

Review # 8 Factoring and Quadratics

Multiply. FOIL

1.  $(7x+2)(x+1)$

$7x^2 + 9x + 2$

$7x^2 + 7x + 2x + 2$

3.  $(x-9)(x-3)$

$x^2 - 3x - 9x + 27$

$x^2 - 12x + 27$

5.  $(x+2)(x-2)$

$x^2 - 2x + 2x - 4$

$x^2 - 4$

2.  $(x-4)(x^2-4x-3)$

$x^3 - 4x^2 - 3x - 4x^2 + 16x + 12$

$x^3 - 8x^2 + 13x + 12$

4.  $(x-9)^2$

$(x-9)(x-9)$

$x^2 - 9x - 9x + 81$

$x^2 - 18x + 81$

6.  $(5x+1)^2 (5x+1)(5x+1)$

$25x^2 + 5x + 5x + 1$

$25x^2 + 10x + 1$

Factor the following polynomials.

7.  $x^2 - 2x - 15$

$P = -15$

$S = -2$

$-5 + 2$

$(x-5)(x+2)$

9.  $2x^2 + x - 3$

$P = -6$

$S = 1$

$3 - 2$

$2x^2 + 3x - 2x - 3$

$(x-1)(2x+3)$

11.  $x^2 - 6x + 9$

$P = 9$

$S = -6$

$-3 - 3$

$(x-3)(x-3)$

GCF:  $3x$

13.  $12x^2 - 3x$

$3x(4x-1)$

15.  $15x^2 - 17x + 2$

BB+G

$P = 30$

$S = -17$

$-15x - 2x$

$15x^2 - 15x - 2x + 2$   
 $(15x-2)(x-1)$

8.  $12x^2 - 26x - 10$

GCF 2 BB+G

$P = -30x^2$

$S = -13x$

$-5x + 2x$

$2(6x^2 - 13x - 5)$

$2(6x^2 - 15x + 2x - 5)$

$2(2x-5)(3x+1)$

$2(3x+1)(2x-5)$

10.  $9x^2 - 6x - 15$

GCF 3

$P = -15$

$S = -2$

$-5 + 3$

$3(3x^2 - 2x - 5)$

$3(3x^2 - 5x + 3x - 5)$

$3(x+1)(3x-5)$

$3(x+1)(3x-5)$

12.  $7x^2 - 22x + 3$

$P = 21$

$S = -22$

$-21 - 1$

$7x^2 - 21x - 1x + 3$

$(7x-1)(x-3)$

$(7x-1)(x-3)$

14.  $3x^2 - 48$

GCF 3

DOS  $a=4x$   $b=4$

$3(x^2 - 16)$

$3(x+4)(x-4)$

16.  $144x^2 - 81$

GCF = 9

$9(16x^2 - 9)$

DOS  $a=4x$   $b=3$

$9(4x+3)(4x-3)$

BB+G

17.  $2x^2 + 5x + 3$

$2x^2 + 3x + 2x + 3$   
 $(x+1)(2x+3)$

$(2x+3)(x+1)$

$(x+1)(2x+3)$

P: 6

S: 5

3x 2x

19.  $4b^3 - 6b^2 + 10b - 15$  Group

$(2b^2 + 5)$  Done not DOS

$(2b-3)(2b-3)$

$(2b^2+5)(2b-3)$

21.  $2x^3 + x^2 + 8x + 4$  Group

$(x^2 + 4)$  Done

$(2x+1)(2x+1)$

$(x^2+4)(2x+1)$

18.  $20x^2 - 8x - 28$

$4(5x^2 - 2x - 7)$

$4(5x^2 + 5x - 7x - 7)$

$4(x+1)(5x-7)$

GCF 4

P: -35

S: -2

-7x + 5x

$4(5x-7)(x+1)$

20.  $2m^3 + 4m^2 + 6m + 12$  GCF: 2

$2(m^3 + 2m^2 + 3m + 6)$  Group

$(m^2 + 3)$  Done not DOS

$(m+2)(m+2)$

$(m^2+3)(m+2)$

22.  $x^3 - 64x$  GCF x

$x(x^2 - 64)$  DOS

$x(x+8)(x-8)$

Solve the following quadratic equations by FACTORING.

23.  $6x = -x^2 - 8$

$x^2 + 6x + 8 = 0$  P: 8

S: 6

$(x+4)(x+2) = 0$  4 + 2

$x+4 = 0$   $x+2 = 0$

$x = -4$   $x = -2$

25.  $2x^2 = 6x$

$2x^2 - 6x = 0$

$2x(x-3) = 0$

$2x = 0$   $x-3 = 0$

$x = 0$   $x = 3$

27.  $(2x-4)(3x+6) = 0$

$2x-4 = 0$   $3x+6 = 0$

$2x = 4$

$3x = -6$

$x = 2$   $x = -2$

24.  $3x^2 = 16x + 12$

$3x^2 - 16x - 12 = 0$

P: -36

S: -16

-18 + 2

$3x^2 - 18x + 2x - 12$

$(3x+2)(x-6)$

$(3x+2)(x-6) = 0$

$3x+2 = 0$   $x-6 = 0$

$x = -\frac{2}{3}$   $x = 6$

26.  $4x^2 + x = 9 + x$

$-x - 9 - 9x$

$4x^2 - 9 = 0$  DOS

$(2x+3)(2x-3) = 0$

$2x+3 = 0$

$2x-3 = 0$

$2x = -3$

$2x = 3$

$x = -\frac{3}{2}$   $x = \frac{3}{2}$

28.  $r^2 + 9 = 10r$

$r^2 - 10r + 9 = 0$

P: 9

$(r-9)(r-1) = 0$

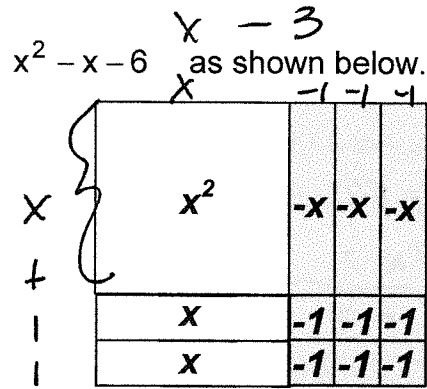
S: -10

$r-9 = 0$

$r-1 = 0$  -9 -1

$r = 9$   $r = 1$

29. Joey used algebra tiles to model the trinomial  $x^2 - x - 6$  as shown below.



What are the factors of this trinomial?

- A.  $(x + 3)(x + 2)$
  - B.  $(x + 1)(x - 6)$
  - C.  $(x - 6)(x - 3)$
  - D.  $(x - 3)(x + 2)$**
- $(x+2)(x-3)$

30. The area of a triangle is given by the equation  $h^2 + 4h = 192$  where  $h$  is the height of the triangle. What is the height of the triangle?

- A. 8
- B. 12**
- C. 16
- D. 24
- E. 48

$h^2 + 4h - 192 = 0$

Calc help  $y_1 = -192/x$  (graph)

2nd table

Look for diff of 4

P: -192 S: 4

16 + -12

$h + 16 = 0$      $h - 12 = 0$

~~$h = -16$~~

**$h = 12$**

height can't be neg.

31. The area of a rectangle is represented by the equation  $w^2 + 4w = 60$ , where  $w$  is the width of the rectangle. Find the width.

$w^2 + 4w - 60 = 0$

P: -60

S: 4

10 - 6

$w + 10 = 0$      $w - 6 = 0$

~~$w = -10$~~

can't be - negative

**$w = 6$**

32. Determine the area of a rectangle whose dimensions are  $(3x + 2)$  and  $(2x + 1)$ .

$L = lw$  so multiply

$A = (3x + 2)(2x + 1)$

$A = 6x^2 + 7x + 2$

33. The area of a rectangle is represented by the polynomial  $x^2 + 3x - 6x - 18$ . Which of the following could represent the length and width of the rectangle?

- A. Length:  $x + 3$  Width:  $x + 6$
- B. Length:  $x - 3$  Width:  $x - 6$
- C. Length:  $x + 3$  Width:  $x - 6$**
- D. Length:  $x - 3$  Width:  $x + 6$

$x^2 + 3x - 6x - 18$

P: -18

S: -3

-6 + 3

$x^2 - 3x - 18 = 0$

**$(x - 6)(x + 3)$**

## Review

34. Solve  $|3x+4|=13$

$3x+4 = -13$

$3x = -17$

$x = \frac{-17}{3}$  OR  $x = 3$

$3x+4 = 13$

$3x = 9$

2 answers 2 numbers 13 away from zero

35. The owner of a bookstore recorded the following information from last week.

|                                      |    |     |     |     |     |     |
|--------------------------------------|----|-----|-----|-----|-----|-----|
| Number of Customers, $c$             | 12 | 18  | 24  | 30  | 36  | 42  |
| Amount of Sales, $s$<br>(in dollars) | 80 | 110 | 140 | 170 | 200 | 230 |

stat ed it  
stat calc 4 (Lin Reg)  
 $a = 5$   
 $b = 20$

According to information in the table, which equation describes the relationship between the number of customers and the amount of sales?

A.  $s = 6c + 30$

B.  $s = c + 30$

C.  $s = 5c + 20$

D.  $s = \frac{c+30}{6}$

E.  $s = 6c + 8$

$y = 5x + 20$

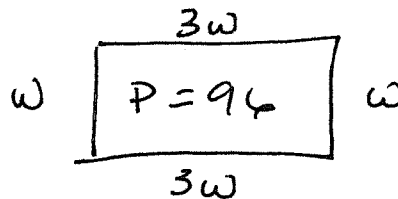
36. A rectangle's length,  $l$ , is 3 times the width,  $w$ . If the perimeter of the rectangle is 96 units, what are the rectangle's dimensions?

A. 12 units and 32 units

B. 4 units and 12 units

C. 8 units and 24 units

D. 36 units and 12 units



$8w = 96$

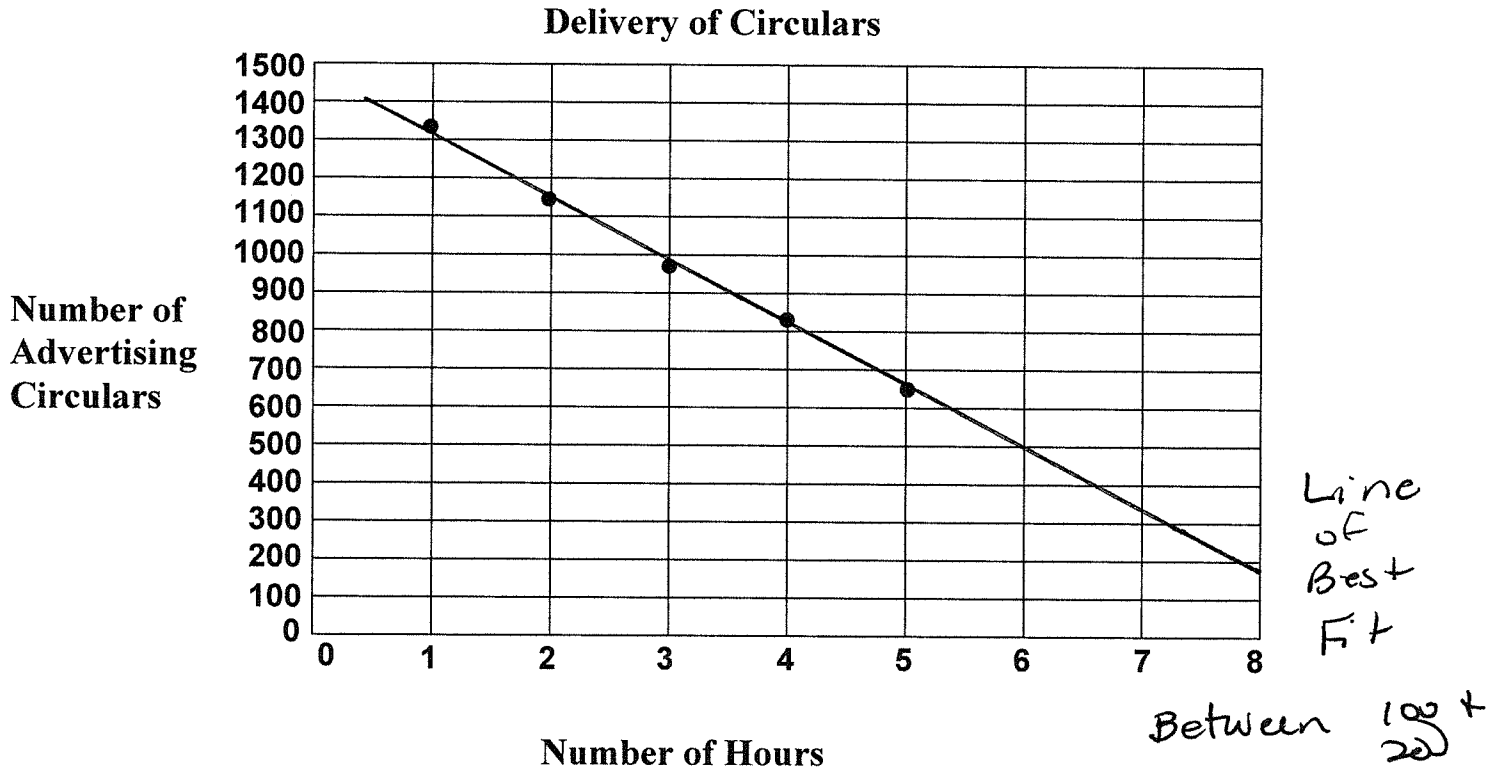
$w = 12$

$l = 3w$

$l = 3(12)$

$l = 36$

37. Haley had a job delivering advertising circulars house to house. She started with 1500 circulars. At the end of 1 hour, she had delivered 185. She plotted her progress each hour showing the number of circulars she had left. After 5 hours her graph looked like this.



Based on this information, which is the best prediction of the number of circulars Haley will have left after 8 hours?

- A. 485
- B. 395
- C. 310
- D. 275
- E. 150

Answers in random order:

$2(2x - 5)(3x + 1)$ ;  $-4, -2$ ;  $25x^2 + 10x + 1$ ;  $x^3 - 8x^2 + 13x + 12$ ;  $3(x - 4)(x + 4)$ ;  $0, 3$ ; D;  
 $x^2 - 12x + 27$ ;  $(7x - 1)(x - 3)$ ;  $3(3x - 5)(x + 1)$ ; E;  $3x(4x - 1)$ ;  $x^2 - 4$ ; D;  $(2x + 3)(x + 1)$ ;  $9, 1$ ;  
 $(15x - 2)(x - 1)$ ;  $x^2 - 18x + 81$ ;  $(x - 3)(x - 3)$ ;  $7x^2 + 9x + 2$ ;  $\frac{3}{2}, \frac{-3}{2}$ ;  $(x - 5)(x + 3)$ ;  $\frac{-2}{3}, 6$ ;  
 $9(4x - 3)(4x + 3)$ ;  $3, \frac{-17}{3}$ ;  $(2x + 3)(x - 1)$ ; C; B;  $2, -2$ ;  $x(x + 8)(x - 8)$ ;  $4(5x - 7)(x + 1)$ ;  $6, C$ ;  
 $(x^2 + 4)(2x + 1)$ ;  $(2b^2 + 5)(2b - 3)$ ;  $2(m^2 + 3)(m + 2)$ ;  $6x^2 + 7x + 2$

