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Que 1: Length of a rectangle is 10 cm more than the breadth. If the area is 144 square cm, find the length and breadth of the rectangle. ***Marks :(3)***

Ans: breadth = x

length = x + 10

x (x + 10) = 144

x^2 + 10 x = 144

breadth = 8, length = 18

Que 2: Difference between two numbers is 4 and its product is 96. Find the numbers. ***Marks :(3)***

Ans: Numbers x, x +4

x (x + 4) = 96

x^2 + 4x =96

x = 8, -12

numbers = 8, 12 or -12, -8

Que 3: If the sum of the square of Anju's age and 6 times of Anju's age is 280, then find Anju's age. ***Marks :(3)***

Ans: Age = x

x^2 + 6x = 280

$(x + 3)^2$ = 289

x + 3 = 17

x = 14

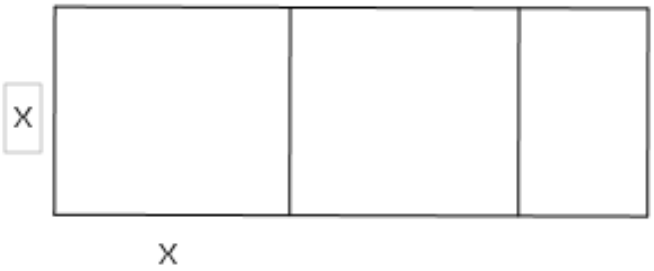
Que 4: The length of a rectangular sheet shown in the figure is 13 cm.

From this sheet two square sheets of maximum size are cut off.

The area of the remaining sheet is 15 sq.cm.

(a) if the width of the sheet is x, what is its breadth of the remaining sheet ?

(b) Forming a second-degree equation, find the length and breadth of the remaining sheet. ***Marks :(4)***



Ans: (a) Breadth of remaining rectangle = 13-2x

(b) x(13-2x) = 15

$2x^2$-13x + 15 = 0

$$x=\frac{13\mp\sqrt{169-4\times2\times15}}{2\times2}$$

x = 5 , 1.5

If x = 5 breadth = 3 cm

If x = 1.5, breadth = 10 cm

Que 5: A pond of rectangular shape is to be constructed with perimeter 42 m and diagonal length 15 m.

If breadth of the pond is '*x*', what is its length?

Form a second-degree equation and hence find the length and breadth of the pond.
Marks :(4)

Ans: breadth = x, length g = 21-x

$x^2 + (21 - x)^2$ = 225

x^2-21x + 108 = 0

x = 9, 12

breadth = 9m, length g = 12m

Que 6: When 4 cm is subtracted from each side of a square, area becomes 144 square cm. Form an equation by taking *x* as the side of larger squire. Find the side of the large square?
Marks :(3)

Ans: Length of a side of the large square =x, then the length of a side of the small square = x-4

(x – 4)2 = 144

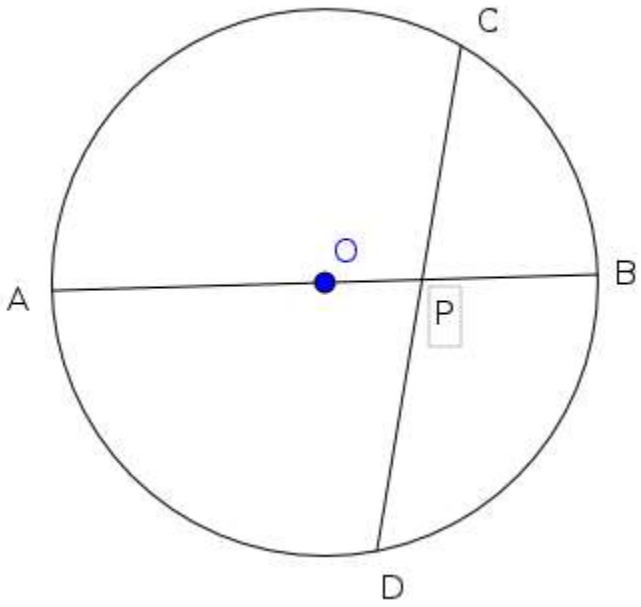
x = 16

Que 7: In the figure AB is the diameter of the circle. The chord CD cut AB at P.

AB = 16 cm, CD = 14 cm, PC = 6 cm

(a) If PA = x, Find PB.

(b) Find the length of PA. ***Marks :(4)***



Ans: (a) PB = 16 – x

(b) x(16 - x) = 6 x 8

$(x - 8)^2$ = 16

x = 12

Que 8: When breadth is increased by 2 cm and length is reduced by 3 cm of a rectangle with perimeter 60 cm, the area of the newly formed rectangle became 210 sq.cm.

(a) If width of the first rectangle is x, what is its length ?

(b) What is the length of the newly formed rectangle ?

(c) Forming a second degree equation, find the length and breadth of the first rectangle. ***Marks :(5)***

Ans: (a) Length of first rectangle = 30 – x

(b) Length of new rectangle = 27 – x

(c) (x + 2) (27 – x) = 210

x^2 - 25x+156 = 0

x = 13,12

when x = 13 length = 17 cm

when x = 12 length = 18 cm

Que 9: Sum of the first *n* consecutive natural numbers is $\frac{n(n+1)}{2}$. Then, how many natural numbers are to be added to get a sum 325 ? ***Marks :(3)***

Ans:

. $\frac{n(n+1)}{2}$ = 325

n^2 + n = 650

n = 25

Que 10: Sum of the squares of two consecutive even numbers is 452.

a) If one number is 'x', then what is the next number ?

b) Form the second degree equation and find the numbers ***Marks :(4)***

Ans:

(a) Next number is x + 2

(b) x^2 +$(x + 2)^2$ = 452

$(x + 1)^2$ = 225

The numbers are 14, 16

Que 11: Number in the unit place of a two digit number is 3 more than that in the tenth place number. Product of the number and the sum of its digits is 70. What is the number? ***Marks :(5)***

Ans: Numbers = x, x+3

Double digit = 11x + 3

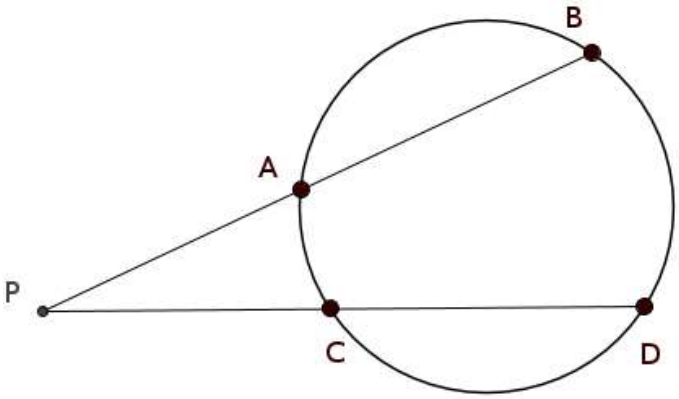
(2x + 3)(11x + 3) = 70

$22x^2$ + 39x – 61 = 0

x = 1

Number = 14

Que 12: In the figure, the chord AB and CD are extended and met at P. If PB = 14 cm, AB = 5 cm, CD = 15 cm, what is the length of PC? ***Marks :(4)***



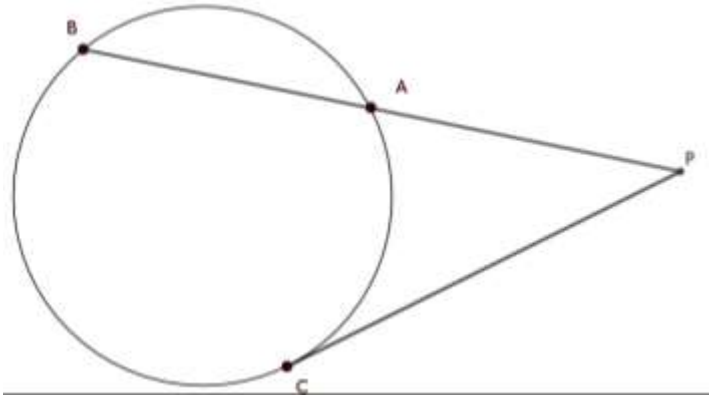
Ans: If PC = x, then PD = x + 15

x (x + 15) = 9 x 14

x^2 + 15x = 126

x = 6

Que 13: In the figure, AB = 9 cm, PC= 6 cm, then what is the length of PA?



Ans:

$x(x+9) = 36$

$$x^2 + 9x + \left(\frac{9}{2}\right)^2 = 36 + \left(\frac{9}{2}\right)^2$$

$$\left(x+\frac{9}{2}\right)^2 = \frac{225}{4}$$

PA = 3 cm