MATHS

BOOKS - HT Olympiad Previous Year Paper

IMO QUESTION PAPER 2019-20 SET B

Mathematical Reasoning

1. Mihika constructed an angle of $120°$ and trisected it. Measure of two angles taken

together will be ____.

A. 90°

B. 40°

C. 80°

D. none of these

Answer: C

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2. Find the difference between the place value of 4 in 3286.4023 and face value of 2 in 4568234.

A. 1.6

B. 2.4

C. 200.4

D. 196

Answer: A

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3. Which of the following hands of the clock shows $\frac{1}{2}$ of a revolution?

A.

B.

C.

D.

Answer: B

4. The given table shows the temperature of a place for 6 consecutive hours.

Hour	1	2	3	4	5	6
Temperature (in °C)	−8	12	−1	20	18	5

Calculate the difference between the highest and the lowest temperature of the place over the 6-hour period.

A. $15° C$

B. $28^{\circ}C$

C. $12^{\circ}C$

D. $20^{\circ}C$

Answer: B

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5. The smallest number which when divided by 30, 45, 75 and 60 leaves a remainder of 21, 36, 66 and 51 respectively is

A. 900

B. 909

C. 891

D. none of these

Answer: C

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6. How many parts should be shaded in Figure

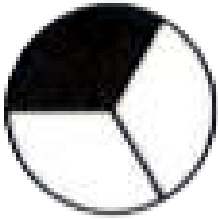Y to make it the same shaded fraction as the
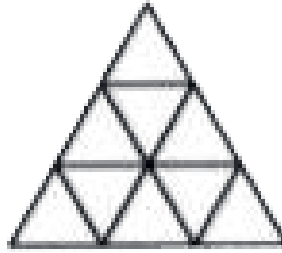
unshaded fraction of Figure X?

Figure X

Figure Y

A. 3

B. 5

C. 8

D. 6

Answer: D

7. Find the value of MCXXI + CMLXXXI - DLIV + XII.

    A. DLX

    B. MLXI

    C. MDLX

    D. MCD

Answer: C

8. Which of the following equations has x = 3 as a solution?

A. $3x + 2(x + 5) = 40$

B. $8x + 2(x - 2) = 35 - 3x$

C. $3x + 9 = 33$

D. none of these

Answer: B

9. If P, Q and R represent the prime digits, then

find the value of P and Q respectively.

$$
\begin{array}{rccc}
 & P & P & 3 \\
\times & & Q & Q \\
\hline
| & R & 6 & 1 \\
+\ |\ R & 6 & 1 & 0 \\
\hline
|\ 7 & |\ 7 & 1 \\
\end{array}
$$

A. 3, 5

B. 7, 2

C. 1, 7

D. 2, 7

Answer: D

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10. $72.432 \times 461.2 \times 0.0034$ is same as ____

A. $7.2432 \times 4.612 \times 3.4$

B. $7.2432 \times 4.612 \times 0.34$

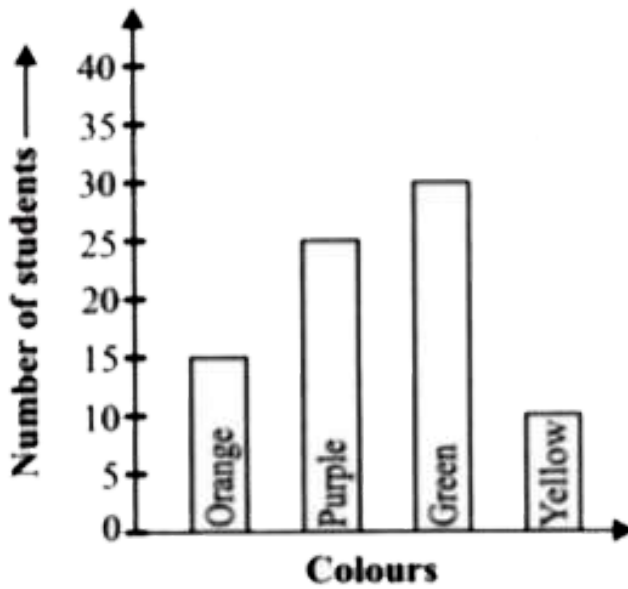C. $7.2432 \times 4612 \times 0.0000034$

D. $7243.2 \times 4.612 \times 0.000034$

Answer: A

11. Kanika surveyed the students of her class to determine their favourite colours. The results are shown in the given bar graph. Study it carefully and answer the following questions.

Bar graph with y-axis labeled "Number of students" (scale 0 to 40) and x-axis labeled "Colours" with bars for Orange (15), Purple (25), Green (30), Yellow (10).

How many more students like green colour than orange colour?
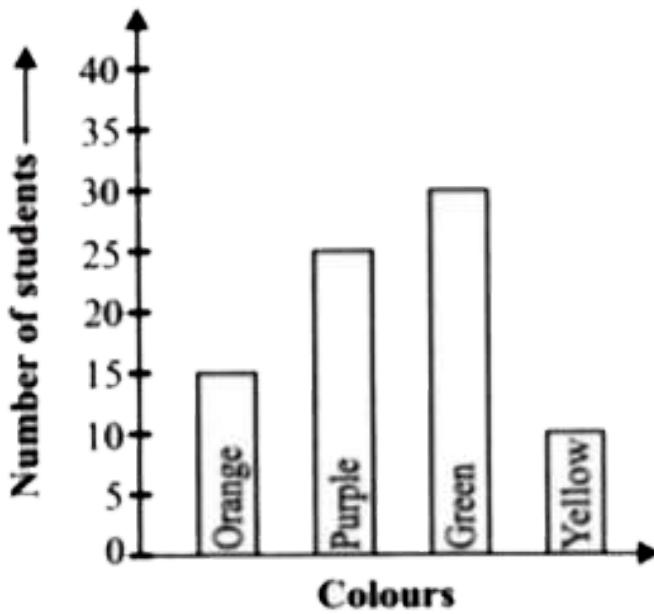
A. 45

B. 30

C. 15

D. 40

Answer: C

12. Kanika surveyed the students of her class to determine their favourite colours. The results are shown in the given bar graph. Study it carefully and answer the following questions.

Number of students (y-axis): 0, 5, 10, 15, 20, 25, 30, 35, 40

Bars: Orange, Purple, Green, Yellow

Colours (x-axis)

Find the ratio of number of students who like

purple colour to the total number of students.
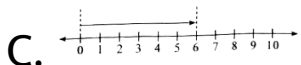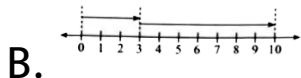
A. $4:5$

B. $5:16$

C. $16:5$

D. $5:4$

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13. Which of the following number lines represents the expression $0 + (- 3) + 10$?
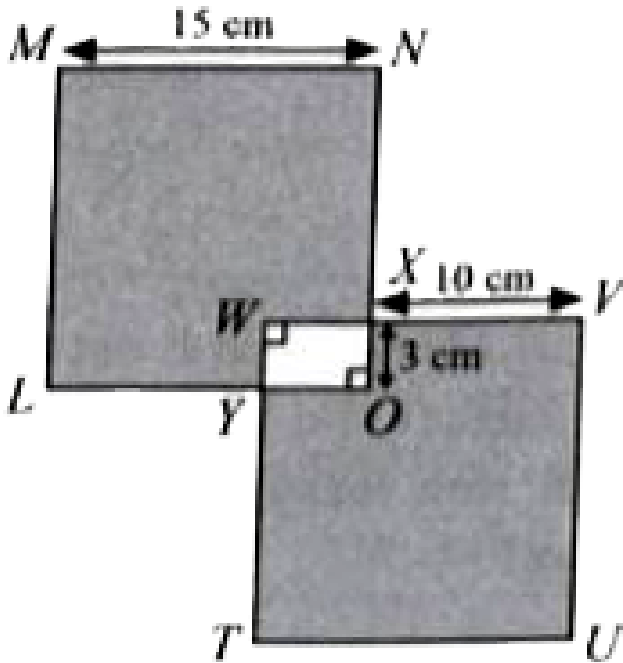
A.

B.

C.

D.
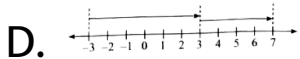
Answer: A

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14. In the given figure (not drawn to scale), if LMNO and TUVW are two identical squares,

then find the area of the shaded region.

A. $350cm^2$

B. $225cm^2$

C. $450cm^2$

D. $420cm^2$

Answer: D

15. Which of the following square(s) must be shaded so that given figure is symmetric along both lines LM and AB?
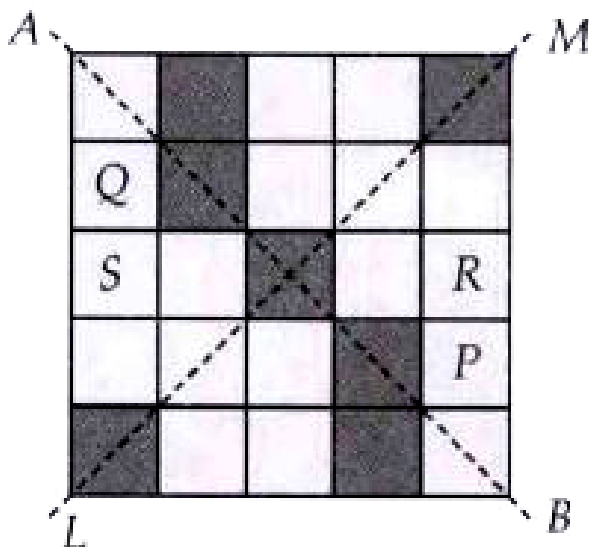
A. R and S

B. P only

C. Q and P

D. Q Only

Answer: C

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16. Find the sum of 185.32 (round off to nearest tenths), 64.698 (round off to nearest

hundredths) and 36.952 (round off to nearest tenths).

A. 287

B. 197

C. 185

D. 280

Answer: A

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17. Which of the following options is incorrect?

A. A regular pentagon has only five lines of symmetry.

B. A square has four lines of symmetry.

C. A pentagonal prism has 10 edges.

D. A tetrahedron has 4 faces.

Answer: C

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18. In the given figure, the ratio of shaded part to unshaded part is _____
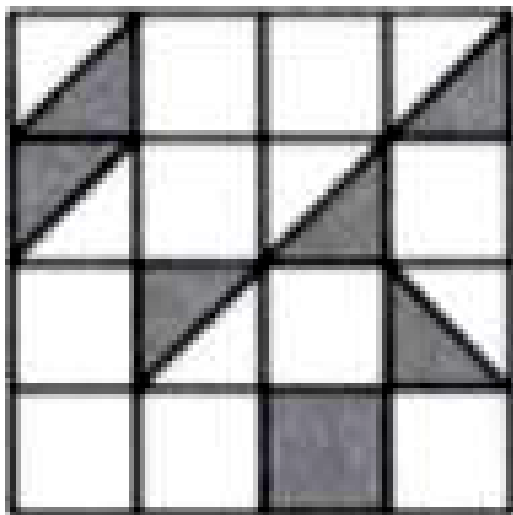
A. $1 : 4$

B. $1 : 3$

C. $1 : 2$

D. $2 : 3$

Answer: B

19. Simplify : $8\dfrac{3}{4} - 3\dfrac{7}{8} - 4\dfrac{1}{16} - \dfrac{3}{4}$.

A. $\dfrac{9}{16}$

B. $\dfrac{3}{4}$

C. $\dfrac{1}{16}$

D. $\dfrac{3}{8}$

Answer: C

20. In International System of numeration, the sum of 35486526 and 29637779 can be written as

A. Sixty five crore one lakh forty three thousand five

B. Six crore fifty twelve lakh four thousand three hundred five

C. Sixty five million one hundred twenty four thousand three hundred five

D. Six million five thousand one hundred twenty four thousand three hundred five.

Answer: C

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Everyday Mathematics

1. Ashima, Jiya and Meera distributed 9.780 kg of sugar equally among themselves. Ashima used all her sugar equally to make 20 chocolate shakes. How much sugar need to make each shake?

A. 320g

B. 250g

C. 163g

D. 170g

Answer: C

2. Saumya had 18 thousand rupee notes in her purse. She spent Rs. 12850 on buying clothes, Rs. 1315 on buying fruits and vegetables, Rs. 840 on buying sweets and Rs.180 on transport. How much money is left with her?

A. Rs. 2140

B. Rs. 120

C. Rs. 1230

D. Rs. 2815

Answer: D

3. A piece of cloth 8 m in width and 12 m in length has to be covered by square block prints. If each side of the square block is 0.5 m in length, then how many such square blocks can be printed on the cloth?

A. 217

B. 384

C. 312

D. 420

Answer: B

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4. Three big drums contains 44 litres, 55 litres and 99 litres of diesel. What is the largest measure that can measure all the different quantities exactly?

A. 9 litres

B. 120 litres

C. 11 litres

D. 70 litres

Answer: C

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5. Preeti travelled 3x km distance by walk, 9y km by cycle and 5 km by bus. The total distance travelled by Preeti is ____.

A. $(3x - 9y + 5)$ km

B. $(3x + 9y + 5)$ km

C. $(3x - 9y - 5)$ km

D. $(9x + 3y - 5)$ km

Answer: B

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6. There are $\dfrac{3}{5}$ as many men as women in the hall. $\dfrac{2}{3}$ of the men and $\dfrac{1}{5}$ of the women wear formal dress. What is the ratio of the people in

the hall who do not wear formal dress to the total number of people in the hall?

A. $8:5$

B. $3:5$

C. $5:8$

D. $4:5$

Answer: C

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7. A stadium has a capacity of 1800 seats. There are 300 seats each allotted for Rs. 300 tickets, 400 seats each for Rs. 450 tickets, 400 seats each for Rs. 500 tickets and the rest for Rs. 1000 tickets each. If all the tickets are sold, then how much money would be collected?

    A. Rs. 870000

    B. Rs. 990000

    C. Rs. 1050000

    D. Rs. 1170000

Answer: D

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8. A total of 225 playing cards are to be divided among Niharika, Raghav and Varun respectively in the ratio of 2:5:8. How many number of playing cards will Raghav get?

A. 75

B. 85

C. 120

D. 45

Answer: A

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9. There are 222 red balls in a basket. A boy takes out 6 red balls from it and replaces then by 12 white balls. He continues to do so til all the red balls are replaced by white balls. Determine the number of white balls put in the basket.

A. 333

B. 444

C. 345

D. 400

Answer: B

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10. A postman covers 50 m distance to deliver

a parcel to the customer. He travels 0.017 km

by bicycle and the rest on foot. What distance does he cover on foot?

A. 33 m

B. 28 m

C. 23 m

D. 22 m

Answer: A

Achievers Section

1. Read the statements carefully and state 'T' for true and 'F' for false.

(i) A right angle is one fourth of a revolution.

(ii) Place value and face value are always equal at ones place.

(iii) The sum of two negative integers and a positive integer is always a negative integer.

(iv) The successor of every whole number is a natural number.

A.

i	ii	iii	iv
T	F	T	F

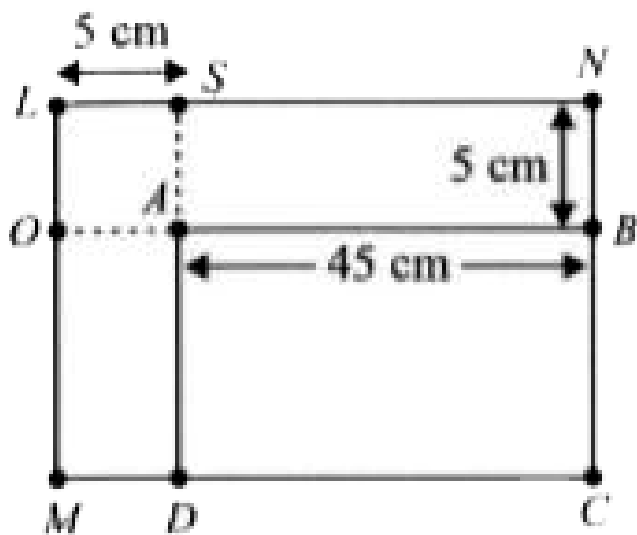|	i	ii	iii	iv
B.	T	T	F	T
C.	F	F	T	T
D.	F	T	T	F

Answer: B

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2. ABCD is a rectangle. When the length and breadth of the rectangle are increased, the rectangle gets enlarged to LNCM. If the length of rectangle ABCD is thrice its breadth, then

find the

(a) sum of perimeter of rectangle ABCD and SNBA.

(b) area of rectangle LNCM.

A. (a, b), $(225cm, 840cm^2)$

B. (a, b), $(220cm, 1000cm^2)$

C. (a, b), $(220cm, 900cm^2)$

D. $(a, b), (235cm, 750cm^2)$

Answer: B

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3. The total number of students who applied for government jobs in the five years in a state are given below.

Year	2013	2014	2015	2016	2017
No. of students	4500	6000	7500	3500	5500

Using the symbol to represent 500 students,

answer the following questions.

(i) How many symbols are needed to represent the number of students who applied in 2014 ?

(ii) How many less symbols are needed to represent the number of students who applied in 2017 than those in 2015?

A.
i	ii
12	4

B.
i	ii
5	8

C.
i	ii
8	4

D.
i	ii
12	6

Answer: A

4. In a quiz, there are 50 questions. If all questions are answered correctly, a student's score will be 100, if all questions are answered incorrectly, a student's score will be -50. Part way through this quiz Rashi has a score of -5. What will her new score be, if she

(a) answers 3 of the next 7 questions correctly and 4 of them incorrectly?

(b) answers 2 of the next 8 questions incorrectly and 6 of them correctly?

A. $\begin{array}{cc} a & b \\ 3 & 5 \end{array}$

B. $\begin{array}{cc} a & b \\ -3 & 5 \end{array}$

C. $\begin{array}{cc} a & b \\ -3 & -7 \end{array}$

D. $\begin{array}{cc} a & b \\ 1 & 5 \end{array}$

Answer: B

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5. Read the given statements carefully and

select the correct option.

Statement-1: A chord of a circle is a line

segment joining any two points on the circle.

Statement-2: Two intersecting lines are perpendicular, if the angle between them is $180°$.

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: C

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