

## 5.6 Applications

Name \_\_\_\_\_

**1.** A whole number increased by its square is two more than twice itself. Find the number.

Let  $x$  = the whole number

**2.** Three less than the square of a whole number is equal to twice the number. Find the number.

Let  $x$  = the whole number

Answer: **1.** The whole number is 2.

**3.** If the area of a rectangle is  $91 \text{ m}^2$  and its length is one meter shorter than twice its width, what are the dimensions of the rectangle?

Let  $x = \text{width}$

then,  $= \text{length}$

$$\text{Area} = \text{Length} \times \text{Width}$$

**4.** The area of a rectangle is  $70 \text{ ft}^2$  and its length is one foot shorter than three times its width. What are the dimensions of the rectangle?

Let  $x = \text{width}$

then,  $= \text{length}$

$$\text{Area} = \text{Length} \times \text{Width}$$

Answer: **3.** Length is 13 m, width is 7 m.

**5.** Together, it takes Angel and Bart four hours to mow a certain lawn. It takes Angel 6 more hours than Bart to do the job alone. How long would each need to mow the lawn working alone?

Let  $x$  = time it takes Bart to mow alone  
 then  
           = time it takes Angel to mow alone

	Rate	Time (WT)	Amount of work done
Bart			
Angel			
Total			

**6.** Together, Topsy and Turvey can eat a 40 pound bag of dog food in 2 weeks. Topsy, by herself can eat a 40 pound bag of dog food in three weeks less than it takes Turvey to eat the full bag by himself. How many weeks would a 40 pound bag last Turvey?

Let  $x$  = time it takes Turvey to finish the  
 the 40 pound bag  
 then  
           = time it takes Topsy to finish the bag

	Rate	Time (WT)	Amount of work done
Topsy			
Turvey			
Total			

Answer: **5.** Bart takes 6 hours, and Angel takes 12 hours

**7.** A rowing team can row 45 miles upstream and back again in 8 hours. If the speed of the current is 3 mph, what is the speed of the team's outrigger in still water?

Let  $x$  = speed of outrigger in still water

	Rate	Time	Distance
upstream			
downstream			

**8.** A cyclist traveled 80 miles into a headwind, then returned with the advantage of a tailwind to the starting point in 9 hours. If the speed of the wind was 2 miles per hour, what was the speed of the cyclist with no wind.

Let  $x$  = speed of cyclist with no wind

	Rate	Time	Distance
headwind			
tailwind			

Answer: 7. The speed of the outrigger is 12 mph.