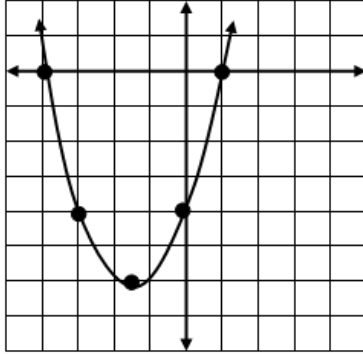


Aim: How can we solve area problems leading to a quadratic equation?

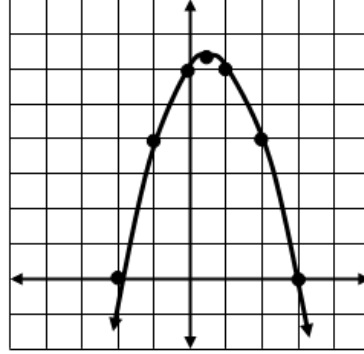
Do Now:

Write an equation for each graph below.

Ex.1

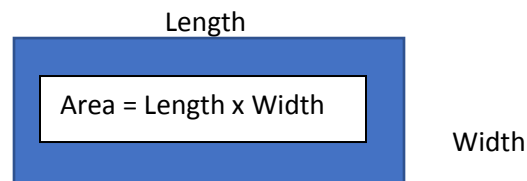


Ex.2



I - Solve applications of quadratic equations using rectangles.

1) Rectangles



2) The length of a rectangle is 3 more than the width. If the area is 40 square inches, what are the dimensions?

$$\boxed{40} \begin{matrix} x \\ x + 3 \end{matrix}$$

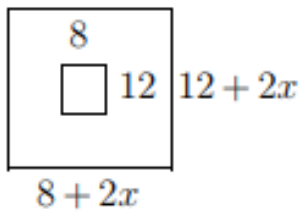
3) The length of a rectangle is four feet longer than the width. The area is 21. Find the dimensions.

4) A rectangular lot is 20 yards longer than it is wide and its area is 2400 square yards. Find the dimensions of the lot.

5) If the side of a square is increased by 5 the area is multiplied by 4. Find the side of the original square.

Aim: How can we solve area problems leading to a quadratic equation?

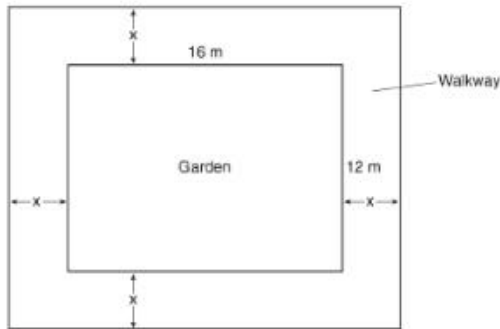
- 6) The length of a rectangle is 5 inches more than twice a number. The width is 4 inches less than the same number. If the area of the rectangle is 15, find the number
- 7) A plot of land for sale has a width of x ft., and a length that is 8ft less than its width. A farmer will only purchase the land if it measures 240 square feet. What value of x will cause the farmer to purchase the land?
- 8) An 8 in by 12 in picture has a frame of uniform width around it. The area of the frame is equal to the area of the picture. What is the width of the frame?



Aim: How can we solve area problems leading to a quadratic equation?

1.

A rectangular garden measuring 12 meters by 16 meters is to have a walkway installed around it with a width of x meters, as shown in the diagram below. Together, the walkway and the garden have an area of 396 square meters.



Write an equation that can be used to find x , the width of the walkway.

Describe how your equation models the situation.

Determine and state the width of the walkway, in meters.

3.

The height, H , in feet, of an object dropped from the top of a building after t seconds is given by $H(t) = -16t^2 + 144$.

How many feet did the object fall between one and two seconds after it was dropped?

Determine, algebraically, how many seconds it will take for the object to reach the ground.

2.

A landscaper is creating a rectangular flower bed such that the width is half of the length. The area of the flower bed is 34 square feet. Write and solve an equation to determine the width of the flower bed, to the nearest tenth of a foot.

4.

A school is building a rectangular soccer field that has an area of 6000 square yards. The soccer field must be 40 yards longer than its width. Determine algebraically the dimensions of the soccer field, in yards.

Note: **Question 1** has 3 questions so it has 3 separate answers

Question 3 has 2 questions so it has 2 separate answers

Aim: How can we solve area problems leading to a quadratic equation?

Answers to Homework # 7

Please select the correct answers number for each question. There are more answers than question. Answers may be repeated.

1) 3

2) -3

3) -100

4) 60 and 100

5) 60 and 40

6) 4

7) 4.1

8) $(16)(12)$

9) $(16)(12)=396$ - Length multiplied by width is equal to Area

10) 48

11) $(16+2x)(12+2x)$

12) $(16+2x)(12+2x) = 396$ – Length multiplied by width is equal to Area