Name _____ Date _____

Another Method
Completing the Square

Vocabulary

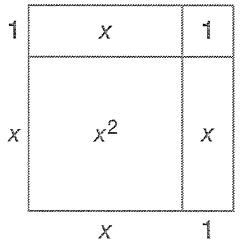
Define the term in your own words.

1. completing the square

Problem Set

Use a geometric figure to complete the square for each expression. Factor the resulting trinomial.

1. $x^2 + 2x$



$x^2 + 2x + 1 = (x + 1)^2$

2. $x^2 + 4x$

3. $x^2 + 12x$

4. $x^2 + 9x$

5. $x^2 + 11x$

6. $x^2 + 28x$

Determine the unknown value that would make each trinomial a perfect square.

7. $x^2 - 10x + \underline{25}$

8. $x^2 + 14x + \_\_\_\_$

9. $x^2 + \_\_\_x + 9$

10. $x^2 - \_\_\_\_x + 81$

11. $x^2 + 7x + \_\_\_\_$

12. $x^2 - 15x + \_\_\_\_$

13. $x^2 - \_\_\_\_x + 169$

14. $x^2 + \_\_\_x + \frac{9}{4}$

12

Determine the roots of each quadratic equation by completing the square. Round your answer to the nearest hundredth. Check your answer.

15. $x^2 + 4x - 6 = 0$

$x^2 + 4x - 6 = 0$

$x^2 + 4x = 6$

$x^2 + 4x + 4 = 6 + 4$

$(x + 2)^2 = 10$

$\sqrt{(x + 2)^2} = \pm\sqrt{10}$

$x + 2 = \pm\sqrt{10}$

$x = -2 \pm \sqrt{10}$

$x \approx 1.16$ or $x \approx -5.16$

The roots are approximately 1.16 and −5.16.

Check:

$(1.16)^2 + 4(1.16) - 6 \stackrel{?}{=} 0$

$1.3456 + 4.64 - 6 \stackrel{?}{=} 0$

$-0.0144 \approx 0$

$(-5.16)^2 - 4(-5.16) - 6 \stackrel{?}{=} 0$

$26.6256 - 20.64 - 6 \stackrel{?}{=} 0$

$-0.0144 \approx 0$

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16. $x^2 - 2x - 4 = 0$

17. $x^2 + 10x + 2 = 0$

18. $x^2 - 12x + 25 = 0$

19. $x^2 + 3x - 1 = 0$

20. $x^2 + x - 10 = 0$