MATHS

BOOKS - MTG IIT JEE FOUNDATION

PREP TEST 1

Section A

1. Simplify:

$$\left(-18\frac{1}{3} \times 2\frac{8}{11}\right) - \left(4\frac{5}{7} \times 2\left(\frac{1}{3}\right)\right)$$

A. 63

B. $-23\frac{7}{9}$

C. -61

D. $61\left(\dfrac{2}{3}\right)$

Answer:

2. Which of the following equation is incorrect?

A. $(-17) \times (-7) \times (-3) < 0$

B. $[8 \times (-4)] + 32 = 0$

C. $(-48) + [(2 \times 3) + 0] = -8$

D. $[(-15) + 5] + (-3) < 0$

Answer:

3. The sides of a triangle have length (in cm) 10, 6.5 and a, where a is a whole number. The minimum value that a can take is

A. 6

B. 5

C. 3

D. 4

Answer:

4. The value of $9x^2 + 49y^2 - 42xy$, when x = 15 and y = 3 is

A. 636

B. 576

C. 456

D. 386

Answer:

5. Shubham is 25 years younger to his mother. Seven years later, his mother will be twice as old as Shubham. Find the present age of Shubham (in years),

A. 18

B. 43

C. 17

D. 24

Answer:

6. In which of the following cases, a unique triangle can be drawn

A. AB = 4 cm, BC = 8 cm and CA = 2 cm

B. BC = 5.2 cm, $\angle B = 90°$ and $\angle C = 110°$

C. $XY = 5cm$, $\angle X = 45°$ and $\angle Y = 60°$

D. An isosceles triangle with the length of each equal side 6.2 cm.

Answer:

7. The standard form of $\dfrac{-48}{60}$ is

A. $\dfrac{48}{60}$

B. $-\dfrac{60}{48}$

C. $-\dfrac{4}{5}$

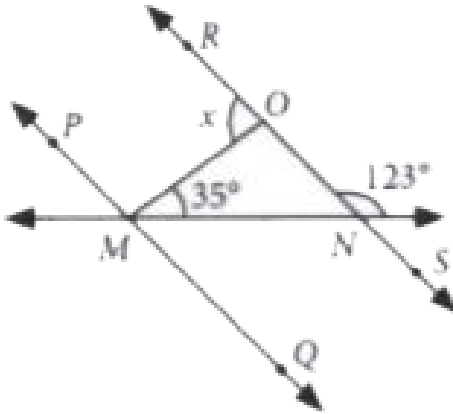D. $-\dfrac{4}{-5}$

Answer:

▶ **Watch Video Solution**

8. The value of x in the following figure is:

A. $57°$

B. $123°$

C. $92°$

D. $113°$

Answer:

▶ **Watch Video Solution**

9. What is the probability of the sun setting tomorrow?

A. 1

B. 0

C. $1/2$

D. None of these

Answer:

▶ **Watch Video Solution**

10. A figure has a rotational symmetry of order more than 1, the angle of rotation can be_____

A. $21°$

B. $22°$

C. $23°$

D. $24°$

Answer:

▶ **Watch Video Solution**

---

11. A man walks 3 km North and then 4 km East. Find how far he is now, from the starting position.
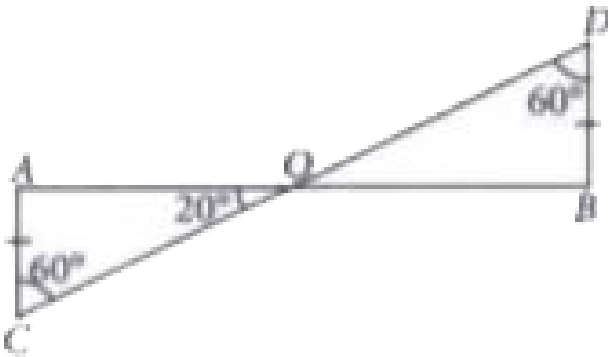
A. 25 km

B. 5 km

C. 5 m

D. 7 km

Answer:

12. If $\triangle \, AOC \approx \triangle \, BOD$, then measure of $\angle OBD$ is:

A. 100°

B. 50°

C. 80°

D. None of these

Answer:

13. Which of the following figures has 10 vertices ?
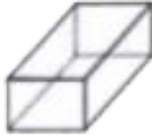

Fig-U   Fig-V   Fig-W   Fig-X

A. Fig-U

B. Fig-V

C. Fig-W

D. Fig-X

Answer:

Watch Video Solution

14. $\dfrac{3}{7}$ of $\dfrac{2}{5}$ is equal to:

A. $\dfrac{5}{12}$

B. $\dfrac{5}{35}$

C. $\dfrac{1}{35}$

D. $\dfrac{6}{35}$

Answer:

▶ **Watch Video Solution**

---

15. In an election between two candidates, the candidate who gets 30% of the votes polled is defeated by 15000 votes. What is the total number of votes polled?

A. 37500

B. 30000

C. 26250

D. 11250

Answer:

▶ **Watch Video Solution**

16. Assertion : A parallelogram has no line of symmetry.

Reason : Each regular polygon has as many lines of symmetry as it has sides.

A. If both assertion and reason are true and reason is the correct explanation of assertion.

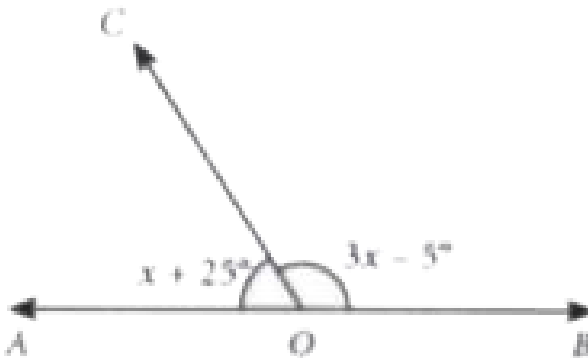B. If both assertion and reason are true but reason is not the correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer:

▶ **Watch Video Solution**

---

17. Assertion : The value of x in the following figure is 40°.

Reason: A linear pair is a pair of adjacent angles whose non-common arms are opposite rays.

A. If both assertion and reason are true and reason is the

correct explanation of assertion.

B. If both assertion and reason are true but reason is not the

correct explanation of assertion.

C. If assertion is true but reason is false.

D. If assertion is false but reason is true.

Answer:

▶ **Watch Video Solution**

18. For any non-zero integers 'a' and 'b" and whole numbers m

and n.

$$a^m \times a^n = a^{m+n}$$

$$a^m = a^n, a > 0 \Rightarrow m = n$$

$$a^m \div a^n = a^{m-n}$$

The value of $\dfrac{6^{12} \times 15^{16}}{3^{11}}$ is:

A. $2^6 \times 3^{16} \times 5^{12}$

B. $2^{12} \times 3^{17} \times 5^{16}$

C. $2^6 \times 5^{16} \times 3^{12}$

D. $2^7 \times 3^{17} \times 5^8$

Answer:

▶ **Watch Video Solution**

---

19. For any non-zero integers 'a' and 'b" and whole numbers m

and n.

- $a^m \times a^n = a^{m+n}$

$a^m = a^n, a > 0 \Rightarrow m = n$

$$a^m + a^n = a^{m-n}$$

If $\left(\dfrac{2}{9}\right)^3 \times \left(\dfrac{2}{9}\right)^6 = \left(\dfrac{2}{9}\right)^{2m-1}$, then m equals

A. 5

B. 10

C. 4

D. 9

Answer:

▶ **Watch Video Solution**

20. For any non-zero integers 'a' and 'b" and whole numbers m

and n.

$$a^m \times a^n = a^{m+n}$$

$$a^m = a^n, a > 0 \Rightarrow m = n$$

$$a^m \div a^n = a^{m-n}$$

$2^3 + 2^3 + 2^3 + 2^3$ is equal to:
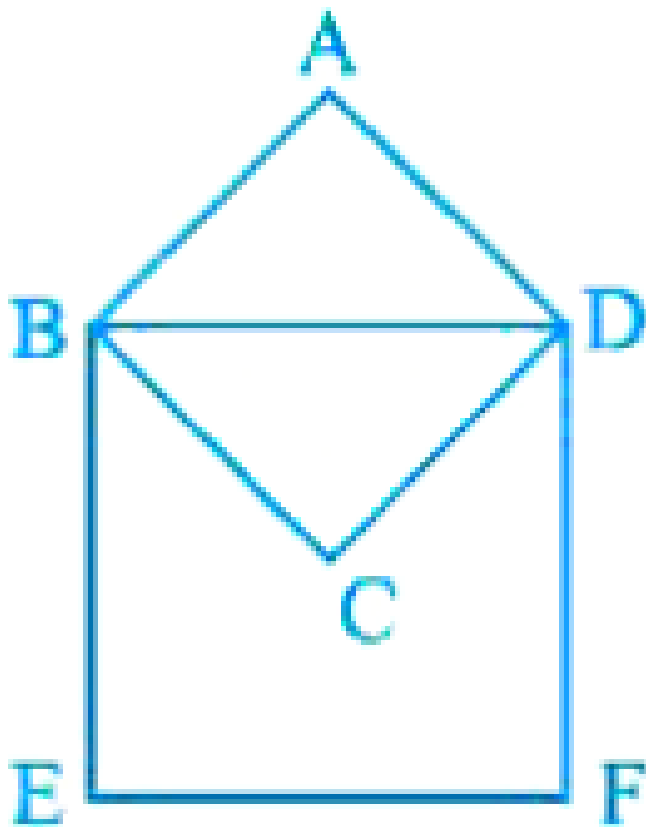
A. 2^5

B. 2^{12}

C. 281

D. 216

Answer:

▶ **Watch Video Solution**

1. In Figl 9.38. ABCD is a square with AB= 15 cm. Find the area of the square BDFE.

2. Find whether the following measures can be the sides of triangles.

(i) 5 cm, 7 cm, 10 cm

(ii) 3 cm, 6 cm, 5 cm

(iii) 2 cm, 7 cm, 14 cm

3. A multistorey building has 25 floors above the ground level each of height 5m. It also has 3 floors in the basement each of height 5m. A lift in building moves at a rate of 1m/s. If a man starts from 50m above the ground, how long will it take him to reach at 2nd floor of basement?

4. Construct two equations with the solution x = 20.

5. Arrange the following rational numbers in ascending order.

$$\frac{3}{7}, \frac{4}{5}, -\frac{5}{21}, \frac{2}{15}$$

▶ Watch Video Solution

6. For the celebrating children's students of Class VII bought sweets for Rs 740.25 and cold drink for Rs 70. If 35 students contributed equally what amount was contributed by each student?
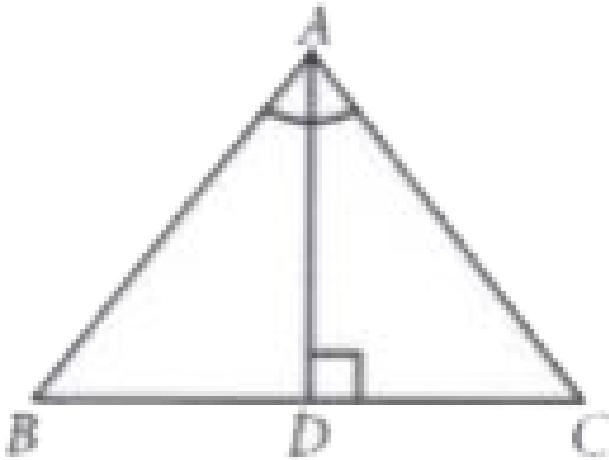
▶ Watch Video Solution

7. Rahul does the push-ups 25, 25, 50, 80, 75, 50, 75, 80, 25, 50 in 10 days. Find the mean and mode.

▶ Watch Video Solution

8. AD is the bisector of $\angle A$ such that $AD \perp BC$. Then, find out whether $\triangle\,ABC$ is an isosceles triangle or not? Give appropriate reason.
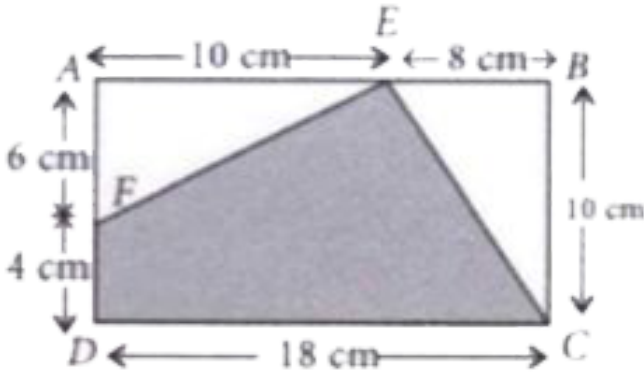
9. A car cost Rs 500000 one year ago, now costs Rs 200000. Find the percentage increase or decrease in the price.

10. Find the area of the shaded portion.

11. From the sum of

$x^2 - y^2 - 1,\ y^2 - x^2 - 1$ and $1 - x^2 - y^2$ subtract $-\left(1 + y^2\right)$.

12. If one side of a square is represented by 18x - 20 and the adjacent side is represented by 42 - 13x, find the length of the side of the square.

13. Find the median of the following data:

2,2,0,4,13,12,6,9,5,11

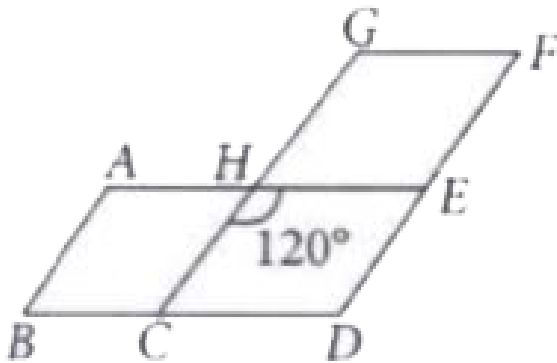**14.** Compare the following exponentials by using $>$ or $<$

(i) 10^{-13} & 10^{-17}

(ii) 10^5 & 10^9

15. In the given figure, AE || GF || BD, AB || CG || DF and $\angle CHE = 120°$. Find $\angle ABC$ and $\angle CDE$

> ▶ Watch Video Solution

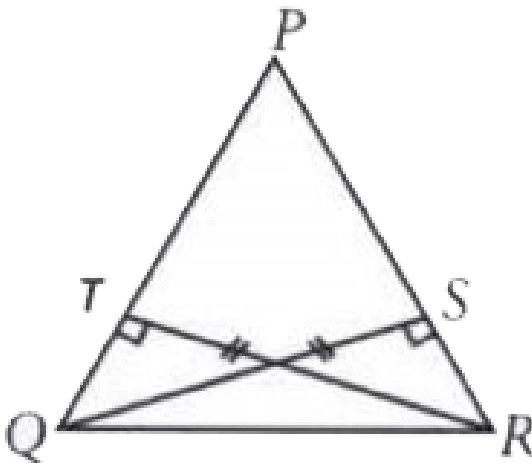**16.** Draw all lines of symmetry for each of the following figures as given below:

(i)

(ii)

> ▶

17. Two adjacent sides PS and RS of the parallelogram PQRS are 6 cm and 12 cm respectively. The height corresponding to the base RS is 5 cm. Find (i) the area of the parallelogram PQRS and (ii) the height corresponding to base PS.

18. In the given figure, $QS \perp PR$, $RT \perp PQ$ and QS =RT

Is $\triangle QSR = \sim \triangle RTQ$? Give reason.

(ii) Is $\angle PQR = \angle PRQ$? Give reason.

19. Following cards are kept on a table.

| U | M | F | A | G | E | I | L | O |

What is the probability of getting a:

(i) card having vowel?

(ii) card marked G?

(iii) card having consonant?

20. Chalk contains 10% calcium, 3% carbon and 12% oxygen. Find the amount of carbon and calcium (in grams) in $2\frac{1}{2}$ kg of chalk.

21. The lengths of two sides of an isosceles triangle are 9 cm and 20 cm. What is the perimeter of the triangle? Give reason.

22. Aahuti purchased a house for Rs. 50,59,700 and spent Rs. 40300 on its repairs. To make a profit of 5%, she should sell the house for Rs. _____.
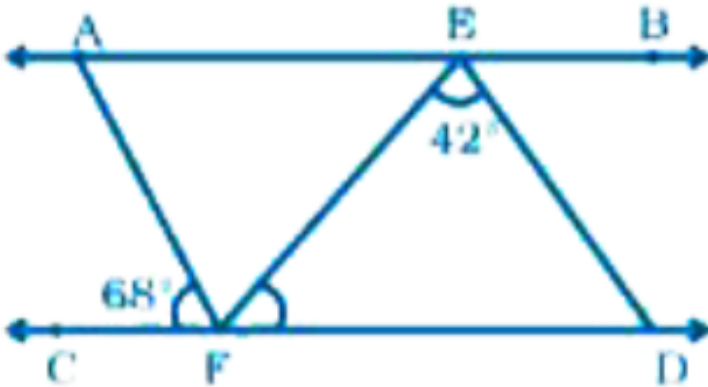
23. Garima bought 5 kg 400 g apples and 4 kg 250 g oranges. Latika bought 5 kg 800 g mangoes and 4 kg 130 g bananas. Who

bought more fruits and by how much?

24. In Fig. 5.49, AB||CD, AF||ED, $\angle AFC = 68°$ and $\angle FED = 42°$.

Find $\angle EFD$.

25. Identify the terms (other than constants) and write their

numerical coefficients in each of the following algebraic

expressions:

A. $5 - 3x$

B. $1 + q + 7q^2 - 5q^3$

C. $-y^3 z^3 + 11y^2$

D. $5x - \dfrac{3}{7}x^2 + 7$

Answer:

▶ **Watch Video Solution**

26. List four rational numbers between $\dfrac{5}{7}$ and $\dfrac{7}{8}$.

▶ **Watch Video Solution**

27. Draw an isosceles triangle in which each of the equal sides is of length 3 cm and the angle between them is 45^0.

28. Do as directed.

(i) Write a positive integer and a negative integer whose sum is -10.

(ii) Write a positive and a negative integer whose difference is 19.

(iii) Write a pair of negative integers whose sum is -34.

(iv) Write a pair of positive integers whose difference is 65.

29. The table below gives the data of tourists visiting 5 hill stations over two consecutive years. Study the table and answer the questions that follow:

Hill stations	Nainital	Shimla	Manali	Mussoorie	Kullu
2008	4000	5200	3700	5800	3500
2009	4800	4500	4200	6200	4600

(a) Draw a double bar graph to depict the above information using appropriate scale.

(b) Which hill station was visited by the maximum number of tourists in 2008?

(c) Which hill station was visited by the least number of tourists in 2009?

(d) In which hill stations was there increase in number of tourists in the year 2009?

▶ **Watch Video Solution**