

Chapter – 4 : Randamkrithi Samavakyangal

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)

Hint: breadth = x , length = $x + 10$, $x(x + 10) = 144$, $x^2 + 10x = 144$, breadth = 8 , length = 18

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

Hint: Numbers $x, x + 4$, $x(x + 4) = 96$, $x^2 + 4x = 96$, $x = 8, -12$, numbers = 8, 12 or -12, -8

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)

Hint: Age = x , $x^2 + 6x = 280$, $(x + 3)^2 = 289$, $x + 3 = 17$, $x = 14$

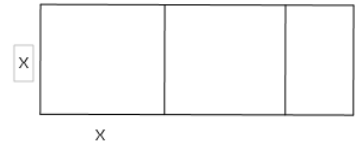
4) All the terms of an arithmetic sequence are natural numbers. Its common difference is 3, then

a) If one term is x , which is the next term? Marks :(5)

b) If the sum of the reciprocals of two consecutive terms of the arithmetic sequence is $\frac{11}{28}$, find the terms.

Hint: Next term = $x + 3$, $\frac{1}{x} + \frac{1}{x+3} = \frac{11}{28}$, $11x^2 - 23x - 84 = 0$, $x = 4, \frac{21}{11}$, പദങ്ങളെ 4, 7

5) 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 ? Marks :(4)



(b) Forming a second degree equation, find the length and breadth of the remaining sheet.

Hint: (a) Breadth of remaining rectangle = $13 - 2x$, (b) $x(13 - 2x) = 15$, $2x^2 - 13x + 15 = 0$, $x = \frac{13 \pm \sqrt{169 - 4 \times 2 \times 15}}{2 \times 2}$
 $x = 5, 1.5$, If $x = 5$ breadth = 3 cm , If $x = 1.5$, breadth = 10 cm

6) 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? Marks :(4)

Form a second degree equation and hence find the length and breadth of the pond.

Hint: breadth = x , length = $21 - x$, $x^2 + (21 - x)^2 = 225$, $x^2 - 21x + 108 = 0$, $x = 9, 12$

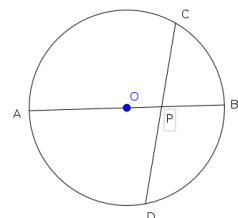
breadth = 9m , length = 12m

7) 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 square. Find the side of the large square? Marks :(3)

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

$(x - 4)^2 = 144$, $x = 16$

8) 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)

Hint: (a) PB = 16 - x , (b) $x(16 - x) = 6 \times 8$, $(x - 8)^2 = 16$, x = 12

9)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. Marks :(5)

- (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.

Hint: (a) Lenth of first rectangle = 30 - x , (b) Lenth 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

10)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)

Hint:
 $\frac{n(n+1)}{2} = 325$, $n^2 + n = 650$, n = 25

11)Sum of the squares of two consecutive even numbers is 452. Marks :(4)

- a) If one number is 'x' , then what is the next number ?
- b) Form the second degree equation and find the numbers

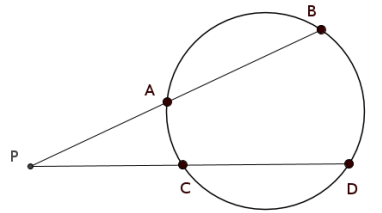
Hint: (a) Next number is x + 2 , (b) $x^2 + (x + 2)^2 = 452$, $(x + 1)^2 = 225$, The numbers are 14,16

12)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)

Hint: അക്കങ്ങളു് = x, x+3 , രണ്ടക്കസംഖ്യ = 11x + 3 , $(2x + 3)(11x + 3) = 70$, $22x^2 + 39x - 61 = 0$
 x = 1 , സംഖ്യ = 14

13)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)**

Hint: If PC = x, then PD = x + 15 , $x(x + 15) = 9 \times 14$, $x^2 + 15x = 126$, x=6



14)In the figure, AB = 9 cm, PC= 6 cm, then what is the length of PA?

Marks :(4) , Hint: $x(x + 9) = 36$, $x^2 + 9x + \left(\frac{9}{2}\right)^2 = 36 + \left(\frac{9}{2}\right)^2$

$\left(x + \frac{9}{2}\right)^2 = \frac{225}{4}$, PA = 3 cm

