



MATHS

BOOKS - HT Olympiad Previous Year Paper

IMO QUESTION PAPER 2018-19 SET A

Everyday Mathematics

1. In Shimla, minimum temperature on Tuesday was $25^{\circ}C$. On Wednesday, it fell by $3^{\circ}C$ and due to rainfall on Thursday, it further fell by $4^{\circ}C$.

What was the minimum temperature on Thursday ?

A. $20^{\circ}C$

B. $18^{\circ}C$

C. $22^{\circ}C$

D. $19^{\circ}C$

Answer: B



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2. Mr Sharma earns Rs 64000 per month . He gave $\frac{2}{5}$ of his salary to his son and $\frac{5}{8}$ of the remaining to his daughter and the rest to his wife .

Find the share of his wife .

A. Rs. 14400

B. Rs. 24000

C. Rs.25600

D. Rs.38400

Answer: A



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3. The grades obtained by 30 students of class VII are as follows :

A^+ B^+ A B A^+ B^+ A^+ B B B^+ A A A^+ B B^+
 A A^+ B B A A A^+ A^+ B B^+ B B^+ A^+ A^+ A

If a student has been select at random, then find the probability that he has obtained grade A^+ .

A. $\frac{7}{10}$

B. $\frac{7}{30}$

C. $\frac{9}{10}$

D. $\frac{3}{10}$

Answer: D



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4. Manvi says that she got 16 more marks than 4 times the number of marks scored by Aashi . Form an equation which gives the marks scored by Aashi, if Manvi scored 72 marks .

A. $16x + 4 = 72$

B. $16 + 4x = 72$

C. $16x + 72 = 4$

D. $72 + 4x = 16$

Answer: B



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5. A rectangular piece of land is to be sold off in smaller pieces. The total area of the land is 2^{17} sq. miles. The pieces to be cut out as 16^2 sq. Miles in size. How many smaller pieces of the land can be sold at the given size?

A. 2^{15}

B. 16^4

C. 2^9

D. None of these

Answer: C



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6. Sushma sells an article at a loss of 12% . If she had sold it for Rs. 50.80 more, then she would have earned a profit of 8% . Find the cost price of the article .

- A. Rs.260
- B. Rs.250
- C. Rs.254
- D. Rs. 244

Answer: C



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7. A rectangular grassy land is 65 m long and 50 m broad . It is surrounded by 3 m wide path . Find the cost of gravelling the path at Rs 2.50 per m^2 .

A. Rs. 1500

B. Rs. 1518

C. Rs. 1815

D. Rs. 1960

Answer: C



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8. The number of students in a school increased by 8% annually . If there are 71280 students in the school, then how many students were there last year ?

A. 57640

B. 54000

C. 61320

D. 66000

Answer: D



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9. The ages of Ruchi and Suchi are in the ratio $6 : 1$. The sum of their ages is 56 years . What is the ratio of their ages after 6 years ?

A. $27 : 7$

B. $26 : 9$

C. $25 : 3$

D. $29 : 7$

Answer: A



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10. In an examination, one should get 36% of the maximum marks to pass . A student obtained 113 marks and is declared fail by 85 marks . The maximum marks are _____ .

- A. 500
- B. 550
- C. 640
- D. 1008

Answer: B



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Achievers Section

1. State 'T' for true of 'F' for false and select the correct option.

(i) Every natural number is a rational number.

(ii) Every rational number is a fraction.

(iii) Zero is not a rational number.

(iv) The reciprocal of 0 is $\frac{1}{0}$.

A. (i) F (ii) T (iii) T (iv) F

B. (i) T (ii) T (iii) T (iv) F

C. (i) T (ii) F (iii) F (iv) F

D. (i) T (ii) T (iii) F (iv) F

Answer: C



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2. Match the following .

Column-I

(P) If $2700 \times x^6 = 27 \times 10^8$,
then $x =$

(Q) If $pqr = 0$, then $\frac{\left(\left(x^p\right)^r\right)^{2q}}{x^{pqr}} =$ (ii) 900

(R) $\frac{2 \times 2^{n+3}}{2^{n+4} - 2^3 \times 2^n} + 2^2$ is equal to (iii) 10

(S) $\frac{\left(3^{-2}\right)^5 \times \left(5^{-3}\right)^4 \times \left(7^{-4}\right)^5}{\left(2^{-1}\right)^2 \times \left(7^2\right)^{-10} \times \left(3^4\right)^{-3} \times \left(5^7\right)^{-2}}$ (iv) 1
equals

Column-II

(i) 6

(ii) 900

(iii) 10

(iv) 1

A. (P)(i) (Q)(iv) (R)(iii) (S)(ii)

B. (P)(iii) (Q)(i) (R)(iv) (S)(ii)

C. (P)(ii) (Q)(iii) (R)(i) (S)(iv)

D. (P)(iii) (Q)(iv) (R)(i) (S)(ii)

Answer: D

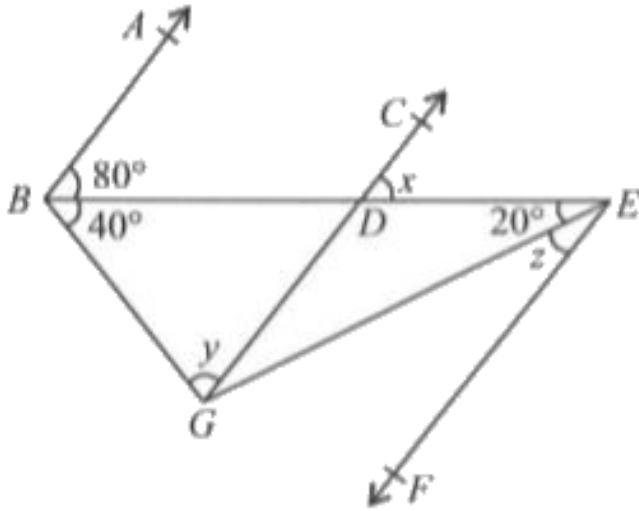


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3. In the given figure (not drawn to scale), if $AB \parallel CG \parallel EF$, then find

(i) $2z - x$

(ii) $x+2y$



A. (i) 40°

(ii) 220°

B. (i) 60°

(ii) 200°

C. (i) 50°

(ii) 200°

D. (i) 40°

(ii) 200°

Answer: D



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4. Study the following statements carefully and select the correct option.

Statement-I A hall is 36m long and 24m broad. If allowing area of $40m^2$ for doors and windows, the cost of papering the walls at Rs. 8.40 per square metre is Rs. 4704, then the height of the hall is 5 m.

Statement-II : If the difference between the circumference and diameter of a circle is 154 cm, then the radius of circle is 30.93 cm.

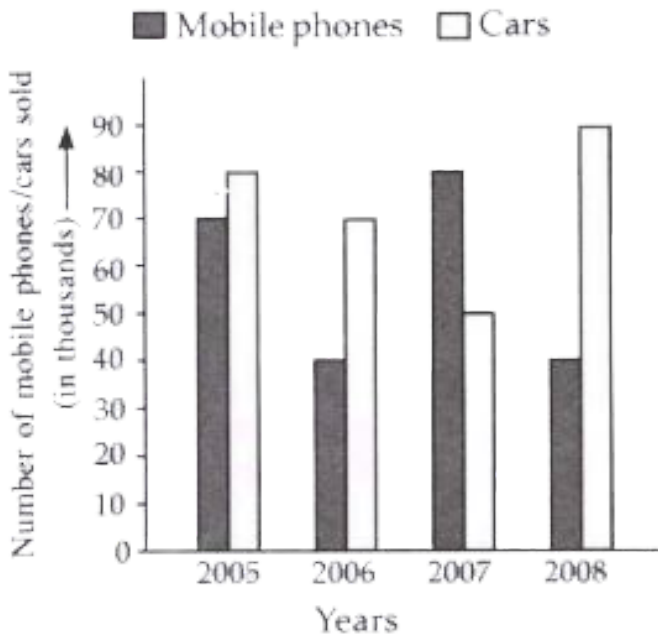
- A. Both Statement-I and Statement-II are true.
- B. Both Statement-I and Statement-II are false.
- C. Statement-I is true but Statement-II is false.
- D. Statement-I is false but Statement-II is true.

Answer: C



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5. The given double bar graph shows the sale of mobile phone and cars from 2005 to 2008



- (i) Find the ratio of the total number of mobile phones sold in 2006 and 2008 to the total number of cars sold in 2005 and 2007
- (ii) What is the average number of cars sold from 2005 to 2008

A. (i) 8 : 13

(ii) 72500

B. (i) 13 : 16

(ii) 72500

C. (i) 8 : 13

(ii) 97000

D. (i) 16 : 17

(ii) 89000

Answer: A



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Logical Reasoning

1. If $\frac{3}{7}$ of 64% of $\frac{x}{21}$ is 1280, then the value of x is _____.

A. 98000

B. 64000

C. 8000

D. 4900

Answer: A



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2. Simplify : $\frac{2^{p-8} \times 8^{q-4}}{2^{p-11} \times 8^{q-5}}$

A. 2^5

B. 2^6

C. 2^3

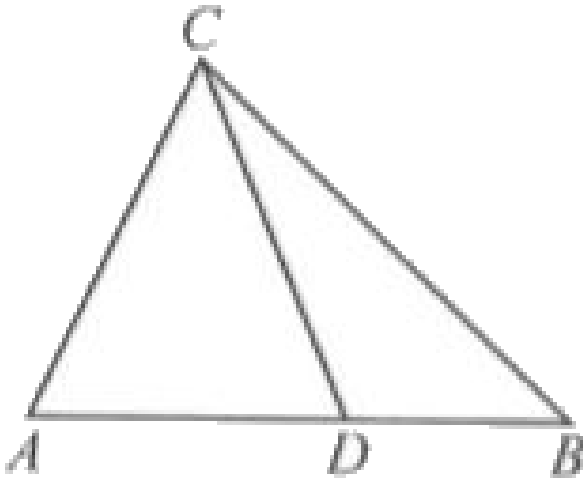
D. 2^4

Answer: B



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3. In the given figure, if $\angle A = 2\angle B$ and $\angle ACD = 2\angle DCB$, then find the measure of $\angle DCB + \angle B$.



- A. 60°
- B. 90°
- C. 45°
- D. 75°

Answer: A

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4. Which of the following options represents the value of p shown on the number line ?



A. $\frac{6}{3} + \frac{1}{3} - \frac{1}{9} + \frac{4}{3}$

B. $-\frac{1}{4} - \frac{3}{2}$

C. $\frac{1}{3} - \frac{6}{2} + \frac{4}{3} - \frac{1}{2}$

D. $\frac{2}{3} - \frac{1}{3} + \frac{6}{3} + 2$

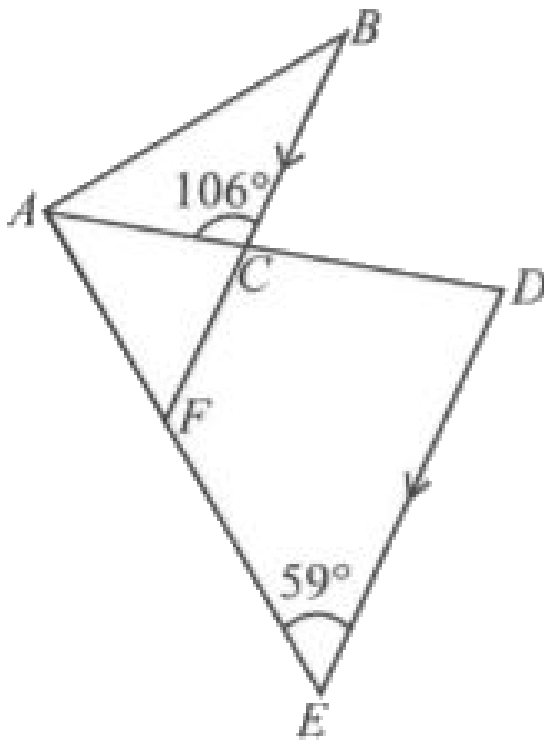
Answer: C



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5. In the given figure, ACD is a straight line . $AC = CB$ and $BF \parallel DE$. Find

$\angle BAE$.



- A. 42°
- B. 84°
- C. 39°
- D. None of these

Answer: B

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6. Select a pair of integers whose sum is -51.

A. $-42, 93$

B. $1, -50$

C. $-93, 42$

D. $-1, -52$

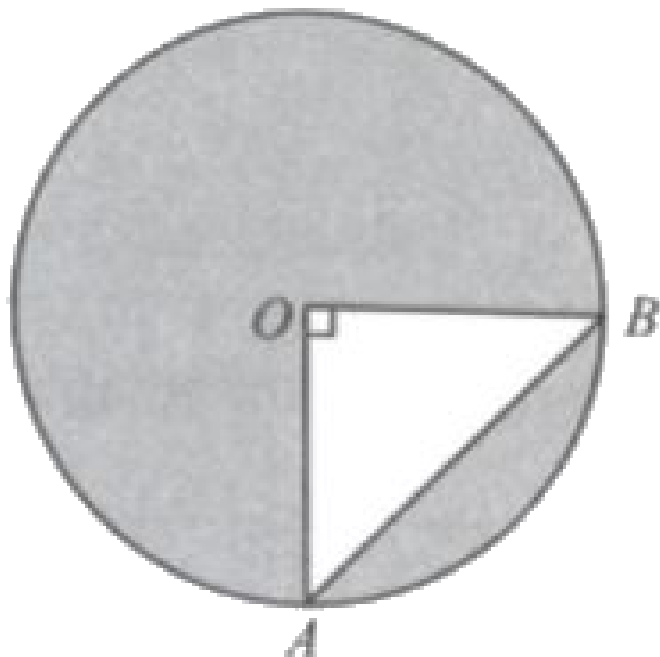
Answer: C



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7. A circle with centre at O and radius 5 cm is given . A right angled triangle AOB is inscribed in the circle. Find the area of the shaded region.

(Take $\pi = \frac{22}{7}$)



- A. $132\frac{4}{7}cm^2$
- B. $139\frac{4}{7}cm^2$
- C. $66\frac{1}{14}cm^2$
- D. $153\frac{7}{17}cm^2$

Answer: C



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8. By how much is $-12x + 2y$ greater than the sum of $-18x + 6y$ and $5x - 25y$?

A. $x + 21y$

B. $-x - 21y$

C. $x + 25y$

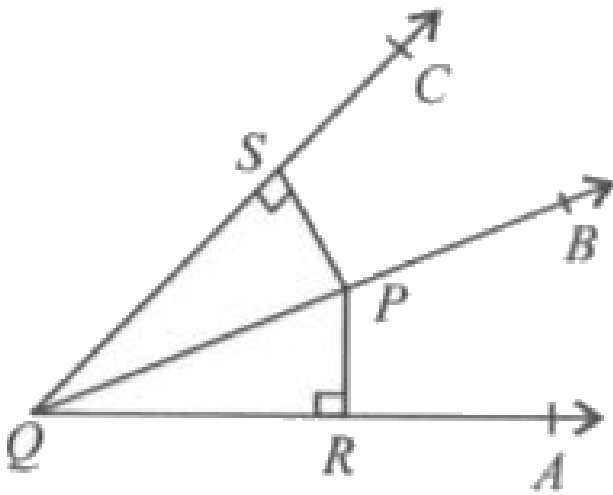
D. $x + 36y$

Answer: A



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9. By which congruency criterion, $\triangle QPR \cong \triangle QPS$, if $QR = QS$, $PR \perp QA$ and $PS \perp QC$.



A. SAS

B. RHS

C. ASA

D. SSS

Answer: B

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10. Which of the following statements is CORRECT ?

- A. If lengths of any two sides of a triangle are 7 cm and 10 cm, then the length of its third side lies between 3 cm and 17 cm.
- B. It is possible to construct a unique triangle, if all its three angles are given.
- C. An angle of $\left(7\frac{1}{2}\right)^\circ$, can't be constructed using compass and ruler.
- D. None of these

Answer: A



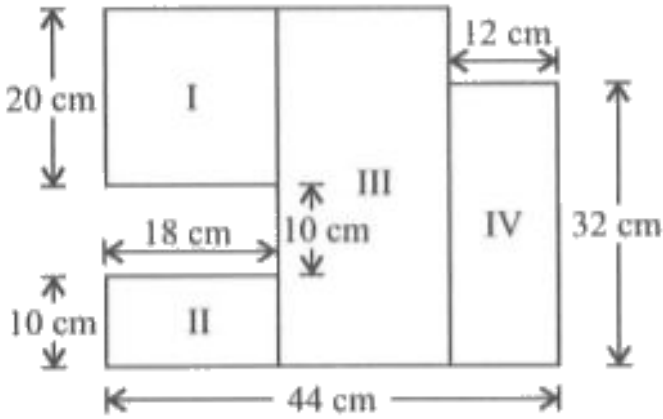
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11. Study the given figure (not drawn to scale) carefully and select the correct option.

(i) Perimeter of the complete figure is 198 cm.

(ii) Total area of figure II and III is 4cm^2 less than the total area of figure I

and IV.



- A. Only (i) is true.
- B. Only (ii) is true.
- C. Both (i) and (ii) are true.
- D. Neither (i) nor (ii) is true.

Answer: B



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12. If $a : b = 2\frac{1}{2} : 1\frac{2}{3}$ and $b : c = 1\frac{1}{4} : 3\frac{1}{2}$, then find $a : b : c$.

A. 7: 6: 18

B. 5: 9: 14

C. 15: 11: 14

D. 15: 10: 28

Answer: D

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13. Solve for x: $\frac{7x + 3}{4} + \frac{9x - 5}{8} = \frac{16x - 3}{16}$

A. $\frac{1}{6}$

B. $\frac{5}{3}$

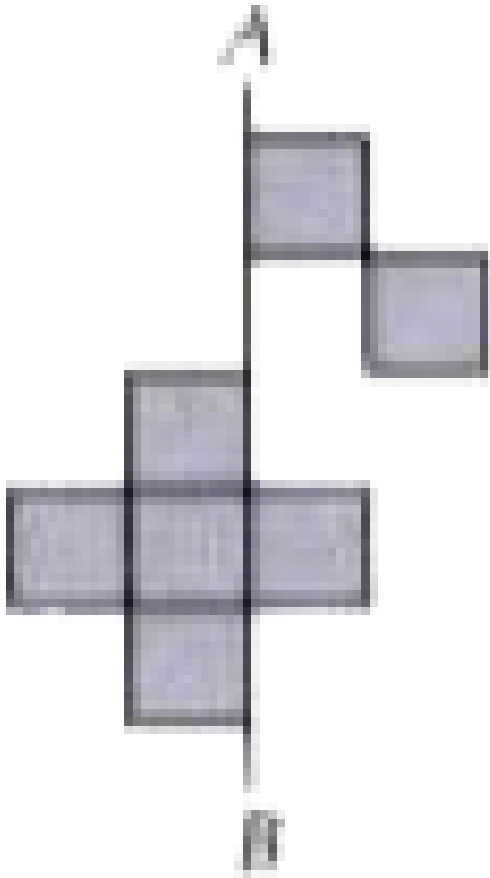
C. $-\frac{3}{5}$

D. $-\frac{1}{6}$

Answer: D

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14. What is the least number of squares that must be added so that the line AB becomes the line of symmetry



A. 4

B. 5

C. 6

D. 7

Answer: C



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15. The sum of two consecutive multiples of 6 is 114 . Find the smaller number.

A. 60

B. 66

C. 54

D. 96

Answer: C



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16. A sum of money at simple interest doubles itself in 5 years 6 months .

In how much time will it triple itself at the same rate ?

- A. 11 years
- B. 12 years
- C. 16 years
- D. None of these

Answer: A



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17. Find the mean of first 7 odd natural numbers.

- A. 49
- B. 28
- C. 21

D. 7

Answer: D

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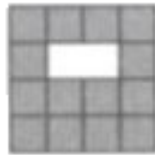
18. Which of the following figures is the top view of the given figure ?



A.



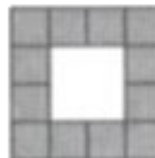
B.



C.

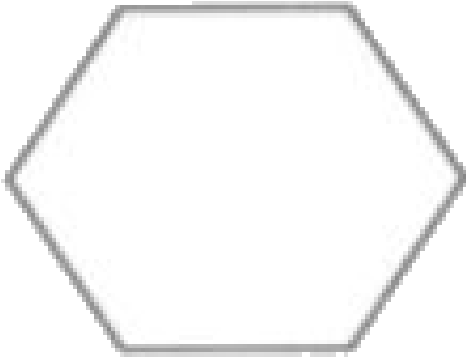


D.



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19. What is the order of rotational symmetry of the given figure ?



A. 2

B. 6

C. 4

D. 0

Answer: B



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20. A bag contains 5 blue gems, 8 red gems and 2 green gems . A gem is drawn at random . What is the probability of getting a blue gem ?

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

B. $\frac{2}{3}$

C. $\frac{2}{9}$

D. $\frac{5}{6}$

Answer: A



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