



MATHS

BOOKS - HT Olympiad Previous Year Paper

IMO QUESTION PAPER 2020-21 SET A

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



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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



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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



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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



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5. Which of the following is a perfect number?

A. 6

B. 12

C. 24

D. 8

Answer: A

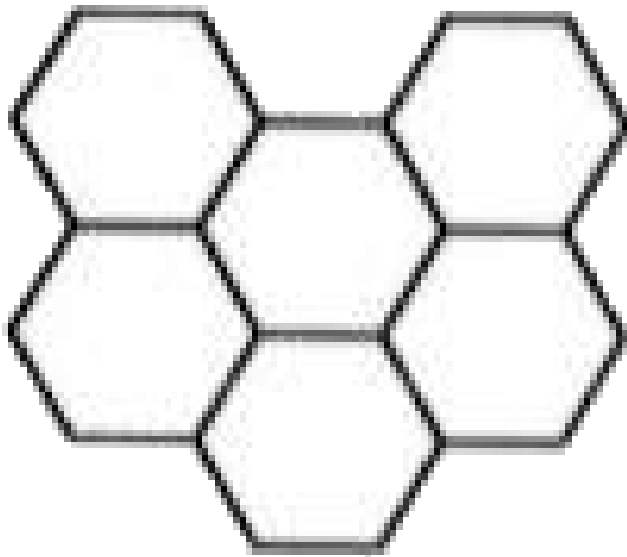


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6. Given figure is made up of six regular hexagons.

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

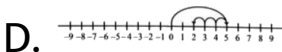
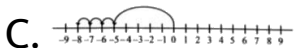
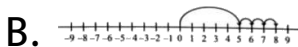
D. 6 cm

Answer: D



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



Answer: A



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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



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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



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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



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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. $(x - y) : y$

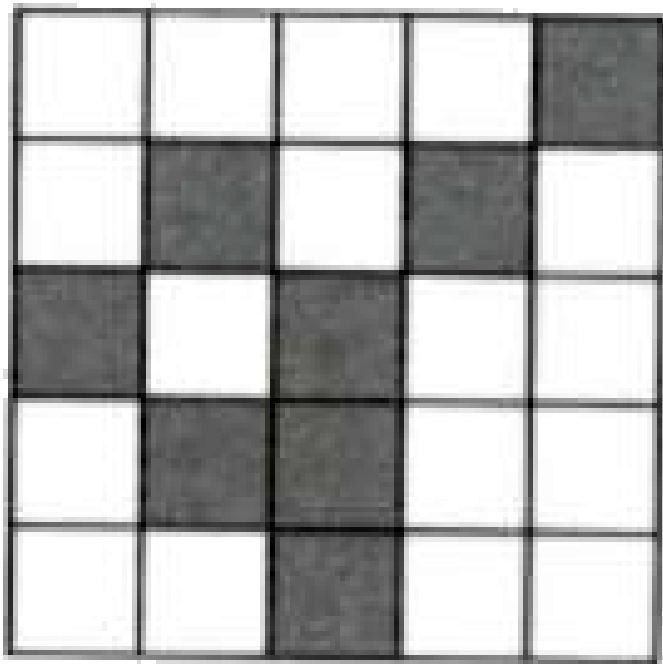
D. $(x - y) : x$

Answer: D



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



A. 1

B. 2

C. 3

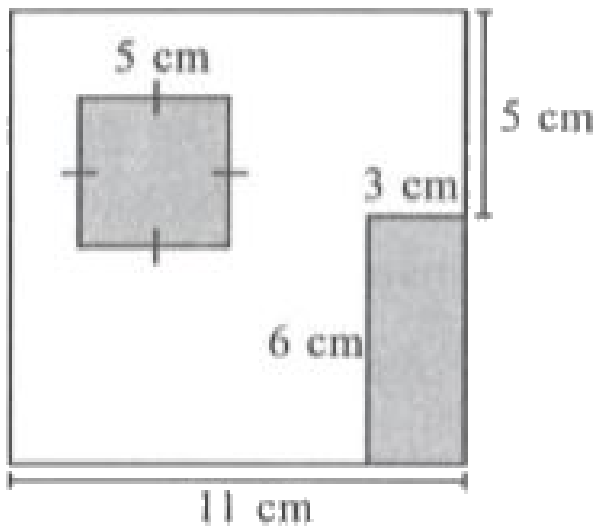
D. 4

Answer: B



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



A. 78 cm^2

B. 43 cm^2

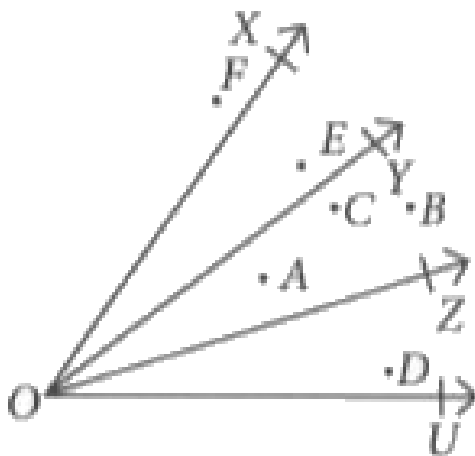
C. 66 cm^2

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



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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



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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



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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



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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



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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



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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



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Everyday Mathematics

1. The length, breadth and height of a room are 8m and 25cm, 6m and 75cm 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



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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



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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



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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



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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



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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



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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



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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



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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



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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



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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.

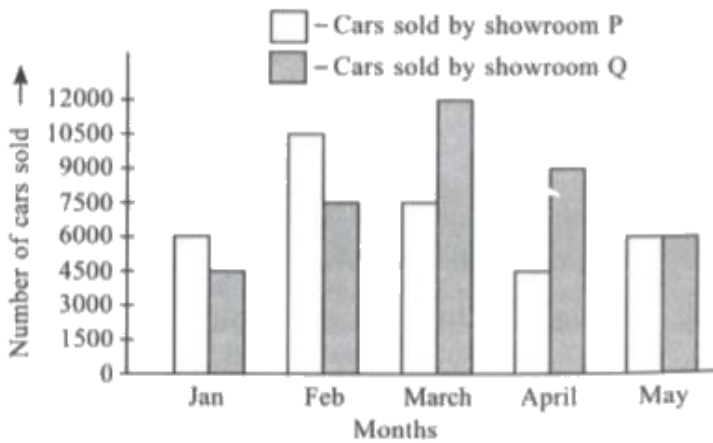
$$(P) \rightarrow (2), (Q) \rightarrow (1), (R) \rightarrow (4), (S) \rightarrow (3)$$

Answer: A



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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



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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



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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



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



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