selected as GST Inspector)

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19/04/2022-> (12:30 PM - 1:30 PM)

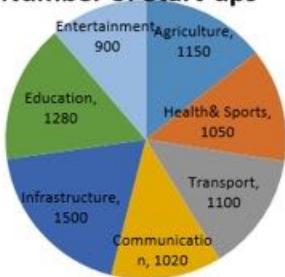
**Q.1)-**

The given pie charts show the number of start-ups in various industries since 2010 and the number of successful start-ups in those industries.

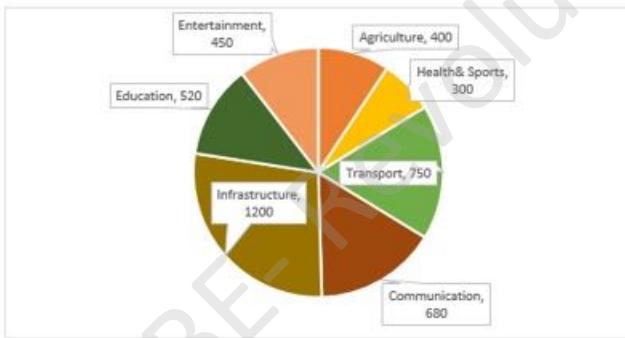
Study the charts and answer the question that follows.

Start-ups in various industries started since 2010

**Number of Start-ups**



Successful start-ups in various industries



What should be the increase in the number (to the nearest integer) of successful start-ups in the industry of Health & Sports, so that its success percentage is the same as that of Education?

1. 127    2. 187    3. 155    4. 220

**Q.2)-**

The compound interest on a certain sum of money at 21% p.a. for 2 years is ₹11,138.40 (interest compounded yearly). The total amount received (in ₹) after 2 years is:

1. 35,138.40    2. 28,315.40    3. 31,538.40    4. 24,000.50

**Q.3)-**

Telegram (Previous year papers PDFs [SSC,Railway,DSSSB,UP SI]):

[https://t.me/RBE\\_S](https://t.me/RBE_S)

81

YouTube (Free lectures and job updates):

<https://youtu.be/HIRRafUmCmk>

What is the simplified value of the following?

$$\frac{9 \div \frac{3}{7} \text{ of } (9 + 6 \times 4 - 2) + \left[ \frac{1}{5} \div \frac{7}{25} - \left\{ \frac{5}{8} + \frac{6}{16} \right\} \right]}{24 \div 16 - 10 + 36 \div (5 + 20 \div 4 - 1)}$$

1.  $\frac{51}{56}$     2.  $\frac{7}{40}$     3.  $\frac{40}{7}$     4.  $\frac{5}{56}$

**Q.4)-**

Chords AB and CD of a circle intersect externally at P. If AB = 7 cm, CD = 1 cm and PD = 5 cm, then 50% of the length of PA (in cm) is:

1. 10    2. 5    3. 8    4. 3

**Q.5)-**

If  $a^2 + b^2 + 49c^2 + 18 = 2(b + 28c - a)$ , then the value of  $(2a - b + 7c)$  is:

1. -3    2. 1    3. -4    4. 5

**Q.6)-**

If  $x^2 - 5x - 1 = 0$ , what is the value of

$$\frac{x^6 - x^4 + x^2 - 1}{x^2} ?$$

1. 135    2. 145    3. 140    4. 130

**Q.7)-**

An article is sold at a profit of  $13\frac{1}{4}\%$ . Had it been sold for ₹76.70 more, the profit would have been  $16\frac{1}{5}\%$ . 50% of the cost price of the article (in ₹) is:

1. 2,500    2. 1,300    3. 1,500    4. 1,250

**Q.8)-**

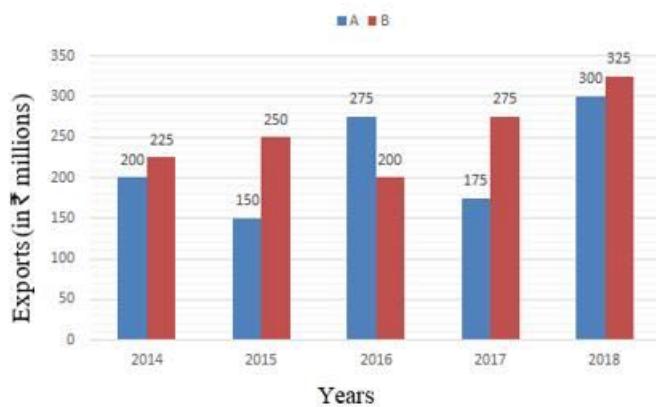
A car covers a distance of 90 km in 50 min. What is its speed (in m/s)?

1. 30    2. 90    3. 108    4. 60

**Q.9)-**

Study the given bar graph and answer the question that follows.

The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



The total exports of cars of type B from 2015 to 2018 is what percentage more than the total exports of cars of type A from 2015 to 2018 (correct to one decimal place)?

1. 17.2%    2. 14.9%    3. 15.5%    4. 16.7%

**Q.10)-**

A and B had a joint business in which A invested ₹60,000 in the business for one year. After 3 months B invested ₹80,000. At the beginning of the second year, A invested ₹30,000 more and B withdrew ₹5,000. At the end of two years, profit earned by A is ₹35,880. What is the profit (in ₹) earned by B, if they distributed half of the total profit equally and rest in the capital ratio?

1. 69,920    2. 58,940    3. 34,040    4. 38,060

**Q.11)-**

A 20 m long ladder rests against a wall so that the angle between the ladder and the wall is  $30^\circ$ . How far (in m) is the base of the ladder from the wall?

1.  $10\sqrt{3}$     2.  $20\sqrt{3}$     3. 10    4. 20

**Q.12)-**

What is the LCM of 3.6, 1.8 and 0.144?

1. 36    2. 360    3. 3.6    4. 3600

**Q.13)-**

A is 120% of B and B is 65% of C. If the sum of A, B and C is 121.5, then the value of C – 2B + A is:

1. 14    2. 35    3. 24    4. 39

**Q.14)-**

The average of three numbers is 15. The average of the second and the third number is 12.5. What is the first number?

1. 20    2. 18    3. 21    4. 24

**Q.15)-**

X, Y and Z can complete a piece of work in 46 days, 92 days and 23 days, respectively. X started the work. Y joined him after 7 days. If Z joined them after 8 days from the beginning, then for how many days did Y work?

1.  $11\frac{5}{7}$     2.  $9\frac{5}{7}$     3.  $10\frac{5}{7}$     4.  $12\frac{5}{7}$

**Q.16)-**

If  $\cos B = \frac{5}{7}$ , what is the value of  $\operatorname{cosec} B + \cot B$ ? Given that  $0 < B < \frac{\pi}{2}$

1.  $\sqrt{6}$     2.  $\frac{7}{\sqrt{6}}$     3.  $\frac{5}{\sqrt{6}}$     4.  $\frac{\sqrt{6}}{12}$

**Q.17)-**

A circle is inscribed in  $\Delta ABC$ , touching AB, BC and AC at the points P, Q and R, respectively. If  $AB - BC = 4$  cm,  $AB - AC = 2$  cm and the perimeter of  $\Delta ABC = 32$  cm, then  $\frac{BC}{2}$  (in cm) = ?

1.  $\frac{13}{3}$     2.  $\frac{20}{3}$     3.  $\frac{10}{3}$     4.  $\frac{11}{3}$

**Q.18)-**

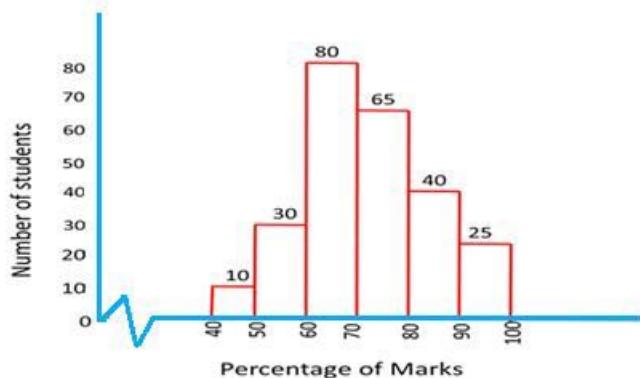
The circumcentre of an equilateral triangle is at a distance of 3.2 cm from the base of the triangle. What is the length (in cm) of each of its altitudes?

1. 6.4    2. 7.2    3. 12.8    4. 9.6

**Q.19)-**

Study the given histogram and answer the question that follows.

The histogram represents the percentage of marks obtained by a number of students of a school in the class X Board Examination in 2018. The total number of students = 250.



The number of students who have obtained less than 50% marks is approximately what percentage less than the number of students who have obtained 90% marks and above?

1. 60%    2. 75%    3. 40%    4. 80%

**Q.20)-**

If 8A5146B is divisible by 88, then what is the value of  $A^B$ ?

1. 12    2. 27    3. 64    4. 81

**Q.21)-**

Find a single discount percentage equivalent to successive discounts of 10%, 20% and 25%.

1. 55%    2. 46%    3. 18.3%    4. 20%

**Q.22)-**

In  $\triangle ABC$ ,  $\angle A = 66^\circ$ ,  $BD \perp AC$  and  $CE \perp AB$ .  $BD$  and  $EC$  intersect at  $P$ . The bisectors  $\angle PBC$  and  $\angle PCB$  meet at  $Q$ . What is the measure of  $\angle BQC$ ?

1.  $132^\circ$     2.  $127^\circ$     3.  $147^\circ$     4.  $143^\circ$

**Q.23)-**

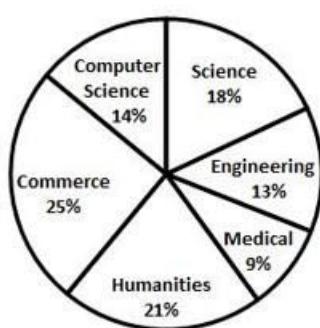
If  $\cos 53^\circ = \frac{x}{y}$ , then  $\sec 53^\circ + \cot 37^\circ$  is equal to:

1.  $\frac{x + \sqrt{y^2 - x^2}}{x}$     2.  $\frac{x + \sqrt{y^2 - x^2}}{y}$     3.  $\frac{y + \sqrt{y^2 - x^2}}{y}$     4.  $\frac{y + \sqrt{y^2 - x^2}}{x}$

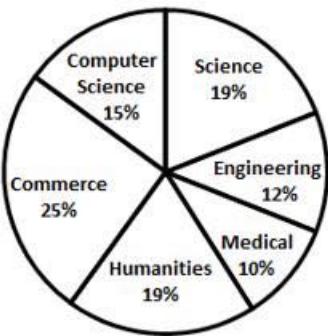
**Q.24)-**

The following pie-charts show the number of students studying in different departments of an institute during the academic years 2019 and 2020. The total number of students was 2000 and 2400, respectively, in academic years 2019 and 2020.

What is the ratio of the number of students studying science in the year 2019 to that in the year 2020?



**Academic Year 2019**



**Academic Year 2020**

1. 18 : 19    2. 14 : 15    3. 15 : 19    4. 20 : 21

**Q.25)-**

Two similar jugs have their heights of 8 cm and 12 cm, respectively. If the capacity of the smaller jug is  $80 \text{ cm}^3$ , what is the capacity of the bigger jug (in  $\text{cm}^3$ )?

1. 216    2. 120    3. 270    4. 192

### Answer key

Q.1	1	Q.2	1	Q.3	4	Q.4	2	Q.5	2
Q.6	1	Q.7	2	Q.8	1	Q.9	4	Q.10	3
Q.11	3	Q.12	3	Q.13	3	Q.14	1	Q.15	1
Q.16	1	Q.17	1	Q.18	4	Q.19	1	Q.20	4
Q.21	2	Q.22	3	Q.23	4	Q.24	3	Q.25	3



## RBE- Revolution By Education



By: Shubham Jain  
(Selected as GST Inspector)

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19/04/2022-> (4:00 PM - 5:00 PM)

Q.1)-

Find the greatest 3-digit number which, when divided by 3, 4, 5 and 8, leaves remainder 2 in each case.

1. 482    2. 962    3. 958    4. 122

Q.2)-

A fruit seller sells 45% of the oranges that he has along with one more orange to a customer. He then sells 20% of the remaining oranges and 2 more oranges to a second customer. He then sells 90% of the now remaining oranges to a third customer and is still left with 5 oranges. How many oranges did the fruit seller have initially?

1. 100    2. 120    3. 111    4. 121

Q.3)-

What is the angle of elevation of the sun when the shadow of a 9-m high pole is  $3\sqrt{3}$  m long?

1.  $90^\circ$     2.  $30^\circ$     3.  $60^\circ$     4.  $45^\circ$

Q.4)-

20 men can finish a work in 30 days. They started working, but 4 men left the work after 10 days. In how many days would the work be completed?

1. 35    2. 28    3. 25    4. 30

Q.5)-

The average of twelve numbers is 42. The average of the last five numbers is 40, and that of the first four numbers is 44. The sixth number is 6 less than the fifth number and 5 less than the seventh number. The average of the sixth and seventh numbers is:

1. 44.5    2. 41.5    3. 43.5    4. 45.5

Q.6)-

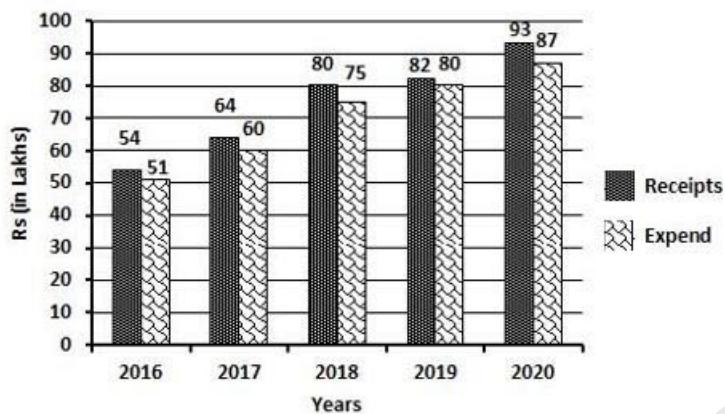
A and B entered into a partnership with certain investments. At the end of 8 months, A withdrew and collected back his money. A and B received profit in the ratio 5 : 9 at the end of the year. If B had invested ₹36,000, then how much (in ₹) had A invested?

1. 25,000    2. 20,000    3. 36,000    4. 30,000

**Q.7)-**

The following bar graph shows receipts and expenditure by a business firm over 5 years. Gain = Receipts – Expenditure.

In which year did the company gain the maximum amount?



1. 2018    2. 2017    3. 2020    4. 2016

**Q.8)-**

AB is a chord of a circle with centre O. C is a point on the circumference of the circle in the minor sector. If  $\angle ABO = 40^\circ$ , what is the measure (in degree) of  $\angle ACB$ ?

1.  $100^\circ$     2.  $120^\circ$     3.  $130^\circ$     4.  $110^\circ$

**Q.9)-**

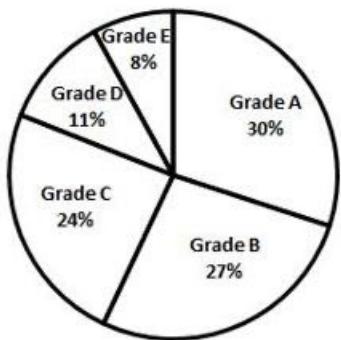
Two successive discounts of 20% and 25% on the marked price of an article are equal to a single discount of ₹250. If the marked price of the article is 25% above the cost price, the cost price (in ₹) of the article is:

1. 550    2. 500    3. 450    4. 600

**Q.10)-**

Performance of 1800 students in grades has been shown in the following pie chart.

How many students have got either grade D or grade E?



1. 352    2. 345    3. 359    4. 342

**Q.11)-**

A shopkeeper bought 60 pencils at a rate of 4 for ₹5 and another 60 pencils at a rate of 2 for ₹3. He mixed all the pencils and sold them at a rate of 3 for ₹4. Find his gain or loss percentage.

1. Profit  $2\frac{7}{8}\%$     2. Loss  $3\frac{1}{33}\%$     3. Loss  $2\frac{7}{8}\%$     4. Profit  $3\frac{1}{8}\%$

**Q.12)-**

If  $(x+y)^3 - (x-y)^3 - 3y(2x^2 - 3y^2) = ky^3$ , then find the value of  $k$ .

1. 10    2. 8    3. 10.5    4. 11

**Q.13)-**

What is the compound interest (in ₹) at the rate of 10%, compounded annually, for 3 years on the principal which in 8 years at the rate of 12% per annum gives ₹4,800 as simple interest?

1. 1,505    2. 1,655    3. 1,455    4. 2,045

**Q.14)-**

If  $a + b + c = 11$  and  $ab + bc + ca = 28$ , then find the value of  $a^3 + b^3 + c^3 - 3abc$ .

1. 407    2. 1639    3. 2255    4. 1093

**Q.15)-**

In a right-angled triangle, the lengths of the medians from the vertices of acute angles are 7 cm and  $4\sqrt{6}$  cm. What is the length of the hypotenuse of the triangle (in cm)?

1.  $\sqrt{29}$     2.  $\frac{5}{2}\sqrt{29}$     3.  $2\sqrt{29}$     4.  $3.5 + 2\sqrt{6}$

**Q.16)-**

Find the value of the following expression:

$$\frac{1\frac{2}{3} \div \frac{5}{6} \times 6 + \frac{4}{5} \times \frac{1}{2} + \frac{2}{3}}{2 - [1\frac{1}{3} \times (-\frac{3}{5}) - 6 \left\{ \frac{3}{5} - (3 - \frac{3}{10}) \right\}]}$$

1.  $\frac{1}{7}$     2.  $-\frac{1}{7}$     3.  $\frac{4}{3}$     4.  $-\frac{4}{3}$

**Q.17)-**

If  $\cot^2 \alpha + \tan^2 \alpha = 2$ ,  $0^\circ \leq \alpha \leq 90^\circ$ , then find the value of  $\alpha$

1.  $90^\circ$     2.  $60^\circ$     3.  $45^\circ$     4.  $0^\circ$

**Q.18)-**

Find the value of k such that the number k53206k is divisible by 6.

1. 4    2. 1    3. 2    4. 7

**Q.19)-**

The length of a wire (in cm) of 0.1 mm radius that can be drawn from melting a solid copper sphere of diameter 6 cm is:

1. 250000    2. 360000    3. 440000    4. 810000

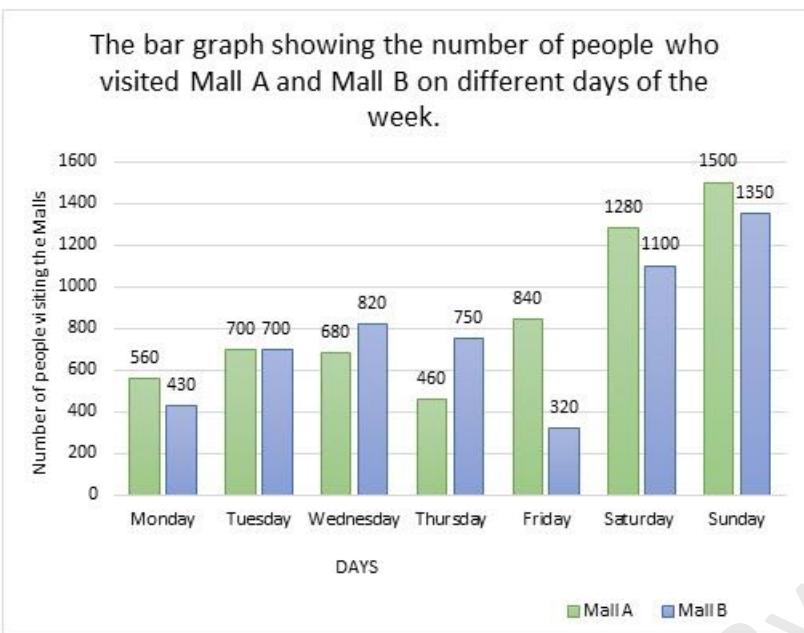
**Q.20)-**

Akhil rides first 12 km at a speed of 16 km/h and further 6 km at a speed of 20 km/h. Find his average speed (in km/h).

1.  $16\frac{4}{5}$     2.  $17\frac{1}{2}$     3.  $17\frac{1}{7}$     4.  $18\frac{1}{5}$

**Q.21)-**

The bar graph shows the number of people who visited Mall A and Mall B on different days of a week.



What is the ratio of the number of people visiting Mall A on Thursday, Saturday and Sunday together to the number of people visiting Mall B on these three days together?

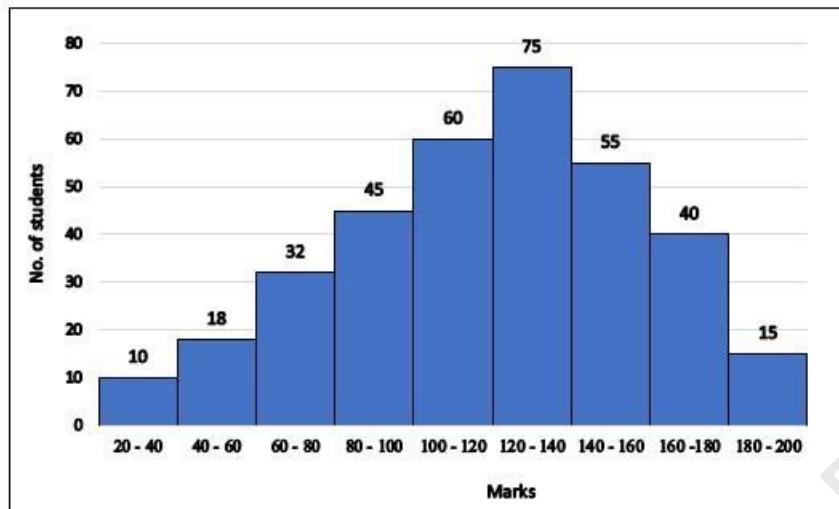
1. 80 : 81    2. 81 : 80    3. 27 : 25    4. 25 : 27

Q.22)-

The given histogram represents the marks of students in Mathematics test of a certain class.

The total number of students is 350 and the maximum marks of the test are 200.

Study the graph and answer the question that follows.



The total number of students whose marks are less than 100 is what percentage (correct up to one place of decimal) less than the total number of students whose marks are 120 and above?

1. 36.6%    2. 51.8%    3. 43.2%    4. 32.7%

**Q.23)-**

In a triangle ABC, the bisector of angle BAC meets BC at point D such that  $DC = 2BD$ . If  $AC - AB = 5$  cm, then find the length of AB (in cm).

1. 5    2. 10    3. 12    4. 7

**Q.24)-**

In a circle with centre O and of radius 13 cm, two parallel chords are drawn on different sides of the centre. If the length of one chord is 10 cm and the distance between the two chords is 17 cm, then find the difference in lengths of the two chords (in cm).

1. 10    2. 14    3. 12    4. 24

**Q.25)-**

Simplify the following expression:

$$\frac{\cos A}{1 - \tan A} + \frac{\sin A}{1 - \cot A} - \sin A$$

1.  $1 + \sin A$     2.  $(1 + \sin A) \cos A$     3.  $\cos A$     4.  $1 + \cos A$

---

**Answer key**

Q.1	2	Q.2	2	Q.3	3	Q.4	1	Q.5	2
Q.6	4	Q.7	3	Q.8	3	Q.9	2	Q.10	4
Q.11	2	Q.12	4	Q.13	2	Q.14	1	Q.15	3
Q.16	4	Q.17	3	Q.18	1	Q.19	2	Q.20	3
Q.21	2	Q.22	3	Q.23	1	Q.24	2	Q.25	3

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By: Shubham Jain  
(Selected as GST Inspector)  
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20/04/2022-> (9:00 AM - 10:00 AM)

**Q.1)-**

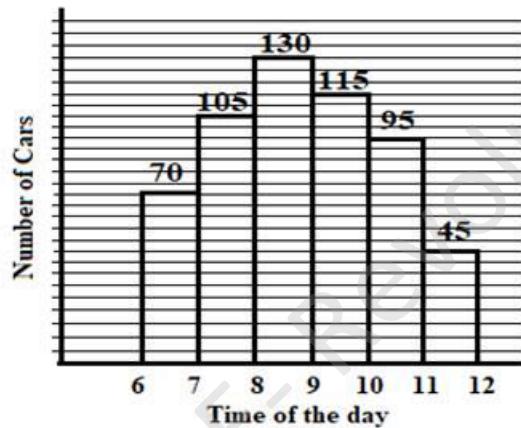
If  $6 \tan A (\tan A + 1) = 5 - \tan A$ , Given that  $0 < A < \frac{\pi}{2}$  what is the value of  $(\sin A + \cos A)$ ?

1.  $3\sqrt{5}$     2.  $\frac{5}{\sqrt{3}}$     3.  $5\sqrt{3}$     4.  $\frac{3}{\sqrt{5}}$

**Q.2)-**

The number of cars passing the road near a colony from 6 am to 12 noon has been shown in the following histogram.

What is the minimum change percentage in the number of cars in comparison to the previous hour? (correct to 2 decimal places)



1. 15.25%    2. 23.81%    3. 10.52%    4. 11.54%

**Q.3)-**

The value of:

$$[25 + 8 \div 2 - \{16 + (14 \text{ of } 7 \div 14) - (18 \div 12 \text{ of } \frac{1}{2})\}] = ?$$

1. 6    2. 9    3. 3    4. 12

**Q.4)-**

A shopkeeper allows a 28% discount on the marked price of an article and still makes a profit of 20%. If he gains ₹30.80 on the sale of one article, then what is the selling price (in ₹) of the article?

- 1.** 184.80    **2.** 154.00    **3.** 164.30    **4.** 174.80

**Q.5)-**

If  $\left(0.4x + \frac{1}{x}\right) = 5$ , what is the value of  $\left(0.064x^3 + \frac{1}{x^2}\right)$  ?

- 1.** 119    **2.** 125    **3.** 110    **4.** 105

**Q.6)-**

A triangle with the lengths of its sides proportional to the numbers 7, 24 and 30 is:

- 1.** obtuse angled    **2.** right angled    **3.** not possible    **4.** acute angled

**Q.7)-**

80% and 90% pure acid solutions are mixed to obtain 20 litres of 87% pure acid solution. Find the quantity (in litres) of 80% pure acid solution taken to form the mixture.

- 1.** 6    **2.** 9    **3.** 4    **4.** 8

**Q.8)-**

Numbers A and B are 0% and 50%, respectively, more than the number C. The ratio of A to that of B is:

- 1.** 13 : 15    **2.** 15 : 13    **3.** 5 : 4    **4.** 4 : 5

**Q.9)-**

Points A and B are on a circle with centre O. PA and PB are tangents to the circle from an external point P. If PA and PB are inclined to each other at  $42^\circ$ , then find the measure of  $\angle OAB$ .

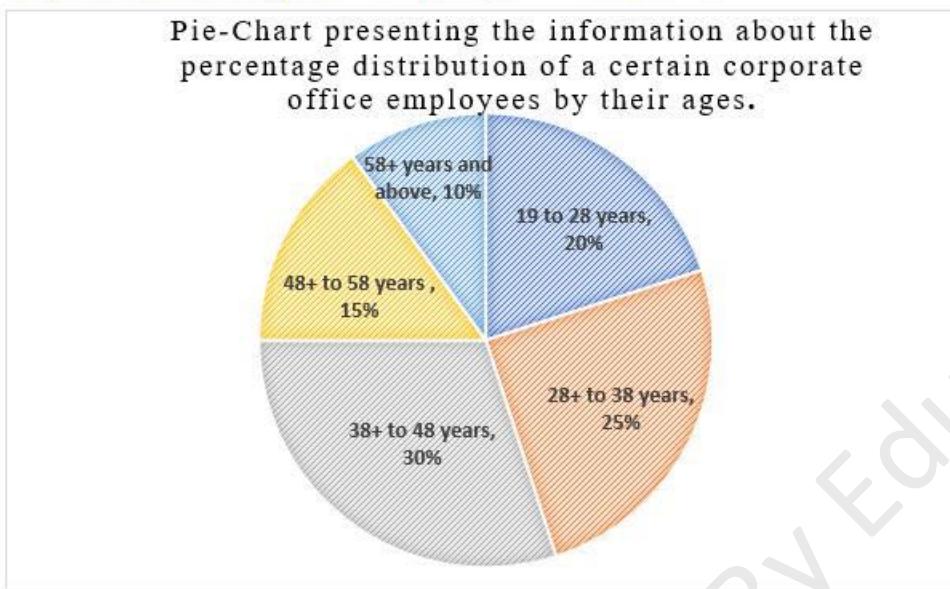
- 1.**  $42^\circ$     **2.**  $69^\circ$     **3.**  $21^\circ$     **4.**  $25^\circ$

**Q.10)-**

The following pie chart shows the distribution of percentage of a certain corporate office employees in various age-groups.

Total number of employees of the corporate office = 2500

Study the chart carefully and answer the question that follows.



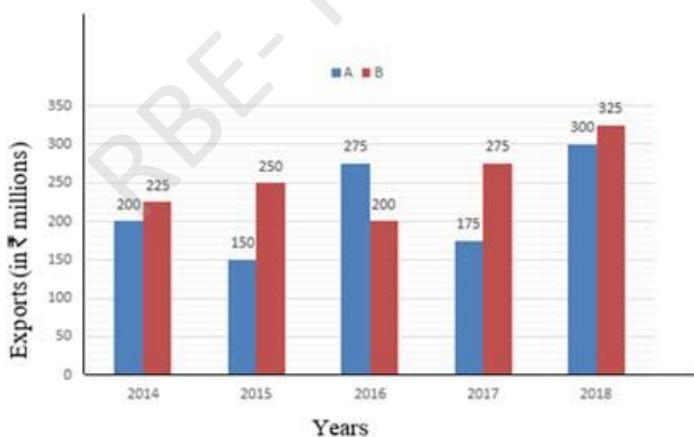
The number of the corporate office employees of age group of 38+ years and above is how much percentage more than that of 28+ to 38 years?

1. 120%    2. 150%    3. 80%    4. 20%

### Q.11)-

Study the given bar graph and answer the question that follows.

The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



The total exports of cars of type A from 2014 to 2016 is approximately what percentage less than the total exports of cars of type B from 2015 to 2017 (correct to one decimal place)?

1. 11.3%    2. 13.8%    3. 10.4%    4. 11.7%

**Q.12)-**

Find the value of k in the number 3426k if the number is divisible by 6 but NOT divisible by 5.

1. 6    2. 3    3. 4    4. 9

**Q.13)-**

Simplify the following expression:

$$\operatorname{cosec}^4 A (1 - \cos^4 A) - 2 \cot^2 A - 1$$

1. 1    2.  $\sin^2 A$     3. 0    4.  $\operatorname{cosec}^2 A$

**Q.14)-**

If  $x^2 + \frac{1}{x^2} = 18, x > 0$ , then find the value of  $x^3 + \frac{1}{x^3}$ .

1. 52    2.  $34\sqrt{5}$     3.  $46\sqrt{5}$     4.  $17\sqrt{5}$

**Q.15)-**

The tops of two poles of heights 18 m and 30.5 m are connected by a wire. If the wire makes an angle of  $30^\circ$  with the horizontal, what is the length (in m) of the wire?

1. 36    2. 28    3. 20    4. 25

**Q.16)-**

The difference between compound interest compounded annually and simple interest on a certain sum at a rate of 15% per annum for 2 years is ₹1,944. Find the compound interest compounded annually (in ₹) on the same sum for the same period at a rate of 10% per annum.

1. 18,060    2. 27,216    3. 18,144    4. 20,500

**Q.17)-**

In a right triangle ABC, right angled at B, altitude BD is drawn to the hypotenuse AC of the triangle. If AD = 6 cm, CD = 5 cm, then find the value of  $AB^2 + BD^2$  (in cm).

1. 36    2. 66    3. 30    4. 96

**Q.18)-**

Ram travelled from a place Z to P at an average speed of 130 km/h. He travelled the first 75% of the distance in two-third of the time and the rest at an average speed of X km/h. The value of  $\frac{X}{2}$  is:

1. 97.5    2. 51    3. 19.25    4. 48.75

**Q.19)-**

What is the least square number which is exactly divisible by 2, 3, 10, 18 and 20?

1. 900    2. 180    3. 196    4. 30

**Q.20)-**

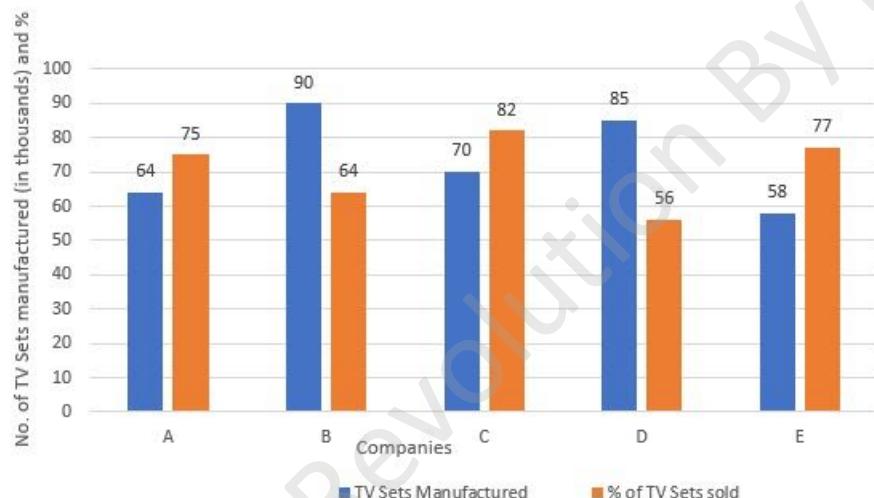
In a circle with centre O, PA and PB are tangents to the circle at point A and point B, respectively. C is a point on the major arc AB. If  $\angle ACB = 50^\circ$ , then find the measure of  $\angle APB$ .

1.  $90^\circ$     2.  $80^\circ$     3.  $100^\circ$     4.  $50^\circ$

**Q.21)-**

The given bar chart represents the number of Televisions Sets (TV) manufactured (in thousands) and the respective percentage of those TV Sets sold by five different companies A, B, C, D and E in 2015.

Study the chart carefully and answer the question that follows.



The average number of TV sets sold by companies C and D is what percentage of the number of TV sets manufactured by company E? Express your answer correct to one place of decimal.

1. 92.2%    2. 90.5%    3. 86.5%    4. 89.1%

**Q.22)-**

Manjeet bought a second-hand motorbike for ₹22,000 and spent ₹3,000 on its overhauling and maintenance. He then sold it with 12% profit. If he had sold it for ₹500 less, then what would have been his profit percentage?

1. 10%    2. 10.5%    3. 8%    4. 5%

**Q.23)-**

The inner circumference of a circular path enclosed between two concentric circles is 264 m. The uniform width of the circular path is 3 m. What is the area (in  $m^2$ , to the nearest whole number) of the path? (Take  $\pi = \frac{22}{7}$ )

1. 696    2. 948    3. 756    4. 820

**Q.24)-**

A college hostel mess has provisions for 25 days for 350 boys. At the end of 10 days, when some boys were shifted to another hostel, it was found that now the provisions will last for 21 more days. How many boys were shifted to another hostel?

1. 98    2. 92    3. 110    4. 100

**Q.25)-**

The average of eleven consecutive positive integers is  $d$ . If the last two numbers are excluded, by how much will the average increase or decrease?

1. Will decrease by 1    2. Will increase by 2    3. Will increase by 1    4. Will decrease by 2

---

**Answer key**

Q.1	4	Q.2	4	Q.3	2	Q.4	1	Q.5	1
Q.6	1	Q.7	1	Q.8	1	Q.9	3	Q.10	1
Q.11	2	Q.12	1	Q.13	3	Q.14	2	Q.15	4
Q.16	3	Q.17	4	Q.18	4	Q.19	1	Q.20	2
Q.21	2	Q.22	1	Q.23	4	Q.24	4	Q.25	1



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By: Shubham Jain  
(Selected as GST Inspector)  
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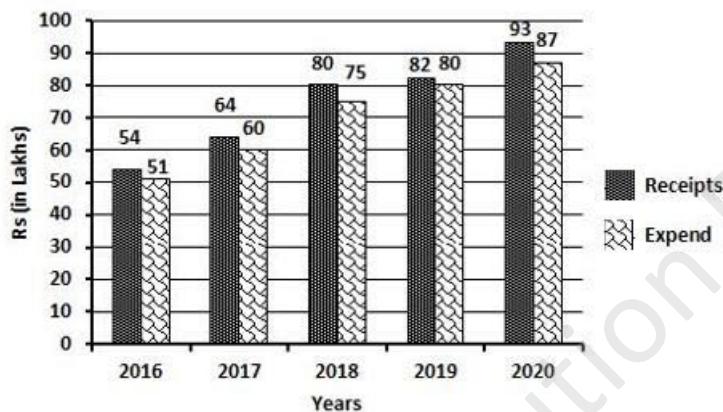


20/04/2022-> (12:30 PM - 1:30 PM)

**Q.1)-**

The following bar graph shows receipts and expenditure of a business firm over 5 years. Gain = Receipts – Expenditure.

What is the percentage of increase in expenditure from 2018 to 2019 as compared to 2018?



1.  $8\frac{3}{4}$
2.  $6\frac{1}{4}$
3.  $6\frac{2}{3}$
4.  $2\frac{1}{2}$

**Q.2)-**

If  $\tan^2 A - 6 \tan A + 9 = 0$ ,  $0 < A < 90^\circ$ , What is the value of  $6 \cot A + 8 \sqrt{10} \cos A$ ?

1.  $10\sqrt{10}$
2.  $8\sqrt{10}$
3. 10
4. 14

**Q.3)-**

If the number  $48k2048p6$  is divisible by 99, then  $(k \times p)$  is equal to:

1. 4
2. 2
3. 0
4. 6

**Q.4)-**

If  $6\sqrt{6}p^3 + 2\sqrt{2}q^3 = (\sqrt{6}p + \sqrt{2}q)(Sp^2 + Mq^2 - Npq)$ , then the positive value of  $\sqrt{S^2 + M^2 + 2N^2}$  is:

1. 10
2. 9
3. 12
4. 8

**Q.5)-**

Telegram (Previous year papers PDFs [SSC,Railway,DSSSB,UP SI]):

[https://t.me/RBE\\_S](https://t.me/RBE_S)

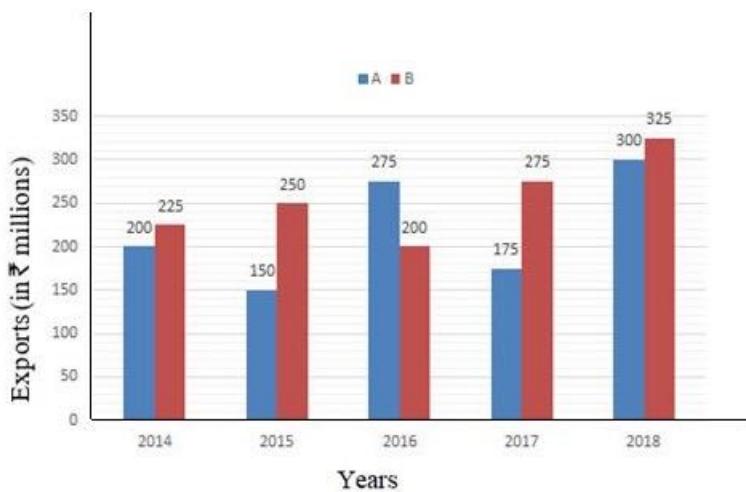
100

YouTube (Free lectures and job updates):

<https://youtu.be/HIRRafUmCmk>

Study the given bar graph and answer the question that follows.

The bar graph shows the exports of cars of type A and B (in ₹ millions) from 2014 to 2018.



In which year were the exports of cars of type B ₹20 million less than the average exports (per year) of cars of type A over the five years?

1. 2015    2. 2017    3. 2014    4. 2016

**Q.6)-**

What is the average of the first six prime numbers?

1. 7    2. 6    3.  $6\frac{5}{6}$     4.  $9\frac{1}{3}$

**Q.7)-**

If  $\tan B = \frac{5}{3}$ , what is the value of  $\frac{\cosec B + \sin B}{\cos B - \sec B}$ ?

1.  $-\frac{177}{125}$     2.  $\frac{177}{125}$     3.  $-\frac{59}{15}$     4.  $\frac{59}{15}$

**Q.8)-**

If  $\sqrt{x} - \frac{1}{\sqrt{x}} = \sqrt{5}$ ,  $x \neq 0$ , then what is the value of  $\frac{(x^4 + \frac{1}{x^2})}{(x^2 + 1)}$ ?

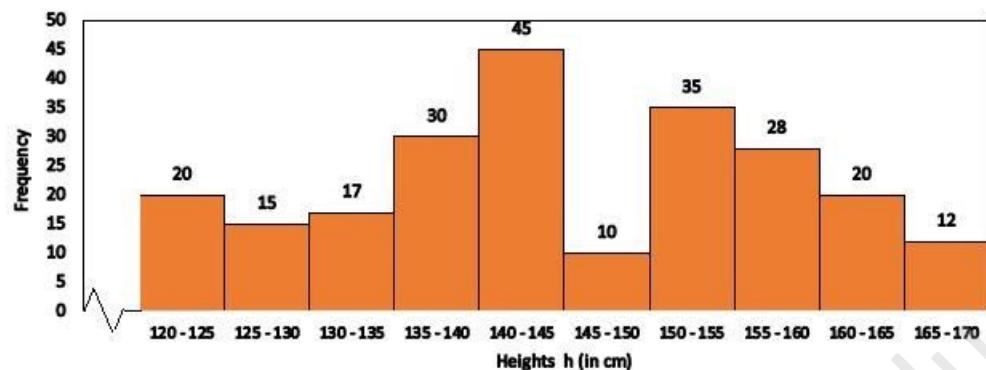
1. 46    2. 42    3. 48    4. 44

**Q.9)-**

The given histogram shows the heights of 232 students of an athletic club and their numbers.

Study the histogram carefully and answer the questions that follows.

**Histogram showing the heights of children of an athletic club and their numbers.**



If the histogram is to be presented by a line diagram, what would be the starting point and the end point of the line diagram?

1. (122.5, 20) and (167.5, 20)    2. (122.5, 0) and (167.5, 0)    3. (117.5, 20) and (172.5, 20)    4. (117.5, 0) and (172.5, 0)

**Q.10)-**

A reduction of 20% in the price of bananas enables a customer to buy 6 more bananas for ₹80. What is the reduced price of bananas per dozen (in ₹)?

1. 32    2. 36    3. 35    4. 40

**Q.11)-**

In  $\triangle PQR$ ,  $\angle Q = 66^\circ$  and  $\angle R = 34^\circ$ . T is a point on QR, and S is a point between Q and T such that  $PS \perp QR$  and PT is the bisector of  $\angle QPR$ . What is the measure of  $\angle SPT$ ?

1.  $18^\circ$     2.  $16^\circ$     3.  $20^\circ$     4.  $12^\circ$

**Q.12)-**

The least number which should be added to 3627 so that the sum is exactly divisible by 4, 5, 6 and 8 is:

1. 93    2. 72    3. 39    4. 27

**Q.13)-**

A and B are two points on the same side of a ground, 50 metres apart. The angles of elevation of these points to the top of a tree are  $60^\circ$  and  $30^\circ$ , respectively. What is 40% of the height of the tree (in m)?

1.  $5\sqrt{3}$     2.  $10\sqrt{3}$     3.  $15\sqrt{3}$     4.  $25\sqrt{3}$

**Q.14)-**

The total surface area of a right pyramid, with base as a square of side 8 cm, is  $208 \text{ cm}^2$ . What is the slant height (in cm) of the pyramid?

1. 7    2. 9    3. 10    4. 8

**Q.15)-**

A, B and C divide an amount of ₹10,500 amongst themselves in the ratio 5 : 7 : 9, respectively. If each one gets ₹500 more, then what will be the ratio of the amounts with A, B and C?

1. 3 : 4 : 5    2. 5 : 6 : 7    3. 5 : 7 : 9    4. 7 : 9 : 11

**Q.16)-**

AB is a chord in the minor segment of a circle with centre O. C is a point between A and B on the minor arc AB. The tangents to the circle at A and B meet at the point D. If  $\angle ACB = 116^\circ$ , then the measure of  $\angle ADB$  is

1.  $56^\circ$     2.  $52^\circ$     3.  $64^\circ$     4.  $48^\circ$

**Q.17)-**

P and Q completed a work together and were paid ₹1,080 and ₹1,440, respectively. If P can do the entire work in 20 days, how many days did they take to complete the work together?

1.  $8\frac{3}{7}$     2.  $8\frac{4}{7}$     3.  $6\frac{3}{7}$     4.  $6\frac{4}{7}$

**Q.18)-**

A fruit vendor recovers the cost of 95 oranges by selling 80 oranges. What is his profit percentage?

1. 18.75%    2. 24.25%    3. 21.25%    4. 20.75%

**Q.19)-**

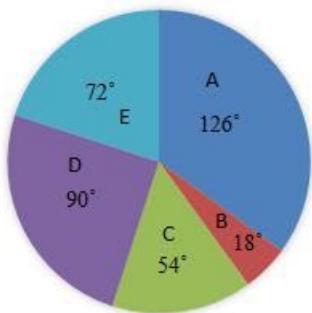
In triangle ABC, X and Y are the points on sides AB and AC, respectively, such that XY is parallel to BC. If  $XY : BC = 2.5 : 7$ , what is the ratio of the area of the trapezium BCYX to that of the  $\triangle AXY$ ?

1.  $\frac{196}{25}$     2.  $\frac{25}{196}$     3.  $\frac{171}{25}$     4.  $\frac{25}{171}$

**Q.20)-**

Study the given pie chart and answer the question that follows.

The pie chart shows the breakup of the total number of employees of a company working in different offices (A to E), in degrees. The total number of employees = 3600.



If the percentage of male employees in office C is 20% and that of female employees in office D is 40%, then what is the ratio of the number of female employees in office D to that of female employees in office C?

1. 3 : 8    2. 5 : 6    3. 3 : 2    4. 2 : 3

**Q.21)-**

If Raman drives his bike at a speed of 24 km/h, he reaches his office 5 minutes late. If he drives at a speed of 30 km/h, he reaches his office 4 minutes early. How much time (in minutes) will he take to reach his office at a speed of 27 km/h?

1. 40    2. 55    3. 50    4. 45

**Q.22)-**

The simple interest on a sum of money at 10% per annum for 4 years is ₹3,200. What will be the amount (in ₹) of the same sum for the same period at the same rate of interest when the interest is compounded annually?

1. 11,172.80    2. 11,712.80    3. 11,127.80    4. 11,217.80

**Q.23)-**

A shopkeeper offers a discount of 18% on a machine and sells it for ₹48,380. If he does not offer the discount, he will get a profit of 18%. What is the cost price (in ₹) of the machine?

1. 55,000    2. 50,000    3. 48,500    4. 59,000

**Q.24)-**

The value of

$$25 \div 10 - \left( \frac{7}{4} \times \frac{1}{3} \right) \text{ of } \frac{6}{5} + \frac{14}{3} \times \frac{9}{10} + \left( \frac{1}{5} \div \frac{1}{25} \right) \text{ is:}$$

1. 15    2. 7    3. 11    4. 9

**Q.25)-**

AC is the diameter of a circle dividing the circle into two semicircles. ED is a chord in one semicircle, such that ED is parallel to AC. B is a point on the circumference of the circle in the other semicircle.  $\angle CBE = 75^\circ$ . What is the measure (in degrees) of  $\angle CED$ ?

1.  $37^\circ$    2.  $68^\circ$    3.  $15^\circ$    4.  $75^\circ$

### Answer key

Q.1	3	Q.2	3	Q.3	3	Q.4	4	Q.5	4
Q.6	3	Q.7	1	Q.8	1	Q.9	4	Q.10	1
Q.11	2	Q.12	1	Q.13	2	Q.14	2	Q.15	1
Q.16	2	Q.17	2	Q.18	1	Q.19	3	Q.20	2
Q.21	1	Q.22	2	Q.23	2	Q.24	3	Q.25	3

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20/04/2022-> (4:00 PM - 5:00 PM)

**Q.1)-**

If  $5\sqrt{3} + \sqrt{75} = 17.32$ , then the value of  $14\sqrt{3} + \sqrt{108}$  is:

1. 32.46
2. 35.64
3. 34.64
4. 33.86

**Q.2)-**

The length of the body diagonal of a cube is  $8\sqrt{3}$  cm. What is the volume (in  $\text{cm}^3$ ) of the cube?

1. 729
2. 512
3. 343
4. 216

**Q.3)-**

A person bought a book at 31% discount on its printed price. If no discount was given, then he would have to pay ₹2,480 more. How much did he pay (in ₹) for the book?

1. 7,000
2. 4,560
3. 8,000
4. 5,520

**Q.4)-**

A and B can do a work in 12 days and 18 days, respectively. They worked together for 4 days after which B was replaced by C and the remaining work was completed by A and C in the next 4 days. In how many days will C alone complete 50% of the same work?

1. 18
2. 24
3. 36
4. 21

**Q.5)-**

While preparing the results of English of a class, the marks of one student got recorded as 95 in place of 57, as a result of which there was an increase in the average score by 0.95. How many students were there in the class?

1. 37
2. 40
3. 45
4. 57

**Q.6)-**

The distance between two towns is covered in 7 hours at a speed of 50 km/h. By how much should the speed (in km/h) be increased so that 2 hours of travelling time will be saved?

1. 70
2. 30
3. 20
4. 40

**Q.7)-**

Telegram (Previous year papers PDFs [SSC,Railway,DSSSB,UP SI]):

[https://t.me/RBE\\_S](https://t.me/RBE_S)

106

YouTube (Free lectures and job updates):

<https://youtu.be/HIRRafUmCmk>

An article is sold at a certain price. If it is sold at 70% of this price, then there is a loss of 10%. What is the percentage profit, when it is sold at the original selling price?

1.  $\frac{200}{7}\%$     2.  $\frac{300}{7}\%$     3.  $\frac{50}{7}\%$     4.  $\frac{100}{7}\%$

**Q.8)-**

PQRS is a cyclic quadrilateral and PQ is a diameter of the circle. If  $\angle RPQ = 23^\circ$ , then what is the measure of  $\angle PSR$ ?

1.  $147^\circ$     2.  $123^\circ$     3.  $113^\circ$     4.  $157^\circ$

**Q.9)-**

The value of  $\left(\frac{1-\cot\theta}{1-\tan\theta}\right)^2 + 1$ , if  $0^\circ < \theta < 90^\circ$ , is equal to:

1.  $\operatorname{cosec}^2\theta$     2.  $\sin^2\theta$     3.  $\sec^2\theta$     4.  $\cos^2\theta$

**Q.10)-**

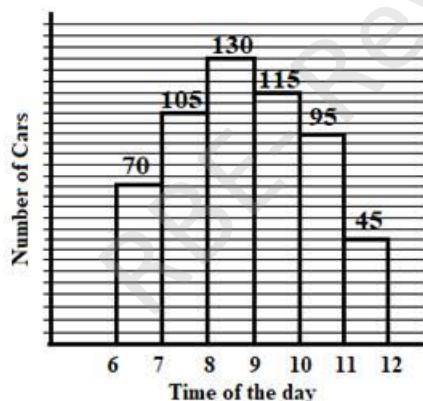
In  $\Delta ABC$ ,  $\angle A = 68^\circ$ . If I is the incentre of the triangle, then the measure of  $\angle BIC$  is:

1.  $112^\circ$     2.  $68^\circ$     3.  $56^\circ$     4.  $124^\circ$

**Q.11)-**

The number of cars passing the road near a colony from 6 am to 12 noon has been shown in the following histogram.

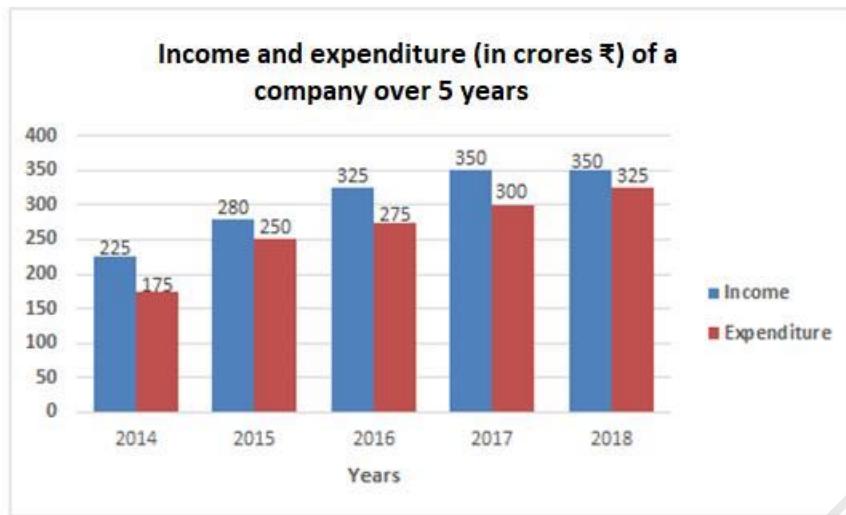
During which hour(s) is the number of cars passed less than the average number of cars passed from 7 am to 12 noon?



1. 6-7, 10-11, 11-12    2. 7-8, 8-9, 9-10    3. 10-11, 11-12    4. 6-7, 11-12

**Q.12)-**

The given bar graph shows the income and expenditure (in crores ₹) of a company over 5 years, from 2014 to 2018. Study the bar graph and answer the question that follows.



What is the difference (in crores ₹) between the expenditure for the years 2017 and 2018 taken together and the income for the years 2015 and 2016 taken together?

1. 16    2. 15    3. 20    4. 18

**Q.13)-**

If  $(4a - 3b) = 1$ ,  $ab = \frac{1}{2}$ , where  $a > 0$  and  $b > 0$ , what is the value of  $(64a^3 + 27b^3)$ ?

1. 35    2. 15    3. 30    4. 25

**Q.14)-**

Divide ₹66,300 between A and B in such a way that the amount that A receives after 8 years is equal to the amount that B receives after 10 years; with compound interest being compounded annually at a rate of 10% per annum.

1. A = ₹35,200, B = ₹31,100    2. A = ₹36,300, B = ₹30,000    3. A = ₹37,000, B = ₹29,300    4. A = ₹35,520, B = ₹30,810

**Q.15)-**

Three partners shared the profit in a business in the proportion of 9 : 8 : 11. They invested their capitals for 4 months, 6 months and 18 months, respectively. What was the ratio of their capitals?

1. 81 : 16 : 66    2. 27 : 16 : 66    3. 81 : 48 : 22    4. 27 : 48 : 22

**Q.16)-**

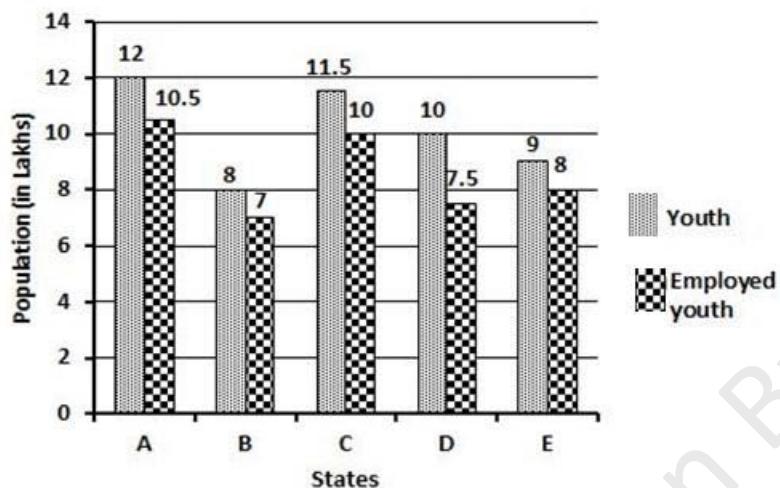
A ladder of length 3.5 m just reaches the top of a wall. If the ladder makes an angle of  $60^\circ$  with the wall, then what is the height of the wall (in m)?

1.  $1.75$     2.  $\frac{7\sqrt{3}}{4}$     3.  $3.5\sqrt{3}$     4.  $\frac{3.5}{\sqrt{3}}$

**Q.17)-**

The following bar graph shows the number of youth (in lakhs) and the number of employed youth (in lakhs) in five states A, B, C, D and E.

What is the average number of youth in the five states?



1. 1015000    2. 1200000    3. 1010000    4. 1025000

**Q.18)-**

Find the value of the following expression:

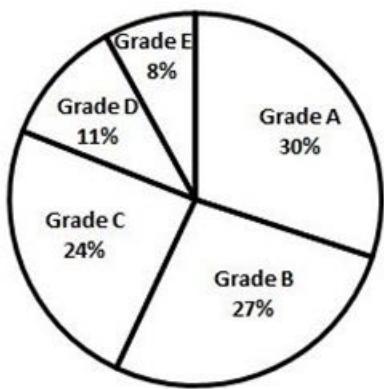
$$\frac{1\frac{1}{2} + 1\frac{3}{7} \div \left(1\frac{3}{5} \text{ of } 1\frac{1}{4}\right) \times 2\frac{1}{3}}{2\frac{2}{3} \div \frac{4}{9} \times \frac{5}{6} + 14}$$

1.  $\frac{49}{114}$     2.  $\frac{13}{114}$     3.  $\frac{1}{6}$     4.  $\frac{107}{342}$

**Q.19)-**

Performance of 1800 students in grades has been shown in the following pie chart.

How many more students have obtained grade B than those who have obtained grade C?



1. 50    2. 3    3. 54    4. 60

**Q.20)-**

Which of the following is the smallest number that is a perfect square and is divisible by each of the numbers 6, 8 and 15?

1. 3600    2. 225    3. 576    4. 121

**Q.21)-**

The value of  $\frac{5\cos^2 62^\circ + 5\cos^2 28^\circ - 21}{7\sin^2 35^\circ + 7\sin^2 55^\circ + 1}$  is:

1. 3    2. -2    3. 2    4. -3

**Q.22)-**

A circle is circumscribed on a quadrilateral ABCD. If  $\angle DAB = 100^\circ$ ,  $\angle ADB = 35^\circ$  and  $\angle CDB = 40^\circ$ , then find the measure of  $\angle DBC$ .

1.  $40^\circ$     2.  $35^\circ$     3.  $45^\circ$     4.  $60^\circ$

**Q.23)-**

In a right-angled triangle PQR,  $\angle Q = 90^\circ$ . A and B are the mid-points of PQ and PR, respectively. If  $PQ = 16$  cm,  $QR = 30$  cm and  $PR = 34$  cm, what is perimeter (in cm) of the trapezium ABRQ?

1. 65    2. 80    3. 70    4. 40

**Q.24)-**

A is 25% more than B, and B is 40% less than C. If C is 20% more than D, then A is what percentage less than D?

**1.** 10%    **2.** 12%    **3.** 9%    **4.** 11%

**Q.25)-**

If  $a + b + c = 6$ ,  $a^2 + b^2 + c^2 = 32$ , and  $a^3 + b^3 + c^3 = 189$ , then the value of  $4abc$  is:

**1.** 16    **2.** 9    **3.** 12    **4.** 8

---

**Answer key**

Q.1	3	Q.2	2	Q.3	4	Q.4	1	Q.5	2
Q.6	3	Q.7	1	Q.8	3	Q.9	1	Q.10	4
Q.11	1	Q.12	3	Q.13	1	Q.14	2	Q.15	3
Q.16	1	Q.17	3	Q.18	3	Q.19	3	Q.20	1
Q.21	2	Q.22	4	Q.23	3	Q.24	1	Q.25	3



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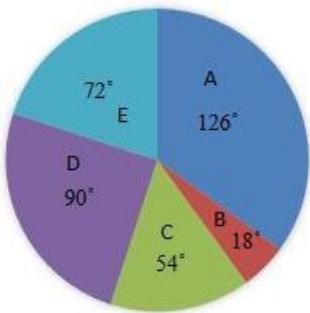


21/04/2022-> (9:00 AM - 10:00 AM)

**Q.1)-**

The breakup of the total number of employees of a company working in different offices (A to E), in degrees, is given in the pie chart.

Total number of employees = 2400.



If 40% of the number of employees in office A are shifted equally to office B and E, then what will be the sum of the number of employees in B and C?

1. 648    2. 72    3. 545    4. 735

**Q.2)-**

Three positive numbers are in the ratio 2 : 3 : 4. The sum of their squares is 2349. The average of the first two numbers is:

1. 18    2. 22.5    3. 27.5    4. 36

**Q.3)-**

In triangle ABC, the bisector of angle BAC meets BC at point D in such a way that AB = 10 cm, AC = 15 cm and BD = 6 cm. Find the length of BC (in cm).

1. 17    2. 9    3. 15    4. 11

**Q.4)-**

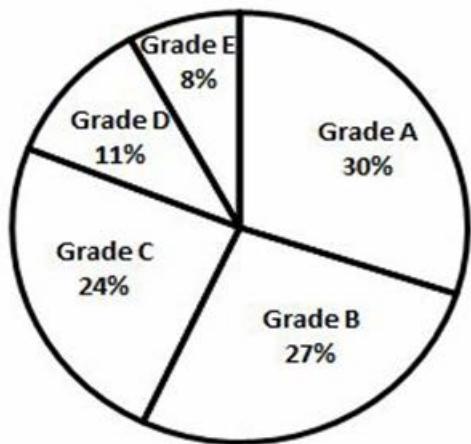
The distance between two stations A and B is 200 km. A train runs from A to B at a speed of 75 km/h, while another train runs from B to A at a speed of 85 km/h. What will be the distance between the two trains (in km) 3 minutes before they meet?

1. 8    2. 10    3. 6    4. 5

**Q.5)-**

Performance of 1800 students in grades has been shown in the following pie chart.

The number of students getting grade B is what percentage of the number of students getting grade A?



1. 95%    2. 85%    3. 90%    4. 97%

**Q.6)-**

Find the sum of the greatest and the smallest number which may replace  $k$  in the number  $3281k6$  to make the number divisible by 6.

1. 5    2. 9    3. 8    4. 4

**Q.7)-**

From a ship's masthead 180 m high, the angle of depression of a boat is observed to be  $60^\circ$ . Find the distance (in m) of the boat from the ship.

1.  $180\sqrt{3}$     2. 360    3.  $60\sqrt{3}$     4. 180

**Q.8)-**

A and B working alone can complete a work in 8 days and 12 days, respectively. They started working together, but A left 2 days before completion of the work. In how many days was the work completed?

1. 10    2. 8    3. 5    4. 6

**Q.9)-**

A household appliances company offers two successive discounts of 20% and 35% on the sale of a food processor. What is the final sale price (in Rs, to the nearest rupee) of a food processor costing Rs 4580?

1. 2519    2. 2382    3. 2977    4. 3664

**Q.10)-**

A shopkeeper bought toffees at a rate of 10 for ₹15 and sold them at a rate of 16 for ₹40. Find his profit percentage. (correct to two decimal places)

1. 66.67%    2. 50.55%    3. 33.33%    4. 65.05%

**Q.11)-**

Find the value of the following expression:

$$\frac{(7.03)^3 - 0.027}{(7.03)^2 + 2.109 + (0.3)^2}$$

1. 6.73    2. 7.33    3. 7.06    4. 7

**Q.12)-**

O is the centre of a circle of radius 10 cm. P is a point outside the circle and PQ is a tangent to the circle. What is the length (in cm) of PQ if the length OP is 26 cm?

1.  $2\sqrt{194}$     2. 25    3. 20    4. 24

**Q.13)-**

The sides of a triangular field are 360 m, 480 m and 600 m. Its area is equal to the area of a square field. What is the side (in m) of the square field?

1.  $120\sqrt{6}$     2.  $120\sqrt{3}$     3.  $160\sqrt{3}$     4.  $160\sqrt{6}$

**Q.14)-**

Anil lent a sum of ₹5,000 on simple interest for 10 years in such a way that the rate of interest is 6% per annum for the first 2 years, 8% per annum for the next 2 years and 10% per annum beyond 4 years. How much interest (in ₹) will he earn at the end of 10 years?

1. 4,400    2. 5,000    3. 4,200    4. 3,500

**Q.15)-**

Find the value of the following expression:

$$\frac{4\frac{1}{3} + 3\frac{1}{3} \times 1\frac{4}{5} \div 3\frac{3}{4} \times (6\frac{1}{4} \text{ of } 1\frac{1}{15})}{\frac{2}{3} \div \frac{5}{6} \times \frac{2}{3}}$$

1.  $12\frac{1}{2}$     2.  $289\frac{3}{8}$     3.  $\frac{1}{8}$     4.  $28\frac{1}{8}$

**Q.16)-**

In a  $\triangle ABC$ , D, E and F are the mid-points of side BC, CA and AB respectively. If  $BC = 25.6$  cm,  $CA = 18.8$  cm and  $AB = 20.4$  cm, what is the perimeter (in cm) of the  $\triangle DEF$ ?

1. 32.4    2. 36.8    3. 34.4    4. 30.6

**Q.17)-**

Person A started a business by investing ₹65,000. After a few months, B joined him by investing ₹50,000. Three months after the joining of B, C joined the two with an investment of ₹55,000. At the end of the year, A got 50% of profit as his share. For how many months did A alone finance the business?

1. 3    2. 5    3. 2    4. 4

**Q.18)-**

The radii of two concentric circles with centre O are 26 cm and 16 cm. Chord AB of the larger circle is tangent to the smaller circle at C and AD is a diameter. What is the length of CD?

1. 38 cm    2. 36 cm    3. 42 cm    4. 35 cm

**Q.19)-**

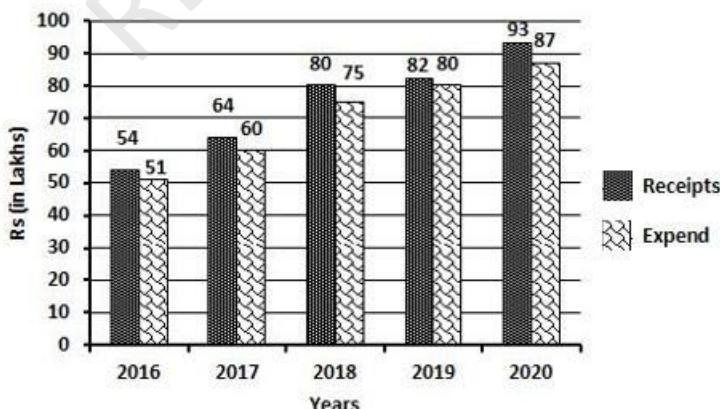
Find the smallest number which should be added to the smallest number divisible by 6, 9 and 15 to make it a perfect square.

1. 9    2. 19    3. 10    4. 21

**Q.20)-**

The following bar graph shows receipts and expenditure by a business firm over 5 years. Gain = Receipts – Expenditure.

In which year did the company gain the minimum amount?



1. 2016    2. 2019    3. 2017    4. 2018

**Q.21)-**

If  $A = 30^\circ$ , what is the value of:  $\frac{[8 \sin A + 11 \operatorname{cosec} A - \cot^2 A]}{10 \cos 2A}$  ?

1.  $4\frac{2}{5}$     2.  $3\frac{4}{5}$     3.  $5\frac{1}{5}$     4.  $4\frac{3}{5}$

**Q.22)-**

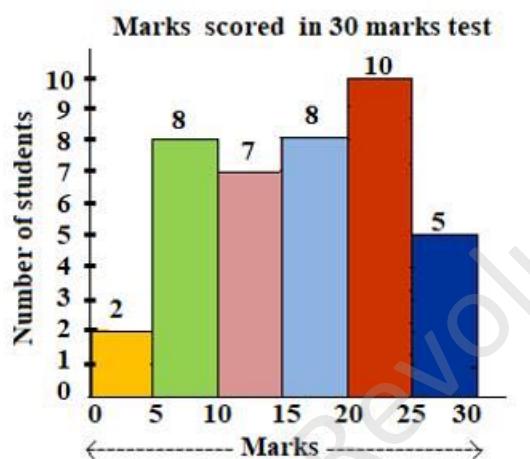
If  $(2 \cos A + 1)(2 \cos A - 1) = 0$ ,  $0^\circ < A \leq 90^\circ$ , then find the value of A.

1.  $60^\circ$     2.  $45^\circ$     3.  $90^\circ$     4.  $30^\circ$

**Q.23)-**

The following histogram shows the marks scored by 40 students in a test of 30 marks. A student has to score a minimum of 10 marks to pass the test.

What is the percentage of students who passed the test?



1. 75%    2. 72%    3. 30%    4. 66.66%

**Q.24)-**

If  $5x - \frac{1}{4x} = 6$ ,  $x > 0$ , then find the value of  $25x^2 - \frac{1}{16x^2}$ .

1.  $\sqrt{246}$     2. 36    3.  $6\sqrt{41}$     4.  $6\sqrt{31}$

**Q.25)-**

A person's salary was decreased by 50% and subsequently increased by 50%. By what much per cent does his salary increase or decrease?

1. Increase 20%    2. Increase 15%    3. Decrease 25%    4. Decrease 18%

## Answer key

Q.1	1	Q.2	2	Q.3	3	Q.4	1	Q.5	3
Q.6	3	Q.7	3	Q.8	4	Q.9	2	Q.10	1
Q.11	1	Q.12	4	Q.13	1	Q.14	1	Q.15	4
Q.16	1	Q.17	1	Q.18	1	Q.19	3	Q.20	2
Q.21	4	Q.22	1	Q.23	1	Q.24	3	Q.25	3

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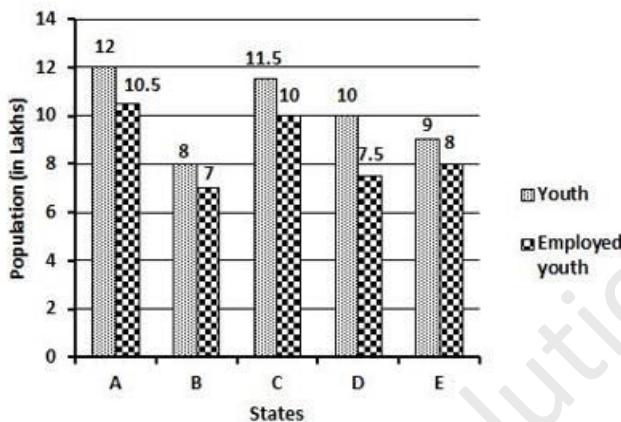


**21/04/2022-> (12:30 PM - 1:30 PM)**

**Q.1)-**

The following bar graph shows the total number of youth (in lakhs) and the number of employed youth (in lakhs) in 5 states A, B, C, D and E.

How many youth (in lakhs) are unemployed in states B and D taken together?



1. 4.25    2. 3.25    3. 4.5    4. 3.5

**Q.2)-**

A person's salary was increased by 50% and subsequently decreased by 50%. How much percentage does he lose or gain?

1. Loss of 25%    2. Gain of 50%    3. Loss of 30%    4. Gain of 20%

**Q.3)-**

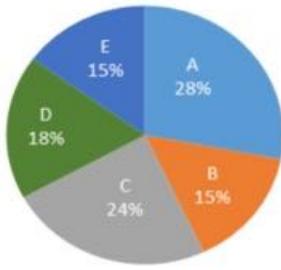
If a nine-digit number  $485x3678y$  is divisible by 72, then for the smallest value of x, the value of  $(2y - 3x)$  is:

1. 6    2. 8    3. 11    4. 9

**Q.4)-**

The given pie chart shows the percentage of students in five schools and the table shows the ratio of boys and girls in each school.

Study the pie chart and table and answer the question that follows.



The below table shows the ratio of girls and boys in the given five schools.

School	Girls : Boys
A	3 : 4
B	2 : 3
C	5 : 3
D	1 : 2
E	4 : 1

The number of girls in school D is what percentage less than the number of boys in school B (correct to the nearest integer)?

1. 33%    2. 19%    3. 35%    4. 27%

**Q.5)-**

In the month of March, Dalip earned on an average ₹501 per day. For the first 18 days, his average earning was ₹495 and, for the last 15 days, his average earning was ₹505. On 18<sup>th</sup> March, he earned ₹50 more than that earned on 17<sup>th</sup> March. How much (in ₹) did he earn on 18<sup>th</sup> March?

1. 498    2. 500    3. 501    4. 502

**Q.6)-**

A solid cone of radius 7 cm and height 7 cm was melted along with two solid spheres of radius 7 cm each to form a solid cylinder of radius 7 cm. What is the curved surface area (in cm<sup>2</sup>) of the cylinder?

(Use  $\pi = \frac{22}{7}$ )

1. 880    2. 482    3. 2196    4. 924

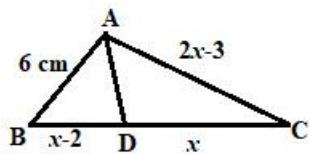
**Q.7)-**

Simplify  $\left[ \left( 5\frac{1}{4} \div 3\frac{1}{2} \times \frac{5}{12} \right) - \frac{3}{16} \right] \div \left( 3\frac{4}{7} \div \frac{5}{14} \text{ of } 6\frac{2}{3} \right) \text{ of } 1\frac{1}{3}$ .

1.  $\frac{17}{32}$     2.  $\frac{3}{32}$     3.  $\frac{5}{32}$     4.  $\frac{7}{32}$

**Q.8)-**

In the following figure, AD bisects angle BAC. Find the length (in cm) of BD.



1. 4    2. 6    3. 9    4. 5

**Q.9)-**

In  $\Delta ABC$ , the perpendiculars drawn from A, B and C meet the opposite sides at points D, E and F, respectively. AD, BE and CF intersect at point P. If  $\angle EPD = 110^\circ$  and the bisectors of  $\angle A$  and  $\angle B$  meet at point Q, then  $\angle AQB = ?$

1.  $135^\circ$     2.  $110^\circ$     3.  $125^\circ$     4.  $115^\circ$

**Q.10)-**

Two trains are running on parallel tracks in the same direction at the speed of 80 km/h and 90 km/h, respectively. The trains crossed each other in 3 minutes. If the length of one train is 230 m, then what is the length (in m) of the other train?

1. 270    2. 300    3. 250    4. 230

**Q.11)-**

A and B entered into a partnership with investments in the ratio 3 : 5. After a few months, A withdrew and collected back his money. At the end of the year, they received profit in the ratio 2 : 5. After how many months did A withdraw?

1. 8    2. 6    3. 9    4. 7

**Q.12)-**

A tyre has two punctures. The first puncture alone would have made the tyre flat in 45 minutes, and the second puncture alone would have done it in 90 minutes. If air leaks out at a constant rate, then how long (in minutes) does it take for both the punctures together to make the tyre flat?

1. 40    2. 30    3. 45    4. 15

**Q.13)-**

AB and CD are two chords in a circle with centre O and AD is the diameter. When produced, AB and CD meet at the point P. If  $\angle DAP = 27^\circ$ ,  $\angle APD = 35^\circ$ , then what is the measure (in degrees) of  $\angle DBC$ ?

1. 32    2. 30    3. 28    4. 26

**Q.14)-**

If  $a^2 + b^2 = 65$  and  $ab = 8$ ,  $a > b > 0$ , then find the value of  $a^2 - b^2$ .

1. 65    2. 60    3. 72    4. 63

**Q.15)-**

If  $\frac{\sin^2 \theta - 3\sin \theta + 2}{\cos^2 \theta} = 1$ , where  $0^\circ < \theta < 90^\circ$ , then what is the value of  $(\cos 2\theta - \sin 3\theta + \operatorname{cosec} 2\theta)$ ?

1.  $\frac{3 + 4\sqrt{3}}{6}$     2.  $\frac{-3 - 4\sqrt{3}}{6}$     3.  $\frac{3 - 4\sqrt{3}}{6}$     4.  $\frac{-3 + 4\sqrt{3}}{6}$

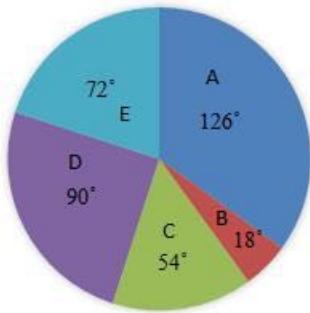
**Q.16)-**

If  $x^4 - 79x^2 + 1 = 0$ , then a value of  $x + x^{-1}$  can be:

1. 9    2. 7    3. 5    4. 8

**Q.17)-**

The breakup of the total number of employees of a company working in different offices (A to E), in degrees, is given in the pie chart. Total number of employees = 2400.



If the percentage of male employees in office C is 20% and that of female employees in E is 40%, then what is the ratio of the numbers of female employees in E to that of female employees in C?

1. 2 : 3    2. 3 : 8    3. 5 : 4    4. 3 : 2

**Q.18)-**

The selling price of a mobile phone is ₹59,620 and it was sold at 8.4% profit. The cost price (in ₹) of the mobile phone is:

1. 52,000    2. 55,000    3. 45,000    4. 50,000

**Q.19)-**

Study the graph and answer the question that follows.



What is the ratio of the total number of workers whose daily wages are less than ₹450 to the total number of workers whose daily wages are ₹650 and above?

1. 5 : 7    2. 3 : 5    3. 1 : 4    4. 6 : 7

**Q.20)-**

A shopkeeper marks an article  $x\%$  above the cost price and sells it by allowing 30% discount on the marked price. If there is a loss of 4.8%, then what is the value of  $x$ ?

1. 36    2. 30    3. 40    4. 35

**Q.21)-**

What is the compound interest (in ₹) on a sum of ₹62,500 for 2 years at 12% p.a., if the interest is compounded 8-monthly?

1. 18,342    2. 13,428    3. 16,548    4. 16,232

**Q.22)-**

A ladder 18 m long rests against a wall so that the angle between the ladder and the wall is  $30^\circ$ . How far (in m) is the base of the ladder from the wall?

1.  $18\sqrt{3}$     2. 9    3.  $9\sqrt{3}$     4. 18

**Q.23)-**

What is the sum of the numbers between 400 and 500 such that when they are divided by 6, 12 and 16, it leaves no remainder?

1. 1024    2. 960    3. 912    4. 480

**Q.24)-**

AB is the diameter of a circle with centre O. C and D are two points on the circle on either side of AB, such that  $\angle CAB = 52^\circ$  and  $\angle ABD = 47^\circ$ . What is the difference (in degrees) between the measures of  $\angle CAD$  and  $\angle CBD$ ?

1. 10    2. 20    3. 25    4. 15

Q.25)-

If  $\operatorname{cosec} A = \sec B$ , where A and B are acute angles, then what is the value of  $(A + B)$ ?

1.  $135^\circ$     2.  $90^\circ$     3.  $0^\circ$     4.  $45^\circ$

Answer key

Q.1	4	Q.2	1	Q.3	2	Q.4	1	Q.5	4
Q.6	4	Q.7	4	Q.8	1	Q.9	3	Q.10	1
Q.11	1	Q.12	2	Q.13	3	Q.14	4	Q.15	4
Q.16	1	Q.17	1	Q.18	2	Q.19	4	Q.20	1
Q.21	4	Q.22	2	Q.23	3	Q.24	1	Q.25	2

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(Selected as GST Inspector)

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21/04/2022-> (4:00 PM - 5:00 PM)

**Q.1)-**

Find the value of the following expression:

$$-5 + 5 + 625 \div 5 \times 5$$

1. 25    2. 625    3. 605    4. 121

**Q.2)-**

If  $\left(a + \frac{1}{a} + 3\right)^2 = 16$ , where  $a$  is a non-zero real number, then find the value of  $a^2 + \frac{1}{a^2}$ .

1. 49    2. 7    3. 3    4. 47

**Q.3)-**

A 22.5 m high tent is in the shape of a frustum of a cone surmounted by a hemisphere. If the diameters of the upper and the lower circular ends of the frustum are 21 m and 39 m, respectively, then find the area of the cloth (in  $m^2$ ) used to make the tent (ignoring the wastage).

(Use  $\pi = \frac{22}{7}$ )

1.  $1635\frac{6}{7}$     2.  $787\frac{2}{7}$     3.  $2800\frac{2}{7}$     4.  $2107\frac{2}{7}$

**Q.4)-**

If a 10-digit number 54726x79y6 is divisible by 72, then what is the value of  $5x - 3y$ , for the least value of  $y$ ?

1. 23    2. 16    3. 19    4. 17

**Q.5)-**

Ras Bihari, a plumber, earned on an average ₹925 per day in the month of January. He earned on an average ₹881 per day during the first 20 days and ₹915 per day during the last 20 days. What was his average income (in ₹) per day from 12<sup>th</sup> January to 20<sup>th</sup> January?

1. 875    2. 792    3. 805    4. 800

**Q.6)-**

In a triangle ABC, points P and Q are on AB and AC, respectively, such that  $AP = 4$  cm,  $PB = 6$  cm,  $AQ = 5$  cm and  $QC = 7.5$  cm. If  $PQ = 6$  cm, then find BC (in cm).

1. 9    2. 10    3. 15    4. 12

**Q.7)-**

If  $4x - 3y = 12$  and  $xy = 5$ , then find the value of  $\frac{16x^2 + 9y^2}{8}$ .

1. 44    2. 33    3. 18    4. 3

**Q.8)-**

Monthly expenditure of a family on different heads is shown in the following pie chart. The family earns ₹1,08,000 every month.

What is the amount spent on Rent every month (in ₹)?

**Expenditure on different Heads**

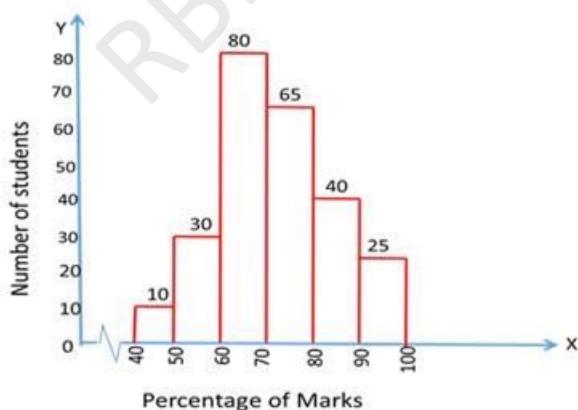


1. 21,000    2. 15,000    3. 18,000    4. 17,500

**Q.9)-**

Study the histogram and answer the question given below.

The graph represents the number of students obtaining a percentage of marks in class X Board examination in 2018 in a school.



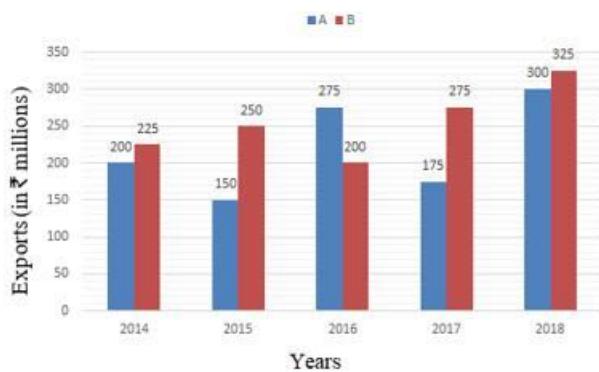
The number of students who have secured less than 60% marks is what per cent less than the number of students who have secured 80% marks and above?

- 1.** 37.4%    **2.** 38.5%    **3.** 29.7%    **4.** 33.5%

**Q.10)-**

The following bar graph shows exports of cars of type A and B (in ₹ millions) from 2014 to 2018. Study the graph and answer the question that follows.

Exports of Cars of Type A and B (in ₹ millions) during 2014 to 2018.



The total exports of cars of type A in 2014 to 2018 is what per cent more than the total exports of cars of type B in 2015 to 2017? (Correct to one decimal place)

- 1.** 44.3%    **2.** 51.7%    **3.** 41.3%    **4.** 50.4%

**Q.11)-**

Ankita's weight is 20% less than that of her grandmother. The grandmother weighs 26 kg less than grandmother's husband, whose weight is 81 kg. If Ankita's brother is 8 kg heavier than Ankita, then what is the weight (in kg) of Ankita's brother?

- 1.** 60    **2.** 36    **3.** 52    **4.** 19

**Q.12)-**

A 240-m long train crosses a 360-m long tunnel in 30 seconds. What is the speed of the train (in km/h)?

- 1.** 60    **2.** 28.8    **3.** 72    **4.** 43.2

**Q.13)-**

LCM and HCF of two numbers are 90 and 15, respectively. If the sum of the two numbers is 75, then find the greater number.

- 1.** 60    **2.** 45    **3.** 75    **4.** 90

**Q.14)-**

In a circle with centre O, PQ and QR are two chords such that  $\angle PQR = 118^\circ$ . What is the measure of  $\angle OPR$ ?

1.  $31^\circ$    2.  $28^\circ$    3.  $36^\circ$    4.  $26^\circ$

**Q.15)-**

The length of the shadow of a vertical tower on level ground increases by 8.4 cm when the altitude of the sun changes from  $45^\circ$  to  $30^\circ$ . What is the height of the tower (in m)?

1.  $4.2(\sqrt{3} + 3)$    2.  $4.2(\sqrt{3} - 1)$    3.  $4.2(\sqrt{3} + 1)$    4.  $8.4(\sqrt{3} + 3)$

**Q.16)-**

AB is a chord of a circle with centre O. C is a point on the circle in the minor sector. If  $\angle ABO = 50^\circ$ , then what is the degree measure of  $\angle ACB$ ?

1.  $140^\circ$    2.  $100^\circ$    3.  $130^\circ$    4.  $110^\circ$

**Q.17)-**

A reduction of 15% in the price of wheat enables a housewife to buy 6 kg more for ₹2,720. The reduced price of wheat per kg (in ₹) is:

1. 68   2. 65   3. 70   4. 75

**Q.18)-**

If 35 men can finish a work in 6 days, then in how many days can 7 men do half of the same work?

1. 17   2. 30   3. 15   4. 60

**Q.19)-**

A vegetable vendor sold 1 kg of potatoes for ₹25 and earned 25% profit. In the evening, he started selling potatoes with only 10% profit. At what cost (in ₹) per kg did he sell the potatoes in the evening?

1. 20   2. 22   3. 24   4. 21

**Q.20)-**

A borrows a sum of ₹90,000 for 4 years at 5% simple interest. He lends it to B at 7% for 4 years at simple interest. What is his gain (in ₹)?

1. 8,000   2. 7,200   3. 7,500   4. 9,000

**Q.21)-**

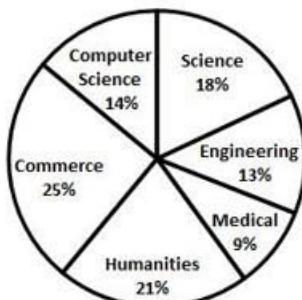
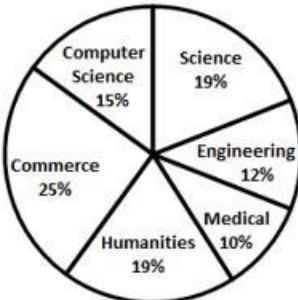
If  $\tan A = \frac{2.4}{0.7}$ , what is the value of  $(50 \cos A + 24 \cot A)$ ?

1. 21   2. 34   3. 26   4. 37

**Q.22)-**

The following pie charts show the number of students studying in different departments of an institute during the academic years 2019 and 2020. The total number of students was 2000 and 2400, respectively, in academic years 2019 and 2020.

What is the ratio of Commerce and Computer Science students taken together in 2019 to Engineering and Medical students taken together in 2020?

**Academic year 2019****Academic year 2020**

1. 22 : 39    2. 39 : 22    3. 44 : 65    4. 65 : 44

**Q.23)-**

The perimeters of two similar  $\triangle ABC$  and  $\triangle PQR$  are  $48.4\text{ cm}$  and  $12.1\text{ cm}$ , respectively. What is the ratio of the areas of  $\triangle ABC$  and  $\triangle PQR$ ?

1. 4 : 1    2. 16 : 1    3. 1 : 16    4. 1 : 4

**Q.24)-**

If  $\sec^2 \alpha + 4 \cos^2 \alpha = 4$  and  $0^\circ \leq \alpha \leq 90^\circ$ , then find the value of  $\alpha$ .

1.  $30^\circ$     2.  $60^\circ$     3.  $0^\circ$     4.  $45^\circ$

**Q.25)-**

Three partners X, Y and Z started their business by investing ₹40,000, ₹38,000 and ₹30,000, respectively. After 6 months, X and Z made additional investments of ₹20,000 and ₹15,000 respectively, whereas Y withdrew ₹8,000. Find the share of Y (in ₹) in the total profit of ₹38,880 made at the end of the year.

1. 10,950    2. 10,200    3. 9,800    4. 10,880

**Answer key**

Q.1	2	Q.2	4	Q.3	4	Q.4	2	Q.5	3
Q.6	3	Q.7	2	Q.8	3	Q.9	2	Q.10	2
Q.11	3	Q.12	3	Q.13	2	Q.14	2	Q.15	3
Q.16	1	Q.17	1	Q.18	3	Q.19	2	Q.20	2
Q.21	1	Q.22	4	Q.23	2	Q.24	4	Q.25	4

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