

Name: _____

SM2 5.5: Solving Quadratics by Factoring

Solve each equation using the zero factor property.

1) $(5n + 7)(n + 7) = 0$

2) $(a - 8)(a + 6) = 0$

3) $(r - 6)(4r - 7) = 0$

4) $(x + 7)(5x - 8) = 0$

Solve each equation.

5) $x^2 + 6x - 7 = 0$

6) $2r^2 + 7r + 6 = 0$

7) $v^2 + 7v = 0$

8) $5k^2 + 20k - 60 = 0$

9) $0 = -35b^2 - 28b$

10) $x^2 - 16 = 0$

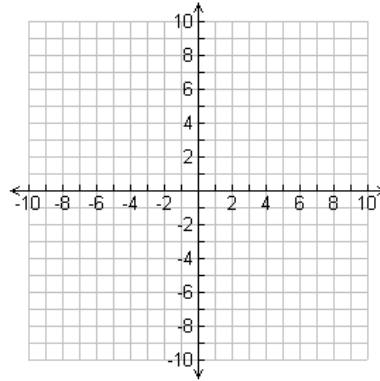
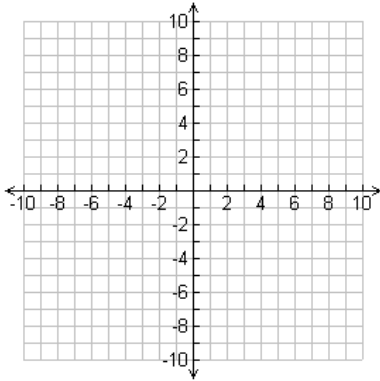
11) $4v^2 - 2v = 2$

12) $7n^2 - 16 = -24n$

a) Find the real roots of each quadratic function. b) Then sketch the graph of each quadratic function and label the roots. c) Determine the positive and negative intervals.

13) $f(x) = x^2 - 11x + 24$

14) $g(x) = -x^2 + 7x$



Positive:

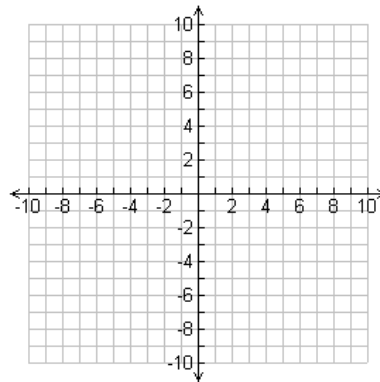
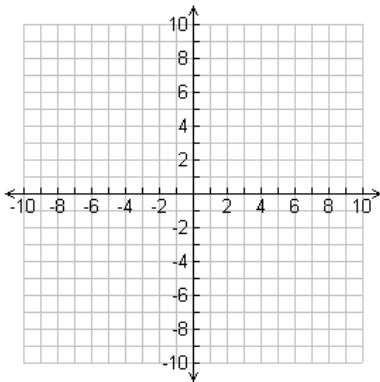
Negative:

15) $y = -x^2 + 5x + 14$

Positive:

Negative:

16) $f(x) = x^2 - 2x + 1$



Positive:

Negative:

Positive:

Negative:

17) Which function has a shorter positive interval?

x	$f(x)$
-3	-10
-2	0
-1	6
0	8
1	6
2	0
3	-10

$g(x) = -x^2 + 3x + 10$

- 18) A soccer ball is kicked from the ground and travels a parabolic path modeled by $h(t) = -5t^2 + 20t$, where $h(t)$ is the height of the soccer ball in meters above the ground t seconds after being kicked. Assuming the ball lands on level ground, about how long is the ball in the air?
- 19) The income in dollars for a school talent show is $I(p) = 100p - 5p^2$, where p is the ticket price. What ticket price(s) will result in an income of \$0?
- 20) A rectangular carpet has an area of $A(x) = x^2 + 6x - 16$ square feet. Find the width of the carpet if the length is $x + 8$ feet.
- 21) The height of a baseball in feet x seconds after it is thrown is given by $h(x) = -16x^2 + 32x + 5$. When will the ball be at a height of 21 feet?
- 22) A rectangular porch has an area of 32 square feet. The length of the porch is 4 feet longer than the width. What is the width of the porch?
- 23) As part of a science experiment, Carson designs and creates a cushioned egg carrier. He puts an egg inside it, and then drops it from a window that is 25 feet high to see whether his design can safely cushion the egg and keep it from breaking. The egg's height in feet x seconds after being dropped is given by $h(x) = 25 - 16x^2$. After how many seconds will the egg hit the ground?