Lesson 5

READY, SET, GO! Name Key Period Date

READY

Topic: Finding x-intercepts for linear equations

1. Find the x-intercept of each equation below. Write your answer as an ordered pair. Consider how the format of the given equation either facilitates or inhibits your work.

Plug in 0 for y. Solve for x

a. $3x + 4y = 12$ $3x = 12$ $x = 4$ (4,0)	b. $y = 5x - 3$ $0 = 5x - 3$ $\frac{3}{5} = x$ $(\frac{3}{5}, 0)$	c. $y - 5 = -4(x + 1)$ $-5 = -4(x+1)$ $\frac{5}{4} = x+1$ $\frac{1}{4} = x$ $(\frac{1}{4}, 0)$
d. $y = -4x + 1$ $\frac{-1}{-4} = \frac{-4x}{-4}$ $\frac{1}{4} = x$ $(\frac{1}{4}, 0)$	e. $y - 6 = 2(x + 7)$ $-6 = 2(x+1)$ $-3 = x+1$ $-4 = x$ (-4,0)	f. $5x - 2y = 10$ $5x = 10$ $x = 2$ (2,0)

2. Which of the linear equation formats above facilitates your work in finding x-intercepts? Why?

Standard Form is easiest to find the x-intercept. Once you plug in zero for y there is only one more step to solve for x.

3. Using the same equations from question 1, find the y-intercepts. Write your answers as ordered pairs

Plug in 0 for x. Solve for y

a. $3x + 4y = 12$ $4y = 12$ $y = 3$ (0,3)	b. $y = 5x - 3$ $y = -3$ (0,-3)	c. $y - 5 = -4(x + 1)$ $y - 5 = -4$ $y = 1$ (0,1)
d. $y = -4x + 1$ $y = 1$ (0,1)	e. $y - 6 = 2(x + 7)$ $y - 6 = 2(7)$ $y - 6 = 14$ $y = 20$ (0,20)	f. $5x - 2y = 10$ $-2y = 10$ $y = -5$ (0,-5)

4. Which of the formats above facilitate finding the y-intercept? Why?

Slope-intercept form is easiest to find y-intercept. $y = mx + b$, b is the y-intercept.

SET

Topic: Solve Quadratic Equations, Connecting Quadratics with Area

For each of the given quadratic equations, (a) describe the rectangle the equation fits with. (b) What constraints have been placed on the dimensions of the rectangle?

5. $x^2 + 7x - 170 = 0$
$(x+17)(x-10) = 0$
Fits a rectangle with one dimension increased by 17 and the other decreased by 10.

6. $x^2 + 15x - 16 = 0$
$(x+16)(x-1)=0$
Fits a rectangle with one dimension increased by 16 and the other decreased by 1.

7. $x^2 + 2x - 35 = 0$
$(x+7)(x-5)=0$
Fits a rectangle with one dimension increased by 7 and the other decreased by 5.

8. $x^2 + 11x - 80 = 0$
$(x+16)(x-5)=0$
Fits a rectangle with one dimension increased by 16 and the other decreased by 5.

Solve the quadratic equations below.

9. $x^2 + 7x - 170 = 0$
$(x+17)(x-10) = 0$
$x+17=0$ $x-10=0$
$x=-17$ $x=10$

10. $x^2 + 15x - 16 = 0$
$(x+16)(x-1) = 0$
$x+16=0$ $x-1=0$
$x=-16$ $x=1$

11. $x^2 + 2x - 35 = 0$
$(x+7)(x-5) = 0$
$x+7=0$ $x-5=0$
$x=-7$ $x=5$

12. $x^2 + 11x - 80 = 0$
$(x+16)(x-5) = 0$
$x+16=0$ $x-5=0$
$x=-16$ $x=5$

GO

Topic: Factoring Expressions

Write each of the expressions below in factored form.

13. $x^2 - x - 132$
$(x-12)(x+11)$

14. $x^2 - 5x - 36$
$(x-9)(x+4)$

15. $x^2 + 5x + 6$
$(x+2)(x+3)$

16. $x^2 + 13x + 42$
$(x+6)(x+7)$

17. $x^2 + x - 56$
$(x+8)(x-7)$

18. $x^2 - x$
$x(x-1)$

19. $x^2 - 8x + 12$
$(x-6)(x-2)$

20. $x^2 - 10x + 25$
$(x-5)^2$

21. $x^2 + 5x$
$x(x+5)$