

Bridge to Algebra 2

Factoring DAY ONE WS

1 - 18: Factor each expression completely. Show all work to earn full credit.

$$\begin{array}{r} -15 \\ -5 \quad 3 \\ -2 \end{array}$$

1. $3p^2 - 2p - 5$
 $3p^2 + 3p - 5p - 5$
 $3p(p+1) - 5(p+1)$
 $(3p-5)(p+1)$

$$\begin{array}{r} -18 \\ 6 \quad -3 \\ 3 \end{array}$$

2. $2n^2 + 3n - 9$
 $2n^2 + 6n - 3n - 9$
 $2n(n+3) - 3(n+3)$
 $(2n-3)(n+3)$

$$\begin{array}{r} 12 \\ -6 \quad -2 \\ -8 \end{array}$$

3. $3n^2 - 8n + 4$
 $3n^2 - 6n - 2n + 4$
 $3n(n-2) - 2(n-2)$
 $(3n-2)(n-2)$

$$\begin{array}{r} 60 \\ 4 \quad 15 \\ 19 \end{array}$$

4. $5n^2 + 19n + 12$
 $5n^2 + 15n + 4n + 12$
 $5n(n+3) + 4(n+3)$
 $(5n+4)(n+3)$

$$\begin{array}{r} 10 \\ 10 \quad 1 \\ 11 \end{array}$$

5. $2v^2 + 11v + 5$
 $2v^2 + 10v + v + 5$
 $2v(v+5) + 1(v+5)$
 $(2v+1)(v+5)$

$$\begin{array}{r} 4 \\ 4 \quad 1 \\ 5 \end{array}$$

6. $2n^2 + 5n + 2$
 $2n^2 + 4n + n + 2$
 $2n(n+2) + 1(n+2)$
 $(2n+1)(n+2)$

$$\begin{array}{r} 196 \\ 49 \quad 4 \\ 53 \end{array}$$

7. $7a^2 + 53a + 28$
 $7a^2 + 49a + 4a + 28$
 $7a(a+7) + 4(a+7)$
 $(7a+4)(a+7)$

$$\begin{array}{r} 189 \\ 3 \quad 63 \\ 66 \end{array}$$

8. $9k^2 + 66k + 21$
 $9k^2 + 63k + 3k + 21$
 $9k(k+7) + 3(k+7)$
 $(9k+3)(k+7)$

$$\begin{array}{r} -90 \\ 3 \quad -30 \\ -27 \end{array}$$

9. $15n^2 - 27n - 6$
 $15n^2 + 3n - 30n - 6$
 $3n(5n+1) - 6(5n+1)$
 $(3n-6)(5n+1)$

$$\begin{array}{r} 45 \\ -3 \quad -15 \\ -18 \end{array}$$

10. $5x^2 - 18x + 9$
 $5x^2 - 15x - 3x + 9$
 $5x(x-3) - 3(x-3)$
 $(5x-3)(x-3)$

$$\begin{array}{r} -100 \\ -20 \quad 5 \\ -15 \end{array}$$

11. $4n^2 - 15n - 25$
 $4n^2 - 20n + 5n - 25$
 $4n(n-5) + 5(n-5)$
 $(4n+5)(n-5)$

$$\begin{array}{r} 196 \\ -7 \quad -28 \\ -35 \end{array}$$

12. $4x^2 - 35x + 49$
 $4x^2 + 28x - 7x + 49$
 $4x(x-7) - 7(x-7)$
 $(4x-7)(x-7)$

$$\begin{array}{r} 16 \\ -16 \quad -1 \\ -17 \end{array}$$

13. $4n^2 - 17n + 4$
 $4n^2 - 16n - n + 4$
 $4n(n-4) - 1(n-4)$
 $(4n-1)(n-4)$

$$\begin{array}{r} -294 \\ 21 \quad -14 \\ 7 \end{array}$$

14. $6x^2 + 7x - 49$
 $6x^2 + 21x - 14x - 49$
 $3x(2x+7) - 7(2x+7)$
 $(3x-7)(2x+7)$

$$\begin{array}{r} 36 \\ 36 \quad 1 \\ 37 \end{array}$$

15. $6x^2 + 37x + 6$
 $6x^2 + 36x + x + 6$
 $6x(x+6) + 1(x+6)$
 $(6x+1)(x+6)$

$$\begin{array}{r} 150 \\ -15 \quad -10 \\ -25 \end{array}$$

16. $-6a^2 - 25a - 25$
 $-6a^2 - 15a - 10a - 25$
 $-3(2a+5) - 5(2a+5)$
 $(-3a-5)(2a+5)$

~~$$\begin{array}{r} -36 \\ 9 \times -4 \\ 5 \end{array}$$~~

17. $6n^2 + 5n - 6$
 $6n^2 + 9n - 4n - 6$
 $3n(2n+3) - 2(2n+3)$
 $(3n-2)(2n+3)$

~~$$\begin{array}{r} -1600 \\ 80 \times -20 \\ 60 \end{array}$$~~

18. $16b^2 + 60b - 100$

$$16b^2 + 80b - 20b - 100$$

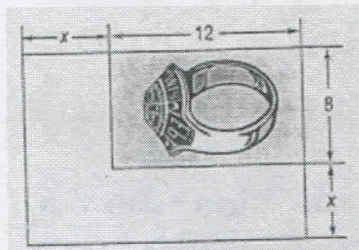
$$16b(b+5) - 20(b+5)$$

$$(16b-20)(b+5)$$

$$4(4b-5)(b+5)$$

19-23: Real-World Problems

19. YEARBOOK DESIGN. A sponsor for the school yearbook has asked that the length and width of a photo in their ad be increased by the same amount in order to double the area of the photo. If the photo was originally 12 centimeters wide by 8 centimeters long, what should the new dimensions of the enlarged photo be?



~~$$\begin{array}{r} -96 \\ 20 \times -4 \\ 20 \end{array}$$~~

$$12+4=16$$

$$8+4=12$$

$$192 = (x+12)(x+8)$$

$$192 = x^2 + 12x + 8x + 96$$

$$12 \cdot 8 = 96$$

$$2(96) = 192$$

$$16 \text{ cm by } 12 \text{ cm}$$

$$0 = x^2 + 20x - 96$$

$$0 = (x+20)(x-4)$$

$$x-4=0 \quad x+20=0$$

$$x=4 \quad x \neq -20$$

20. NUMBER THEORY. Find two consecutive even integers whose product is 168.

~~$$\begin{array}{r} -168 \\ -12 \times 14 \\ 2 \end{array}$$~~

$$(x-12)(x+14) = 0$$

$$x-12=0 \quad x+14=0$$

$$x=12 \quad x=-14$$

$$x(x+2) = 168$$

$$x^2 + 2x - 168 = 0$$

$$12 \frac{1}{2} \times 14$$

or

$$-12 \frac{1}{2} \times -14$$

21. GEOMETRY. The triangle has an area of 40 square centimeters. Find the height h of the triangle.

~~$$\begin{array}{r} -40 \\ 8 \times -5 \\ 3 \end{array}$$~~

$$A = \frac{1}{2}bh$$

$$A = 40 \text{ cm}^2$$

$$40 = \frac{1}{2}(2h+6)(h)$$

$$0 = (h+3)(h) - 40$$

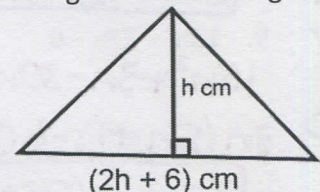
$$0 = h^2 + 3h - 40$$

$$0 = (h+8)(h-5)$$

$$h+8=0 \quad h-5=0$$

$$h \neq -8 \quad h=5$$

$$5 \text{ cm}$$



22. GEOMETRY. A rectangle with an area of 35 square inches is formed by cutting off strips of equal width from a rectangular piece of paper.

$$x^2 - 8x + 7 = 0$$

$$(x-7)(x-1) = 0$$

$$x-7=0 \quad x-1=0$$

$$x \neq 7 \quad x=1$$

a. Find the width of each strip.

$$(7-2x)(9-2x) = 35$$

$$63 - 14x - 18x + 4x^2 = 35$$

$$4x^2 - 32x + 28 = 0$$

$$A = lw$$

$$A = 35 \text{ in}^2$$

$$7 - 2(1)$$

$$5 \text{ in}$$

b. Find the dimensions of the new rectangle.

$$9 - 2(1) = 9 - 2 = 7$$

$$7 \text{ in by } 5 \text{ in}$$

