## 5.1 Application Problems

*7th work on odd # questions*

Solve.

1. The length of a rectangle is twice the width. The area of the rectangle is 32 ft². Find the length and width. (Area = $l \cdot w$)

2. The height of a triangle is four times the length of the base. The area of the triangle is 18 m². Find the height and the length of the base of the triangle. $\left(\text{Area} = \frac{1}{2}bh\right)$

3. The height of a triangle is 2 m more than twice the length of the base. The area of the triangle is 20 m². Find the height and the length of the base of the triangle.

4. The length of a rectangle is 1 ft more than twice the width. The area of the rectangle is 120 ft². Find the length and width of the rectangle.

5. The sum of the squares of two consecutive positive odd integers is thirty-four. Find the two integers.

6. The difference between the squares of two consecutive positive even integers is twenty-eight. Find the two integers.

7. The sum of the squares of three consecutive integers is two. Find the three integers.

8. The sum of the squares of three consecutive even integers is eight. Find the three integers.

9. An integer plus twice the square of the integer is 21. Find the integer.

10. Twice the sum of three times an integer and the square of the integer is 36. Find the integer.

11. One car is two years older than a second car. Two years ago the product of their ages was 24. Find the present ages of the two cars.

12. One coin is twice the age of a second coin. One year ago the product of their ages was 10. Find the present ages of the coins.

Solve.

**13.** One stamp is three times the age of a second stamp. Eight years ago the product of their ages was 19. Find the present ages of the stamps.

**14.** One child is twice the age of a second child. Three years ago the product of the sum of their ages and the difference between their ages was 45. Find the present ages of the children.

**15.** A small pipe takes 8 h longer to fill a tank than a larger pipe. Working together, the pipes can fill the tank in 3 h. How long would it take each pipe working alone to fill the tank?

**16.** One painter takes 6 h longer to paint a room than does a second painter. Working together, the painters can paint the room in 4 h. How long would it take each painter working alone to paint the room?

**17.** One photocopy machine takes 16 min longer to reproduce a report than does a second machine. Working together, it takes 6 min to reproduce the report. How long would it take each machine working alone to reproduce the report?

**18.** A water tank has two drains. One drain takes 21 min longer to empty the tank than does the second drain. With both drains open, the tank empties in 10 min. How long would it take each drain working alone to empty the tank?

**19.** A motorboat traveled 24 mi at a constant rate before reducing the speed by 2 mph. Another 20 mi was traveled at the reduced speed. The total time for the 44-mile trip was 4 h. Find the rate of the boat during the first 24 mi.

**20.** A motorist traveled 120 mi at a constant rate before increasing the speed by 10 mph. Another 100 mi was driven at the increased speed. The total time for the 220-mile trip was 5 h. Find the rate during the first 120 mi.

**21.** It took a motorboat one more hour to travel 48 mi against the current than it did to go 48 mi with the current. The rate of the current was 2 mph. Find the rate of the boat in calm water.

**22.** It took a small plane one more hour to fly 240 mi against the wind than it did to fly the same distance with the wind. The rate of the wind was 20 mph. Find the rate of the plane in calm air.