

EXTRA PRACTICE 13
Solving Applications Using Quadratic Equations
Use after Section 5.8

Name _____

Example: Three times the square of a number plus five times that number is 2. Find the number.

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$$\begin{array}{ccccccc} \downarrow & \downarrow & \overbrace{} & \downarrow & \overbrace{} & \downarrow & \downarrow \\ 3 & \cdot & x^2 & + & 5x & = & 2 \end{array}$$

Solve:

$$\begin{aligned} 3x^2 + 5x &= 2 \\ 3x^2 + 5x - 2 &= 0 \\ (3x - 1)(x + 2) &= 0 \\ x &= \frac{1}{3} \text{ and } x = -2 \end{aligned}$$

The values $\frac{1}{3}$ and -2 check in the original problem. There are two numbers, $\frac{1}{3}$ and -2 .

Solve.

1. If you subtract a number from twice its square, the result is 3. Find all such numbers.

2. If 6 is added to the square of a number, the result is 22. Find all such numbers.

3. Five more than the square of a number is six times the number. Find all such numbers.

4. Twenty more than the square of a number is twelve times the number. Find all such numbers. _____

5. The product of the page numbers on two facing pages of a book is 600. Find the page numbers. _____

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6. The product of two positive consecutive even integers is 224. Find the integers.

7. Two more than a number times five less than that number is 18. Find all such numbers.

8. The length of a rectangle is 8 cm greater than the width. The area of the rectangle is 105 cm^2 . Find the width and the length. _____
9. The area of a square is 45 more than the perimeter. Find the length of a side.

10. The height of a triangle is 6 m less than the base. The area is 56 m^2 . Find the height and the base. _____
11. The base of a triangle is 8 cm greater than the height. The area of the triangle is 120 cm^2 . Find the height and the base. _____

12. The sum of the squares of two consecutive odd whole numbers is 202. Find the numbers.
