Aptitude Questions

1. The price of commodity *X* increases by 40 paise every year, while the price of commodity *Y*increases by 15 paise every year. If in 2001, the price of commodity *X* was Rs. 4.20 and that of*Y* was Rs. 6.30, in which year commodity *X* will cost 40 paise more than the commodity *Y* ?

   A. 2010 B. 2011

   C. 2012 D. 2013

   Answer: Option **B**

   Explanation:

   Suppose commodity *X* will cost 40 paise more than *Y* after *z* years.

   Then, $(4.20 + 0.40z) - (6.30 + 0.15z) = 0.40$

   $\Rightarrow 0.25z = 0.40 + 2.10$

   $\Rightarrow z = \frac{2.50}{0.25} = \frac{250}{25} = 10.$

   $\therefore$ *X* will cost 40 paise more than *Y* 10 years after 2001 *i.e.,* 2011.

2. There are two examinations rooms A and B. If 10 students are sent from A to B, then the number of students in each room is the same. If 20 candidates are sent from B to A, then the number of students in A is double the number of students in B. The number of students in room A is:

   A. 20 B. 80

   C. 100 D. 200

   Answer: Option **C**

   Explanation:

   Let the number of students in rooms A and B be *x* and *y* respectively.

   Then, $x - 10 = y + 10 \Rightarrow x - y = 20$ .... (i)

   and $x + 20 = 2(y - 20) \Rightarrow x - 2y = -60$ .... (ii)

Solving (i) and (ii) we get: $x = 100$, $y = 80$.

$\therefore$ The required answer A = 100.

3. If $a - b = 3$ and $a^2 + b^2 = 29$, find the value of ab.

A. 10 B. 12

C. 15 D. 18

Answer: Option **A**

Explanation:

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

$= 29 - 9 = 20$

$\Rightarrow ab = 10.$

4. The product of two numbers is 120 and the sum of their squares is 289. The sum of the number is:

A. 20 B. 23

C. 169 D. None of these

Answer: Option **B**

Explanation:

Let the numbers be x and y.

Then, $xy = 120$ and $x^2 + y^2 = 289$.

$\therefore$ $(x + y)^2 = x^2 + y^2 + 2xy = 289 + (2 \times 120) = 529$

$\therefore$ $x + y = 529 = 23.$

5. The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?

A. 3 : 3 : 10 B. 10 : 11 : 20

C. 23 : 33 : 60 D. Cannot be determined

Answer: Option **C**

Explanation:

Let A = 2*k*, B = 3*k* and C = 5*k*.

A's new salary = $\frac{115}{100}$ of $2k = \left(\frac{115}{100} \times 2k\right) = \frac{23k}{10}$

B's new salary = $\frac{110}{100}$ of $3k = \left(\frac{110}{100} \times 3k\right) = \frac{33k}{10}$

C's new salary = $\frac{120}{100}$ of $5k = \left(\frac{120}{100} \times 5k\right) = 6k$

$\therefore$ New ratio $\left(\frac{23k}{10} : \frac{33k}{10} : 6k\right) = 23 : 33 : 60$

---

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

A. Rs. 330 B. Rs. 360

C. Rs. 380 D. Rs. 430

Answer: Option **A**

Explanation:

$A : B = \left[4x \times 3 + \left(4x - \frac{1}{4} \times 4x\right) \times 7\right] : \left[5x \times 3 + \left(5x - \frac{1}{5} \times 5x\right) \times 7\right]$

$= (12x + 21x) : (15x + 28x)$

$= 33x : 43x$

$= 33 : 43.$

$\therefore$ A's share = Rs. $\left(760 \times \frac{33}{76}\right)$ = Rs. 330.

Direction (for Q.No. 7):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

7. What is R's share of profit in a joit venture?

I. Q started business investing Rs. 80,000.

II. R joined him after 3 months.

III. P joined after 4 months with a capital of Rs. 1,20,000 and got Rs. 6000 as his share profit.

A. All I, II and III

B. I and III only

C. II and III only

D. Even with all I, II and III, the answer cannot be arrived at

E. None of these

Answer: Option **D**

Explanation:

From I, II and III, we get P : Q : R = (120000 x 8) : (80000 x 12) : (*x* x 9).

Since R's investment is not given, the above ratio cannot be give.

∴ Given data is inadequate.

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

A. Rs. 375 B. Rs. 400

C. Rs. 600 D. Rs. 800

Answer: Option **B**

Explanation:

C's 1 day's work = $\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{3} - \frac{7}{24} = \frac{1}{24}$.

A's wages : B's wages : C's wages = $\frac{1}{6} : \frac{1}{8} : \frac{1}{24}$ = 4 : 3 : 1.

∴ C's share (for 3 days) = Rs. $\left(3 \times \frac{1}{24} \times 3200\right)$ = Rs. 400.

9. A goods train runs at the speed of 72 kmph and crosses a 250 m long platform in 26 seconds. What is the length of the goods train?

A. 230 m B. 240 m

C. 260 m D. 270 m

Answer: Option **D**

Explanation:

Speed = $\left(72 \times \frac{5}{18}\right)$ m/sec = 20 m/sec.

Time = 26 sec.

Let the length of the train be *x* metres.

Then, $\frac{x + 250}{26} = 20$

⇒ $x + 250 = 520$

⇒ $x = 270$.

10. If $\log_{10} 2 = 0.3010$, then $\log_2 10$ is equal to:

A. $\frac{699}{\quad}$ B. $\frac{1000}{\quad}$

301 301

C. 0.3010 D. 0.6990

Answer: Option **B**

Explanation:

$\log_2 10 = \frac{1}{\log_{10} 2} = \frac{1}{0.3010} = \frac{10000}{3010} = \frac{1000}{301}$.

11. An error 2% in excess is made while measuring the side of a square. The percentage of error in the calculated area of the square is:

A. 2% B. 2.02%

C. 4% D. 4.04%

Answer: Option **D**

Explanation:

100 cm is read as 102 cm.

$\therefore$ $A_1 = (100 \times 100)\ cm^2$ and $A_2\ (102 \times 102)\ cm^2$.

$(A_2 - A_1) = [(102)^2 - (100)^2]$

$= (102 + 100) \times (102 - 100)$

$= 404\ cm^2$.

$\therefore$ Percentage error $= \left(\frac{404}{100 \times 100} \times 100\right)\% = 4.04\%$

12. In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is:

A. 75 cu. m B. 750 cu. m

C. 7500 cu. m D. 75000 cu. m

Answer: Option **B**

Explanation:

1 hectare = 10,000 m^2

So, Area = (1.5 x 10000) m^2 = 15000 m^2.

Depth = $\frac{5}{100}$m = $\frac{1}{20}$m.

$\therefore$ Volume = (Area x Depth) = $\left(15000 \times \frac{1}{20}\right)m^3$ = 750 m^3.

Direction (for Q.No. 13):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

13. What is the volume of a cube?

I. The area of each face of the cube is 64 square metres.

II. The length of one side of the cube is 8 metres.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

Let each edge be *a* metres. Then,

I. $a^2 = 64 \Rightarrow a = 8$ m $\Rightarrow$ Volume = $(8 \times 8 \times 8)$ $m^3 = 512$ m^3.

Thus, I alone gives the answer.

II. $a = 8$ m $\Rightarrow$ Volume = $(8 \times 8 \times 8)$ $m^3 = 512$ m^3.

Thus, II alone gives the answer.

$\therefore$ Correct answer is (C).

14. The reflex angle between the hands of a clock at 10.25 is:

A. 180^o B. $192\frac{1^o}{2}$

C. 195^o D. $197\frac{1^o}{2}$

Answer: Option **D**

Explanation:

Angle traced by hour hand in $\frac{125}{12}$ hrs $= \left(\frac{360}{12} \times \frac{125}{12}\right)^o = 312\frac{1^o}{2}$.

Angle traced by minute hand in 25 min $= \left(\frac{360}{60} \times 25\right)^o = 150^o$.

$\therefore$ Reflex angle $= 360^o - \left(312\frac{1}{2} - 150\right)^o = 360^o - 162\frac{1^o}{2} = 197\frac{1}{2}$.

15. At what time between 4 and 5 o'clock will the hands of a watch point in opposite directions?

A. 45 min. past 4 B. 40 min. past 4

C. $50\frac{4}{11}$ min. past 4

D. $54\frac{6}{11}$ min. past 4

Answer: Option **D**

Explanation:

At 4 o'clock, the hands of the watch are 20 min. spaces apart.

To be in opposite directions, they must be 30 min. spaces apart.

∴ Minute hand will have to gain 50 min. spaces.

55 min. spaces are gained in 60 min.

50 min. spaces are gained in $\left(\frac{60}{55} \times 50\right)$ min. or $54\frac{6}{11}$ min.

∴ Required time = $54\frac{6}{11}$ min. past 4.

16. A 12% stock yielding 10% is quoted at:

A. Rs. 83.33

B. Rs. 110

C. Rs. 112

D. Rs. 120

Answer: Option **D**

Explanation:

To earn Rs. 10, money invested = Rs. 100.

To earn Rs. 12, money invested = Rs. $\left(\frac{100}{10} \times 12\right)$ = Rs. 120.

∴ Market value of Rs. 100 stock = Rs. 120.

17. In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

A. 32

B. 48

C. 36 D. 60

E. 120

Answer: Option **C**

Explanation:

There are 6 letters in the given word, out of which there are 3 vowels and 3 consonants.

Let us mark these positions as under:

(1) (2) (3) (4) (5) (6)

Now, 3 vowels can be placed at any of the three places out 4, marked 1, 3, 5.

Number of ways of arranging the vowels = ${}^3P_3 = 3! = 6$.

Also, the 3 consonants can be arranged at the remaining 3 positions.

Number of ways of these arrangements = ${}^3P_3 = 3! = 6$.

Total number of ways = (6 x 6) = 36.

18. Two dice are tossed. The probability that the total score is a prime number is:

A. $\frac{1}{6}$ B. $\frac{5}{12}$

C. $\frac{1}{2}$ D. $\frac{7}{9}$

Answer: Option **B**

Explanation:

Clearly, $n(S) = (6 \times 6) = 36$.

Let E = Event that the sum is a prime number.

Then E = { (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), (4, 3), (5, 2), (5, 6), (6, 1), (6, 5) }

$\therefore$ $n(E) = 15$.

$\therefore$ $P(E) = \frac{n(E)}{} = \frac{15}{} = \frac{5}{}$.

$n(S)$ 36 12

19. An observer 1.6 m tall is 203 away from a tower. The angle of elevation from his eye to the top of the tower is 30º. The heights of the tower is:

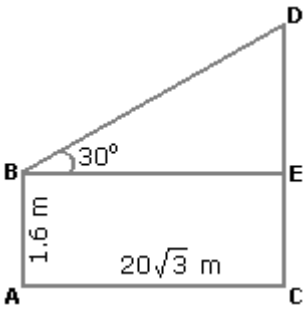
A. 21.6 m B. 23.2 m

C. 24.72 m D. None of these

Answer: Option **A**

Explanation:

Let AB be the observer and CD be the tower.



Draw BE ⊥ CD.

Then, CE = AB = 1.6 m,

BE = AC = 203 m.

$$\frac{DE}{BE} = \tan 30^\circ = \frac{1}{\sqrt{3}}$$

$$\Rightarrow DE = \frac{203}{3}\text{m} = 20 \text{ m}.$$

$\therefore$ CD = CE + DE = (1.6 + 20) m = 21.6 m.

Direction (for Q.No. 20):

Find the odd man out.

20. 1, 4, 9, 16, 23, 25, 36

A. 9 B. 23

C. 25 D. 36

Answer: Option **B**

Explanation:

Each of the numbers except 23, is perfect square.

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

A. 4 B. 5

C. 6 D. 8

Answer: Option **A**

Explanation:

N = H.C.F. of (4665 - 1305), (6905 - 4665) and (6905 - 1305)

= H.C.F. of 3360, 2240 and 5600 = 1120.

Sum of digits in N = (1 + 1 + 2 + 0) = 4

22. The average weight of 8 person's increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?

A. 76 kg B. 76.5 kg

C. 85 kg D. Data inadequate

E. None of these

Answer: Option **C**

Explanation:

Total weight increased = (8 x 2.5) kg = 20 kg.

Weight of new person = (65 + 20) kg = 85 kg.

23. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits

of the number if the ratio between the digits of the number is 1 : 2 ?

A. 4 B. 8

C. 16 D. None of these

Answer: Option **B**

Explanation:

Since the number is greater than the number obtained on reversing the digits, so the ten's digit is greater than the unit's digit.

Let ten's and unit's digits be $2x$ and x respectively.

Then, $(10 \times 2x + x) - (10x + 2x) = 36$

$\Rightarrow 9x = 36$

$\Rightarrow x = 4.$

$\therefore$ Required difference = $(2x + x) - (2x - x) = 2x = 8.$

24. The sum of the present ages of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be:

A. 12 years B. 14 years

C. 18 years D. 20 years

Answer: Option **D**

Explanation:

Let the present ages of son and father be x and $(60 - x)$ years respectively.

Then, $(60 - x) - 6 = 5(x - 6)$

$\Rightarrow 54 - x = 5x - 30$

$\Rightarrow 6x = 84$

$\Rightarrow x = 14.$

$\therefore$ Son's age after 6 years = $(x + 6) = 20$ years..

25. Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?

A. 57%

B. 60%

C. 65%

D. 90%

Answer: Option **A**

Explanation:

Total number of votes polled = (1136 + 7636 + 11628) = 20400.

$\therefore$ Required percentage = $\left(\frac{11628}{20400} \times 100\right)\% = 57\%$.

26. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

A. 30%

B. 70%

C. 100%

D. 250%

Answer: Option **B**

Explanation:

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

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

New S.P. = Rs. 420.

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

$\therefore$ Required percentage = $\left(\frac{295}{420} \times 100\right)\% = \frac{1475}{21}\% = 70\%$ (approximately).

27. If the cost of *x* metres of wire is d rupees, then what is the cost of *y* metres of wire at the same rate?

A. Rs. $\left(\frac{xy}{d}\right)$

B. Rs. (*xd*)

C. Rs. (*yd*)

D. Rs. $\left(yd\right)$

x

Answer: Option **D**

Explanation:

Cost of x metres = Rs. d.

Cost of 1 metre = Rs. $\left(\frac{d}{x}\right)$

Cost of y metres = Rs. $\left(\frac{d}{x} \cdot y\right)$ = Rs. $\left(\frac{yd}{x}\right)$.

28. A flagstaff 17.5 m high casts a shadow of length 40.25 m. The height of the building, which casts a shadow of length 28.75 m under similar conditions will be:

A. 10 m

B. 12.5 m

C. 17.5 m

D. 21.25 m

Answer: Option **B**

Explanation:

Let the height of the building x metres.

Less lengthy shadow, Less in the height (Direct Proportion)

$\therefore$ 40.25 : 28.75 **::** 17.5 : x $\Leftrightarrow$ 40.25 x x = 28.75 x 17.5

$$x = \frac{28.75 \times 17.5}{40.25}$$

$\Rightarrow x = 12.5$

Direction (for Q.No. 29):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

29. In how many days can 10 women finish a work?

I. 10 men can complete the work in 6 days.

II. 10 men and 10 women together can complete the work in $3\frac{3}{7}$ days

III. If 10 men work for 3 days and thereafter 10 women replace them, the remaining work in completed in 4 days.

A. Any two of the three

B. I and II only

C. II and III only

D. I and III only

E. None of these

Answer: Option **A**

Explanation:

I. (10 x 6) men can complete the work in 1 day.

$\Rightarrow$ 1 man's 1 day's work = $\frac{1}{60}$

II. $\left(10 \times \frac{24}{7}\right)$ men + $\left(10 \times \frac{24}{7}\right)$ women can complete the work in 1 day.

$\Rightarrow \left(\frac{240}{7}\right)$ men's 1 day work + $\left(\frac{240}{7}\right)$ women's 1 day work = 1.

$\Rightarrow \left(\frac{240}{7} \times \frac{1}{60}\right) + \left(\frac{240}{7}\right)$ women's 1 day's work = 1.

$\Rightarrow \left(\frac{240}{\quad}\right)$ women's 1 day's work = $\left(1 - \frac{4}{\quad}\right) = 3$

7 7 7

$\Rightarrow$ 10 women's 1 day's work = $\left(\frac{3}{7} \times \frac{7}{240} \times 10\right) = \frac{1}{8}$

So, 10 women can finish the work in 8 days.

III. (10 men's work for 3 days) + (10 women's work for 4 days) = 1

$\Rightarrow$ (10 x 3) men's 1 day's work + (10 x 4) women's 1 day's work = 1

$\Rightarrow$ 30 men's 1 day's work + 40 women's 1 day's work = 1

Thus, I and III will give us the answer.

And, II and III will give us the answer.

$\therefore$ Correct answer is (A).

Direction (for Q.No. 30):

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

30. 8 men and 14 women are working together in a field. After working for 3 days, 5 men and 8 women leave the work. How many more days will be required to complete the work?

I. 19 men and 12 women together can complete the work in 18 days.

II. 16 men can complete two-third of the work in 16 days.

III. In 1 day, the work done by three men in equal to the work done by four women.

A. I only

B. II only

C. III only

D. I or II or III

E. II or III only

Answer: Option **D**

Explanation:

Clearly, I only gives the answer.

Similarly, II only gives the answer.

And, III only gives the answer.

∴ Correct answer is (D).

31. A towel, when bleached, was found to have lost 20% of its length and 10% of its breadth. The percentage of decrease in area is:

A. 10% B. 10.08%

C. 20% D. 28%

Answer: Option **D**

Explanation:

Let original length = x and original breadth = y.

$$\text{Decrease in area} = xy - \left(\frac{80}{100}x \times \frac{90}{100}y\right)$$

$$= \left(xy - \frac{18}{25}xy\right)$$

$$= \frac{7}{25}xy.$$

$$\therefore \text{Decrease \%} = \left(\frac{7}{25}xy \times \frac{1}{xy} \times 100\right)\% = 28\%.$$

Direction (for Q.No. 32):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

32. What is the capacity of a cylindrical tank?

I. Radius of the base is half of its height which is 28 metres.

II. Area of the base is 616 sq. metres and its height is 28 metres.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

I gives, $h = 28$ m and $r = 14$.

$\therefore$ Capacity $= \pi r^2 h$, which can be obtained.

Thus, I alone gives the answer.

II gives, $\pi r^2 = 616\ m^2$ and $h = 28$ m.

∴ Capacity = (πr^2 x h) = (616 x 28) m^3.

Thus, II alone gives the answer.

∴ Correct answer is (C).

33. In 100 m race, A covers the distance in 36 seconds and B in 45 seconds. In this race A beats B by:

A. 20 m B. 25 m

C. 22.5 m D. 9 m

Answer: Option **A**

Explanation:

Distance covered by B in 9 sec. = $\left(\frac{100}{45} \text{ x } 9\right)_m$ = 20 m.

∴ A beats B by 20 metres.

34. A 6% stock yields 8%. The market value of the stock is:

A. Rs. 48 B. Rs. 75

C. Rs. 96 D. Rs. 133.33

Answer: Option **B**

Explanation:

For an income of Rs. 8, investment = Rs. 100.

For an income of Rs. 6, investment = Rs. $\left(\frac{100}{8} \text{ x } 6\right)$ = Rs. 75.

∴ Market value of Rs. 100 stock = Rs. 75.

35. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?

A. 32 B. 48

C. 64 D. 96

E. None of these

Answer: Option **C**

Explanation:

We may have(1 black and 2 non-black) or (2 black and 1 non-black) or (3 black).

∴ Required number of ways $= ({}^3C_1 \times {}^6C_2) + ({}^3C_2 \times {}^6C_1) + ({}^3C_3)$

$$= \left(3 \times \frac{6 \times 5}{2 \times 1}\right) + \left(\frac{3 \times 2}{2 \times 1} \times 6\right) + 1$$

$$= (45 + 18 + 1)$$

$$= 64.$$

36. If Rs. 10 be allowed as true discount on a bill of Rs. 110 due at the end of a certain time, then the discount allowed on the same sum due at the end of double the time is:

A. Rs. 20 B. Rs. 21.81

C. Rs. 22 D. Rs. 18.33

Answer: Option **D**

Explanation:

S.I. on Rs. (110 - 10) for a certain time = Rs. 10.

S.I. on Rs. 100 for double the time = Rs. 20.

T.D. on Rs. 120 = Rs. (120 - 100) = Rs. 20.

T.D. on Rs. 110 = Rs. $\left(\frac{20}{120} \times 110\right)$ = Rs. 18.33

Direction (for Q.Nos. 37 - 38):

Find the odd man out.

37. 10, 14, 16, 18, 21, 24, 26

A. 26 B. 24

C. 21 D. 18

Answer: Option **C**

Explanation:

Each of the numbers except 21 is an even number.

38. 835, 734, 642, 751, 853, 981, 532

A. 751 B. 853

C. 981 D. 532

Answer: Option **A**

Explanation:

In each number except 751, the difference of third and first digit is the middle one.

Direction (for Q.No. 39):

Find out the wrong number in the given sequence of numbers.

39. 1, 2, 6, 15, 31, 56, 91

A. 31 B. 91

C. 56 D. 15

Answer: Option **B**

Explanation:

1, $1 + 1^2 = 2$, $2 + 2^2 = 6$, $6 + 3^2 = 15$, $15 + 4^2 = 31$, $31 + 5^2 = 56$, $56 + 6^2 = 92$

Last number of given series must be 92 not 91.

Direction (for Q.No. 40):

Insert the missing number.

40. 7, 26, 63, 124, 215, 342, (....)

A. 481 B. 511

C. 391 D. 421

Answer: Option **B**

Explanation:

Numbers are $(2^3 - 1)$, $(3^3 - 1)$, $(4^3 - 1)$, $(5^3 - 1)$, $(6^3 - 1)$, $(7^3 - 1)$ etc.

So, the next number is $(8^3 - 1) = (512 - 1) = 511$.

41. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is:

A. 1 : 3 B. 3 : 2

C. 3 : 4 D. None of these

Answer: Option **B**

Explanation:

Let the speeds of the two trains be x m/sec and y m/sec respectively.

Then, length of the first train = $27x$ metres,

and length of the second train = $17y$ metres.

$$\therefore \frac{27x + 17y}{x + y} = 23$$

$$\Rightarrow 27x + 17y = 23x + 23y$$

$$\Rightarrow 4x = 6y$$

$$\Rightarrow \frac{x}{y} = \frac{3}{2}.$$

42. A train overtakes two persons walking along a railway track. The first one walks at 4.5

km/hr. The other one walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train if both the persons are walking in the same direction as the train?

A. 66 km/hr

B. 72 km/hr

C. 78 km/hr

D. 81 km/hr

Answer: Option **D**

Explanation:

4.5 km/hr = $\left(4.5 \times \frac{5}{18}\right)$ m/sec = $\frac{5}{4}$ m/sec = 1.25 m/sec, and

5.4 km/hr = $\left(5.4 \times \frac{5}{18}\right)$ m/sec = $\frac{3}{2}$ m/sec = 1.5 m/sec.

Let the speed of the train be x m/sec.

Then, $(x - 1.25) \times 8.4 = (x - 1.5) \times 8.5$

$\Rightarrow 8.4x - 10.5 = 8.5x - 12.75$

$\Rightarrow 0.1x = 2.25$

$\Rightarrow x = 22.5$

$\therefore$ Speed of the train = $\left(22.5 \times \frac{18}{5}\right)$ km/hr = 81 km/hr.

43. A runs $1\frac{2}{3}$ times as fast as B. If A gives B a start of 80 m, how far must the winning post be so that A and B might reach it at the same time?

A. 200 m

B. 300 m

C. 270 m

D. 160 m

Answer: Option **A**

Explanation:

Ratio of the speeds of A and B = $\frac{5}{3}$: 1 = 5 : 3.

Thus, in race of 5 m, A gains 2 m over B.

2 m are gained by A in a race of 5 m.

80 m will be gained by A in race of $\left(\frac{5}{2} \times 80\right)$m = 200 m.

∴ Winning post is 200 m away from the starting point.

44. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference between R and Q's age?

A. 1 year
B. 2 years
C. 25 years
D. Data inadequate
E. None of these

Answer: Option **D**

Explanation:

Given that:

1. The difference of age b/w R and Q = The difference of age b/w Q and T.

2. Sum of age of R and T is 50 i.e. (R + T) = 50.

Question: R - Q = ?.

Explanation:

R - Q = Q - T

(R + T) = 2Q

Now given that, (R + T) = 50

So, 50 = 2Q and therefore Q = 25.

Question is (R - Q) = ?

Here we know the value(age) of Q (25), but we don't know the age of R.

Therefore, (R-Q) cannot be determined.

45. The value of $\log_2 16$ is:

A. $\frac{1}{8}$ B. 4

C. 8 D. 16

Answer: Option **B**

Explanation:

Let $\log_2 16 = n$.

Then, $2^n = 16 = 2^4 \Rightarrow n = 4$.

$\therefore \log_2 16 = 4$.

46. In a two-digit, if it is known that its unit's digit exceeds its ten's digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is:

A. 24 B. 26

C. 42 D. 46

Answer: Option **A**

Explanation:

Let the ten's digit be x.

Then, unit's digit = $x + 2$.

Number = $10x + (x + 2) = 11x + 2$.

Sum of digits = $x + (x + 2) = 2x + 2$.

$\therefore (11x + 2)(2x + 2) = 144$

$\Rightarrow 22x^2 + 26x - 140 = 0$

$\Rightarrow 11x^2 + 13x - 70 = 0$

$\Rightarrow (x - 2)(11x + 35) = 0$

$\Rightarrow x = 2.$

Hence, required number = $11x + 2 = 24$.

47. The square root of 64009 is:

A. 253 B. 347

C. 363 D. 803

Answer: Option **A**

Explanation:

```
  2|64009( 253
   |4
   |----------
 45|240
   |225
   |----------
503|  1509
   |  1509
   |----------
   |     X
   |----------
```

$\therefore$ 64009 = 253.

48. What should come in place of both x in the equation $\frac{x}{128} = \frac{162}{x}$.

A. 12 B. 14

C. 144 D. 196

Answer: Option **A**

Explanation:

Let $\frac{x}{128} = \frac{162}{x}$

Then $x^2 = 128 \times 162$

$= 64 \times 2 \times 18 \times 9$

$= 8^2 \times 6^2 \times 3^2$

$= 8 \times 6 \times 3$

$= 144.$

$\therefore\ x = \sqrt{144} = 12.$

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

A. 12 days

B. 15 days

C. 16 days

D. 18 days

Answer: Option **B**

Explanation:

A's 2 day's work $= \left(\frac{1}{20} \times 2\right) = \frac{1}{10}.$

(A + B + C)'s 1 day's work $= \left(\frac{1}{20} + \frac{1}{30} + \frac{1}{60}\right) = \frac{6}{60} = \frac{1}{10}.$

Work done in 3 days $= \left(\frac{1}{10} + \frac{1}{10}\right) = \frac{1}{5}.$

Now, $\frac{1}{5}$ work is done in 3 days.

$\therefore$ Whole work will be done in (3 x 5) = 15 days.

50. The value of $\frac{489.1375 \times 0.0483 \times 1.956}{0.0873 \times 92.581 \times 99.749}$ is closest to:

A. 0.006

B. 0.06

C. 0.6 D. 6

Answer: Option **B**

Explanation:

$$\frac{489.1375 \times 0.0483 \times 1.956}{0.0873 \times 92.581 \times 99.749} \approx \frac{489 \times 0.05 \times 2}{0.09 \times 93 \times 100}$$

$$= \frac{489}{9 \times 93 \times 10}$$

$$= \frac{163}{279} \times \frac{1}{10}$$

$$= \frac{0.58}{10}$$

$$= 0.058 \approx 0.06.$$

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

A. 40 B. 80

C. 120 D. 200

Answer: Option **A**

Explanation:

Let the numbers be 3*x*, 4*x* and 5*x*.

Then, their L.C.M. = 60*x*.

So, 60*x* = 2400 or x = 40.

∴ The numbers are (3 x 40), (4 x 40) and (5 x 40).

Hence, required H.C.F. = 40.

52. Which of the following fraction is the largest ?

A. $\frac{7}{}$ B. $\frac{13}{}$

C. $\frac{31}{40}$

D. $\frac{63}{80}$

Answer: Option **A**

Explanation:

L.C.M. of 8, 16, 40 and 80 = 80.

$\frac{7}{8} = \frac{70}{80}$; $\frac{13}{16} = \frac{65}{80}$; $\frac{31}{40} = \frac{62}{80}$

Since, $\frac{70}{80} > \frac{65}{80} > \frac{63}{80} > \frac{62}{80}$, so $\frac{7}{8} > \frac{13}{16} > \frac{63}{80} > \frac{31}{40}$

So, $\frac{7}{8}$ is the largest.

53. A sum of Rs. 725 is lent in the beginning of a year at a certain rate of interest. After 8 months, a sum of Rs. 362.50 more is lent but at the rate twice the former. At the end of the year, Rs. 33.50 is earned as interest from both the loans. What was the original rate of interest?

A. 3.6%

B. 4.5%

C. 5%

D. 6%

E. None of these

Answer: Option **E**

Explanation:

Let the original rate be R%. Then, new rate = (2R)%.

Note:

Here, original rate is for 1 year(s); the new rate is for only 4 months i.e. $\frac{1}{3}$ year(s).

$$\therefore \left(\frac{725 \times R \times 1}{100}\right) + \left(\frac{362.50 \times 2R \times 1}{100 \times 3}\right) = 33.50$$

$\Rightarrow (2175 + 725)\, R = 33.50 \times 100 \times 3$

$\Rightarrow (2175 + 725)\, R = 10050$

$\Rightarrow (2900)R = 10050$

$$\Rightarrow R = \frac{10050}{2900} = 3.46$$

$\therefore$ Original rate = 3.46%

54. An accurate clock shows 8 o'clock in the morning. Through how may degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

A. 144^o B. 150^o

C. 168^o D. 180^o

Answer: Option **D**

Explanation:

Angle traced by the hour hand in 6 hours = $\left(\frac{360}{12} \times 6\right)^o = 180^o$.

55. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?

A. 564 B. 645

C. 735 D. 756

E. None of these

Answer: Option **D**

Explanation:

We may have (3 men and 2 women) or (4 men and 1 woman) or (5 men only).

$\therefore$ Required number of ways $= ({}^7C_3 \times {}^6C_2) + ({}^7C_4 \times {}^6C_1) + ({}^7C_5)$

$$= \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times \frac{6 \times 5}{2 \times 1}\right) + ({}^7C_3 \times {}^6C_1) + ({}^7C_2)$$

$$= 525 + \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times 6\right) + \left(\frac{7 \times 6}{2 \times 1}\right)$$

$$= (525 + 210 + 21)$$

$$= 756.$$

56. A dishonest milkman professes to sell his milk at cost price but he mixes it with water and thereby gains 25%. The percentage of water in the mixture is:

A. 4%

B. $6\frac{1}{4}\%$

C. 20%

D. 25%

Answer: Option **C**

Explanation:

Let C.P. of 1 litre milk be Re. 1

Then, S.P. of 1 litre of mixture = Re. 1, Gain = 25%.

C.P. of 1 litre mixture = Re. $\left(\frac{100}{125} \times 1\right) = \frac{4}{5}$

By the rule of alligation, we have:

C.P. of 1 litre of milk		C.P. of 1 litre of water
Re. 1	Mean Price	0
4/5	Re. 4/5	1/5

$\therefore$ Ratio of milk to water = $\frac{4}{5} : \frac{1}{5} = 4 : 1$.

Hence, percentage of water in the mixture = $\left(\frac{1}{5} \times 100\right)\% = 20\%$.

57. A vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?

A. $\frac{1}{3}$ B. $\frac{1}{4}$

C. $\frac{1}{5}$ D. $\frac{1}{7}$

Answer: Option **C**

Explanation:

Suppose the vessel initially contains 8 litres of liquid.

Let x litres of this liquid be replaced with water.

Quantity of water in new mixture = $\left(3 - \frac{3x}{8} + x\right)$ litres

Quantity of syrup in new mixture = $\left(5 - \frac{5x}{8}\right)$ litres

$\therefore \left(3 - \frac{3x}{8} + x\right) = \left(5 - \frac{5x}{8}\right)$

$\Rightarrow 5x + 24 = 40 - 5x$

$\Rightarrow 10x = 16$

$\Rightarrow x = \frac{8}{5}$.

So, part of the mixture replaced = $\left(\frac{8}{5} \times \frac{1}{8}\right) = \frac{1}{5}$.

58. The cost price of a Rs. 100 stock at 4 discount, when brokerage is $\frac{1}{4}$% is:

A. Rs. 95.75

B. Rs. 96

C. Rs. 96.25

D. Rs. 104.25

Answer: Option **C**

Explanation:

C.P. = Rs. $\left(100 - 4 + \frac{1}{4}\right)$ = Rs. 96.25

59. If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?

A. 2 : 5

B. 3 : 7

C. 5 : 3

D. 7 : 3

Answer: Option **C**

Explanation:

Let 40% of A = $\frac{2}{3}$ B

Then, $\frac{40A}{100} = \frac{2B}{3}$

$\Rightarrow \frac{2A}{5} = \frac{2B}{3}$

$\Rightarrow A = \left(2 \times \frac{5}{2}\right) = 5$

B 3 2 3

∴ A : B = 5 : 3.

60. In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?

A. 50 B. 100

C. 150 D. 200

Answer: Option **C**

Explanation:

Let the number of 25 p, 10 p and 5 p coins be x, $2x$, $3x$ respectively.

Then, sum of their values = Rs. $\left(\frac{25x}{100} + \frac{10 \times 2x}{100} + \frac{5 \times 3x}{100}\right)$ = Rs. $\frac{60x}{100}$

∴ $\frac{60x}{100} = 30 \Leftrightarrow x = \frac{30 \times 100}{60} = 50.$

Hence, the number of 5 p coins = (3 x 50) = 150.

61. A fires 5 shots to B's 3 but A kills only once in 3 shots while B kills once in 2 shots. When B has missed 27 times, A has killed:

A. 30 birds B. 60 birds

C. 72 birds D. 90 birds

Answer: Option **A**

Explanation:

Let the total number of shots be x. Then,

Shots fired by A = $\frac{5}{8}x$

Shots fired by B = $\frac{3}{8}x$

Killing shots by A = $\frac{1}{3}$ of $\frac{5}{8}x = \frac{5}{24}x$

Shots missed by B = $\frac{1}{2}$ of $\frac{3}{8}x = \frac{3}{16}x$

$\therefore \frac{3x}{16} = 27$ or $x = \left(\frac{27 \times 16}{3}\right) = 144.$

Birds killed by A = $\frac{5x}{24} = \left(\frac{5}{24} \times 144\right) = 30.$

62. Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present?

A. 16 years
B. 18 years
C. 20 years
D. Cannot be determined
E. None of these

Answer: Option **A**

Explanation:

Let the ages of Kunal and Sagar 6 years ago be $6x$ and $5x$ years respectively.

Then, $\frac{(6x + 6) + 4}{(5x + 6) + 4} = \frac{11}{10}$

$\Rightarrow 10(6x + 10) = 11(5x + 10)$

$\Rightarrow 5x = 10$

$\Rightarrow x = 2.$

$\therefore$ Sagar's present age = $(5x + 6) = 16$ years.

63. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference between R and Q's age?

A. 1 year
B. 2 years

C. 25 years

D. Data inadequate

E. None of these

Answer: Option **D**

Explanation:

Given that:

1. The difference of age b/w R and Q = The difference of age b/w Q and T.

2. Sum of age of R and T is 50 i.e. (R + T) = 50.

Question: R - Q = ?.

Explanation:

R - Q = Q - T

(R + T) = 2Q

Now given that, (R + T) = 50

So, 50 = 2Q and therefore Q = 25.

Question is (R - Q) = ?

Here we know the value(age) of Q (25), but we don't know the age of R.

Therefore, (R-Q) cannot be determined.

64. $\frac{1}{1 + x^{(b-a)} + x^{(c-a)}} + \frac{1}{1 + x^{(a-b)} + x^{(c-b)}} + \frac{1}{1 + x^{(b-c)} + x^{(a-c)}} = ?$

A. 0

B. 1

C. x^{a-b-c}

D. None of these

Answer: Option **B**

Explanation:

$$\text{Given Exp.} = \frac{1}{\left(1 + \frac{x^b}{x^a} + \frac{x^c}{x^a}\right)} + \frac{1}{\left(1 + \frac{x^a}{x^b} + \frac{x^c}{x^b}\right)} + \frac{1}{\left(1 + \frac{x^b}{x^c} + \frac{x^a}{x^c}\right)}$$

$$= \frac{x^a}{(x^a + x^b + x^c)} + \frac{x^b}{(x^a + x^b + x^c)} + \frac{x^c}{(x^a + x^b + x^c)}$$

$$= \frac{(x^a + x^b + x^c)}{(x^a + x^b + x^c)}$$

$$= 1.$$

2

65. $\frac{1}{1 + a^{(n - m)}} + \frac{1}{1 + a^{(m - n)}} = ?$

A. 0

B. $\frac{1}{2}$

C. 1

D. $a^{m + n}$

Answer: Option **C**

Explanation:

$$\frac{1}{1 + a^{(n - m)}} + \frac{1}{1 + a^{(m - n)}} = \frac{1}{\left(1 + \frac{a^n}{a^m}\right)} + \frac{1}{\left(1 + \frac{a^m}{a^n}\right)}$$

$$= \frac{a^m}{(a^m + a^n)} + \frac{a^n}{(a^m + a^n)}$$

$$= \frac{(a^m + a^n)}{(a^m + a^n)}$$

= 1.

66. Simran started a software business by investing Rs. 50,000. After six months, Nanda joined her with a capital of Rs. 80,000. After 3 years, they earned a profit of Rs. 24,500. What was Simran's share in the profit?

A. Rs. 9,423
B. Rs. 10,250
C. Rs. 12,500
D. Rs. 10,500

Answer: Option **D**

Explanation:

Simran : Nanda = (50000 x 36) : (80000 x 30) = 3 : 4.

$\therefore$ Simran's share = Rs. $\left(24500 \times \frac{3}{7}\right)$ = Rs. 10,500.

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

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

Answer: Option **B**

Explanation:

A's 2 day's work = $\left(\frac{1}{20} \times 2\right) = \frac{1}{10}$.

(A + B + C)'s 1 day's work = $\left(\frac{1}{20} + \frac{1}{30} + \frac{1}{60}\right) = \frac{6}{60} = \frac{1}{10}$.

Work done in 3 days = $\left(\frac{1}{10} + \frac{1}{10}\right) = \frac{1}{5}$.

Now, $\frac{1}{5}$ work is done in 3 days.

∴ Whole work will be done in (3 x 5) = 15 days.

68. Robert is travelling on his cycle and has calculated to reach point A at 2 P.M. if he travels at 10 kmph, he will reach there at 12 noon if he travels at 15 kmph. At what speed must he travel to reach A at 1 P.M.?

A. 8 kmph
B. 11 kmph
C. 12 kmph
D. 14 kmph

Answer: Option **C**

Explanation:

Let the distance travelled by x km.

Then, $\frac{x}{10} - \frac{x}{15} = 2$

$\Rightarrow 3x - 2x = 60$

$\Rightarrow x = 60$ km.

Time taken to travel 60 km at 10 km/hr = $\left(\frac{60}{10}\right)$hrs = 6 hrs.

So, Robert started 6 hours before 2 P.M. *i.e.*, at 8 A.M.

∴ Required speed = $\left(\frac{60}{5}\right)$kmph. = 12 kmph.

69. A man rows to a place 48 km distant and come back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is:

A. 1 km/hr
B. 1.5 km/hr
C. 2 km/hr
D. 2.5 km/hr

Answer: Option **A**

Explanation:

Suppose he move 4 km downstream in x hours. Then,

Speed downstream = $\left(\frac{4}{x}\right)$ km/hr.

Speed upstream = $\left(\frac{3}{x}\right)$ km/hr.

$\therefore \frac{48}{(4/x)} + \frac{48}{(3/x)} = 14$ or $x = \frac{1}{2}$.

So, Speed downstream = 8 km/hr, Speed upstream = 6 km/hr.

Rate of the stream = $\frac{1}{2}(8 - 6)$ km/hr = 1 km/hr.

70. In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 kg?

A. 3 : 7 B. 5 : 7

C. 7 : 3 D. 7 : 5

Answer: Option **C**

Explanation:

By the rule of alligation:

Cost of 1 kg pulses of 1st kind		Cost of 1 kg pulses of 2nd kind
Rs. 15	Mean Price Rs. 16.50	Rs. 20
3.50		1.50

$\therefore$ Required rate = 3.50 : 1.50 = 7 : 3.

71. If $\log \frac{a}{b} + \log \frac{b}{a} = \log (a + b)$, then:

A. $a + b = 1$ B. $a - b = 1$

C. $a = b$

D. $a^2 - b^2 = 1$

Answer: Option **A**

Explanation:

$$\log \frac{a}{b} + \log \frac{b}{a} = \log (a + b)$$

$$\Rightarrow \log (a + b) = \log\left(\frac{a}{b} \times \frac{b}{a}\right) = \log 1.$$

So, $a + b = 1$.

72. In a race of 200 m, A can beat B by 31 m and C by 18 m. In a race of 350 m, C will beat B by:

A. 22.75 m

B. 25 m

C. 19.5 m

D. $7\frac{4}{7}$ m

Answer: Option **B**

Explanation:

A : B = 200 : 169.

A : C = 200 : 182.

$$\frac{C}{B} = \left(\frac{C}{A} \times \frac{A}{B}\right) = \left(\frac{182}{200} \times \frac{200}{169}\right) = 182 : 169.$$

When C covers 182 m, B covers 169 m.

When C covers 350 m, B covers $\left(\frac{169}{182} \times 350\right)$ m = 325 m.

Therefore, C beats B by (350 - 325) m = 25 m.

73. **If 6th March, 2005 is Monday,** what was the day of the week on 6th March, 2004?

A. Sunday

B. Saturday

C. Tuesday

D. Wednesday

Answer: Option **A**

Explanation:

The year 2004 is a leap year. So, it has 2 odd days.

But, Feb 2004 not included because we are calculating from March 2004 to March 2005. So it has 1 odd day only.

∴ The day on 6^{th} March, 2005 will be 1 day beyond the day on 6^{th} March, 2004.

Given that, 6^{th} March, 2005 is Monday.

∴ 6^{th} March, 2004 is Sunday (1 day before to 6^{th} March, 2005).

74. An accurate clock shows 8 o'clock in the morning. Through how may degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

A. 144^o

B. 150^o

C. 168^o

D. 180^o

Answer: Option **D**

Explanation:

Angle traced by the hour hand in 6 hours = $\left(\frac{360}{12} \times 6\right)^o = 180^o$.

75. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:

A. 145^o

B. 150^o

C. 155^o

D. 160^o

Answer: Option **C**

Explanation:

Angle traced by hour hand in 12 hrs = 360^o.

Angle traced by hour hand in 5 hrs 10 min. *i.e.*, $\frac{31}{6}$ hrs = $\left(\frac{360}{12} \times \frac{31}{6}\right)^{o}$ = 155º.

76. The market value of a 10.5% stock, in which an income of Rs. 756 is derived by investing Rs. 9000, brokerage being $\frac{1}{4}$%, is:

A. Rs. 108.25 B. Rs. 112.20

C. Rs. 124.75 D. Rs. 125.25

Answer: Option **C**

Explanation:

For an income of Rs. 756, investment = Rs. 9000.

For an income of Rs. $\frac{21}{2}$, investment = Rs. $\left(\frac{9000}{756} \times \frac{21}{2}\right)$ = Rs. 125.

∴ For a Rs. 100 stock, investment = Rs. 125.

Market value of Rs. 100 stock = Rs. $\left(125 - \frac{1}{4}\right)$ = Rs. 124.75

77. From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being kings?

A. $\frac{1}{15}$ B. $\frac{25}{57}$

C. $\frac{35}{256}$ D. $\frac{1}{221}$

Answer: Option **D**

Explanation:

Let S be the sample space.

Then, $n(S) = {}^{52}C_2 = \frac{(52 \times 51)}{(2 \times 1)} = 1326.$

Let E = event of getting 2 kings out of 4.

$\therefore\ n(E) = {}^{4}C_2 = \frac{(4 \times 3)}{(2 \times 1)} = 6.$

$\therefore\ P(E) = \frac{n(E)}{n(S)} = \frac{6}{1326} = \frac{1}{221}.$

78. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen and King only)?

A. $\frac{1}{13}$ B. $\frac{3}{13}$

C. $\frac{1}{4}$ D. $\frac{9}{52}$

Answer: Option **B**

Explanation:

Clearly, there are 52 cards, out of which there are 12 face cards.

$\therefore\ P$ (getting a face card) $= \frac{12}{52} = \frac{3}{13}.$

79. The true discount on Rs. 2562 due 4 months hence is Rs. 122. The rate percent is:

A. 12% B. $13\frac{1}{3}\%$

C. 15% D. 14%

Answer: Option **C**

Explanation:

P.W. = Rs. (2562 - 122) = Rs. 2440.

∴ S.I. on Rs. 2440 for 4 months is Rs. 122.

∴ Rate = $\left[\frac{100 \times 122}{2440 \times \frac{1}{3}}\right]\%$ = 15%.

Direction (for Q.No. 80):

Find out the wrong number in the given sequence of numbers.

80. 22, 33, 66, 99, 121, 279, 594

A. 33 B. 121

C. 279 D. 594

Answer: Option **C**

Explanation:

Each of the number except 279 is a multiple of 11.

81. Two trains running in opposite directions cross a man standing on the platform in 27 seconds and 17 seconds respectively and they cross each other in 23 seconds. The ratio of their speeds is:

A. 1 : 3 B. 3 : 2

C. 3 : 4 D. None of these

Answer: Option **B**

Explanation:

Let the speeds of the two trains be *x* m/sec and y m/sec respectively.

Then, length of the first train = 27*x* metres,

and length of the second train = 17*y* metres.

∴ $27x + 17y = 23$

$x+y$

$\Rightarrow 27x + 17y = 23x + 23y$

$\Rightarrow 4x = 6y$

$\Rightarrow \frac{x}{y} = \frac{3}{2}.$

82. A train overtakes two persons walking along a railway track. The first one walks at 4.5 km/hr. The other one walks at 5.4 km/hr. The train needs 8.4 and 8.5 seconds respectively to overtake them. What is the speed of the train if both the persons are walking in the same direction as the train?

A. 66 km/hr
B. 72 km/hr
C. 78 km/hr
D. 81 km/hr

Answer: Option **D**

Explanation:

4.5 km/hr = $\left(4.5 \times \frac{5}{18}\right)$ m/sec = $\frac{5}{4}$ m/sec = 1.25 m/sec, and

5.4 km/hr = $\left(5.4 \times \frac{5}{18}\right)$ m/sec = $\frac{3}{2}$ m/sec = 1.5 m/sec.

Let the speed of the train be x m/sec.

Then, $(x - 1.25) \times 8.4 = (x - 1.5) \times 8.5$

$\Rightarrow 8.4x - 10.5 = 8.5x - 12.75$

$\Rightarrow 0.1x = 2.25$

$\Rightarrow x = 22.5$

$\therefore$ Speed of the train = $\left(22.5 \times \frac{18}{5}\right)$ km/hr = 81 km/hr.

83. A runs $1\frac{2}{3}$ times as fast as B. If A gives B a start of 80 m, how far must the winning post be so that A and B might reach it at the same time?

A. 200 m

B. 300 m

C. 270 m

D. 160 m

Answer: Option **A**

Explanation:

Ratio of the speeds of A and B = $\frac{5}{3}$: 1 = 5 : 3.

Thus, in race of 5 m, A gains 2 m over B.

2 m are gained by A in a race of 5 m.

80 m will be gained by A in race of $\left(\frac{5}{2} \times 80\right)$m = 200 m.

∴ Winning post is 200 m away from the starting point.

84. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference between R and Q's age?

A. 1 year

B. 2 years

C. 25 years

D. Data inadequate

E. None of these

Answer: Option **D**

Explanation:

Given that:

1. The difference of age b/w R and Q = The difference of age b/w Q and T.

2. Sum of age of R and T is 50 i.e. (R + T) = 50.

Question: R - Q = ?.

Explanation:

R - Q = Q - T

(R + T) = 2Q

Now given that, (R + T) = 50

So, 50 = 2Q and therefore Q = 25.

Question is (R - Q) = ?

Here we know the value(age) of Q (25), but we don't know the age of R.

Therefore, (R-Q) cannot be determined.

85. The value of $\log_2 16$ is:

A. $\frac{1}{8}$ B. 4

C. 8 D. 16

Answer: Option **B**

Explanation:

Let $\log_2 16 = n$.

Then, $2^n = 16 = 2^4 \quad \Rightarrow \quad n = 4$.

$\therefore \log_2 16 = 4$.

86. In a two-digit, if it is known that its unit's digit exceeds its ten's digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is:

A. 24 B. 26

C. 42 D. 46

Answer: Option **A**

Explanation:

Let the ten's digit be x.

Then, unit's digit = $x + 2$.

Number = $10x + (x + 2) = 11x + 2$.

Sum of digits = $x + (x + 2) = 2x + 2$.

$\therefore$ $(11x + 2)(2x + 2) = 144$

$\Rightarrow 22x^2 + 26x - 140 = 0$

$\Rightarrow 11x^2 + 13x - 70 = 0$

$\Rightarrow (x - 2)(11x + 35) = 0$

$\Rightarrow x = 2$.

Hence, required number = $11x + 2 = 24$.

87. The square root of 64009 is:

A. 253 B. 347

C. 363 D. 803

Answer: Option **A**

Explanation:

```
  2|64009( 253
   |4
   |----------
 45|240
   |225
   |----------
503|  1509
   |  1509
   |----------
   |    X
   |----------
```

$\therefore$ 64009 = 253.

88. What should come in place of both x in the equation $\frac{x}{128} = \frac{162}{x}$.

A. 12 B. 14

C. 144 D. 196

Answer: Option **A**

Explanation:

Let $\frac{x}{128} = \frac{162}{x}$

Then $x^2 = 128 \times 162$

$= 64 \times 2 \times 18 \times 9$

$= 8^2 \times 6^2 \times 3^2$

$= 8 \times 6 \times 3$

$= 144.$

$\therefore x = 144 = 12.$

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

A. 12 days

B. 15 days

C. 16 days

D. 18 days

Answer: Option **B**

Explanation:

A's 2 day's work = $\left(\frac{1}{20} \times 2\right) = \frac{1}{10}$.

(A + B + C)'s 1 day's work = $\left(\frac{1}{20} + \frac{1}{30} + \frac{1}{60}\right) = \frac{6}{60} = \frac{1}{10}$.

Work done in 3 days = $\left(\frac{1}{10} + \frac{1}{10}\right) = \frac{1}{5}$.

Now, $\frac{1}{5}$ work is done in 3 days.

$\therefore$ Whole work will be done in (3 x 5) = 15 days.

90. The value of $\frac{489.1375 \times 0.0483 \times 1.956}{0.0873 \times 92.581 \times 99.749}$ is closest to:

A. 0.006 B. 0.06

C. 0.6 D. 6

Answer: Option **B**

Explanation:

$$\frac{489.1375 \times 0.0483 \times 1.956}{0.0873 \times 92.581 \times 99.749} \approx \frac{489 \times 0.05 \times 2}{0.09 \times 93 \times 100}$$

$$= \frac{489}{9 \times 93 \times 10}$$

$$= \frac{163}{279} \times \frac{1}{10}$$

$$= \frac{0.58}{10}$$

$$= 0.058 \approx 0.06.$$

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

A. 40 B. 80

C. 120 D. 200

Answer: Option **A**

Explanation:

Let the numbers be 3*x*, 4*x* and 5*x*.

Then, their L.C.M. = 60*x*.

So, 60*x* = 2400 or x = 40.

∴ The numbers are (3 x 40), (4 x 40) and (5 x 40).

Hence, required H.C.F. = 40.

92. Which of the following fraction is the largest ?

A. $\frac{7}{8}$ B. $\frac{13}{16}$

C. $\frac{31}{40}$ D. $\frac{63}{80}$

Answer: Option **A**

Explanation:

L.C.M. of 8, 16, 40 and 80 = 80.

$\frac{7}{8} = \frac{70}{80}$; $\frac{13}{16} = \frac{65}{80}$; $\frac{31}{40} = \frac{62}{80}$

Since, $\frac{70}{80} > \frac{65}{80} > \frac{63}{80} > \frac{62}{80}$, so $\frac{7}{8} > \frac{13}{16} > \frac{63}{80} > \frac{31}{40}$

So, $\frac{7}{8}$ is the largest.

93. A sum of Rs. 725 is lent in the beginning of a year at a certain rate of interest. After 8 months, a sum of Rs. 362.50 more is lent but at the rate twice the former. At the end of the year, Rs. 33.50 is earned as interest from both the loans. What was the original rate of interest?

A. 3.6% B. 4.5%

C. 5% D. 6%

E. None of these

Answer: Option **E**

Explanation:

Let the original rate be R%. Then, new rate = (2R)%.

Note:

Here, original rate is for 1 year(s); the new rate is for only 4 months i.e. $\frac{1}{3}$ year(s).

$$\therefore \left(\frac{725 \times R \times 1}{100}\right) + \left(\frac{362.50 \times 2R \times 1}{100 \times 3}\right) = 33.50$$

$$\Rightarrow (2175 + 725)\, R = 33.50 \times 100 \times 3$$

$$\Rightarrow (2175 + 725)\, R = 10050$$

$$\Rightarrow (2900)R = 10050$$

$$\Rightarrow R = \frac{10050}{2900} = 3.46$$

$\therefore$ Original rate = 3.46%

94. An accurate clock shows 8 o'clock in the morning. Through how may degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

A. 144^o B. 150^o

C. 168^o D. 180^o

Answer: Option **D**

Explanation:

Angle traced by the hour hand in 6 hours = $\left(\frac{360}{12} \times 6\right)^o = 180^o$.

95. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?

A. 564 B. 645

C. 735 D. 756

E. None of these

Answer: Option **D**

Explanation:

We may have (3 men and 2 women) or (4 men and 1 woman) or (5 men only).

∴ Required number of ways $= ({}^{7}C_3 \times {}^{6}C_2) + ({}^{7}C_4 \times {}^{6}C_1) + ({}^{7}C_5)$

$$= \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times \frac{6 \times 5}{2 \times 1}\right) + ({}^{7}C_3 \times {}^{6}C_1) + ({}^{7}C_2)$$

$$= 525 + \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times 6\right) + \left(\frac{7 \times 6}{2 \times 1}\right)$$

$$= (525 + 210 + 21)$$

$$= 756.$$

96. A dishonest milkman professes to sell his milk at cost price but he mixes it with water and thereby gains 25%. The percentage of water in the mixture is:

A. 4%

B. $6\frac{1}{4}\%$

C. 20%

D. 25%

Answer: Option **C**

Explanation:

Let C.P. of 1 litre milk be Re. 1

Then, S.P. of 1 litre of mixture = Re. 1, Gain = 25%.

C.P. of 1 litre mixture = Re. $\left(\frac{100}{125} \times 1\right) = \frac{4}{5}$

By the rule of alligation, we have:

C.P. of 1 litre of milkC.P. of 1 litre of water

Re. 1	Mean Price	0
$4\frac{}{5}$	Re. $4\frac{}{5}$	$1\frac{}{5}$

$\therefore$ Ratio of milk to water = $4\frac{}{5} : 1\frac{}{5}$ = 4 : 1.

Hence, percentage of water in the mixture = $\left(\frac{1}{5} \times 100\right)\%$ = 20%.

97. A vessel is filled with liquid, 3 parts of which are water and 5 parts syrup. How much of the mixture must be drawn off and replaced with water so that the mixture may be half water and half syrup?

A. $1\frac{}{3}$ B. $1\frac{}{4}$

C. $1\frac{}{5}$ D. $1\frac{}{7}$

Answer: Option **C**

Explanation:

Suppose the vessel initially contains 8 litres of liquid.

Let x litres of this liquid be replaced with water.

Quantity of water in new mixture = $\left(3 - \frac{3x}{8} + x\right)$ litres

Quantity of syrup in new mixture = $\left(5 - \frac{5x}{8}\right)$ litres

$\therefore \left(3 - \frac{3x}{8} + x\right) = \left(5 - \frac{5x}{8}\right)$

$\Rightarrow 5x + 24 = 40 - 5x$

$\Rightarrow 10x = 16$

$\Rightarrow x = \frac{8}{5}$.

So, part of the mixture replaced = $\left(\frac{8}{5} \text{ x } \frac{1}{8}\right) = \frac{1}{5}$.

98. The cost price of a Rs. 100 stock at 4 discount, when brokerage is $\frac{1}{4}\%$ is:

A. Rs. 95.75
B. Rs. 96
C. Rs. 96.25
D. Rs. 104.25

Answer: Option **C**

Explanation:

C.P. = Rs. $\left(100 - 4 + \frac{1}{4}\right)$ = Rs. 96.25

99. If 40% of a number is equal to two-third of another number, what is the ratio of first number to the second number?

A. 2 : 5
B. 3 : 7
C. 5 : 3
D. 7 : 3

Answer: Option **C**

Explanation:

Let 40% of A = $\frac{2}{3}$ B

Then, $\frac{40A}{100} = \frac{2B}{3}$

$\Rightarrow \frac{2A}{5} = \frac{2B}{3}$

$\Rightarrow \frac{A}{B} = \left(\frac{2}{3} \times \frac{5}{2}\right) = \frac{5}{3}$

$\therefore$ A : B = 5 : 3.

100. In a bag, there are coins of 25 p, 10 p and 5 p in the ratio of 1 : 2 : 3. If there is Rs. 30 in all, how many 5 p coins are there?

A. 50 B. 100

C. 150 D. 200

Answer: Option **C**

Explanation:

Let the number of 25 p, 10 p and 5 p coins be x, $2x$, $3x$ respectively.

Then, sum of their values = Rs. $\left(\frac{25x}{100} + \frac{10 \times 2x}{100} + \frac{5 \times 3x}{100}\right)$ = Rs. $\frac{60x}{100}$

$\therefore \frac{60x}{100} = 30 \Leftrightarrow x = \frac{30 \times 100}{60} = 50.$

Hence, the number of 5 p coins = (3 x 50) = 150.

101. A fires 5 shots to B's 3 but A kills only once in 3 shots while B kills once in 2 shots. When B has missed 27 times, A has killed:

A. 30 birds B. 60 birds

C. 72 birds D. 90 birds

Answer: Option **A**

Explanation:

Let the total number of shots be x. Then,

Shots fired by A = $5x$

8

Shots fired by B = $\frac{3}{8}x$

Killing shots by A = $\frac{1}{3}$ of $\frac{5}{8}x = \frac{5}{24}x$

Shots missed by B = $\frac{1}{2}$ of $\frac{3}{8}x = \frac{3}{16}x$

$\therefore \frac{3x}{16} = 27$ or $x = \left(\frac{27 \times 16}{3}\right) = 144.$

Birds killed by A = $\frac{5x}{24} = \left(\frac{5}{24} \times 144\right) = 30.$

---

102. Six years ago, the ratio of the ages of Kunal and Sagar was 6 : 5. Four years hence, the ratio of their ages will be 11 : 10. What is Sagar's age at present?

A. 16 years

B. 18 years

C. 20 years

D. Cannot be determined

E. None of these

Answer: Option **A**

Explanation:

Let the ages of Kunal and Sagar 6 years ago be $6x$ and $5x$ years respectively.

Then, $\frac{(6x + 6) + 4}{(5x + 6) + 4} = \frac{11}{10}$

$\Rightarrow 10(6x + 10) = 11(5x + 10)$

$\Rightarrow 5x = 10$

$\Rightarrow x = 2.$

$\therefore$ Sagar's present age = $(5x + 6) = 16$ years.

---

103. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is 50 years, what is definitely the difference between R and Q's age?

A. 1 year
B. 2 years
C. 25 years
D. Data inadequate
E. None of these

Answer: Option **D**

Explanation:

Given that:

1. The difference of age b/w R and Q = The difference of age b/w Q and T.

2. Sum of age of R and T is 50 i.e. (R + T) = 50.

Question: R - Q = ?.

Explanation:

R - Q = Q - T

(R + T) = 2Q

Now given that, (R + T) = 50

So, 50 = 2Q and therefore Q = 25.

Question is (R - Q) = ?

Here we know the value(age) of Q (25), but we don't know the age of R.

Therefore, (R-Q) cannot be determined.

---

104. $\frac{1}{1 + x^{(b-a)} + x^{(c-a)}} + \frac{1}{1 + x^{(a-b)} + x^{(c-b)}} + \frac{1}{1 + x^{(b-c)} + x^{(a-c)}} = ?$

A. 0
B. 1

C. x^{a-b-c}

D. None of these

Answer: Option **B**

Explanation:

Given Exp. $= \dfrac{1}{\left(1 + \dfrac{x^b}{x^a} + \dfrac{x^c}{x^a}\right)} + \dfrac{1}{\left(1 + \dfrac{x^a}{x^b} + \dfrac{x^c}{x^b}\right)} + \dfrac{1}{\left(1 + \dfrac{x^b}{x^c} + \dfrac{x^a}{x^c}\right)}$

$= \dfrac{x^a}{(x^a + x^b + x^c)} + \dfrac{x^b}{(x^a + x^b + x^c)} + \dfrac{x^c}{(x^a + x^b + x^c)}$

$= \dfrac{(x^a + x^b + x^c)}{(x^a + x^b + x^c)}$

$= 1.$

2

105. $\dfrac{1}{1 + a^{(n-m)}} + \dfrac{1}{1 + a^{(m-n)}} = ?$

A. 0

B. $\dfrac{1}{2}$

C. 1

D. a^{m+n}

Answer: Option **C**

Explanation:

$\dfrac{1}{1 + a^{(n-m)}} + \dfrac{1}{1 + a^{(m-n)}} = \dfrac{1}{\left(1 + \dfrac{a^n}{a^m}\right)} + \dfrac{1}{\left(1 + \dfrac{a^m}{a^n}\right)}$

$= \dfrac{a^m}{\quad} + \dfrac{a^n}{\quad}$

$(a^m + a^n)$ $(a^m + a^n)$

$$= \frac{(a^m + a^n)}{(a^m + a^n)}$$

$= 1.$

106. Simran started a software business by investing Rs. 50,000. After six months, Nanda joined her with a capital of Rs. 80,000. After 3 years, they earned a profit of Rs. 24,500. What was Simran's share in the profit?

A. Rs. 9,423
B. Rs. 10,250
C. Rs. 12,500
D. Rs. 10,500

Answer: Option **D**

Explanation:

Simran : Nanda = (50000 x 36) : (80000 x 30) = 3 : 4.

$\therefore$ Simran's share = Rs. $\left(24500 \times \frac{3}{7}\right)$ = Rs. 10,500.

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

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

Answer: Option **B**

Explanation:

A's 2 day's work = $\left(\frac{1}{20} \times 2\right) = \frac{1}{10}$.

(A + B + C)'s 1 day's work = $\left(\frac{1}{20} + \frac{1}{30} + \frac{1}{60}\right) = \frac{6}{60} = \frac{1}{10}$.

Work done in 3 days = $\left(\frac{1}{} + \frac{1}{}\right) = 1.$

10 10 5

Now, $\frac{1}{5}$ work is done in 3 days.

∴ Whole work will be done in (3 x 5) = 15 days.

108. Robert is travelling on his cycle and has calculated to reach point A at 2 P.M. if he travels at 10 kmph, he will reach there at 12 noon if he travels at 15 kmph. At what speed must he travel to reach A at 1 P.M.?

A. 8 kmph
B. 11 kmph
C. 12 kmph
D. 14 kmph

Answer: Option **C**

Explanation:

Let the distance travelled by *x* km.

Then, $\frac{x}{10} - \frac{x}{15} = 2$

$\Rightarrow 3x - 2x = 60$

$\Rightarrow x = 60$ km.

Time taken to travel 60 km at 10 km/hr = $\left(\frac{60}{10}\right)$hrs = 6 hrs.

So, Robert started 6 hours before 2 P.M. *i.e.,* at 8 A.M.

∴ Required speed = $\left(\frac{60}{5}\right)$kmph. = 12 kmph.

109. A man rows to a place 48 km distant and come back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is:

A. 1 km/hr
B. 1.5 km/hr

C. 2 km/hr

D. 2.5 km/hr

Answer: Option **A**

Explanation:

Suppose he move 4 km downstream in x hours. Then,

Speed downstream = $\left(\frac{4}{x}\right)$ km/hr.

Speed upstream = $\left(\frac{3}{x}\right)$ km/hr.

$\therefore \frac{48}{(4/x)} + \frac{48}{(3/x)} = 14$ or $x = \frac{1}{2}$.

So, Speed downstream = 8 km/hr, Speed upstream = 6 km/hr.

Rate of the stream = $\frac{1}{2}(8 - 6)$ km/hr = 1 km/hr.

110. In what ratio must a grocer mix two varieties of pulses costing Rs. 15 and Rs. 20 per kg respectively so as to get a mixture worth Rs. 16.50 kg?

A. 3 : 7

B. 5 : 7

C. 7 : 3

D. 7 : 5

Answer: Option **C**

Explanation:

By the rule of alligation:

Cost of 1 kg pulses of 1st kind		Cost of 1 kg pulses of 2nd kind
Rs. 15	Mean Price Rs. 16.50	Rs. 20
3.50		1.50

∴ Required rate = 3.50 : 1.50 = 7 : 3.

111. If $\log \frac{a}{b} + \log \frac{b}{a} = \log (a + b)$, then:

A. $a + b = 1$

B. $a - b = 1$

C. $a = b$

D. $a^2 - b^2 = 1$

Answer: Option **A**

Explanation:

$\log \frac{a}{b} + \log \frac{b}{a} = \log (a + b)$

$\Rightarrow \log (a + b) = \log\left(\frac{a}{b} \times \frac{b}{a}\right) = \log 1.$

So, $a + b = 1$.

112. In a race of 200 m, A can beat B by 31 m and C by 18 m. In a race of 350 m, C will beat B by:

A. 22.75 m

B. 25 m

C. 19.5 m

D. $7\frac{4}{7}$ m

Answer: Option **B**

Explanation:

A : B = 200 : 169.

A : C = 200 : 182.

$\frac{C}{B} = \left(\frac{C}{A} \times \frac{A}{B}\right) = \left(\frac{182}{200} \times \frac{200}{169}\right) = 182 : 169.$

When C covers 182 m, B covers 169 m.

When C covers 350 m, B covers $\left(\frac{169}{182} \times 350\right)$ m = 325 m.

Therefore, C beats B by (350 - 325) m = 25 m.

113. **If 6th March, 2005 is Monday,** what was the day of the week on 6th March, 2004?

A. Sunday
B. Saturday
C. Tuesday
D. Wednesday

Answer: Option **A**

Explanation:

The year 2004 is a leap year. So, it has 2 odd days.

But, Feb 2004 not included because we are calculating from March 2004 to March 2005. So it has 1 odd day only.

∴ The day on 6th March, 2005 will be 1 day beyond the day on 6th March, 2004.

Given that, 6th March, 2005 is Monday.

∴ 6th March, 2004 is Sunday (1 day before to 6th March, 2005).

114. An accurate clock shows 8 o'clock in the morning. Through how may degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

A. 144º
B. 150º
C. 168º
D. 180º

Answer: Option **D**

Explanation:

Angle traced by the hour hand in 6 hours = $\left(\frac{360}{12} \times 6\right)^{o}$ = 180º.

115. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:

A. 145^o B. 150^o

C. 155^o D. 160^o

Answer: Option **C**

Explanation:

Angle traced by hour hand in 12 hrs = 360^o.

Angle traced by hour hand in 5 hrs 10 min. *i.e.*, $\frac{31}{6}$ hrs = $\left(\frac{360}{12} \times \frac{31}{6}\right)^o = 155^o$.

116. The market value of a 10.5% stock, in which an income of Rs. 756 is derived by investing Rs. 9000, brokerage being $\frac{1}{4}$%, is:

A. Rs. 108.25 B. Rs. 112.20

C. Rs. 124.75 D. Rs. 125.25

Answer: Option **C**

Explanation:

For an income of Rs. 756, investment = Rs. 9000.

For an income of Rs. $\frac{21}{2}$, investment = Rs. $\left(\frac{9000}{756} \times \frac{21}{2}\right)$ = Rs. 125.

$\therefore$ For a Rs. 100 stock, investment = Rs. 125.

Market value of Rs. 100 stock = Rs. $\left(125 - \frac{1}{4}\right)$ = Rs. 124.75

117. From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being kings?

A. $\frac{1}{15}$ B. $\frac{25}{57}$

C. $\frac{35}{256}$

D. $\frac{1}{221}$

Answer: Option **D**

Explanation:

Let S be the sample space.

Then, $n(S) = {}^{52}C_2 = \frac{(52 \times 51)}{(2 \times 1)} = 1326.$

Let E = event of getting 2 kings out of 4.

$\therefore\ n(E) = {}^{4}C_2 = \frac{(4 \times 3)}{(2 \times 1)} = 6.$

$\therefore\ P(E) = \frac{n(E)}{n(S)} = \frac{6}{1326} = \frac{1}{221}.$

118. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen and King only)?

A. $\frac{1}{13}$

B. $\frac{3}{13}$

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

D. $\frac{9}{52}$

Answer: Option **B**

Explanation:

Clearly, there are 52 cards, out of which there are 12 face cards.

$\therefore\ P$ (getting a face card) $= \frac{12}{52} = \frac{3}{13}.$

119. The true discount on Rs. 2562 due 4 months hence is Rs. 122. The rate percent is:

A. 12%

B. $13\frac{1}{3}\%$

C. 15%

D. 14%

Answer: Option **C**

Explanation:

P.W. = Rs. (2562 - 122) = Rs. 2440.

∴ S.I. on Rs. 2440 for 4 months is Rs. 122.

∴ Rate = $\left[\frac{100 \times 122}{2440 \times \frac{1}{3}}\right]\% = 15\%$.

Direction (for Q.No. 120):

Find out the wrong number in the given sequence of numbers.

120. 22, 33, 66, 99, 121, 279, 594

A. 33

B. 121

C. 279

D. 594

Answer: Option **C**

Explanation:

Each of the number except 279 is a multiple of 11.

Direction (for Q.No. 121):

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

121. What is the area of the given rectangle?

I. Perimeter of the rectangle is 60 cm.

II. Breadth of the rectangle is 12 cm.

III. Sum of two adjacent sides is 30 cm.

A. I only

B. II only

C. I and II only

D. II and III only

E. II and either I or III

Answer: Option **E**

Explanation:

From I and II, we can find the length and breadth of the rectangle and therefore the area can be obtained.

So, III is redundant.

Also, from II and III, we can find the length and breadth and therefore the area can be obtained.

So, I is redundant.

∴ Correct answer is "II and either I or III".

122. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through:

A. 145º B. 150º

C. 155º D. 160º

Answer: Option **C**

Explanation:

Angle traced by hour hand in 12 hrs = 360º.

Angle traced by hour hand in 5 hrs 10 min. *i.e.*, $\frac{31}{6}$ hrs = $\left(\frac{360}{12} \times \frac{31}{6}\right)^{\circ}$ = 155º.

123. In how many ways can the letters of the word 'LEADER' be arranged?

A. 72 B. 144

C. 360 D. 720

E. None of these

Answer: Option **C**

Explanation:

The word 'LEADER' contains 6 letters, namely 1L, 2E, 1A, 1D and 1R.

∴ Required number of ways = $\frac{6!}{(1!)(2!)(1!)(1!)(1!)}$ = 360.

124. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

A. 210 B. 1050

C. 25200 D. 21400

E. None of these

Answer: Option **C**

Explanation:

Number of ways of selecting (3 consonants out of 7) and (2 vowels out of 4)

$= ({}^{7}C_3 \times {}^{4}C_2)$

$= \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times \frac{4 \times 3}{2 \times 1}\right)$

$= 210.$

Number of groups, each having 3 consonants and 2 vowels = 210.

Each group contains 5 letters.

Number of ways of arranging 5 letters among themselves $= 5!$

$= 5 \times 4 \times 3 \times 2 \times 1$

$= 120.$

$\therefore$ Required number of ways = (210 x 120) = 25200.

Direction (for Q.No. 125):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

125. In a cricket team, the average age of eleven players in 28 years. What is the age of the captain?

I. The captain is eleven years older than the youngest player.

II. The average age of 10 players, other than the captain is 27.3 years.

III. Leaving aside the captain and the youngest player, the average ages of three groups of three players each are 25 years, 28 years and 30 years respectively.

A. Any two of the three
B. All I, II and III
C. II only or I and III only
D. II and III only

E. None of these

Answer: Option **C**

Explanation:

Total age of 11 players = (28 x 11) years = 308 years.

I. C = Y + 11 $\Rightarrow$ C - Y = 11 .... (i)

II. Total age of 10 players (excluding captain) = (27.3 x 10) years = 273 years.

$\therefore$ Age of captain = (308 - 273) years = 35 years.

Thus, C = 35. .... (ii)

From (i) and (ii), we get Y = 24

III. Total age of 9 players = [(25 x 3) + (28 x 3) + (30 x 3)] years = 249 years.

$\therefore$ C + Y = (308 - 249) = 59 .... (iii)

From (i) and (iii), we get C = 35.

Thus, II alone gives the answer.

Also, I and III together give the answer.

$\therefore$ Correct answer is (C).

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

A. 279 B. 283

C. 308 D. 318

Answer: Option **C**

Explanation:

Other number = $\left(\frac{11 \times 7700}{275}\right)$ = 308.

Learn more problems on : Problems on H.C.F and L.C.M

Discuss about this problem : Discuss in Forum

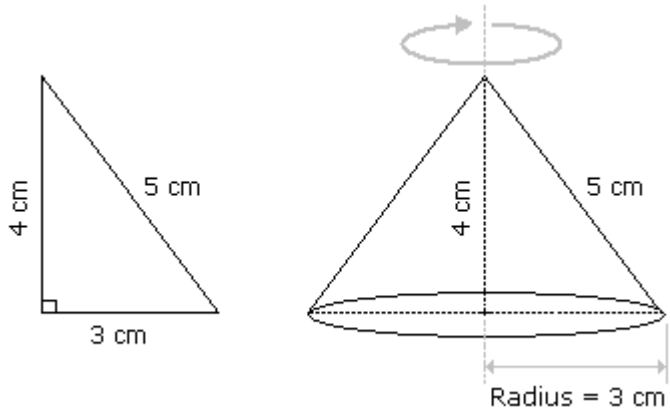
127. A right triangle with sides 3 cm, 4 cm and 5 cm is rotated the side of 3 cm to form a cone. The volume of the cone so formed is:

A. 12π cm^3 B. 15π cm^3

C. 16π cm^3 D. 20π cm^3

Answer: Option **A**

Explanation:



Clearly, we have $r = 3$ cm and $h = 4$ cm.

$\therefore$ Volume $= \frac{1}{3}\pi r^2 h = \left(\frac{1}{3} \times \pi \times 3^2 \times 4\right) cm^3 = 12\pi$ cm^3.

128. A man has some hens and cows. If the number of heads be 48 and the number of feet equals 140, then the number of hens will be:

A. 22 B. 23

C. 24 D. 26

Answer: Option **D**

Explanation:

Let the number of hens be x and the number of cows be y.

Then, $x + y = 48$ .... (i)

and $2x + 4y = 140 \Rightarrow x + 2y = 70$ .... (ii)

Solving (i) and (ii) we get: $x = 26$, $y = 22$.

$\therefore$ The required answer = 26.

129. $(256)^{0.16} \times (256)^{0.09} = ?$

A. 4 B. 16

C. 64 D. 256.25

Answer: Option **A**

Explanation:

$(256)^{0.16} \times (256)^{0.09} = (256)^{(0.16 + 0.09)}$

$= (256)^{0.25}$

$= (256)^{(25/100)}$

$= (256)^{(1/4)}$

$= (4^4)^{(1/4)}$

$= 4^{4(1/4)}$

$= 4^1$

$= 4$

130. In a 200 metres race A beats B by 35 m or 7 seconds. A's time over the course is:

A. 40 sec B. 47 sec

C. 33 sec D. None of these

Answer: Option **C**

Explanation:

B runs 35 m in 7 sec.

$\therefore$ B covers 200 m in $\left(\frac{7}{35} \times 200\right)$ = 40 sec.

B's time over the course = 40 sec.

$\therefore$ A's time over the course (40 - 7) sec = 33 sec.

131. Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?

A. 57%
B. 60%
C. 65%
D. 90%

Answer: Option **A**

Explanation:

Total number of votes polled = (1136 + 7636 + 11628) = 20400.

$\therefore$ Required percentage = $\left(\frac{11628}{20400} \times 100\right)\% = 57\%$.

Direction (for Q.No. 132):

Find the odd man out.

132. 835, 734, 642, 751, 853, 981, 532

A. 751
B. 853
C. 981
D. 532

Answer: Option **A**

Explanation:

In each number except 751, the difference of third and first digit is the middle one.

Direction (for Q.Nos. 133 - 134):

Find out the wrong number in the given sequence of numbers.

133. 8, 13, 21, 32, 47, 63, 83

A. 47
B. 63
C. 32
D. 83

Answer: Option **A**

Explanation:

Go on adding 5, 8, 11, 14, 17, 20.

So, the number 47 is wrong and must be replaced by 46.

134. 582, 605, 588, 611, 634, 617, 600

A. 634 B. 611

C. 605 D. 600

Answer: Option **A**

Explanation:

Alternatively 23 is added and 17 is subtracted from the terms. So, 634 is wrong.

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

A. Rs. 375 B. Rs. 400

C. Rs. 600 D. Rs. 800

Answer: Option **B**

Explanation:

C's 1 day's work = $\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{3} - \frac{7}{24} = \frac{1}{24}$.

A's wages : B's wages : C's wages = $\frac{1}{6} : \frac{1}{8} : \frac{1}{24} = 4 : 3 : 1$.

$\therefore$ C's share (for 3 days) = Rs. $\left(3 \times \frac{1}{24} \times 3200\right)$ = Rs. 400.

136. The compound interest on Rs. 30,000 at 7% per annum is Rs. 4347. The period (in years) is:

A. 2 B. $2\frac{1}{}$

2

C. 3 D. 4

Answer: Option **A**

Explanation:

Amount = Rs. (30000 + 4347) = Rs. 34347.

Let the time be n years.

Then, $30000\left(1+\frac{7}{100}\right)^{n}=34347$

$\Rightarrow \left(\frac{107}{100}\right)^{n}=\frac{34347}{30000}=\frac{11449}{10000}=\left(\frac{107}{100}\right)^{2}$

$\therefore$ n = 2 years.

Direction (for Q.No. 137):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

137. What is the speed of the train?

I. The train crosses a tree in 13 seconds.

II. The train crosses a platform of length 250 metres in 27 seconds.

III. The train crosses another train running in the same direction in 32 seconds.

A. I and II only

B. II and III only

C. I and III only

D. Any two of the three

E. None of these

Answer: Option **A**

Explanation:

Let the speed of the train be x metres/sec.

$$\text{Time taken to cross a tree} = \frac{\text{Length of the train}}{\text{Speed of the train}}$$

$$\text{Time taken to cross a platform} = \frac{\text{(Length of the train + Length of the Platform)}}{\text{Speed of the train}}$$

I gives, $13 = \frac{l}{x} \Rightarrow 13x$.

II gives $27 = \frac{l + 250}{x}$

$$\Rightarrow \frac{13x + 250}{x} = 27$$

$$\Rightarrow x = \frac{125}{7} \text{ m/sec.}$$

Thus I and II give the speed of the train.

$\therefore$ The correct answer is (A.)

Direction (for Q.Nos. 138 - 139):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.

- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

138. What is the capacity of a cylindrical tank?

I. Radius of the base is half of its height which is 28 metres.

II. Area of the base is 616 sq. metres and its height is 28 metres.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

I gives, $h = 28$ m and $r = 14$.

$\therefore$ Capacity = $\pi r^2 h$, which can be obtained.

Thus, I alone gives the answer.

II gives, $\pi r^2 = 616$ m^2 and $h = 28$ m.

$\therefore$ Capacity = $(\pi r^2 \times h) = (616 \times 28)$ m^3.

Thus, II alone gives the answer.

$\therefore$ Correct answer is (C).

139. What is the volume of 32 metre high cylindrical tank?

I. The area of its base is 154 m^2.

II. The diameter of the base is 14 m.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

Given, height = 32 m.

I gives, area of the base = 154 m^2.

$\therefore$ Volume = (Area of the base x Height) = (154 x 32) m^3.

Thus, I alone gives the answer.

II gives, radius of the base = 7 m.

$\therefore$ Volume = $\pi r^2 h = \left(\frac{22}{7} \text{ x } 7 \text{ x } 7 \text{ x } 32\right) m^3 = 4928\ m^3$.

Thus, II alone gives the answer.

$\therefore$ Correct answer is (C).

140. A, B, C subscribe Rs. 50,000 for a business. A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35,000, A receives:

A. Rs. 8400 B. Rs. 11,900

C. Rs. 13,600 D. Rs. 14,700

Answer: Option **D**

Explanation:

Let C = *x*.

Then, B = x + 5000 and A = x + 5000 + 4000 = x + 9000.

So, $x + x + 5000 + x + 9000 = 50000$

$\Rightarrow 3x = 36000$

$\Rightarrow x = 12000$

A : B : C = 21000 : 17000 : 12000 = 21 : 17 : 12.

$\therefore$ A's share = Rs. $\left(35000 \times \frac{21}{50}\right)$ = Rs. 14,700.

---

141. The present worth of Rs. 2310 due $2\frac{1}{2}$ years hence, the rate of interest being 15% per annum, is:

A. Rs. 1750

B. Rs. 1680

C. Rs. 1840

D. Rs. 1443.75

Answer: Option **B**

Explanation:

P.W. = Rs. $\left[\frac{100 \times 2310}{100 + \left(15 \times \frac{5}{2}\right)}\right]$ = Rs. 1680.

---

142. The average age of husband, wife and their child 3 years ago was 27 years and that of wife and the child 5 years ago was 20 years. The present age of the husband is:

A. 35 years

B. 40 years

C. 50 years

D. None of these

Answer: Option **B**

Explanation:

Sum of the present ages of husband, wife and child = (27 x 3 + 3 x 3) years = 90 years.

Sum of the present ages of wife and child = (20 x 2 + 5 x 2) years = 50 years.

∴ Husband's present age = (90 - 50) years = 40 years.

143. The price of 2 sarees and 4 shirts is Rs. 1600. With the same money one can buy 1 saree and 6 shirts. If one wants to buy 12 shirts, how much shall he have to pay ?

A. Rs. 1200

B. Rs. 2400

C. Rs. 4800

D. Cannot be determined

E. None of these

Answer: Option **B**

Explanation:

Let the price of a saree and a shirt be Rs. *x* and Rs. *y* respectively.

Then, $2x + 4y = 1600$ .... (i)

and $x + 6y = 1600$ .... (ii)

Divide equation (i) by 2, we get the below equation.

=> x + 2y = 800. --- (iii)

Now subtract (iii) from (ii)

```
 x +  6y = 1600  (-)
 x +  2y =  800
----------------
     4y =  800
----------------
```

Therefore, y = 200.

Now apply value of y in (iii)

=> x + 2 x 200 = 800

=> x + 400 = 800

Therefore x = 400

Solving (i) and (ii) we get $x = 400$, $y = 200$.

∴ Cost of 12 shirts = Rs. (12 x 200) = Rs. 2400.

144. Q is as much younger than R as he is older than T. If the sum of the ages of R and T is

50 years, what is definitely the difference between R and Q's age?

A. 1 year

B. 2 years

C. 25 years

D. Data inadequate

E. None of these

Answer: Option **D**

Explanation:

Given that:

1. The difference of age b/w R and Q = The difference of age b/w Q and T.

2. Sum of age of R and T is 50 i.e. (R + T) = 50.

Question: R - Q = ?.

Explanation:

R - Q = Q - T

(R + T) = 2Q

Now given that, (R + T) = 50

So, 50 = 2Q and therefore Q = 25.

Question is (R - Q) = ?

Here we know the value(age) of Q (25), but we don't know the age of R.

Therefore, (R-Q) cannot be determined.

Direction (for Q.Nos. 145 - 146):

Find out the wrong number in the series.

145. 196, 169, 144, 121, 100, 80, 64

A. 169

B. 144

C. 121 D. 100

E. 80

Answer: Option **E**

Explanation:

Numbers must be $(14)^2$, $(13)^2$, $(12)^2$, $(11)^2$, $(10)^2$, $(9)^2$, $(8)^2$.

So, 80 is wrong.

146. 6, 12, 48, 100, 384, 768, 3072

A. 768 B. 384

C. 100 D. 48

E. 12

Answer: Option **C**

Explanation:

Each even term of the series is obtained by multiplying the previous term by 2.

2^{nd} term = (1^{st} term) x 2 = 6 x 2 = 12

4^{th} term = (3^{rd} term) x 2 = 48 x 2 = 96.

6^{th} term = (5^{th} term) x 2 = 384 x 2 =768.

$\therefore$ 4^{th} term should be 96 instead of 100.

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

A. Rs. 45 B. Rs. 50

C. Rs. 55 D. Rs. 60

Answer: Option **A**

Explanation:

A : B : C = (10 x 7) : (12 x 5) : (15 x 3) = 70 : 60 : 45 = 14 : 12 : 9.

$\therefore$ C's rent = Rs. $\left(175 \times \frac{9}{35}\right)$ = Rs. 45.

148. If the simple interest on a sum of money for 2 years at 5% per annum is Rs. 50, what is the compound interest on the same at the same rate and for the same time?

A. Rs. 51.25 B. Rs. 52

C. Rs. 54.25 D. Rs. 60

Answer: Option **A**

Explanation:

Sum = Rs. $\left(\frac{50 \times 100}{2 \times 5}\right)$ = Rs. 500.

Amount = Rs. $\left[500 \times \left(1 + \frac{5}{100}\right)^2\right]$

= Rs. $\left(500 \times \frac{21}{20} \times \frac{21}{20}\right)$

= Rs. 551.25

$\therefore$ C.I. = Rs. (551.25 - 500) = Rs. 51.25

Direction (for Q.No. 149):

Find out the wrong number in the given sequence of numbers.

149. 36, 54, 18, 27, 9, 18.5, 4.5

A. 4.5 B. 18.5

C. 54 D. 18

Answer: Option **B**

Explanation:

The terms are alternatively multiplied by 1.5 and divided by 3. However, 18.5 does not satisfy it.

150. Two trains are running at 40 km/hr and 20 km/hr respectively in the same direction. Fast train completely passes a man sitting in the slower train in 5 seconds. What is the length of the fast train?

A. 23 m

B. $23\frac{2}{9}$ m

C. $27\frac{7}{9}$ m

D. 29 m

Answer: Option **C**

Explanation:

Relative speed = (40 - 20) km/hr = $\left(20 \times \frac{5}{18}\right)$ m/sec = $\left(\frac{50}{9}\right)$ m/sec.

$\therefore$ Length of faster train = $\left(\frac{50}{9} \times 5\right)$ m = $\frac{250}{9}$ m = $27\frac{7}{9}$ m.

151. A train moves past a telegraph post and a bridge 264 m long in 8 seconds and 20 seconds respectively. What is the speed of the train?

A. 69.5 km/hr

B. 70 km/hr

C. 79 km/hr

D. 79.2 km/hr

Answer: Option **D**

Explanation:

Let the length of the train be x metres and its speed by y m/sec.

Then, $\frac{x}{y} = 8 \Rightarrow x = 8y$

Now, $\frac{x + 264}{20} = y$

$\Rightarrow 8y + 264 = 20y$

$\Rightarrow y = 22.$

$\therefore$ Speed = 22 m/sec = $\left(22 \times \frac{18}{5}\right)$km/hr = 79.2 km/hr.

152. How many seconds will a 500 metre long train take to cross a man walking with a speed of 3 km/hr in the direction of the moving train if the speed of the train is 63 km/hr?

A. 25 B. 30

C. 40 D. 45

Answer: Option **B**

Explanation:

Speed of the train relative to man = (63 - 3) km/hr

= 60 km/hr

= $\left(60 \times \frac{5}{18}\right)$ m/sec

= $\left(\frac{50}{3}\right)$ m/sec.

$\therefore$ Time taken to pass the man = $\left(500 \times \frac{3}{50}\right)$ sec

= 30 sec.

153. In a 500 m race, the ratio of the speeds of two contestants A and B is 3 : 4. A has a start of 140 m. Then, A wins by:

A. 60 m

B. 40 m

C. 20 m

D. 10 m

Answer: Option **C**

Explanation:

To reach the winning post A will have to cover a distance of (500 - 140)m, *i.e.*, 360 m.

While A covers 3 m, B covers 4 m.

While A covers 360 m, B covers $\left(\frac{4}{3} \text{ x } 360\right)\text{m} = 480$ m.

Thus, when A reaches the winning post, B covers 480 m and therefore remains 20 m behind.

∴ A wins by 20 m.

154. If $3^{(x-y)} = 27$ and $3^{(x+y)} = 243$, then x is equal to:

A. 0

B. 2

C. 4

D. 6

Answer: Option **C**

Explanation:

$3^{x-y} = 27 = 3^3 \Leftrightarrow x - y = 3$ ....(i)

$3^{x+y} = 243 = 3^5 \Leftrightarrow x + y = 5$ ....(ii)

On solving (i) and (ii), we get $x = 4$.

Direction (for Q.No. 155):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

155. What was the percentage of discount given?

I. 23.5% profit was earned by selling an almirah for Rs. 12,350.

II. If there were no discount, the earned profit would have been 30%.

III. The cost price of the almirah was Rs. 10,000.

A. Only I and II

B. Only II and III

C. Only I and III

D. Any two of the three

E. None of these

Answer: Option **E**

Explanation:

I. S.P. = Rs. 12350, Gain = 23.5%

$\therefore$ C.P. = Rs. $\left(\frac{100}{123.5} \times 12350\right)$ = Rs. 10,000.

II. M.P. = 130% of C.P. = 130% of Rs. 10,000 = Rs. 13,000.

From I and II, discount = Rs. (13000 - 12350) = Rs. 650.

Discount % = $\left(\frac{650}{13000} \times 100\right)\%$ = 5%.

Thus, I and II give the answer.

II and III can not give the answer. Because we require profit percentage with discount and profit percentage without discount. So II and III are not sufficient.

Since III gives C.P. = Rs. 10,000, I and III give the answer.

Therefore, I and II [or] I and III give the answer.

$\therefore$ Correct answer is (E).

156. The diagonal of a rectangle is 41 cm and its area is 20 sq. cm. The perimeter of the rectangle must be:

A. 9 cm

B. 18 cm

C. 20 cm

D. 41 cm

Answer: Option **B**

Explanation:

$l^2 + b^2 = 41$.

Also, $lb = 20$.

$(l + b)^2 = (l^2 + b^2) + 2lb = 41 + 40 = 81$

$\Rightarrow (l + b) = 9$.

$\therefore$ Perimeter $= 2(l + b) = 18$ cm.

157. A, B and C can complete a piece of work in 24, 6 and 12 days respectively. Working together, they will complete the same work in:

A. $\frac{1}{24}$ day

B. $\frac{7}{24}$ day

C. $3\frac{3}{7}$ days

D. 4 days

Answer: Option **C**

Explanation:

Formula: If A can do a piece of work in n days, then A's 1 day's work $= \frac{1}{n}$.

(A + B + C)'s 1 day's work $= \left(\frac{1}{24} + \frac{1}{6} + \frac{1}{12}\right) = \frac{7}{24}$.

Formula: If A's 1 day's work $= \frac{1}{n}$, then A can finish the work in n days.

So, all the three together will complete the job in $\left(\frac{24}{7}\right)$ days $= 3\frac{3}{7}$ days.

7 7

158. If selling price is doubled, the profit triples. Find the profit percent.

A. $66\frac{2}{3}$

B. 100

C. $105\frac{1}{3}$

D. 120

Answer: Option **B**

Explanation:

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

Then, $3(y - x) = (2y - x) \Rightarrow y = 2x$.

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

$\therefore$ Profit % = $\left(\frac{x}{x} \times 100\right)\% = 100\%$

159. The value of $\log_2 16$ is:

A. $\frac{1}{8}$

B. 4

C. 8

D. 16

Answer: Option **B**

Explanation:

Let $\log_2 16 = n$.

Then, $2^n = 16 = 2^4 \Rightarrow n = 4$.

$\therefore \log_2 16 = 4$.

Direction (for Q.No. 160):

Each of the questions given below consists of a statement and / or a question and two

statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

160. What will be compounded amount?

I. Rs. 200 was borrowed for 192 months at 6% compounded annually.

II. Rs. 200 was borrowed for 16 years at 6%.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

I. Amount = Rs. $\left[200 \times \left(1 + \frac{6}{100}\right)^{16}\right]$

II. Amount = Rs. $\left[200 \times \left(1 + \frac{6}{100}\right)^{16}\right]$

Thus, I as well as II gives the answer.

∴ Correct answer is (C).

161. The price of commodity *X* increases by 40 paise every year, while the price of commodity *Y*increases by 15 paise every year. If in 2001, the price of commodity *X* was Rs. 4.20 and that of*Y* was Rs. 6.30, in which year commodity *X* will cost 40 paise more than the commodity *Y* ?

A. 2010 B. 2011

C. 2012 D. 2013

Answer: Option **B**

Explanation:

Suppose commodity *X* will cost 40 paise more than *Y* after *z* years.

Then, $(4.20 + 0.40z) - (6.30 + 0.15z) = 0.40$

$\Rightarrow 0.25z = 0.40 + 2.10$

$\Rightarrow z = \frac{2.50}{0.25} = \frac{250}{25} = 10.$

$\therefore$ *X* will cost 40 paise more than *Y* 10 years after 2001 *i.e.,* 2011.

162. There are two examinations rooms A and B. If 10 students are sent from A to B, then the number of students in each room is the same. If 20 candidates are sent from B to A, then the number of students in A is double the number of students in B. The number of students in room A is:

A. 20 B. 80

C. 100 D. 200

Answer: Option **C**

Explanation:

Let the number of students in rooms A and B be *x* and *y* respectively.

Then, $x - 10 = y + 10 \Rightarrow x - y = 20$ .... (i)

and $x + 20 = 2(y - 20) \Rightarrow x - 2y = -60$ .... (ii)

Solving (i) and (ii) we get: $x = 100$, $y = 80$.

∴ The required answer A = 100.

163. If $a - b = 3$ and $a^2 + b^2 = 29$, find the value of ab.

A. 10 B. 12

C. 15 D. 18

Answer: Option **A**

Explanation:

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

$= 29 - 9 = 20$

$\Rightarrow ab = 10.$

164. The product of two numbers is 120 and the sum of their squares is 289. The sum of the number is:

A. 20 B. 23

C. 169 D. None of these

Answer: Option **B**

Explanation:

Let the numbers be x and y.

Then, $xy = 120$ and $x^2 + y^2 = 289$.

∴ $(x + y)^2 = x^2 + y^2 + 2xy = 289 + (2 \times 120) = 529$

∴ $x + y = 529 = 23.$

165. The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?

A. 3 : 3 : 10 B. 10 : 11 : 20

C. 23 : 33 : 60 D. Cannot be determined

Answer: Option **C**

Explanation:

Let A = 2*k*, B = 3*k* and C = 5*k*.

A's new salary = $\frac{115}{100}$ of $2k = \left(\frac{115}{100} \times 2k\right) = \frac{23k}{10}$

B's new salary = $\frac{110}{100}$ of $3k = \left(\frac{110}{100} \times 3k\right) = \frac{33k}{10}$

C's new salary = $\frac{120}{100}$ of $5k = \left(\frac{120}{100} \times 5k\right) = 6k$

$\therefore$ New ratio $\left(\frac{23k}{10} : \frac{33k}{10} : 6k\right) = 23 : 33 : 60$

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

A. Rs. 330 B. Rs. 360

C. Rs. 380 D. Rs. 430

Answer: Option **A**

Explanation:

$A : B = \left[4x \times 3 + \left(4x - \frac{1}{4} \times 4x\right) \times 7\right] : \left[5x \times 3 + \left(5x - \frac{1}{5} \times 5x\right) \times 7\right]$

$= (12x + 21x) : (15x + 28x)$

$= 33x : 43x$

$= 33 : 43.$

$\therefore$ A's share = Rs. $\left(760 \times \frac{33}{76}\right)$ = Rs. 330.

Direction (for Q.No. 167):

Each of the questions given below consists of a question followed by three statements. You

have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

167. What is R's share of profit in a joit venture?

I. Q started business investing Rs. 80,000.

II. R joined him after 3 months.

III. P joined after 4 months with a capital of Rs. 1,20,000 and got Rs. 6000 as his share profit.

A. All I, II and III

B. I and III only

C. II and III only

D. Even with all I, II and III, the answer cannot be arrived at

E. None of these

Answer: Option **D**

Explanation:

From I, II and III, we get P : Q : R = (120000 x 8) : (80000 x 12) : (*x* x 9).

Since R's investment is not given, the above ratio cannot be give.

∴ Given data is inadequate.

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

A. Rs. 375 B. Rs. 400

C. Rs. 600 D. Rs. 800

Answer: Option **B**

Explanation:

C's 1 day's work = $\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{3} - \frac{7}{24} = \frac{1}{24}$.

A's wages : B's wages : C's wages = $\frac{1}{6} : \frac{1}{8} : \frac{1}{24}$ = 4 : 3 : 1.

∴ C's share (for 3 days) = Rs. $\left(3 \times \frac{1}{24} \times 3200\right)$ = Rs. 400.

169. A goods train runs at the speed of 72 kmph and crosses a 250 m long platform in 26 seconds. What is the length of the goods train?

A. 230 m
B. 240 m
C. 260 m
D. 270 m

Answer: Option **D**

Explanation:

Speed = $\left(72 \times \frac{5}{18}\right)$ m/sec = 20 m/sec.

Time = 26 sec.

Let the length of the train be *x* metres.

Then, $\frac{x + 250}{26} = 20$

⇒ $x + 250 = 520$

⇒ $x = 270$.

170. If $\log_{10} 2 = 0.3010$, then $\log_2 10$ is equal to:

A. $\frac{699}{301}$
B. $\frac{1000}{301}$

C. 0.3010 D. 0.6990

Answer: Option **B**

Explanation:

$\log_2 10 = \frac{1}{\log_{10} 2} = \frac{1}{0.3010} = \frac{10000}{3010} = \frac{1000}{301}$.

171. An error 2% in excess is made while measuring the side of a square. The percentage of error in the calculated area of the square is:

A. 2% B. 2.02%

C. 4% D. 4.04%

Answer: Option **D**

Explanation:

100 cm is read as 102 cm.

$\therefore$ $A_1 = (100 \times 100)\ cm^2$ and $A_2\ (102 \times 102)\ cm^2$.

$(A_2 - A_1) = [(102)^2 - (100)^2]$

$= (102 + 100) \times (102 - 100)$

$= 404\ cm^2$.

$\therefore$ Percentage error $= \left(\frac{404}{100 \times 100} \times 100\right)\% = 4.04\%$

172. In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is:

A. 75 cu. m B. 750 cu. m

C. 7500 cu. m D. 75000 cu. m

Answer: Option **B**

Explanation:

1 hectare = 10,000 m^2

So, Area = (1.5 x 10000) m^2 = 15000 m^2.

Depth = $\frac{5}{100}$m = $\frac{1}{20}$m.

$\therefore$ Volume = (Area x Depth) = $\left(15000 \times \frac{1}{20}\right)m^3$ = 750 m^3.

Direction (for Q.No. 173):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

173. What is the volume of a cube?

I. The area of each face of the cube is 64 square metres.

II. The length of one side of the cube is 8 metres.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

Let each edge be *a* metres. Then,

I. $a^2 = 64 \Rightarrow a = 8$ m $\Rightarrow$ Volume = $(8 \times 8 \times 8)$ $m^3 = 512$ m^3.

Thus, I alone gives the answer.

II. $a = 8$ m $\Rightarrow$ Volume = $(8 \times 8 \times 8)$ $m^3 = 512$ m^3.

Thus, II alone gives the answer.

$\therefore$ Correct answer is (C).

174. The reflex angle between the hands of a clock at 10.25 is:

A. 180^o B. $192\frac{1^o}{2}$

C. 195^o D. $197\frac{1^o}{2}$

Answer: Option **D**

Explanation:

Angle traced by hour hand in $\frac{125}{12}$ hrs $= \left(\frac{360}{12} \times \frac{125}{12}\right)^o = 312\frac{1^o}{2}$.

Angle traced by minute hand in 25 min $= \left(\frac{360}{60} \times 25\right)^o = 150^o$.

$\therefore$ Reflex angle $= 360^o - \left(312\frac{1}{2} - 150\right)^o = 360^o - 162\frac{1^o}{2} = 197\frac{1}{2}$.

175. At what time between 4 and 5 o'clock will the hands of a watch point in opposite directions?

A. 45 min. past 4 B. 40 min. past 4

C. 504 min. past 4 D. 546 min. past 4

11 11

Answer: Option **D**

Explanation:

At 4 o'clock, the hands of the watch are 20 min. spaces apart.

To be in opposite directions, they must be 30 min. spaces apart.

∴ Minute hand will have to gain 50 min. spaces.

55 min. spaces are gained in 60 min.

50 min. spaces are gained in $\left(\frac{60}{55} \times 50\right)$ min. or $54\frac{6}{11}$ min.

∴ Required time = $54\frac{6}{11}$ min. past 4.

176. A 12% stock yielding 10% is quoted at:

A. Rs. 83.33 B. Rs. 110

C. Rs. 112 D. Rs. 120

Answer: Option **D**

Explanation:

To earn Rs. 10, money invested = Rs. 100.

To earn Rs. 12, money invested = Rs. $\left(\frac{100}{10} \times 12\right)$ = Rs. 120.

∴ Market value of Rs. 100 stock = Rs. 120.

177. In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

A. 32 B. 48

C. 36 D. 60

E. 120

Answer: Option **C**

Explanation:

There are 6 letters in the given word, out of which there are 3 vowels and 3 consonants.

Let us mark these positions as under:

(1) (2) (3) (4) (5) (6)

Now, 3 vowels can be placed at any of the three places out 4, marked 1, 3, 5.

Number of ways of arranging the vowels = ${}^3P_3 = 3! = 6$.

Also, the 3 consonants can be arranged at the remaining 3 positions.

Number of ways of these arrangements = ${}^3P_3 = 3! = 6$.

Total number of ways = (6 x 6) = 36.

178. Two dice are tossed. The probability that the total score is a prime number is:

A. $\frac{1}{6}$ B. $\frac{5}{12}$

C. $\frac{1}{2}$ D. $\frac{7}{9}$

Answer: Option **B**

Explanation:

Clearly, $n(S) = (6 \times 6) = 36$.

Let E = Event that the sum is a prime number.

Then E = { (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), (4, 3), (5, 2), (5, 6), (6, 1), (6, 5) }

$\therefore$ $n(E) = 15$.

$\therefore$ $P(E) = \frac{n(E)}{n(S)} = \frac{15}{36} = \frac{5}{12}$.

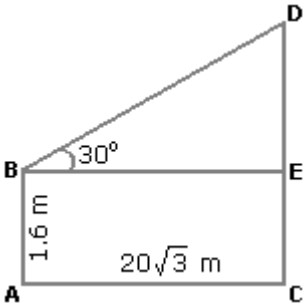
179. An observer 1.6 m tall is 203 away from a tower. The angle of elevation from his eye to the top of the tower is 30º. The heights of the tower is:

A. 21.6 m
B. 23.2 m
C. 24.72 m
D. None of these

Answer: Option **A**

Explanation:

Let AB be the observer and CD be the tower.



Draw BE ⊥ CD.

Then, CE = AB = 1.6 m,

BE = AC = 203 m.

$\frac{DE}{BE} = \tan 30^\circ = \frac{1}{\sqrt{3}}$

$\Rightarrow DE = \frac{203}{\sqrt{3}} m = 20 m.$

$\therefore$ CD = CE + DE = (1.6 + 20) m = 21.6 m.

Direction (for Q.No. 180):

Find the odd man out.

180. 1, 4, 9, 16, 23, 25, 36

A. 9
B. 23
C. 25
D. 36

Answer: Option **B**

Explanation:

Each of the numbers except 23, is perfect square.

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

A. 4 B. 5

C. 6 D. 8

Answer: Option **A**

Explanation:

N = H.C.F. of (4665 - 1305), (6905 - 4665) and (6905 - 1305)

= H.C.F. of 3360, 2240 and 5600 = 1120.

Sum of digits in N = (1 + 1 + 2 + 0) = 4

182. The average weight of 8 person's increases by 2.5 kg when a new person comes in place of one of them weighing 65 kg. What might be the weight of the new person?

A. 76 kg B. 76.5 kg

C. 85 kg D. Data inadequate

E. None of these

Answer: Option **C**

Explanation:

Total weight increased = (8 x 2.5) kg = 20 kg.

Weight of new person = (65 + 20) kg = 85 kg.

183. The difference between a two-digit number and the number obtained by interchanging the digits is 36. What is the difference between the sum and the difference of the digits of the number if the ratio between the digits of the number is 1 : 2 ?

A. 4 B. 8

C. 16 D. None of these

Answer: Option **B**

Explanation:

Since the number is greater than the number obtained on reversing the digits, so the ten's digit is greater than the unit's digit.

Let ten's and unit's digits be $2x$ and x respectively.

Then, $(10 \times 2x + x) - (10x + 2x) = 36$

$\Rightarrow 9x = 36$

$\Rightarrow x = 4.$

$\therefore$ Required difference $= (2x + x) - (2x - x) = 2x = 8.$

184. The sum of the present ages of a father and his son is 60 years. Six years ago, father's age was five times the age of the son. After 6 years, son's age will be:

A. 12 years B. 14 years

C. 18 years D. 20 years

Answer: Option **D**

Explanation:

Let the present ages of son and father be x and $(60 - x)$ years respectively.

Then, $(60 - x) - 6 = 5(x - 6)$

$\Rightarrow 54 - x = 5x - 30$

$\Rightarrow 6x = 84$

$\Rightarrow x = 14.$

$\therefore$ Son's age after 6 years $= (x + 6) = 20$ years..

185. Three candidates contested an election and received 1136, 7636 and 11628 votes respectively. What percentage of the total votes did the winning candidate get?

A. 57% B. 60%

C. 65%

D. 90%

Answer: Option **A**

Explanation:

Total number of votes polled = (1136 + 7636 + 11628) = 20400.

$\therefore$ Required percentage = $\left(\frac{11628}{20400} \times 100\right)\% = 57\%$.

186. In a certain store, the profit is 320% of the cost. If the cost increases by 25% but the selling price remains constant, approximately what percentage of the selling price is the profit?

A. 30%

B. 70%

C. 100%

D. 250%

Answer: Option **B**

Explanation:

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

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

New S.P. = Rs. 420.

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

$\therefore$ Required percentage = $\left(\frac{295}{420} \times 100\right)\% = \frac{1475}{21}\% = 70\%$ (approximately).

187. If the cost of *x* metres of wire is d rupees, then what is the cost of *y* metres of wire at the same rate?

A. Rs. $\left(\frac{xy}{d}\right)$

B. Rs. (xd)

C. Rs. (yd)

D. Rs. $\left(\frac{yd}{x}\right)$

Answer: Option **D**

Explanation:

Cost of x metres = Rs. d.

Cost of 1 metre = Rs. $\left(\frac{d}{x}\right)$

Cost of y metres = Rs. $\left(\frac{d}{x} \cdot y\right)$ = Rs. $\left(\frac{yd}{x}\right)$.

188. A flagstaff 17.5 m high casts a shadow of length 40.25 m. The height of the building, which casts a shadow of length 28.75 m under similar conditions will be:

A. 10 m

B. 12.5 m

C. 17.5 m

D. 21.25 m

Answer: Option **B**

Explanation:

Let the height of the building x metres.

Less lengthy shadow, Less in the height (Direct Proportion)

$\therefore$ 40.25 : 28.75 **::** 17.5 : x $\Leftrightarrow$ 40.25 x x = 28.75 x 17.5

$$x = \frac{28.75 \times 17.5}{40.25}$$

$\Rightarrow x = 12.5$

Direction (for Q.No. 189):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

189. In how many days can 10 women finish a work?

I. 10 men can complete the work in 6 days.

II. 10 men and 10 women together can complete the work in $3\frac{3}{7}$ days

III. If 10 men work for 3 days and thereafter 10 women replace them, the remaining work in completed in 4 days.

A. Any two of the three

B. I and II only

C. II and III only

D. I and III only

E. None of these

Answer: Option **A**

Explanation:

I. (10 x 6) men can complete the work in 1 day.

$\Rightarrow$ 1 man's 1 day's work = $\frac{1}{60}$

II. $\left(10 \times \frac{24}{7}\right)$ men + $\left(10 \times \frac{24}{7}\right)$ women can complete the work in 1 day.

$\Rightarrow \left(\frac{240}{7}\right)$ men's 1 day work + $\left(\frac{240}{7}\right)$ women's 1 day work = 1.

$\Rightarrow \left(\frac{240}{7} \times \frac{1}{60}\right) + \left(\frac{240}{7}\right)$ women's 1 day's work = 1.

$\Rightarrow \left(\frac{240}{7}\right)$ women's 1 day's work $= \left(1 - \frac{4}{7}\right) = \frac{3}{7}$

$\Rightarrow$ 10 women's 1 day's work $= \left(\frac{3}{7} \times \frac{7}{240} \times 10\right) = \frac{1}{8}$

So, 10 women can finish the work in 8 days.

III. (10 men's work for 3 days) + (10 women's work for 4 days) = 1

$\Rightarrow$ (10 x 3) men's 1 day's work + (10 x 4) women's 1 day's work = 1

$\Rightarrow$ 30 men's 1 day's work + 40 women's 1 day's work = 1

Thus, I and III will give us the answer.

And, II and III will give us the answer.

$\therefore$ Correct answer is (A).

Direction (for Q.No. 190):

Each of these questions is followed by three statements. You have to study the question and all the three statements given to decide whether any information provided in the statement(s) is redundant and can be dispensed with while answering the given question.

190. 8 men and 14 women are working together in a field. After working for 3 days, 5 men and 8 women leave the work. How many more days will be required to complete the work?

I. 19 men and 12 women together can complete the work in 18 days.

II. 16 men can complete two-third of the work in 16 days.

III. In 1 day, the work done by three men in equal to the work done by four women.

A. I only

B. II only

C. III only

D. I or II or III

E. II or III only

Answer: Option **D**

Explanation:

Clearly, I only gives the answer.

Similarly, II only gives the answer.

And, III only gives the answer.

∴ Correct answer is (D).

191. A towel, when bleached, was found to have lost 20% of its length and 10% of its breadth. The percentage of decrease in area is:

A. 10% B. 10.08%

C. 20% D. 28%

Answer: Option **D**

Explanation:

Let original length = x and original breadth = y.

$$\text{Decrease in area} = xy - \left(\frac{80}{100}x \times \frac{90}{100}y\right)$$

$$= \left(xy - \frac{18}{25}xy\right)$$

$$= \frac{7}{25}xy.$$

$\therefore$ Decrease % = $\left(\frac{7}{25}xy \times \frac{1}{xy} \times 100\right)\%$ = 28%.

Direction (for Q.No. 192):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

192. What is the capacity of a cylindrical tank?

I. Radius of the base is half of its height which is 28 metres.

II. Area of the base is 616 sq. metres and its height is 28 metres.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

I gives, h = 28 m and r = 14.

$\therefore$ Capacity = $\pi r^2 h$, which can be obtained.

Thus, I alone gives the answer.

II gives, $\pi r^2 = 616\ m^2$ and $h = 28$ m.

$\therefore$ Capacity = $(\pi r^2 \times h) = (616 \times 28)\ m^3$.

Thus, II alone gives the answer.

$\therefore$ Correct answer is (C).

193. In 100 m race, A covers the distance in 36 seconds and B in 45 seconds. In this race A beats B by:

A. 20 m B. 25 m

C. 22.5 m D. 9 m

Answer: Option **A**

Explanation:

Distance covered by B in 9 sec. = $\left(\frac{100}{45} \times 9\right)$ m = 20 m.

$\therefore$ A beats B by 20 metres.

194. A 6% stock yields 8%. The market value of the stock is:

A. Rs. 48 B. Rs. 75

C. Rs. 96 D. Rs. 133.33

Answer: Option **B**

Explanation:

For an income of Rs. 8, investment = Rs. 100.

For an income of Rs. 6, investment = Rs. $\left(\frac{100}{8} \times 6\right)$ = Rs. 75.

$\therefore$ Market value of Rs. 100 stock = Rs. 75.

195. A box contains 2 white balls, 3 black balls and 4 red balls. In how many ways can 3 balls be drawn from the box, if at least one black ball is to be included in the draw?

A. 32 B. 48

C. 64 D. 96

E. None of these

Answer: Option **C**

Explanation:

We may have(1 black and 2 non-black) or (2 black and 1 non-black) or (3 black).

$\therefore$ Required number of ways $= ({}^3C_1 \times {}^6C_2) + ({}^3C_2 \times {}^6C_1) + ({}^3C_3)$

$$= \left(3 \times \frac{6 \times 5}{2 \times 1}\right) + \left(\frac{3 \times 2}{2 \times 1} \times 6\right) + 1$$

$$= (45 + 18 + 1)$$

$$= 64.$$

196. If Rs. 10 be allowed as true discount on a bill of Rs. 110 due at the end of a certain time, then the discount allowed on the same sum due at the end of double the time is:

A. Rs. 20 B. Rs. 21.81

C. Rs. 22 D. Rs. 18.33

Answer: Option **D**

Explanation:

S.I. on Rs. (110 - 10) for a certain time = Rs. 10.

S.I. on Rs. 100 for double the time = Rs. 20.

T.D. on Rs. 120 = Rs. (120 - 100) = Rs. 20.

T.D. on Rs. 110 = Rs. $\left(\frac{20}{120} \times 110\right)$ = Rs. 18.33

Direction (for Q.Nos. 197 - 198):

Find the odd man out.

197. 10, 14, 16, 18, 21, 24, 26

A. 26 B. 24

C. 21 D. 18

Answer: Option **C**

Explanation:

Each of the numbers except 21 is an even number.

198. 835, 734, 642, 751, 853, 981, 532

A. 751 B. 853

C. 981 D. 532

Answer: Option **A**

Explanation:

In each number except 751, the difference of third and first digit is the middle one.

Direction (for Q.No. 199):

Find out the wrong number in the given sequence of numbers.

199. 1, 2, 6, 15, 31, 56, 91

A. 31 B. 91

C. 56 D. 15

Answer: Option **B**

Explanation:

1, $1 + 1^2 = 2$, $2 + 2^2 = 6$, $6 + 3^2 = 15$, $15 + 4^2 = 31$, $31 + 5^2 = 56$, $56 + 6^2 = 92$

Last number of given series must be 92 not 91.

Direction (for Q.No. 200):

Insert the missing number.

200. 7, 26, 63, 124, 215, 342, (....)

A. 481 B. 511

C. 391 D. 421

Answer: Option **B**

Explanation:

Numbers are $(2^3 - 1)$, $(3^3 - 1)$, $(4^3 - 1)$, $(5^3 - 1)$, $(6^3 - 1)$, $(7^3 - 1)$ etc.

So, the next number is $(8^3 - 1) = (512 - 1) = 511$.

201. The price of commodity *X* increases by 40 paise every year, while the price of commodity *Y*increases by 15 paise every year. If in 2001, the price of commodity *X* was Rs. 4.20 and that of*Y* was Rs. 6.30, in which year commodity *X* will cost 40 paise more than the commodity *Y* ?

A. 2010 B. 2011

C. 2012 D. 2013

Answer: Option **B**

Explanation:

Suppose commodity *X* will cost 40 paise more than *Y* after *z* years.

Then, $(4.20 + 0.40z) - (6.30 + 0.15z) = 0.40$

$\Rightarrow 0.25z = 0.40 + 2.10$

$\Rightarrow z = \frac{2.50}{0.25} = \frac{250}{25} = 10.$

$\therefore$ *X* will cost 40 paise more than *Y* 10 years after 2001 *i.e.,* 2011.

202. There are two examinations rooms A and B. If 10 students are sent from A to B, then the number of students in each room is the same. If 20 candidates are sent from B to A, then the number of students in A is double the number of students in B. The number of students in room A is:

A. 20 B. 80

C. 100 D. 200

Answer: Option **C**

Explanation:

Let the number of students in rooms A and B be x and y respectively.

Then, $x - 10 = y + 10 \Rightarrow x - y = 20$ .... (i)

and $x + 20 = 2(y - 20) \Rightarrow x - 2y = -60$ .... (ii)

Solving (i) and (ii) we get: $x = 100$, $y = 80$.

$\therefore$ The required answer A = 100.

203. If $a - b = 3$ and $a^2 + b^2 = 29$, find the value of ab.

A. 10 B. 12

C. 15 D. 18

Answer: Option **A**

Explanation:

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

$= 29 - 9 = 20$

$\Rightarrow ab = 10.$

204. The product of two numbers is 120 and the sum of their squares is 289. The sum of the number is:

A. 20

B. 23

C. 169

D. None of these

Answer: Option **B**

Explanation:

Let the numbers be x and y.

Then, $xy = 120$ and $x^2 + y^2 = 289$.

$\therefore (x + y)^2 = x^2 + y^2 + 2xy = 289 + (2 \times 120) = 529$

$\therefore x + y = 529 = 23$.

205. The salaries A, B, C are in the ratio 2 : 3 : 5. If the increments of 15%, 10% and 20% are allowed respectively in their salaries, then what will be new ratio of their salaries?

A. 3 : 3 : 10

B. 10 : 11 : 20

C. 23 : 33 : 60

D. Cannot be determined

Answer: Option **C**

Explanation:

Let A = 2k, B = 3k and C = 5k.

A's new salary = $\frac{115}{100}$ of $2k = \left(\frac{115}{100} \times 2k\right) = \frac{23k}{10}$

B's new salary = $\frac{110}{100}$ of $3k = \left(\frac{110}{100} \times 3k\right) = \frac{33k}{10}$

C's new salary = $\frac{120}{100}$ of $5k = \left(\frac{120}{100} \times 5k\right) = 6k$

$\therefore$ New ratio $\left(\frac{23k}{10} : \frac{33k}{10} : 6k\right) = 23 : 33 : 60$

206. A and B entered into partnership with capitals in the ratio 4 : 5. After 3 months, A withdrew $\frac{1}{4}$ of his capital and B withdrew $\frac{1}{5}$ of his capital. The gain at the end of 10

months was Rs. 760. A's share in this profit is:

A. Rs. 330

B. Rs. 360

C. Rs. 380

D. Rs. 430

Answer: Option **A**

Explanation:

$$A : B = \left[4x \times 3 + \left(4x - \frac{1}{4} \times 4x\right) \times 7\right] : \left[5x \times 3 + \left(5x - \frac{1}{5} \times 5x\right) \times 7\right]$$

$= (12x + 21x) : (15x + 28x)$

$= 33x : 43x$

$= 33 : 43.$

$\therefore$ A's share = Rs. $\left(760 \times \frac{33}{76}\right)$ = Rs. 330.

Direction (for Q.No. 207):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

207. What is R's share of profit in a joit venture?

I. Q started business investing Rs. 80,000.

II. R joined him after 3 months.

III. P joined after 4 months with a capital of Rs. 1,20,000 and got Rs. 6000 as his share profit.

A. All I, II and III

B. I and III only

C. II and III only

D. Even with all I, II and III, the answer cannot be arrived at

E. None of these

Answer: Option **D**

Explanation:

From I, II and III, we get P : Q : R = (120000 x 8) : (80000 x 12) : (*x* x 9).

Since R's investment is not given, the above ratio cannot be give.

∴ Given data is inadequate.

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

A. Rs. 375 B. Rs. 400

C. Rs. 600 D. Rs. 800

Answer: Option **B**

Explanation:

C's 1 day's work = $\frac{1}{3} - \left(\frac{1}{6} + \frac{1}{8}\right) = \frac{1}{3} - \frac{7}{24} = \frac{1}{24}$.

A's wages : B's wages : C's wages = $\frac{1}{6} : \frac{1}{8} : \frac{1}{24}$ = 4 : 3 : 1.

∴ C's share (for 3 days) = Rs. $\left(3 \times \frac{1}{24} \times 3200\right)$ = Rs. 400.

209. A goods train runs at the speed of 72 kmph and crosses a 250 m long platform in 26 seconds. What is the length of the goods train?

A. 230 m B. 240 m

C. 260 m D. 270 m

Answer: Option **D**

Explanation:

Speed = $\left(72 \times \frac{5}{18}\right)$ m/sec = 20 m/sec.

Time = 26 sec.

Let the length of the train be x metres.

Then, $\frac{x + 250}{26} = 20$

$\Rightarrow x + 250 = 520$

$\Rightarrow x = 270.$

---

210. If $\log_{10} 2 = 0.3010$, then $\log_2 10$ is equal to:

A. $\frac{699}{301}$ B. $\frac{1000}{301}$

C. 0.3010 D. 0.6990

Answer: Option **B**

Explanation:

$\log_2 10 = \frac{1}{\log_{10} 2} = \frac{1}{0.3010} = \frac{10000}{3010} = \frac{1000}{301}$.

---

211. An error 2% in excess is made while measuring the side of a square. The percentage of error in the calculated area of the square is:

A. 2% B. 2.02%

C. 4% D. 4.04%

Answer: Option **D**

Explanation:

100 cm is read as 102 cm.

$\therefore$ $A_1 = (100 \times 100)\ cm^2$ and $A_2\ (102 \times 102)\ cm^2$.

$(A_2 - A_1) = [(102)^2 - (100)^2]$

$= (102 + 100) \times (102 - 100)$

$= 404\ cm^2$.

$\therefore$ Percentage error $= \left(\frac{404}{100 \times 100} \times 100\right)\% = 4.04\%$

212. In a shower, 5 cm of rain falls. The volume of water that falls on 1.5 hectares of ground is:

A. 75 cu. m

B. 750 cu. m

C. 7500 cu. m

D. 75000 cu. m

Answer: Option **B**

Explanation:

1 hectare = 10,000 m^2

So, Area = (1.5 x 10000) m^2 = 15000 m^2.

Depth $= \frac{5}{100}m = \frac{1}{20}m$.

$\therefore$ Volume = (Area x Depth) $= \left(15000 \times \frac{1}{20}\right)m^3 = 750\ m^3$.

Direction (for Q.No. 213):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.

- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

213. What is the volume of a cube?

I. The area of each face of the cube is 64 square metres.

II. The length of one side of the cube is 8 metres.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

Let each edge be a metres. Then,

I. $a^2 = 64 \Rightarrow a = 8$ m $\Rightarrow$ Volume = $(8 \times 8 \times 8)$ $m^3 = 512$ m^3.

Thus, I alone gives the answer.

II. $a = 8$ m $\Rightarrow$ Volume = $(8 \times 8 \times 8)$ $m^3 = 512$ m^3.

Thus, II alone gives the answer.

$\therefore$ Correct answer is (C).

214. The reflex angle between the hands of a clock at 10.25 is:

A. 180^o

B. $192\frac{1^o}{2}$

C. 195^o

D. $197\frac{1}{2}^o$

Answer: Option **D**

Explanation:

Angle traced by hour hand in $\frac{125}{12}$ hrs = $\left(\frac{360}{12} \times \frac{125}{12}\right)^o = 312\frac{1}{2}^o$.

Angle traced by minute hand in 25 min = $\left(\frac{360}{60} \times 25\right)^o = 150^o$.

$\therefore$ Reflex angle = $360^o - \left(312\frac{1}{2} - 150\right)^o = 360^o - 162\frac{1}{2}^o = 197\frac{1}{2}$.

215. At what time between 4 and 5 o'clock will the hands of a watch point in opposite directions?

A. 45 min. past 4

B. 40 min. past 4

C. $50\frac{4}{11}$ min. past 4

D. $54\frac{6}{11}$ min. past 4

Answer: Option **D**

Explanation:

At 4 o'clock, the hands of the watch are 20 min. spaces apart.

To be in opposite directions, they must be 30 min. spaces apart.

$\therefore$ Minute hand will have to gain 50 min. spaces.

55 min. spaces are gained in 60 min.

50 min. spaces are gained in $\left(\frac{60}{55} \times 50\right)$ min. or $54\frac{6}{11}$ min.

$\therefore$ Required time = 54 $\frac{6}{11}$ min. past 4.

216. A 12% stock yielding 10% is quoted at:

A. Rs. 83.33

B. Rs. 110

C. Rs. 112

D. Rs. 120

Answer: Option **D**

Explanation:

To earn Rs. 10, money invested = Rs. 100.

To earn Rs. 12, money invested = Rs. $\left(\frac{100}{10} \times 12\right)$ = Rs. 120.

∴ Market value of Rs. 100 stock = Rs. 120.

217. In how many different ways can the letters of the word 'DETAIL' be arranged in such a way that the vowels occupy only the odd positions?

A. 32

B. 48

C. 36

D. 60

E. 120

Answer: Option **C**

Explanation:

There are 6 letters in the given word, out of which there are 3 vowels and 3 consonants.

Let us mark these positions as under:

(1) (2) (3) (4) (5) (6)

Now, 3 vowels can be placed at any of the three places out 4, marked 1, 3, 5.

Number of ways of arranging the vowels = ${}^3P_3 = 3! = 6$.

Also, the 3 consonants can be arranged at the remaining 3 positions.

Number of ways of these arrangements = ${}^3P_3 = 3! = 6$.

Total number of ways = (6 x 6) = 36.

218. Two dice are tossed. The probability that the total score is a prime number is:

A. $\frac{1}{6}$ B. $\frac{5}{12}$

C. $\frac{1}{2}$ D. $\frac{7}{9}$

Answer: Option **B**

Explanation:

Clearly, $n(S) = (6 \times 6) = 36$.

Let E = Event that the sum is a prime number.

Then E = { (1, 1), (1, 2), (1, 4), (1, 6), (2, 1), (2, 3), (2, 5), (3, 2), (3, 4), (4, 1), (4, 3), (5, 2), (5, 6), (6, 1), (6, 5) }

$\therefore$ $n(E) = 15$.

$\therefore$ $P(E) = \frac{n(E)}{n(S)} = \frac{15}{36} = \frac{5}{12}$.

219. An observer 1.6 m tall is 203 away from a tower. The angle of elevation from his eye to the top of the tower is 30º. The heights of the tower is:

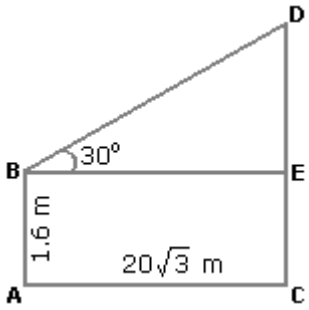
A. 21.6 m B. 23.2 m

C. 24.72 m D. None of these

Answer: Option **A**

Explanation:

Let AB be the observer and CD be the tower.



Draw BE ⊥ CD.

Then, CE = AB = 1.6 m,

BE = AC = 203 m.

$\frac{DE}{BE} = \tan 30^\circ = \frac{1}{\sqrt{3}}$

$\Rightarrow DE = \frac{203}{\sqrt{3}}\text{m} = 20 \text{ m}.$

$\therefore$ CD = CE + DE = (1.6 + 20) m = 21.6 m.

Direction (for Q.No. 220):

Find the odd man out.

220. 1, 4, 9, 16, 23, 25, 36

A. 9

B. 23

C. 25

D. 36

Answer: Option **B**

Explanation:

Each of the numbers except 23, is perfect square.

221. In a regular week, there are 5 working days and for each day, the working hours are 8. A man gets Rs. 2.40 per hour for regular work and Rs. 3.20 per hours for overtime. If he earns Rs. 432 in 4 weeks, then how many hours does he work for ?

A. 160

B. 175

C. 180 D. 195

Answer: Option **B**

Explanation:

Suppose the man works overtime for x hours.

Now, working hours in 4 weeks = (5 x 8 x 4) = 160.

$\therefore$ 160 x 2.40 + x x 3.20 = 432

$\Rightarrow$ 3.20x = 432 - 384 = 48

$\Rightarrow$ x = 15.

Hence, total hours of work = (160 + 15) = 175.

222. $\left(\frac{625}{11} \times \frac{14}{25} \times \frac{11}{196}\right)$ is equal to:

A. 5 B. 6

C. 8 D. 11

Answer: Option **A**

Explanation:

Given Expression = $\frac{25}{11} \times \frac{14}{5} \times \frac{11}{14}$ = 5.

Direction (for Q.No. 223):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

223. In a cricket team, the average age of eleven players in 28 years. What is the age of the captain?

I. The captain is eleven years older than the youngest player.

II. The average age of 10 players, other than the captain is 27.3 years.

III. Leaving aside the captain and the youngest player, the average ages of three groups of three players each are 25 years, 28 years and 30 years respectively.

A. Any two of the three

B. All I, II and III

C. II only or I and III only

D. II and III only

E. None of these

Answer: Option **C**

Explanation:

Total age of 11 players = (28 x 11) years = 308 years.

I. C = Y + 11 $\Rightarrow$ C - Y = 11 .... (i)

II. Total age of 10 players (excluding captain) = (27.3 x 10) years = 273 years.

$\therefore$ Age of captain = (308 - 273) years = 35 years.

Thus, C = 35. .... (ii)

From (i) and (ii), we get Y = 24

III. Total age of 9 players = [(25 x 3) + (28 x 3) + (30 x 3)] years = 249 years.

$\therefore$ C + Y = (308 - 249) = 59 .... (iii)

From (i) and (iii), we get C = 35.

Thus, II alone gives the answer.

Also, I and III together give the answer.

$\therefore$ Correct answer is (C).

224. In a two-digit, if it is known that its unit's digit exceeds its ten's digit by 2 and that the product of the given number and the sum of its digits is equal to 144, then the number is:

A. 24

B. 26

C. 42

D. 46

Answer: Option **A**

Explanation:

Let the ten's digit be x.

Then, unit's digit = $x + 2$.

Number = $10x + (x + 2) = 11x + 2$.

Sum of digits = $x + (x + 2) = 2x + 2$.

$\therefore$ $(11x + 2)(2x + 2) = 144$

$\Rightarrow 22x^2 + 26x - 140 = 0$

$\Rightarrow 11x^2 + 13x - 70 = 0$

$\Rightarrow (x - 2)(11x + 35) = 0$

$\Rightarrow x = 2$.

Hence, required number = $11x + 2 = 24$.

225. Find a positive number which when increased by 17 is equal to 60 times the reciprocal of the number.

A. 3

B. 10

C. 17

D. 20

Answer: Option **A**

Explanation:

Let the number be x.

Then, $x + 17 = \frac{60}{x}$

$\Rightarrow x^2 + 17x - 60 = 0$

$\Rightarrow (x + 20)(x - 3) = 0$

$\Rightarrow x = 3$.

226. Ayesha's father was 38 years of age when she was born while her mother was 36 years old when her brother four years younger to her was born. What is the difference between

the ages of her parents?

A. 2 years

B. 4 years

C. 6 years

D. 8 years

Answer: Option **C**

Explanation:

Mother's age when Ayesha's brother was born = 36 years.

Father's age when Ayesha's brother was born = (38 + 4) years = 42 years.

∴ Required difference = (42 - 36) years = 6 years.

Direction (for Q.No. 227):

Each of the questions given below consists of a question followed by three statements. You have to study the question and the statements and decide which of the statement(s) is/are necessary to answer the question.

227. What is the present age of Tanya?

I. The ratio between the present ages of Tanya and her brother Rahul is 3 : 4 respectively.

II. After 5 years the ratio between the ages of Tanya and Rahul will be 4 : 5.

III. Rahul is 5 years older than Tanya.

A. I and II only

B. II and III only

C. I and III only

D. All I, II and III

E. Any two of the three

Answer: Option **E**

Explanation:

I. Let the present ages of Tanya and Rahul be 3*x* years and 4*x* years.

II. After 5 years, (Tanya's age) : (Rahul's age) = 4 : 5.

III. (Rahul's age) = (Tanya's age) + 5.

From I and II, we get $\frac{3x + 5}{4x + 5} = \frac{4}{5}$. This gives x.

∴ Tanya's age = $3x$ can be found. Thus, I and II give the answer.

From I and III, we get $4x = 3x + 5$. This gives x.

∴ Tanya's age = $3x$ can be found. Thus, I and III give the answer.

From III : Let Tanya's present age be t years.

Then Rahul's present age = $(t + 5)$ years.

Thus, from II and III, we get : $\frac{t}{t + 5} = \frac{4}{5}$. This gives t.

Thus, II and III give the answer.

∴ Correct answer is (E).

228. In an election between two candidates, one got 55% of the total valid votes, 20% of the votes were invalid. If the total number of votes was 7500, the number of valid votes that the other candidate got, was:

A. 2700 B. 2900

C. 3000 D. 3100

Answer: Option **A**

Explanation:

Number of valid votes = 80% of 7500 = 6000.

∴ Valid votes polled by other candidate = 45% of 6000

$= \left(\frac{45}{100} \times 6000\right) = 2700.$

229. A trader mixes 26 kg of rice at Rs. 20 per kg with 30 kg of rice of other variety at Rs. 36 per kg and sells the mixture at Rs. 30 per kg. His profit percent is:

A. No profit, no loss
B. 5%
C. 8%
D. 10%
E. None of these

Answer: Option **B**

Explanation:

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

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

$\therefore$ Gain $= \left(\frac{80}{1600} \times 100\right)\% = 5\%.$

Direction (for Q.No. 230):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

230. A man mixes two types of rice (X and Y) and sells the mixture at the rate of Rs. 17 per kg. Find his profit percentage.

I. The rate of X is Rs. 20 per kg.

II. The rate of Y is Rs. 13 per kg.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **D**

Explanation:

The ratio, in which X and Y are mixed, is not given.

So, both I and II together cannot give the answer.

∴ Correct answer is (D).

231. An industrial loom weaves 0.128 metres of cloth every second. Approximately, how many seconds will it take for the loom to weave 25 metres of cloth?

A. 178 B. 195

C. 204 D. 488

Answer: Option **B**

Explanation:

Le the required time be *x* seconds.

More metres, More time (Direct Proportion)

∴ 0.128 : 25 :: 1 : *x* ⇔ 0.128*x* = 25 x 1

$$x = \frac{25}{0.128} = \frac{25 \times 1000}{128}$$

$\Rightarrow x = 195.31.$

$\therefore$ Required time = 195 sec (approximately).

232. A takes twice as much time as B or thrice as much time as C to finish a piece of work. Working together, they can finish the work in 2 days. B can do the work alone in:

A. 4 days
B. 6 days
C. 8 days
D. 12 days

Answer: Option **B**

Explanation:

Suppose A, B and C take x, $\frac{x}{2}$ and $\frac{x}{3}$ days respectively to finish the work.

Then, $\left(\frac{1}{x} + \frac{2}{x} + \frac{3}{x}\right) = \frac{1}{2}$

$\Rightarrow \frac{6}{x} = \frac{1}{2}$

$\Rightarrow x = 12.$

So, B takes (12/2) = 6 days to finish the work.

233. If log 27 = 1.431, then the value of log 9 is:

A. 0.934
B. 0.945
C. 0.954
D. 0.958

Answer: Option **C**

Explanation:

log 27 = 1.431

$\Rightarrow \log (3^3) = 1.431$

$\Rightarrow 3 \log 3 = 1.431$

$\Rightarrow \log 3 = 0.477$

$\therefore \log 9 = \log(3^2) = 2 \log 3 = (2 \times 0.477) = 0.954.$

234. If $\log_{10} 2 = 0.3010$, the value of $\log_{10} 80$ is:

A. 1.6020 B. 1.9030

C. 3.9030 D. None of these

Answer: Option **B**

Explanation:

$\log_{10} 80 = \log_{10} (8 \times 10)$

$= \log_{10} 8 + \log_{10} 10$

$= \log_{10} (2^3) + 1$

$= 3 \log_{10} 2 + 1$

$= (3 \times 0.3010) + 1$

$= 1.9030.$

235. The ratio between the length and the breadth of a rectangular park is 3 : 2. If a man cycling along the boundary of the park at the speed of 12 km/hr completes one round in 8 minutes, then the area of the park (in sq. m) is:

A. 15360 B. 153600

C. 30720 D. 307200

Answer: Option **B**

Explanation:

Perimeter = Distance covered in 8 min. $= \left(\frac{12000}{60} \times 8\right)$ m = 1600 m.

Let length = 3x metres and breadth = 2x metres.

Then, 2(3x + 2x) = 1600 or x = 160.

∴ Length = 480 m and Breadth = 320 m.

∴ Area = (480 x 320) m^2 = 153600 m^2.

236. The slant height of a right circular cone is 10 m and its height is 8 m. Find the area of its curved surface.

A. 30π m^2

B. 40π m^2

C. 60π m^2

D. 80π m^2

Answer: Option **C**

Explanation:

l = 10 m,

h = 8 m.

So, $r = l^2 - h^2 = (10)^2 - 8^2$ = 6 m.

∴ Curved surface area = πrl = (π x 6 x 10) m^2 = 60π m^2.

237. A man wants to sell his scooter. There are two offers, one at Rs. 12,000 cash and the other a credit of Rs. 12,880 to be paid after 8 months, money being at 18% per annum. Which is the better offer?

A. Rs. 12,000 in cash

B. s. 12,880 at credit

C. Both are equally good

D. [NIL]

Answer: Option **A**

Explanation:

P.W. of Rs. 12,880 due 8 months hence $= \text{Rs.} \left[\frac{12880 \times 100}{100 + \left(18 \times \frac{8}{12}\right)}\right]$

$= \text{Rs.} \left(\frac{12880 \times 100}{\quad}\right)$

= Rs. 11500.

238. The banker's discount of a certain sum of money is Rs. 72 and the true discount on the same sum for the same time is Rs. 60. The sum due is:

A. Rs. 360

B. Rs. 432

C. Rs. 540

D. Rs. 1080

Answer: Option **A**

Explanation:

$$\text{Sum} = \frac{\text{B.D. x T.D.}}{\text{B.D. - T.D.}} = \text{Rs.} \left(\frac{72 \times 60}{72 - 60}\right) = \text{Rs.} \left(\frac{72 \times 60}{12}\right) = \text{Rs. } 360.$$

239. A man standing at a point P is watching the top of a tower, which makes an angle of elevation of 30º with the man's eye. The man walks some distance towards the tower to watch its top and the angle of the elevation becomes 60º. What is the distance between the base of the tower and the point P?

A. 43 units

B. 8 units

C. 12 units

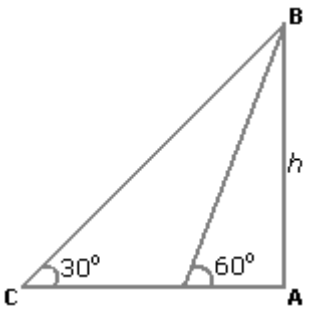
D. Data inadequate

E. None of these

Answer: Option **D**

Explanation:

One of AB, AD and CD must have given.



So, the data is inadequate.

Direction (for Q.No. 240):

Insert the missing number.

240. 8, 7, 11, 12, 14, 17, 17, 22, (....)

A. 27 B. 20

C. 22 D. 24

Answer: Option **B**

Explanation:

There are two series (8, 11, 14, 17, 20) and (7, 12, 17, 22) increasing by 3 and 5 respectively.

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

A. 1677 B. 1683

C. 2523 D. 3363

Answer: Option **B**

Explanation:

L.C.M. of 5, 6, 7, 8 = 840.

∴ Required number is of the form $840k + 3$

Least value of k for which $(840k + 3)$ is divisible by 9 is $k = 2$.

∴ Required number = (840 x 2 + 3) = 1683.

242. If $\frac{144}{0.144} = \frac{14.4}{x}$, then the value of x is:

A. 0.0144 B. 1.44

C. 14.4

D. 144

Answer: Option **A**

Explanation:

$$\frac{144}{0.144} = \frac{14.4}{x}$$

$$\Rightarrow \frac{144 \times 1000}{144} = \frac{14.4}{x}$$

$$\Rightarrow x = \frac{14.4}{1000} = 0.0144$$

---

243. 617 + 6.017 + 0.617 + 6.0017 = ?

A. 6.2963

B. 62.965

C. 629.6357

D. None of these

Answer: Option **C**

Explanation:

```
  617.00
    6.017
    0.617
+   6.0017
 --------
  629.6357
 ---------
```

---

244. $\left(3 - \frac{1}{3}\right)^2$ simplifies to:

A. $\frac{3}{4}$

B. $\frac{4}{3}$

C. 4

D. None of these

3

Answer: Option **C**

Explanation:

$$\left(3 - \frac{1}{3}\right)^2 = (3)^2 + \left(\frac{1}{3}\right)^2 - 2 \times 3 \times \frac{1}{3}$$

$$= 3 + \frac{1}{3} - 2$$

$$= 1 + \frac{1}{3}$$

$$= \frac{4}{3}$$

245. The captain of a cricket team of 11 members is 26 years old and the wicket keeper is 3 years older. If the ages of these two are excluded, the average age of the remaining players is one year less than the average age of the whole team. What is the average age of the team?

A. 23 years
B. 24 years
C. 25 years
D. None of these

Answer: Option **A**

Explanation:

Let the average age of the whole team by x years.

$\therefore$ $11x - (26 + 29) = 9(x - 1)$

$\Rightarrow$ $11x - 9x = 46$

$\Rightarrow$ $2x = 46$

$\Rightarrow$ $x = 23$.

So, average age of the team is 23 years.

246. The present ages of three persons in proportions 4 : 7 : 9. Eight years ago, the sum of

their ages was 56. Find their present ages (in years).

A. 8, 20, 28

B. 16, 28, 36

C. 20, 35, 45

D. None of these

Answer: Option **B**

Explanation:

Let their present ages be $4x$, $7x$ and $9x$ years respectively.

Then, $(4x - 8) + (7x - 8) + (9x - 8) = 56$

$\Rightarrow 20x = 80$

$\Rightarrow x = 4.$

$\therefore$ Their present ages are $4x = 16$ years, $7x = 28$ years and $9x = 36$ years respectively.

Direction (for Q.No. 247):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

247. Divya is twice as old as Shruti. What is the difference in their ages?

I. Five years hence, the ratio of their ages would be 9 : 5.

II. Ten years back, the ratio of their ages was 3 : 1.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **C**

Explanation:

Let Divya's present age be D years and Shruti's present age b S years

Then, D = 2 x S ⇔ D - 2S = 0 ....(i)

I. $\frac{D + 5}{S + 5} = \frac{9}{5}$ ....(ii)

II. $\frac{D - 10}{S - 10} = \frac{3}{1}$ ....(iii)

From (ii), we get : 5D + 25 = 9S + 45 ⇔ 5D - 9S = 20 ....(iv)

From (iii), we get : D - 10 = 3S - 30 ⇔ D - 3S = -20 ....(v)

Thus, from (i) and (ii), we get the answer.

Also, from (i) and (iii), we get the answer.

∴ I alone as well as II alone give the answer. Hence, the correct answer is (C).

248. $(256)^{0.16}$ x $(256)^{0.09}$ = ?

A. 4

B. 16

C. 64

D. 256.25

Answer: Option **A**

Explanation:

$(256)^{0.16}$ x $(256)^{0.09}$ = $(256)^{(0.16 + 0.09)}$

= $(256)^{0.25}$

$= (256)^{(25/100)}$

$= (256)^{(1/4)}$

$= (4^4)^{(1/4)}$

$= 4^{4(1/4)}$

$= 4^1$

$= 4$

249. Three partners shared the profit in a business in the ratio 5 : 7 : 8. They had partnered for 14 months, 8 months and 7 months respectively. What was the ratio of their investments?

A. 5 : 7 : 8

B. 20 : 49 : 64

C. 38 : 28 : 21

D. None of these

Answer: Option **B**

Explanation:

Let their investments be Rs. x for 14 months, Rs. y for 8 months and Rs. z for 7 months respectively.

Then, $14x : 8y : 7z = 5 : 7 : 8$.

Now, $\frac{14x}{8y} = \frac{5}{7} \Leftrightarrow 98x = 40y \Leftrightarrow y = \frac{49}{20}x$

And, $\frac{14x}{7z} = \frac{5}{8} \Leftrightarrow 112x = 35z \Leftrightarrow z = \frac{112}{35}x = \frac{16}{5}x.$

$\therefore\ x : y : z = x : \frac{49}{20}x : \frac{16}{5}x = 20 : 49 : 64.$

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

A. Rs. 7500

B. Rs. 8000

C. Rs. 8500

D. Rs. 9000

Answer: Option **D**

Explanation:

Let B's capital be Rs. *x*.

Then, $\left(\frac{3500 \times 12}{7x} = \frac{2}{3}\right)$

$\Rightarrow 14x = 126000$

$\Rightarrow x = 9000.$

Direction (for Q.No. 251):

Each of the questions given below consists of a statement and / or a question and two statements numbered I and II given below it. You have to decide whether the data provided in the statement(s) is / are sufficient to answer the given question. Read the both statements and

- Give answer (A) if the data in Statement I alone are sufficient to answer the question, while the data in Statement II alone are not sufficient to answer the question.
- Give answer (B) if the data in Statement II alone are sufficient to answer the question, while the data in Statement I alone are not sufficient to answer the question.
- Give answer (C) if the data either in Statement I or in Statement II alone are sufficient to answer the question.
- Give answer (D) if the data even in both Statements I and II together are not sufficient to answer the question.
- Give answer(E) if the data in both Statements I and II together are necessary to answer the question.

251. Ravi, Gagan and Nitin are running a business firm in partnership. What is Gagan's share in the profit earned by them?

I. Ravi, Gagan and Nitin invested the amounts in the ratio of 2 : 4 : 7.

II. Nitin's share in the profit is Rs. 8750.

A. I alone sufficient while II alone not sufficient to answer

B. II alone sufficient while I alone not sufficient to answer

C. Either I or II alone sufficient to answer

D. Both I and II are not sufficient to answer

E. Both I and II are necessary to answer

Answer: Option **E**

Explanation:

Let us name Ravi, Gagan and Nitin by R, G and N respectively.

I. R : G : N = 2 : 4 : 7.

II. N = 8750..

From I and II, we get:

When N = 7, then G = 4.

When N = 8750, then G = $\left(\frac{4}{7} \text{ x } 8750\right)$ = 5000.

Thus, both I and II are needed to get the answer.

∴ Correct answer is (E).

252. A wheel that has 6 cogs is meshed with a larger wheel of 14 cogs. When the smaller wheel has made 21 revolutions, then the number of revolutions mad by the larger wheel is:

A. 4 B. 9

C. 12 D. 49

Answer: Option **B**

Explanation:

Let the required number of revolutions made by larger wheel be *x*.

Then, *More cogs, Less revolutions (Indirect Proportion)*

∴ 14 : 6 **::** 21 : *x* ⇔ 14 x *x* = 6 x 21

$\Rightarrow x = \frac{6 \text{ x } 21}{14}$

⇒ *x* = 9.

253. 10 women can complete a work in 7 days and 10 children take 14 days to complete the work. How many days will 5 women and 10 children take to complete the work?

A. 3
B. 5
C. 7
D. Cannot be determined
E. None of these

Answer: Option **C**

Explanation:

1 woman's 1 day's work = $\frac{1}{70}$

1 child's 1 day's work = $\frac{1}{140}$

(5 women + 10 children)'s day's work = $\left(\frac{5}{70} + \frac{10}{140}\right) = \left(\frac{1}{14} + \frac{1}{14}\right) = \frac{1}{7}$

$\therefore$ 5 women and 10 children will complete the work in 7 days.

254. Two pipes can fill a tank in 20 and 24 minutes respectively and a waste pipe can empty 3 gallons per minute. All the three pipes working together can fill the tank in 15 minutes. The capacity of the tank is:

A. 60 gallons
B. 100 gallons
C. 120 gallons
D. 180 gallons

Answer: Option **C**

Explanation:

Work done by the waste pipe in 1 minute = $\frac{1}{15} - \left(\frac{1}{20} + \frac{1}{24}\right)$

$= \left(\frac{1}{15} - \frac{11}{120}\right)$

$= -\frac{1}{40}$. [-ve sign means emptying]

$\therefore$ Volume of $\frac{1}{40}$ part = 3 gallons.

Volume of whole = (3 x 40) gallons = 120 gallons.

255. A train 240 m long passes a pole in 24 seconds. How long will it take to pass a platform 650 m long?

A. 65 sec
B. 89 sec
C. 100 sec
D. 150 sec

Answer: Option **B**

Explanation:

Speed = $\left(\frac{240}{24}\right)$ m/sec = 10 m/sec.

$\therefore$ Required time = $\left(\frac{240 + 650}{10}\right)$ sec = 89 sec.

256. A jogger running at 9 kmph alongside a railway track in 240 metres ahead of the engine of a 120 metres long train running at 45 kmph in the same direction. In how much time will the train pass the jogger?

A. 3.6 sec
B. 18 sec
C. 36 sec
D. 72 sec

Answer: Option **C**

Explanation:

Speed of train relative to jogger = (45 - 9) km/hr = 36 km/hr.

$= \left(36 \times \frac{5}{18}\right)$ m/sec

= 10 m/sec.

Distance to be covered = (240 + 120) m = 360 m.

$\therefore$ Time taken = $\left(\frac{360}{10}\right)$ sec = 36 sec.

257. Two goods train each 500 m long, are running in opposite directions on parallel tracks. Their speeds are 45 km/hr and 30 km/hr respectively. Find the time taken by the slower train to pass the driver of the faster one.

A. 12 sec

B. 24 sec

C. 48 sec

D. 60 sec

Answer: Option **B**

Explanation:

Relative speed = = (45 + 30) km/hr

$= \left(75 \times \frac{5}{18}\right)$ m/sec

$= \left(\frac{125}{6}\right)$ m/sec.

We have to find the time taken by the slower train to pass the DRIVER of the faster train and not the complete train.

So, distance covered = Length of the slower train.

Therefore, Distance covered = 500 m.

$\therefore$ Required time = $\left(500 \times \frac{6}{125}\right)$ = 24 sec.

258. A boatman goes 2 km against the current of the stream in 1 hour and goes 1 km along the current in 10 minutes. How long will it take to go 5 km in stationary water?

A. 40 minutes

B. 1 hour

C. 1 hr 15 min

D. 1 hr 30 min

Answer: Option **C**

Explanation:

Rate downstream = $\left(\frac{1}{10} \times 60\right)$ km/hr = 6 km/hr.

Rate upstream = 2 km/hr.

Speed in still water = $\frac{1}{2}(6 + 2)$ km/hr = 4 km/hr.

$\therefore$ Required time = $\left(\frac{5}{4}\right)$ hrs = $1\frac{1}{4}$ hrs = 1 hr 15 min.

259. 8 litres are drawn from a cask full of wine and is then filled with water. This operation is performed three more times. The ratio of the quantity of wine now left in cask to that of water is 16 : 65. How much wine did the cask hold originally?

A. 18 litres

B. 24 litres

C. 32 litres

D. 42 litres

Answer: Option **B**

Explanation:

Let the quantity of the wine in the cask originally be x litres.

Then, quantity of wine left in cask after 4 operations = $\left[x\left(1 - \frac{8}{x}\right)^4\right]$ litres.

$\therefore$ $\left(\frac{x(1 - (8/x))^4}{x}\right) = \frac{16}{81}$

$\Rightarrow \left(1 - \frac{8}{}\right)4 = \left(\frac{2}{}\right)4$

$x \qquad 3$

$\Rightarrow \left(\frac{x-8}{x}\right) = \frac{2}{3}$

$\Rightarrow 3x - 24 = 2x$

$\Rightarrow x = 24.$

260. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

A. $\frac{10}{21}$ B. $\frac{11}{21}$

C. $\frac{2}{7}$ D. $\frac{5}{7}$

Answer: Option **A**

Explanation:

Total number of balls = (2 + 3 + 2) = 7.

Let S be the sample space.

Then, $n(S)$ = Number of ways of drawing 2 balls out of 7

$= {}^{7}C_{2}$ `

$= \frac{(7 \times 6)}{(2 \times 1)}$

= 21.

Let E = Event of drawing 2 balls, none of which is blue.

∴ $n(E)$ = Number of ways of drawing 2 balls out of (2 + 3) balls.

$= {}^{5}C_{2}$

$$= \frac{(5 \times 4)}{(2 \times 1)}$$

$= 10.$

$$\therefore \quad P(E) = \frac{n(E)}{n(S)} = \frac{10}{21}.$$