MATHS

BOOKS - HT Olympiad Previous Year Paper

IMO QUESTION PAPER 2019-20 SET A

Mathematical Reasoning

1. If $\left(\dfrac{5}{2}\right)^{5} \times \left(\dfrac{5}{2}\right)^{x+3} = \left(\dfrac{2}{5}\right)^{-10}$ then the value of x is

A. -1

B. 0

C. 10

D. 2

Answer: D

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2. The given Fig (X) is turned to a different position. Which of these CANNOT be the figure
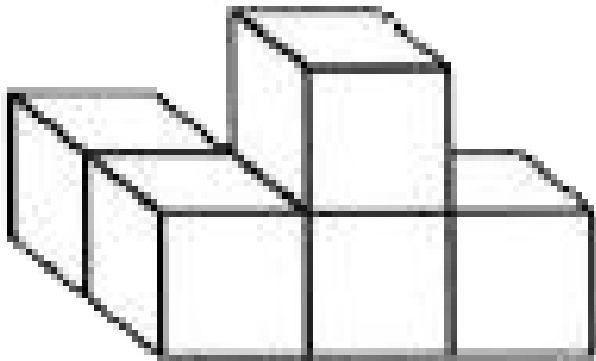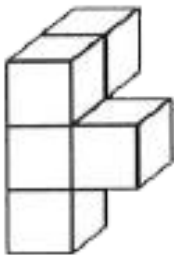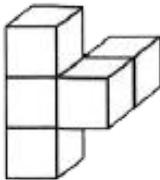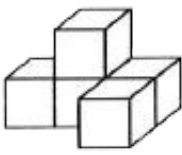
after it is turned?
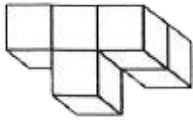

Fig. (X)

A.

B.

C.

D.

Answer: B

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3. Find the value of

$812 + 8.012 + 0.8120 + 8.0012$

A. 825.3904

B. 728.7252

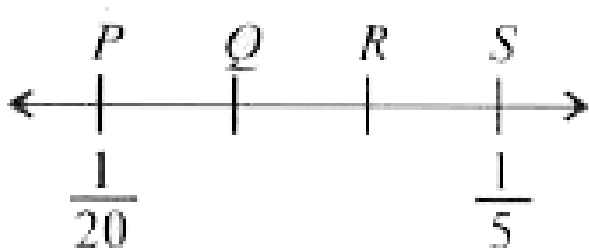C. 828.9332

D. 828.8252

Answer: D

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4. The given number line shows four fractions

P,Q,R and S.If PQ=PR=RS, then find the value of

Q and R respectively.

A. $\dfrac{1}{4}, \dfrac{1}{5}$

B. $\dfrac{1}{10}, \dfrac{3}{20}$

C. $\dfrac{1}{10}, \dfrac{1}{5}$

D. $\dfrac{1}{5}, \dfrac{1}{10}$

Answer: B

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5. Rs. 8000 have been divided into two parts such that if one part is lent a $7\frac{1}{2}\%$ per annum for 2 years and the other at 8% per annum for 3 years, then the total interest received is Rs. 1416. Find the two parts.

  A. Rs. 5550,Rs. 2450

  B. Rs. 5650, Rs. 2350

  C. Rs. 5625, Rs. 2375

  D. Rs. 5600, Rs. 2400

Answer: D

6. In the given figure (not drawn to scale), $LM \mid\mid PN$. Find the value of c-b.
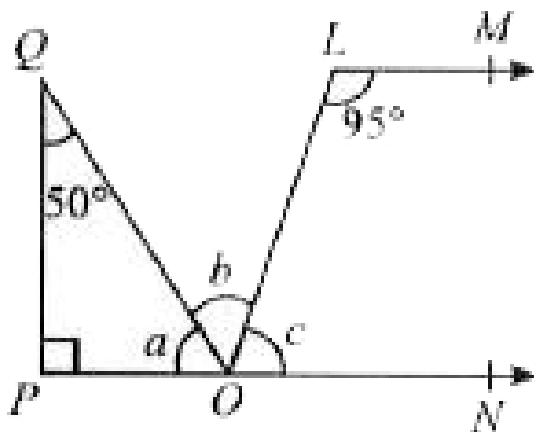
A. $55°$

B. $35°$

C. $40°$

D. $30°$

Answer: D

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7. What is the least number of squares that must be added so that PQ becomes the line of

symmetry?
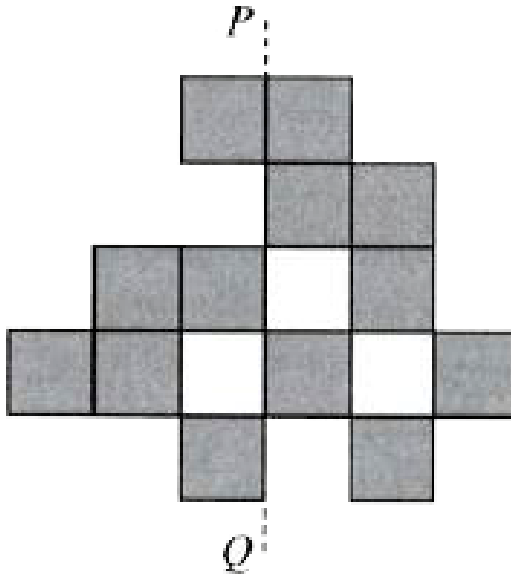
A. 7

B. 8

C. 9

D. None of these

Answer: A

8. If $a = \dfrac{4lm}{l + m}$, then the value of $\dfrac{a + 2l}{a - 2l} + \dfrac{a + 2m}{a - 2m} =$

A. 2

B. 4

C. $\dfrac{2lma}{(l + m)}$

D. None of these

Answer: A

9. Which of the following is true for $\triangle ABC$?

A. $AB - BC > AC$

B. $AB + BC < AC$

C. $AB - BC < AC$

D. $AB + AC < BC$

Answer: C

10. Shiksha has 18 red balls and 9 green balls. She chooses a ball randomly. Find the probability that the chosen ball is of red colour.

A. $\dfrac{4}{5}$

B. $\dfrac{1}{3}$

C. $\dfrac{3}{5}$

D. $\dfrac{2}{3}$

Answer: D

11. Find the value of s which makes the following equation true

$$s - 5 - \{5 - 4 + (7 \times 6 - 12 \div 3)\} = -40$$

A. -12

B. -4

C. 4

D. 12
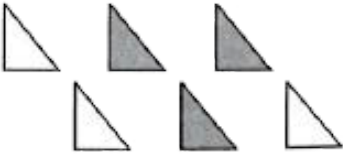
Answer: C

12. Select the correct match

Figure	Fraction of unshaded part
A.	$\dfrac{7}{9}$
B.	$\dfrac{1}{6}$
C.	$\dfrac{1}{2}$
D. None of these	

1. Pooja walks $\dfrac{4}{5}$ km towards office from her home and then returns $\dfrac{2}{3}$ km on the same way towards her home to reach a landmark. How far will she be now from her home?

A. $\dfrac{1}{15}$ km

B. $\dfrac{1}{5}$ km

C. $\dfrac{2}{15}$ km

D. $\dfrac{2}{17}$km

Answer: C

2. Varun scores 50 more runs than 5 times the runs scored by Karan. Form an equation which gives the runs scored by Karan. If Varun scored 120 runs.

A. $50x + 5 = 120$

B. $50 + 5x = 120$

C. $50x + 120 = 5$

D. $120 + 5x = 50$

Answer: B

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3. In a test, 4 marks are given for every correct answer and -2 marks for every incorrect answer. Asha answered all the questions and scored 26 marks though she got nine correct

answers. Varun also answered all he questions and scored 2 marks though he got five correct answers. How many questions did each of them answer incorrectly?

A. 10,8

B. 9,18

C. 5,9

D. 4,10

Answer: C

4. Four bells begin to ring together and ring respectively at an interval of 50 secs, 40 secs, 60 secs and 70 secs. After how much time will they again ring together?

A. 90mins

B. 70 mins

C. 100 mins

D. 60 mins

Answer: B

5. Shreya bought $5\dfrac{3}{4}$ litres of milk on Monday and $4\dfrac{2}{3}$ litres of mile on Tuesday. How many litres of milk and she buy together in two days?

A. $5\dfrac{3}{4}$ litres

B. $6\dfrac{1}{4}$ litres

C. $10\dfrac{5}{12}$ litres

D. $9\dfrac{3}{4}$ litres

Answer: C

6. A piggy bank contains an equal number of one rupee,50 paise and 25 paise coins. If the total value of Rs. 56, then how many coins of each type are there?

A. 25

B. 32

C. 30

D. 22

Answer: B

7. The cost of a pair of trousers was 55% the cost of a shirt. If Shubham intended to buy a pair of trousers and shirt both, then how much money must he have, if the shirt costs Rs. 31.50 more than the pair of trousers?

A. Rs. 38.50

B. Rs. 70

C. Rs. 108.50

D. Rs. 120.55

Answer: C

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8. A man sells two horse for Rs. 4000 each, neither losing nor gaining in the deal. If he sold one horse at a gain of 25% the other horse is sold at a loss of-

A. $33\dfrac{1}{3}\,\%$

B. $16\dfrac{2}{3}\,\%$

C. $50\,\%$

D. $47\,\%$

Answer: B

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9. A school committee invited 135 students to the annual function. If the ratio of number of

boys to the girls was 4:5, then find the number

of boys and girls invited by the committee

A. 70,65

B. 47,88

C. 30105

D. 60,75

Answer: D

10. Saumya borrowed Rs. 15000 at the rate of 12% p.a., for two years and another amount at the rate of 15% p.a for two years. The total interest paid by her was Rs. 9000. Find the amount she borrowed at 15% pa.

    A. Rs. 31000

    B. Rs. 33000

    C. Rs. 28000

    D. Rs. 18000

Answer: D

Achievers Section

1. Read the given statements carefully and select the correct option.

Statement I: While dividing a whole number by a fraction, we always get an integer.

Statement II: The product of a proper and an improper fraction is always less than both the improper fraction and the proper fraction.

A. Both Statement -I and Statement -II are

true.

B. Both Statement -I and Statement -II are

false

C. Statement -I is true but Statement -II is

false.

D. Statement -I is false but Statement -II is

true.

Answer: B

2. Match the following:

Expression	Value of x
(P) $\dfrac{16^x \times 4^5 \times (64)^3}{(4)^2 \times (256)^4} = 256$	(i) 1
(Q) $64^{2x+1} = (2)^{3x-3}$	(ii) 4
(R) $\left(\dfrac{2}{3}\right)^{x-1} \times \left(\dfrac{81}{16}\right) = \dfrac{4}{9}$	(iii) 7
(S) $5^x = (125)^{1/3}$	(iv) −1

A. $P \to ii,\ Q \to i,\ R \to iv,\ S \to iii$

B. $P \to i,\ Q \to ii,\ R \to iii,\ S \to iv$

C. $P \to ii,\ Q \to iv,\ R \to iii,\ S \to i$

D. $P \to iii,\ Q \to ii,\ R \to iv,\ S \to i$

Answer: C

3. Read the given statement carefully and state T for true and F for false.

i) Mean, Median and Mode can never be same for any data.

(ii) Median of the data can less than the mean of data.

(iii) Mean of the observations is the sum of all the observations.

	i	ii	iii
A.	T	T	T

	i	ii	iii
B.	T	F	T

	i	ii	iii
C.	T	T	F

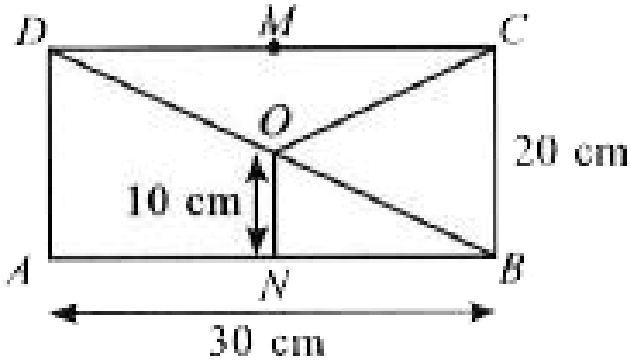|	i	ii	iii
D.	F	T	F

Answer: D

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4. ABCD is a rectangle.If N,O and M are the mid points of AB, BD and CD respectively , then find

(i) area of (δCOD)

(ii) area of $(CBNO)$: area of $(ABCD)$

A.
i	ii
$250cm^2$	$2:1$

B.
i	ii
$150cm^2$	$1:4$

C.
i	ii
$100cm^2$	$3:2$

D.
i	ii
$150cm^2$	$3:8$

Answer: D

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5. Simplify :

(i) If the measure of two supplementary angles are $6x + 20°$ and $10x$ then find the value of x.

(ii) Find the complement angle of $\dfrac{3}{5} \times 45°$

(iii) If two complementary angles are in the ratio 1:5, then find the smallest angle.

	i	ii	iii
A.	$10°$	$63°$	$15°$
B.	$20°$	$27°$	$15°$
C.	$20°$	$63°$	$10°$

D.
i	ii	iii
$10°$	$27°$	$30°$

Answer: A

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