

Question 1.

a) $(x + 1) (y + 1) = xy + (x + y) + \dots\dots\dots$

b) $51 \times 61 = 3000 + \dots\dots\dots$

Answer-

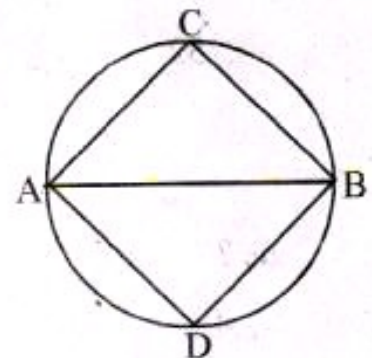
a) 1.

b) $(50 + 1) (60 + 1) = 50 \times 60 + 50 \times 1 + 1 \times 60 + 1 \times 1$
 $= 3000 + 50 + 60 + 1$
 $= 3000 + 111$

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Question 2.

In the figure AB is the diameter of the circle
C and D are two points on the circle



a) What is the measure of $\angle C$?

b) What is $\angle CAD + \angle CBD$?

Answer :-

a) Given , AB = diameter , C and D be the points on the circle

$\therefore \angle ACB = 90^\circ$ (angle in the semi-circle).

b) $\angle CAD + \angle CBD = 90 + 90 = 180^\circ$. (opposite angle)

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Question 3.

a) $5 - 10 = \dots\dots\dots$

b) $-5 - 10 = \dots\dots\dots$

Answer:-

a) $5 - 10 = -5$.

b) $-5 - 10 = -15$.

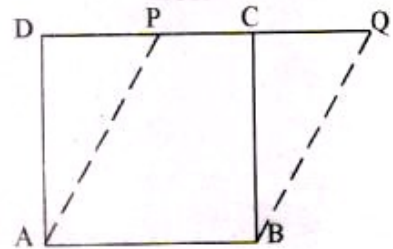
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Question 4.

In the figure ABCD is a square of side 5 cm.

a) What is the area of the square ABCD?

b) What is the area of the parallelogram ABQP?



Answer:-

Given ABCD is a square , side = 5cm.

a) Area of the squar = a^2 (formula)

$$= 5 \times 5 = 25\text{cm}^2 .$$

b) Area of the parallelogram = bh (formula)

$$= AB \times BC$$

$$= 5 \times 5 = 25\text{cm}^2 .$$

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Question 5.

The equation $y = x^2 + 5x + 4$, if $x = -1$. What is the value of y ?

Answer:-

Given , $y = x^2 + 5x + 4$. Put $x = -1$.

$$y = (-1^2) + 5 \times -1 + 4$$

$$= 1 - 5 + 4$$

$$= 5 - 5 = 0 .$$

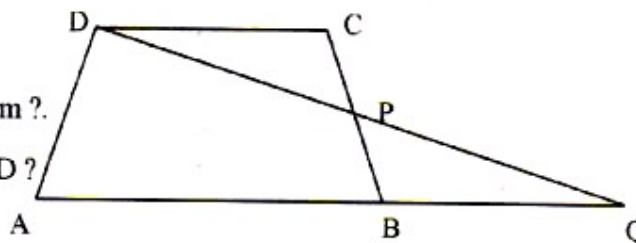
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Question 6.

ABCD is a trapezium. P is the mid point of BC. $AB = 12$ cm, $DC = 8$ cm. The distance between AB and CD is 6 cm.

a) What is the area of the trapezium ?.

b) What is the area of triangle AQD ?



Answer:-

Given , Length of the parallel side of the trapezium
AB and DC = 12 cm and 8cm.

Distance b/w Ab and DC (h) = 6cm

a) Area of the trapezium = $\frac{1}{2}h(a+b)$ (formula)
 $= \frac{1}{2} \times 6(12+8)$
 $= \frac{1}{2} \times 6 \times 20$
 $= 60\text{cm}^2 .$

b)

The area of the ΔAQD = Area of the quadrilateral ABPD + Area of
the ΔBQP .

Consider the ΔPCD and the ΔBQP .

PC = PB (P is the midpoint of BC.)

$\angle DPC = \angle BPQ$ (opposite angles)

$\angle CDP = \angle BQP$ (alternate angles)

Hence the $\Delta PCD = \Delta BQP$.

Here from the figure we can see that the area of the ΔAQD is equal to the
ares of the trapezium ABCD.

\therefore The area of the $\Delta AQD = 60\text{cm}^2 .$

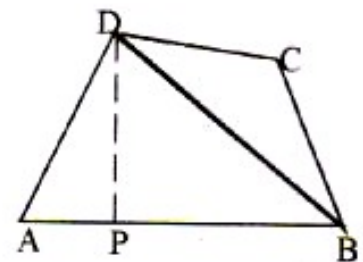
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Question 7.

In the figure DP is perpendicular to AB ,

AB = 10 cm, DP = 6 cm

- a) Find the area of triangle ABD.
- b) If area of triangle BCD is half the area of triangle ABD,



What is the area of the quadrilateral ABCD?

- c) If the distance from A to BD is 'a' and that from C to BD is 'b' then what is a : b ?

Answer:-

Given , AB = 10cm , DP = 6cm.

a) The area of the $\Delta ABD = \frac{1}{2}bh$ (formula)

$$= \frac{1}{2} \times 10 \times 6 = 30\text{cm}^2 .$$

b) Given that the area of the ΔBCD is the half of the area of the ΔABD
 ie., the area of the $\Delta BCD = \frac{30}{2} = 15\text{cm}^2 .$

The area of the quadrilateral ABCD = Area of the ΔABD + Area of the ΔBCD

$$= 30\text{cm}^2 + 15\text{cm}^2 = 45\text{cm}^2 .$$

c) Area of the ΔABD : Area of the $\Delta BCD = 30 : 15.$

Ie., $\frac{1}{2} \times BD \times a : \frac{1}{2} \times BD \times b = 30 : 15.$

$a : b = 30 : 15.$

$a : b = 2 : 1.$

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Question 8.

The weights (in kilogram) of 30 students are given below. Taking the first class as 30 - 40 , prepare a frequency table.

41, 50, 41, 31, 40, 59, 48, 56, 46, 34

42, 67, 75, 60, 45, 39, 45, 64, 45, 63

48, 55, 56, 52, 52, 47, 58, 52, 41, 47

Answer:-

Weight	Tally marks	Frequency
30 – 40	III	3
40 – 50	II II III	13
50 – 60	II III	9
60 - 70	III	4
70 – 80	I	1
Total		30

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Question 9.

- a) What is the sum of the inner and outer angles at the vertex of a polygon ?
- b) If the outer angle is 20 more than thrice the inner angle, what is the measure of the inner angle ?

Answer:-

a) The sum of the inner and outer angles = 180° .

b) Let the inner angle be x

By question , outer angle = $3x + 20$

$$\text{ie., } x + 3x + 20 = 180$$

$$4x + 20 = 180$$

$$4x = 180 - 20 = 160$$

$$x = 160 / 4 = 40$$

Hence the inner angle be 40° .

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Question 10

The table below shows the time taken by 30 students to complete a long distance race.

Time (Minutes)	Number of children
10 – 13	2
13 – 16	5
16 – 19	12
19 – 22	8
22 – 25	3

- a) How many students have taken below 13 minutes to complete the race ?
- b) How many students have taken 19 minutes or above to complete the race ?
- c) If only one student took 16 minutes to complete the race, then how many of them taken between 16 and 19 minutes to complete the race ?

Answer:-

a) 2 students

b) $8 + 3 = 11$.

c) $12 - 1 = 11$.

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Question 11.

a) Length of the diagonal of a square is 5 cm. What is its area ?

b) Draw a square of area $4\frac{1}{2}$ square centimeters.

Answer:-

Given, diagonal = 5cm

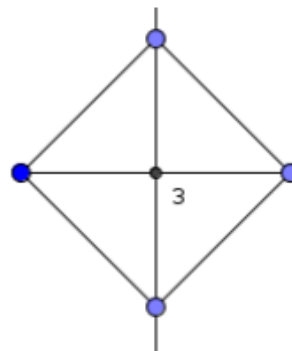
a) Area of the square = $\frac{1}{2}d^2$ (formula)
 $= \frac{1}{2} \times 5 \times 5 = 12.5 \text{ cm}^2 .$

b) Area = $4\frac{1}{2} = 4.5$

ie., $\frac{1}{2}d^2 = 4.5$

$d^2 = \frac{4.5 \times 2}{1} = 9$

$d = \sqrt{9} = 3 \text{ cm}$



Contraction

Draw a line AB with length 3cm and draw its perpendicular bisector meeting at O. From O mark 1.5cm both up and down, then join the sides .

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Question 12.

In the equation $z = \frac{x}{y} - \frac{y}{x}$ if $x = 10$, and $y = -5$.

What will be the value of z ?

Answer:-

Given, equation = $z = \frac{x}{y} - \frac{y}{x}$, Put $x = 10$ and $y = -5$

ie., $z = \frac{10}{-5} - \frac{-5}{10} = -2 - \frac{-1}{2} = -1\frac{1}{2} .$

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Question 13.

Ramu and Venu started a business. Ramu invested 50000 rupees and Venu invested 1,50000 rupees. If they got 20% profit in a year, then

- What is the total profit ?
- What is the ratio of their investments?
- If the profit is dividing according to the ratio of their investments, how much amount each will get ?

Answer:-

Ramu invested = Rs. 50000/- ;

Venu invested = Rs.1,50000/- .

Profit = 20%

a) Total investment = 50000 + 1,50000 = 2,00000.

$$\text{Total profit} = 200000 \times \frac{20}{100} = 40000 .$$

b) Ratio of their investment = 50000 : 150000
= 5 : 15
= 1 : 3.

c) Ramu will get $40000 \times \frac{1}{4} = \text{Rs.10000/-}$

Venu will get $40000 \times \frac{3}{4} = \text{Rs.30000/-}$.

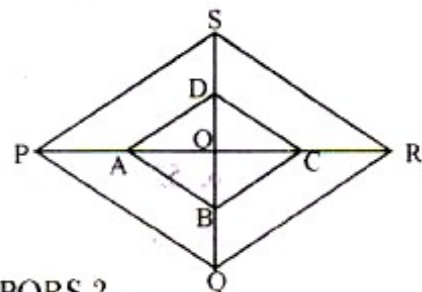
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Question 14.

In the figure, PQRS is rhombus. Its diagonals meet at O. The midpoints of OP, OQ, OR and OS are joined to get the quadrilateral ABCD.

a) Write the suitable name of the quadrilateral ABCD.

Justify your answer.



b) If PR = 12 cm, QS = 8 cm, then what is the area of PQRS ?

c) What is the area of the quadrilateral ABCD ?

Answer:-

a) Name of the quadrilateral ABCD be a Rhombus .

All the sides are equal

b) Given , PR = 12cm , QS = 8cm.

$$\text{The area of the rhombus PQRS} = \frac{1}{2} \times d_1 \times d_2 \text{ (formula)}$$

$$= \frac{1}{2} \times 12 \times 8 = 48 \text{ cm}^2 .$$

c) PR = 12 ; AC = 12/2 = 6cm (d₁)

QS = 8; BD = 8/2 = 4cm (d₂)

$$\text{The area of the quadrilateral ABCD (rhombus)} = \frac{1}{2} \times d_1 \times d_2$$

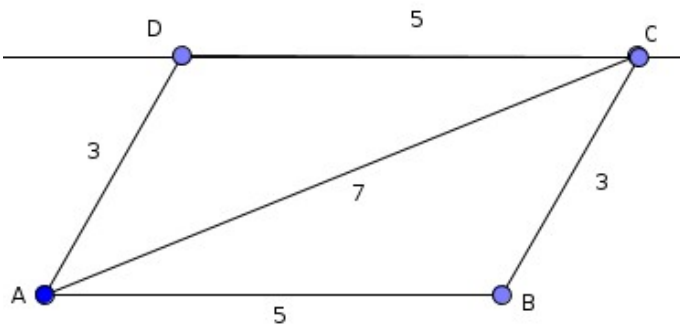
$$= \frac{1}{2} \times 6 \times 4 = 12 \text{cm}^2 .$$

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Question 15.

The length of the sides of a parallelogram are 5cm and 3cm and length of one of its diagonal is 7cm . Draw the parallelogram.

Answer:-



Construction

Draw AB as 5cm. From A and B draw 7cm and 3cm respectively meet at C. Draw a line parallel to AB through C and mark D as 5cm along the line. Join AD. ABCD is the required parallelogram.

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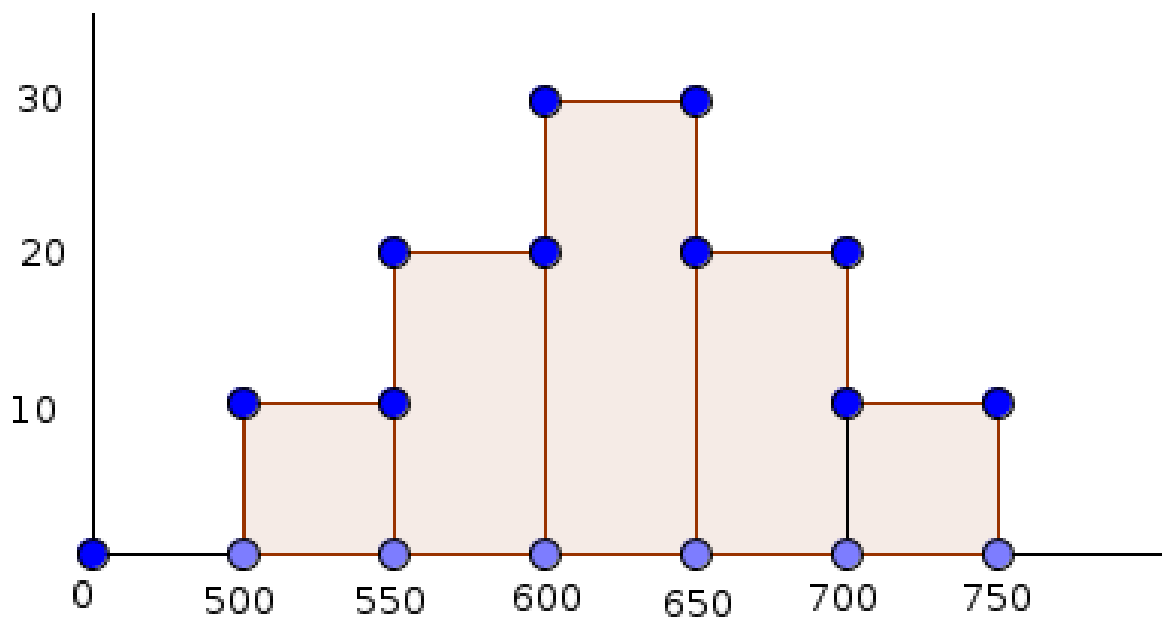
Question 16.

The table below shows the daily income of 90 house holds in a locality

Daily income (Rs.)	Number of house holds
500 – 550	10
550 – 600	20
600 – 650	30
650 – 700	20
700 – 750	10

Draw a histogram.

Answer:-



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Question 17.

Read the following mathematical concept and answer the questions that follow.
Each question carries one score

(6 × 1 = 6)

$$\begin{aligned}17. \quad (-1)^2 &= (-1) \times (-1) &= 1 \\(-1)^3 &= (-1)^2 \times (-1) \\&= 1 \times -1 &= -1 \\(-1)^4 &= (-1)^3 \times (-1) \\&= -1 \times -1 &= 1 \\(-1)^5 &= (-1)^4 \times (-1) \\&= 1 \times -1 &= -1\end{aligned}$$

What do you see ? We get the value of even powers as 1 and the odd powers as -1.

That is if n is odd $(-1)^n = -1$, if n is even $(-1)^n = 1$.

Answer the following questions

a) $(-1)^{2018} = \dots\dots\dots$

b) $(-1)^{2018} + (-1)^{2019} = \dots\dots\dots$

c) $(-1)^5 \times (-1)^7 = \dots\dots\dots$

d) $\frac{(-1)^5}{(-1)^6} = \dots\dots\dots$

e) $-1 + (-1)^5 + (-1)^6 = \dots\dots\dots$

f) $\frac{(-1)^{514321}}{(-1)^5} = \dots\dots\dots$

Answer:-

Here we understand that if the index be a odd number , its becomes as $- 1$ and even number be $+1$.

a) $(-1)^{2018} = 1$. (index be even number so, $+1$)

b) $(-1)^{2018} + (-1)^{2019} = 1 + -1 = 0$.

c) $(-1)^5 \times (-1)^7 = -1 \times -1 = 1$

d) $\frac{(-1)^5}{(-1)^6} = \frac{-1}{1} = -1$

e) $-1 + (-1)^5 + (-1)^6 = -1 + -1 + 1 = -1$

f) $\frac{(-1)^5}{(-1)^5} = \frac{-1}{-1} = 1$.

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