



MATHS

BOOKS - HT Olympiad Previous Year Paper

IMO QUESTION PAPER 2020

Achievers Section

1. Match the figures given in the Column 1 with their line(s) of symmetry given in Column 2

Column 1

Column 2

(P) Equilateral triangle (1) 0

(Q) Square (2) 3

(R) Parallelogram (3) 2

(S) Rhombus (4) 4

A.

$(P) \rightarrow (2), (Q) \rightarrow (4), (R) \rightarrow (1), (S) \rightarrow (3)$

B.

$(P) \rightarrow (2), (Q) \rightarrow (4), (R) \rightarrow (3), (S) \rightarrow (1)$

C.

$(P) \rightarrow (4), (Q) \rightarrow (2), (R) \rightarrow (1), (S) \rightarrow (3)$

D.

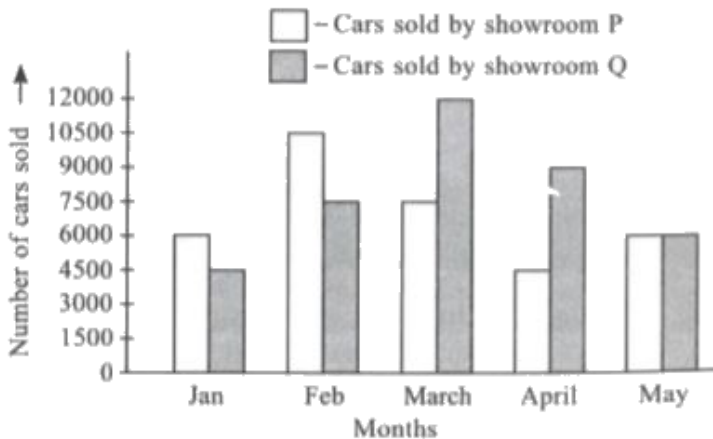
$(P) \rightarrow (2), (Q) \rightarrow (1), (R) \rightarrow (4), (S) \rightarrow (3)$

Answer: A



Watch Video Solution

2. The given bar graph shows the number of cars sold by two showrooms in five months. Study the graph carefully and answer the following questions



(a) How many less cars were sold by Showroom P than Showroom Q in January, March and April altogether?

(b) Find the ratio of total cars sold in February to the total number of cars sold in 5 months.

A. (a) (b)
8000 12:49

B. (a) (b)
8000 17:50

C. (a) (b)
7500 17:50

D. (a) (b)
7500 12:49

Answer: D



Watch Video Solution

3. Fill in the blanks and select the correct option.

- The join of two adjacent vertices is called an P
- A Q is one that does not cross itself.
- Two or more distinct lines meeting at a point are called R lines.

- A. P Q R
Diagonal Simple curve Concurrent
- B. P Q R
Edge Curve Parallel
- C. P Q R
Diagonal Curve Parallel
- D. P Q R
Edge Simple curve Concurrent

Answer: D



Watch Video Solution

4. Select the incorrect option.

- A. The smallest 4-digit number having three different digits is 1002.
- B. Whole numbers are always commutative under addition and multiplication
- C. All whole numbers are natural numbers.
- D. 22222222 is divisible by 11.

Answer: C



Watch Video Solution

5. Study the following statements and select the correct option.

Statement 1: The largest 5-digit number having three different digits is 99987.

Statement 2 : A whole number is added to 10 and the same number is subtracted from 10. Then the sum of the resulting numbers is 20.

- A. Both Statement 1 and Statement 2 are true.
- B. Both Statement 1 and Statement 2 are false.
- C. Statement 1 is true but Statement 2 is false.

D. Statement 1 is false but Statement 2 is true.

Answer: A



Watch Video Solution

Logical Reasoning

1. If ROSE is coded as 5346 , CHAIR is coded as 78915 , then what will be the code for SEARCH ?

A. 369578

B. 369758

C. 369537

D. 697845

Answer: A



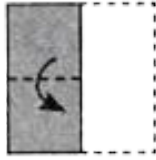
Watch Video Solution

2. A set of three figures X, Y and Z showing a sequence of folding of a piece of paper is given. Fig. (Z) shows the manner in which the folded paper has been cut. Select the figure from the

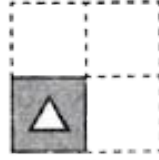
options which shows the unfolded form of fig. (Z)



X

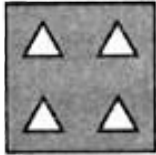


Y

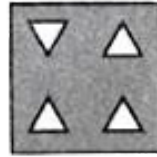


Z

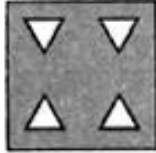
A.



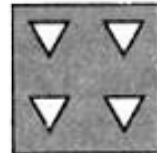
B.



C.



D.



X



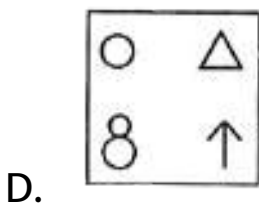
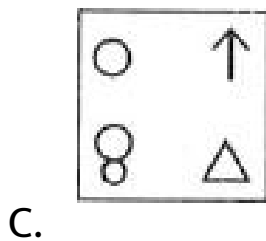
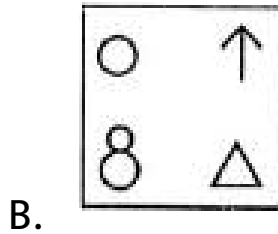
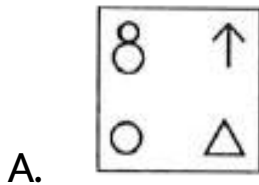
[Watch Video Solution](#)

3. Select a figure from the options which will continue the same series as established by the

Problem Figures.

Problem Figures

↑	△	○	↑	8	○	△	8	↑	△	?
○	8	8	△	△	↑	↑	○	○	8	



Answer: B



Watch Video Solution

4. How many 3's are there in the given series which are immediately preceded by 9 as well as immediately followed by 6 ?

963549336936399336936

A. None

B. One

C. Two

D. More than two

Answer: C



Watch Video Solution

5. There are a certain relationship between the left pair of alphabets. Establish the same relationship in the right pair and find the missing term.

AG : IO :: ? : MS

A. EJ

B. DK

C. DJ

D. EK

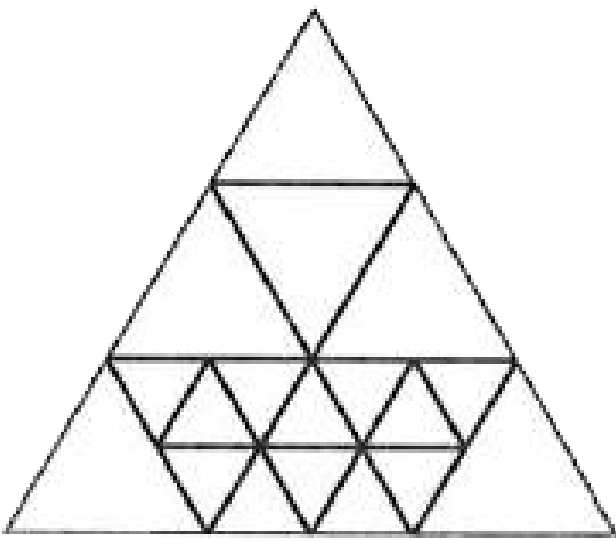
Answer: D



Watch Video Solution

6. How many triangles are there in the given figure

?



A. 20

B. 22

C. 23

D. 25

Answer: D



Watch Video Solution

7. How many meaningful English words can be formed with the letters C, E, I, V using each letter only once in each word ?

A. None

B. One

C. Two

D. More than two

Answer: B



Watch Video Solution

8. Kanika correctly remembers that Pratik's birthday is before Sunday but after Thursday. Vipul correctly remembers that Pratik's birthday is after Friday but before Monday. On which of the following days does Pratik's birthday definitely fall ?

A. Friday

B. Sunday

C. Saturday

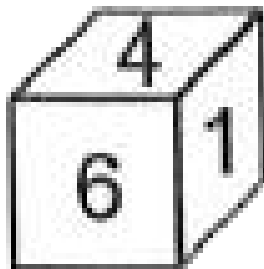
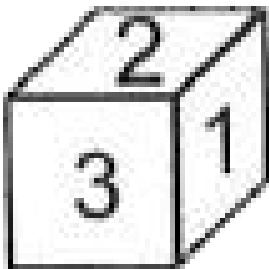
D. Monday

Answer: C



Watch Video Solution

9. Two positions of a dice are shown below. If 5 is on the top, then which number will be at the bottom ?



A. 1

B. 6

C. 4

D. 3

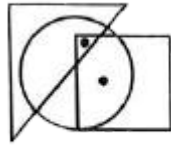
Answer: A



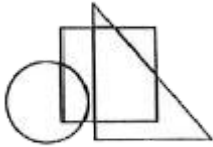
Watch Video Solution

10. Select a figure from the options which satisfies the same conditions of placement of dots as in

the given figure.



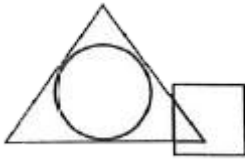
A.



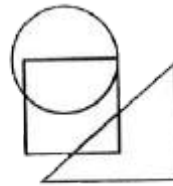
B.



C.



D.



[Watch Video Solution](#)

11. Pointing to a photograph, P said to his friend Q, " She is the only daughter of the father of my mother ". How is P related to the person in the photograph ?

A. Daughter

B. Son

C. Nephew

D. Husband

Answer: B



Watch Video Solution

12. In a row of 50 students, if Raman is 22^{nd} from the top, then what is his rank from the bottom ?

A. 28^{th}

B. 29th

C. 30th

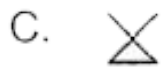
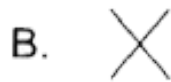
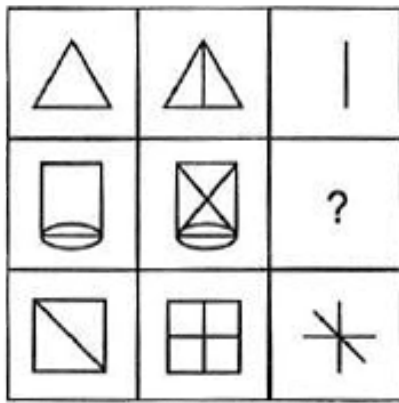
D. 31st

Answer: B



Watch Video Solution

13. Which of the following figures will complete the given figure matrix ?



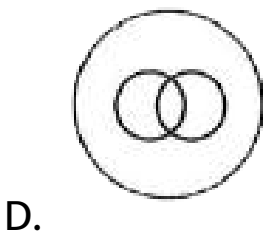
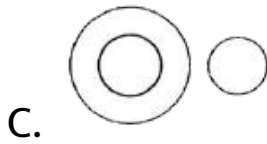
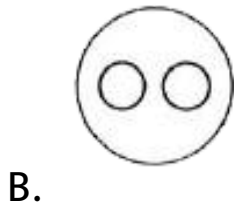
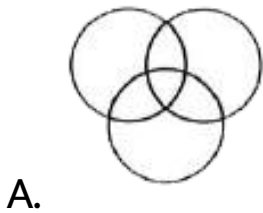
Watch Video Solution

14. Find the water image of the given figure.



Watch Video Solution

15. Which of the following Venn diagrams best represents the relationship amongst, " Women, Mothers and Widows "?



Answer: D



Watch Video Solution

Mathematical Reasoning

1. The additive inverse of the sum of the integers
-9853 and -3187 is

A. 6666

B. 4031

C. 10340

D. 13040

Answer: D



Watch Video Solution

2.6 tenths more than the sum of 3.25 and 5.79 is
_____.

A. 15.04

B. 9.1

C. 9.64

D. 15.14

Answer: C



Watch Video Solution

3. Study the following statements and select the correct option.

P: A variable can take different values.

Q : The value of a variable which satisfies the given equation is called its solution.

A. Both P and Q are true.

B. Both P and Q are false.

C. P is true but Q is false.

D. P is false but Q is true.

Answer: A



Watch Video Solution

4. A number is divisible by 4, if _____ .

A. the sum of the digits is divisible by 4

B. the sum of the last two digits is divisible by
4

C. the number formed by its last two digits is
divisible by 4

D. the last digit is divisible by 4

Answer: C



Watch Video Solution

5. Which of the following is a perfect number?

A. 6

B. 12

C. 24

D. 8

Answer: A

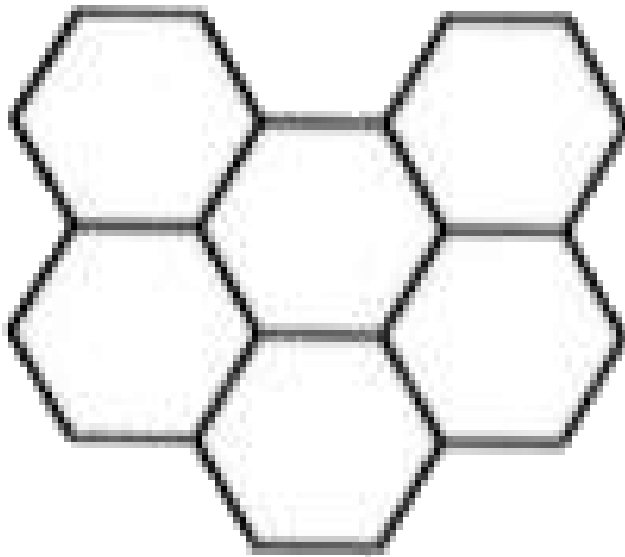


Watch Video Solution

6. Given figure is made up of six regular hexagons.

If the perimeter of the given figure is 108 cm, then

find the length of each side of the hexagon.



A. 3 cm

B. 12 cm

C. 8 cm

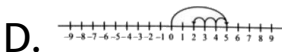
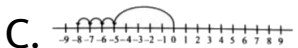
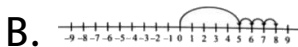
D. 6 cm

Answer: D



Watch Video Solution

7. Which of the following number lines correctly represents $(-5) - (-3)$?



Answer: A



Watch Video Solution

8. Which of the following set of angles can form a triangle?

A. 30° , 80° , 75°

B. 45° , 65° , 65°

C. 95° , 20° , 68°

D. 90° , 45° , 45°

Answer: D



Watch Video Solution

9. The product of a natural number and its successor is always _____ .

- A. an odd number
- B. an even number
- C. a prime number
- D. divisible by 3

Answer: B



Watch Video Solution

10.

Simplify:

$$12\frac{1}{2} - 5.375 + 8.125 - 2.9 + 10 - 3\frac{4}{5} + 11.08$$

A. 26.93

B. 32.43

C. 29.63

D. 36.59

Answer: C



Watch Video Solution

11. There are x students in a class. If there are y girls, then find the ratio of number of boys to the total number of students.

A. $(x + y) : x$

B. $y : x$

C. $(x - y) : y$

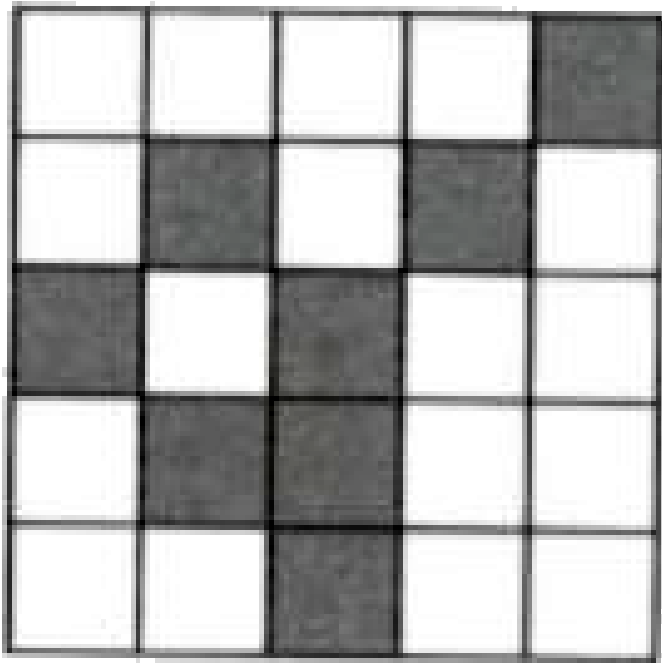
D. $(x - y) : x$

Answer: D



Watch Video Solution

12. How many minimum number of squares that must be shaded to make the given figure symmetric?



A. 1

B. 2

C. 3

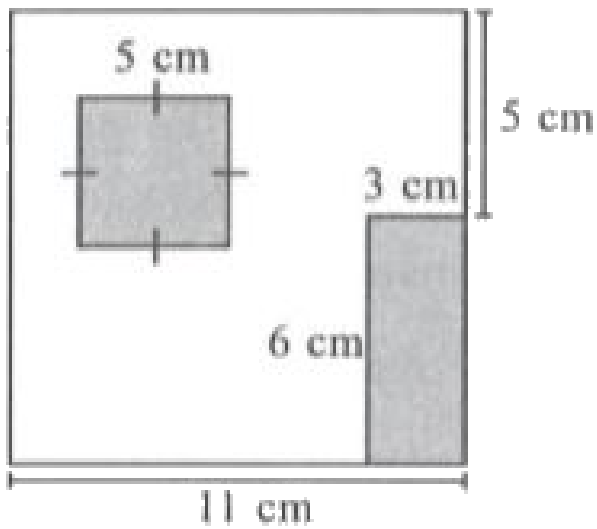
D. 4

Answer: B



Watch Video Solution

13. Find the area of the unshaded region of the given figure (not drawn to scale).



A. 78 cm^2

B. 43 cm^2

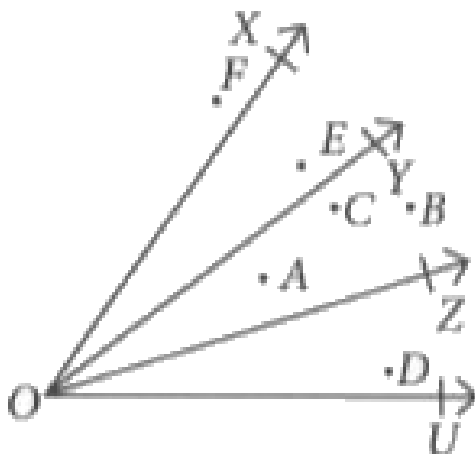
C. 66 cm^2

D. 84 cm^2

Answer: A



14. The points that lie in the exterior of $\angle YOZ$ are/is



A. Only E

B. Only D

C. E and F only

D. E, F and D

Answer: D



Watch Video Solution

15. _____ is the additive identity and _____ is the multiplicative identity respectively for whole numbers.

A. 1,2

B. 1,0

C. 0,2

D. 0,1

Answer: D



Watch Video Solution

16. Find the difference between the largest 7-digit number and the smallest 7-digit number formed by using the digits 4, 0, 3, 9 and 7 (using each digit at least once).

A. 6993951

B. 6949530

C. 6963951

D. 6996951

Answer: D



Watch Video Solution

17. How many right angles will you make, if you face South and turn clockwise to East?

A. Two

B. Three

C. One

D. Five

Answer: B



Watch Video Solution

18. Find the fraction with denominator 120 whose decimal value is 0.65.

A. $\frac{62}{120}$

B. $\frac{78}{120}$

C. $\frac{35}{120}$

D. $\frac{90}{120}$

Answer: B



Watch Video Solution

19. Which of the following ratios are not in proportion?

A. Rs. 20 : Rs. 150 and Rs. 70 : Rs. 525

B. 350 g : 700 g and 1500 g : 3 kg

C. 3 L : 12 L and 400 mL : 1050 mL

D. 35 cm : 15 m and 70 m : 3 km

Answer: C



Watch Video Solution

20. The expression obtained when p is multiplied by 5 and then subtracted from 8 is _____

A. $8 - 5p$

B. $5p - 8$

C. $8p - 5$

D. $8 + 5p$

Answer: A



Watch Video Solution

21. The additive inverse of the sum of the integers -9853 and -3187 is _____

A. 6666

B. 4031

C. 10340

D. 13040

Answer: D



Watch Video Solution

22. 6 length more than the sum of 3.25 and 5.79 is

_____ .

A. 15.04

B. 9.1

C. 9.64

D. 15.14

Answer: C



Watch Video Solution

23. Study the following statements and select the correct option.

P : A variable can take different values .

Q : The value of a variable which satisfies the given equation is called its solution .

- A. Both P and Q are true
- B. Both P and Q are false .
- C. P is true but Q is false
- D. P is false but Q is true

Answer: A



Watch Video Solution

24. A number is divisible by 4, if

A. the sum of the digits is divisible by 4

B. the sum of the last two digits is divisible by
4

C. the number formed by its last two digits is
divisible by 4

D. the last digit is divisible by 4

Answer: C



 Watch Video Solution

25. Which of the following is a perfect number ?

A. 6

B. 12

C. 24

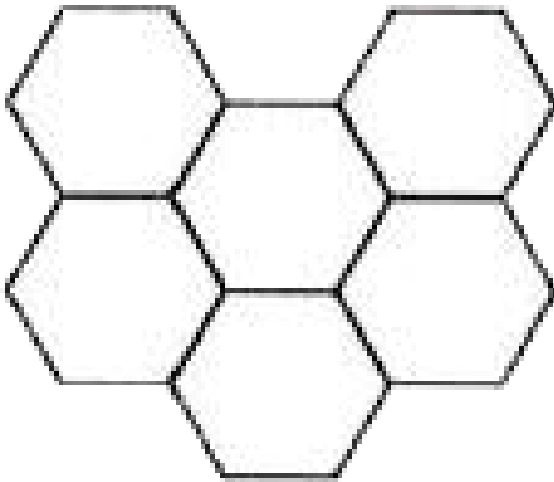
D. 8

Answer: A



Watch Video Solution

26. Given figure is made up of six regular hexagons. If the perimeter of the given figure is 108 cm, then find the length of each side of the hexagon.



A. 3 cm

B. 12 cm

C. 8 cm

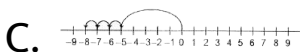
D. 6 cm

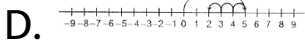
Answer: D



Watch Video Solution

27. Which of the following number lines correctly represents $(-5) - (-3)$?





Answer: A



Watch Video Solution

28. Which of the following set of angles that can form a triangle ?

A. 30° , 80° , 75°

B. 45° , 65° , 65°

C. 95° , 20° , 68°

D. 90° , 45° , 45°

Answer: D



Watch Video Solution

29. The product of a natural number and its successor is always _____

- A. an odd number
- B. an even number
- C. a prime number
- D. divisible by 3

Answer: B



Watch Video Solution

30. Simplify :

$$12\frac{1}{2} - 5.375 + 8.125 - 2.9 + 10 - 3\frac{4}{5} + 11.08$$

A. 26.93

B. 32.43

C. 29.63

D. 36.59

Answer: C



Watch Video Solution

31. There are x students in class. If there are y girls, then find the ratio of number of boys to the total number of students.

A. $(x + y) : x$

B. $y : x$

C. $(x - y) : y$

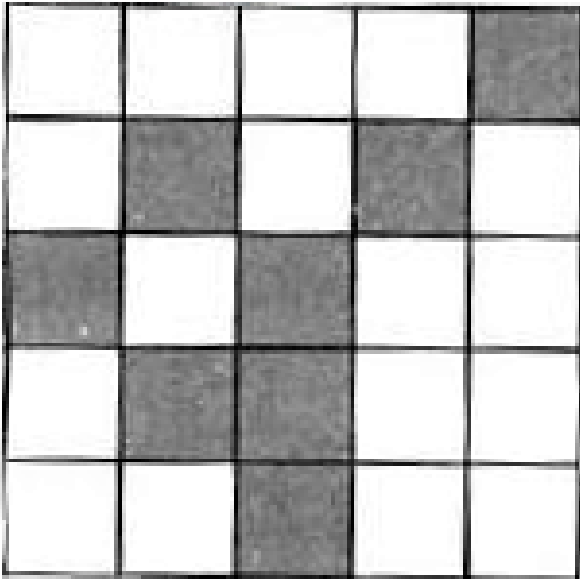
D. $(x - y) : x$

Answer: D



Watch Video Solution

32. How many minimum number of squares that he must be shaded to make the given figure symmetric ?



A. 1

B. 2

C. 3

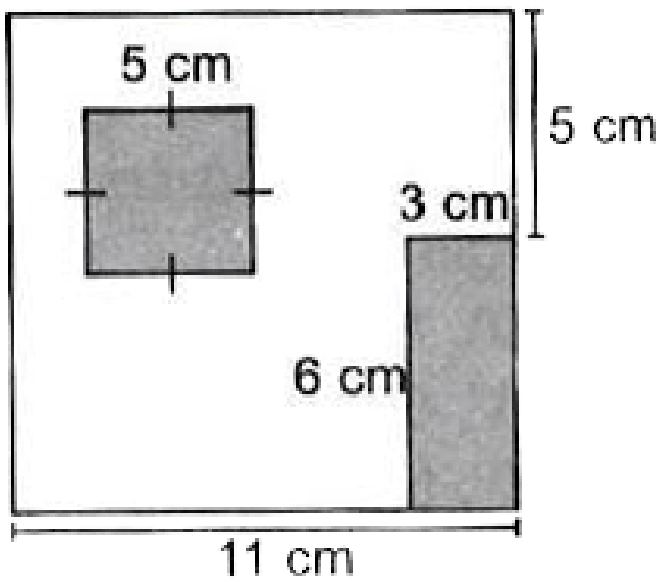
D. 4

Answer: B



Watch Video Solution

33. Find the area of the unshaded region of the given figure (not drawn to scale).



A. 78cm^2

B. 43cm^2

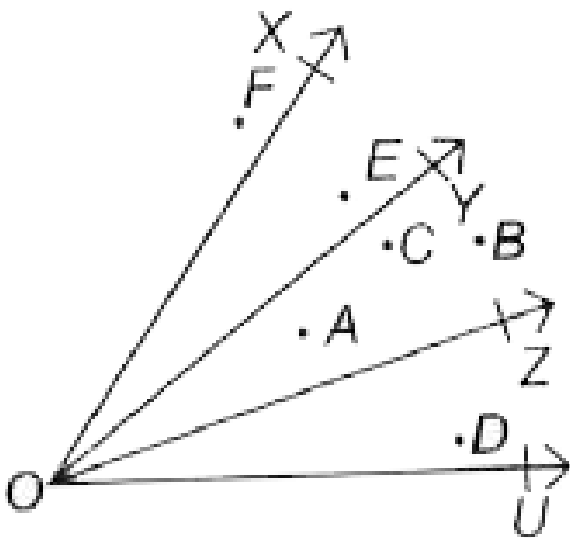
C. 66cm^2

D. 84cm^2

Answer: A

34. The points that lie in the exterior of $\angle YOZ$

are / is



A. Only E

B. Only D

C. E and F only

D. E, F and D

Answer: D



Watch Video Solution

35. _____ is the additive identity and _____ is the multiplicative identity respectively for whole numbers.

A. 1, 2

B. 1, 0

C. 0, 2

D. 0, 1

Answer: D



Watch Video Solution

36. Find the difference between the largest 7 - digit number and the smallest 7 - digit number formed by using the digits 4, 0, 3, 9 and 7 (using each digit at least once).

A. 6993951

B. 6949530

C. 6963951

D. 6996951

Answer: D



Watch Video Solution

37. How many right angles will you make, if you face South and turn clockwise to East ?

A. Two

B. three

C. One

D. Five

Answer: B



Watch Video Solution

38. Find the fraction with denominator 120 whose decimal value is 0.65 .

A. $\frac{62}{120}$

B. $\frac{78}{120}$

C. $\frac{35}{120}$

D. $\frac{90}{120}$

Answer: B



Watch Video Solution

39. Which of the following ratios are not in proportion ?

A. Rs. 20 : Rs. 150 and Rs. 70 : Rs. 525

B. 350 g : 700 g and 1500 g : 3 kg

C. 3 L : 12 L and 400 mL : 1050 mL

D. 35 cm : 15 m and 70 m : 3 km

Answer:



Watch Video Solution

40. The expression obtained when p is multiplied by 5 and then subtracted from 8 is _____

A. $8 - 5p$

B. $5p - 8$

C. $8p - 5$

D. $8 + 5p$

Answer: A



Watch Video Solution

Everyday Mathematics

1. The length, breadth and height of a room are 8m and 25cm, 6m and 75m and 4m 50cm, respectively. Determine the longest rod which can measure the three dimensions of the room exactly.

A. 25 cm

B. 15 cm

C. 75 cm

D. 1 m 15 cm

Answer: C



Watch Video Solution

2. An athlete takes 4 rounds of a rectangular park 140 m long and 60 m wide. Find the total distance covered by him

A. 800 m

B. 1600 m

C. 1200 m

D. 2400 m

Answer: B



Watch Video Solution

3. A car travels 180 km in 6 hours and a bus travels 315 km in 9 hours at uniform speeds. Find the ratio of distance travelled by car to bus in one hour.

A. 7:6

B. 5:8

C. 8:5

D. 6:7

Answer: D



Watch Video Solution

4. Kartik reads 200 pages of a book out of 320 pages. Kanika reads $\frac{3}{5}$ of the same book. Who read less pages and by how much?

A. Kartik, 8 pages

B. Kartik, 12 pages

C. Kanika, 8 pages

D. Kanika, 12 pages

Answer: C



Watch Video Solution

5. Tarun bought 2 shirts of Rs. 250 each, 2 scarfs of Rs. 175.50 each and 4 belts of Rs. 75.75 each. How much amount of money did he spend in all ?

A. Rs. 1248.50

B. Rs. 1154

C. Rs. 1140.25

D. Rs. 1812.50

Answer: B



Watch Video Solution

6. On one day, the temperature on a hill at 7 p.m. was $6^{\circ}C$ but at mid-night, it fell down to $-4^{\circ}C$. By how many degrees did the temperature fall?

A. $5^{\circ}C$

B. $6^{\circ} C$

C. $7^{\circ} C$

D. $10^{\circ} C$

Answer: D



Watch Video Solution

7. A wheel makes 115 revolutions in 1 hr. At this rate, how many revolutions with it make in 8 hours?

A. 920

B. 2070

C. 1840

D. 1640

Answer: C



Watch Video Solution

8. Nandini had some fruits. She packed them into 36 packets of 12 fruits each. She found that she had 6 fruits left. How many fruits she had at first?

A. 426

B. 432

C. 204

D. 438

Answer: D



Watch Video Solution

9. Vaani buys a dress costs Rs. 2874. Which of the following is the correct roman numeral (in Rs.) for the cost of the dress?

A. MMDCCCLXXIV

B. MMDCCCLXXIV

C. MMDCCCLXIV

D. MMDCCCLXXVI

Answer: B



Watch Video Solution

10. A shopkeeper has 423 kg of sugar. He sells 42 kg of sugar every day. Estimate how much sugar is left after 6 days sale to the nearest hundred.

A. 200 kg

B. 170 kg

C. 175 kg

D. 150 kg

Answer: A



Watch Video Solution

11. The length, breadth and height of a room are 8m and 25cm, 6m and 75m and 4m 50cm, respectively. Determine the longest rod which can measure the three dimensions of the room exactly.

A. 25 cm

B. 15 cm

C. 75 cm

D. 1 m 15 cm

Answer: C



Watch Video Solution

12. An athlete takes 4 rounds of a rectangular park 140 m long and 60 m wide. Find the total distance covered by him.

A. 800 m

B. 1600 m

C. 1200 m

D. 2400 m

Answer: B



Watch Video Solution

13. A car travels 180 km in 6 hours and a bus travels 315 km in 9 hours at uniform speeds. Find

the ratio of distance travelled by car to bus in one hour.

A. 7:6

B. 5:8

C. 8:5

D. 6:7

Answer: D



Watch Video Solution

14. Kartik reads 200 pages of a book out of 320 pages. Kanika reads $\frac{3}{5}$ of the same book. Who read less pages and by how much ?

- A. Kartik 8 pages
- B. Kartik 12 pages
- C. Kanika 8 pages
- D. Kanika 12 pages

Answer: C



Watch Video Solution

15. Tarun bought 2 shirts of Rs. 250 each, 2 scarfs of Rs. 175.50 each and 4 belts of Rs. 75.75 each. How much amount of money did he spend in all ?

A. Rs. 1248.50

B. Rs. 1154

C. Rs. 1140.25

D. Rs. 1812.50

Answer: B



Watch Video Solution

16. On one day, the temperature on a hill at 7 p.m. was $6^{\circ}C$ but at a mid - night, it fell down to $-4^{\circ}C$. By how many degrees did the temperature fall ?

A. $5^{\circ}C$

B. $6^{\circ}C$

C. $7^{\circ}C$

D. $10^{\circ}C$

Answer: D



Watch Video Solution

17. A wheel makes 115 revolutions in $\frac{1}{2}$ hour. At this rate, how many revolutions will it make in 8 hours ?

A. 920

B. 2070

C. 1840

D. 1640

Answer: C



Watch Video Solution

18. Nandini had some fruits. She packed them into 36 packets of 12 fruits each. She found that she had 6 fruits left. How many fruits she had at first ?

A. 426

B. 432

C. 204

D. 438

Answer: D



Watch Video Solution

19. Vanni buys a dress costs Rs. 2874 . Which of the following is the correct roman numeral (in Rs.) for the cost of the dress ?

- A. MMDCCCLXXIV
- B. MMDCCCLXXIV
- C. MMDCCCLXIV
- D. MMDCCCLXXVI

Answer: B



Watch Video Solution

20. A shopkeeper has 423 kg of sugar. He sells 42 kg of sugar every day. Estimate how much sugar is left after 6 days sale to the nearest hundred.

A. 200 kg

B. 170 kg

C. 175 kg

D. 150 kg

Answer: A



Watch Video Solution

Achievers Section Hots

Column 1

Column 2

(P) Equilateral triangle (1) 0

(Q) Square (2) 3

(R) Parallelogram (3) 2

(S) Rhombus (4) 4

1.

A.

$(P) \rightarrow (2), (Q) \rightarrow (4), (R) \rightarrow (1), (S) \rightarrow (3)$

B.

$(P) \rightarrow (2), (Q) \rightarrow (4), (R) \rightarrow (3), (S) \rightarrow (1)$

C.

$(P) \rightarrow (4), (Q) \rightarrow (2), (R) \rightarrow (1), (S) \rightarrow (3)$

D.

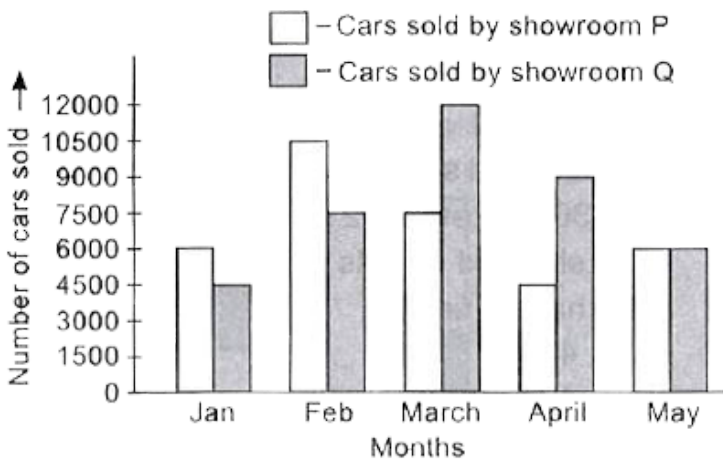
$$(P) \rightarrow (2), (Q) \rightarrow (1), (R) \rightarrow (4), (S) \rightarrow (3)$$

Answer: A



Watch Video Solution

2. The given bar graph shows the number of cars sold by two showrooms in five months. Study the graph carefully and answer the following questions.



(a) How many less cars were sold by Showroom P than Showroom Q in January, March and April altogether ?

(b) Find the ratio of total cars sold in February to the total number of cars sold in 5 months.

A. a b
8000 12:49

B. a b
8000 17:50

C. a b
7500 17:50

$$D. \quad \begin{array}{cc} a & b \\ 7500 & 17:49 \end{array}$$

Answer: D



Watch Video Solution

3. Fill in the blanks and select the correct option.

- The join of two adjacent vertices is called an

 P

- A Q is one that does not cross itself.

- Two or more distinct lines meeting at a point are called R lines.

A. P Q R
Diagonal Simple curve Concurrent

- B. P Q R
Edge Curve Parallel
- C. P Q R
Diagonal Curve Parallel
- D. P Q R
Edge Simple curve Concurrent

Answer: D



Watch Video Solution

4. Select the incorrect option.

A. The smallest 4 - digit number having three different digits is 1002 .

B. Whole numbers are always commutative under addition and multiplication.

C. All whole numbers are natural numbers.

D. 22222222 is divisible by 11.

Answer: C



Watch Video Solution

5. Study the following statements and select the correct option.

Statement 1 : The largest 5- digit number having

three different digits is 99987 .

Statement 2 : A whole number is added to 10 and the same number is subtracted from 10. Then the sum of the resulting numbers is 20.

A. Both Statements 1 and Statements 2 are true .

B. Both Statements 1 and Statements 2 are false .

C. Statement 1 is true but Statement 2 is false .

D. Statement 1 is false but Statement 2 is true .

Answer: A



Watch Video Solution