



Name _____ Date _____ Period _____

COMPLETING THE SQUARE WORKSHEET

- Steps:
- 1) Write the equation in the form: $ax^2 + bx = c$
 - 2) If $a \neq 1$, divide both sides by a .
 - 3) Complete the square to form a perfect square trinomial. (add to BOTH sides!)
 - 4) Factor the left side.
 - 5) Take the square root of both sides (don't forget \pm).
 - 6) Solve for the variable.

1. What must you add to the expression $x^2 + bx$ to *complete the square*?

Solve each equation.

2. $(x-2)^2 = 16$

3. $x^2 - 10x + 25 = 16$

4. $x^2 - 2x + 1 = 3$

Complete the square for each expression. Write the resulting expression as a binomial squared.

5. $x^2 + 14x + ?$

6. $x^2 - 12x + ?$

7. $x^2 - 9x + ?$

Solve each equation by completing the square.

8. $x^2 - 6x = -4$

9. $x^2 + 8 = 6x$

10. $2x^2 - 20x = 8$

11. $x^2 = 24 - 4x$

12. $10x + x^2 = 42$

13. $2x^2 + 8x - 15 = 0$

Write each function in vertex form, and identify its vertex.

14. $h(x) = 3x^2 - 24x + 53$

15. $h(x) = x^2 + 8x - 10$

16. $g(x) = x^2 - 3x + 16$

17. $h(x) = 3x^2 - 12x - 4$

18. The height h above the roadway of the main cable of the Golden Gate Bridge can be

modeled by the function $h(x) = \frac{1}{9000}x^2 - \frac{7}{15}x + 500$, where x is the distance in feet from the left tower.



- Complete the square, and write the function in vertex form.
- What is the vertex, and what does it represent?
- The left and right towers have the same height. What is the distance between them?

Find the value of b in each perfect square trinomial.

19. $x^2 - bx + 144$

20. $4x^2 - bx + 16$

21. $ax^2 + bx + c$