
*Part A: Patterns in Factoring***Practice 1**

1.

$$1 \cdot 6 = 6$$

$$1 + 6 = 7$$

2.

$$15 \cdot 3 = 45$$

$$15 + 3 = 18$$

3.

$$6 \cdot (-4) = -24$$

$$6 + (-4) = 2$$

4.

$$27 \cdot 3 = 81$$

$$27 + 3 = 30$$

5.

$$8 \cdot (-9) = -72$$

$$8 + (-9) = -1$$

6.

$$2 \cdot 9 = 18$$

$$2 + 9 = 11$$

7.

$$x^2 + 14x + 48$$

$$x^2 - 14x + 48$$

$$x^2 - 2x - 48$$

$$x^2 + 2x - 48$$

8.

$$x^2 + 8x - 48$$

$$x^2 - 16x + 48$$

$$x^2 - 8x - 48$$

$$x^2 + 16x + 48$$

9.

$$x^2 - 19x + 48$$

$$x^2 + 13x - 48$$

$$x^2 + 19x + 48$$

$$x^2 - 13x - 48$$

10.

$$(x + 2)(x + 24)$$

$$(x - 2)(x - 24)$$

$$(x + 24)(x - 2)$$

$$(x - 24)(x + 2)$$

11.

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

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

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

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

12.

$(x + 2)(x + 18)$

$(x + 2)(x - 18)$

$(x - 2)(x + 18)$

$(x - 2)(x - 18)$

Practice 2

1.

$6 \cdot (-6) = -36$

$6 + (-6) = 0$

2.

$3 \cdot 5 = 15$

$3 + 5 = 8$

3.

$2 \cdot 32 = 64$

$2 - 32 = -30$

4.

$11 \cdot 12 = 132$

$11 + 12 = 23$

5.

$4 \cdot 25 = 100$

$4 + 25 = 29$

6.

$20 \cdot (-5) = -100$

$20 + (-5) = 15$

7.

$x^2 - 3x - 10$

$x^2 + 3x - 10$

$x^2 - 7x + 10$

$x^2 + 7x + 10$

8.

$x^2 + 10x + 21$

$x^2 - 4x - 21$

$x^2 - 10x + 21$

$x^2 + 4x - 21$

9.

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

$(x - 1)(x - 5)$

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

$(x + 1)(x + 5)$

10.

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

$(x + 3)(x + 5)$

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

$(x - 3)(x - 5)$

11.

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

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

$(x + 1)(x + 15)$

$(x - 1)(x - 15)$

12.

$(x - 3)(x + 24)$

$(x + 3)(x + 24)$

$(x + 3)(x - 24)$

$(x - 3)(x - 24)$

*Part B: Factoring Special Products***Practice 1**

1.

$(x - 1)(x + 1)$

2.

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

3.

$(\frac{1}{2}x + 5)(\frac{1}{2}x - 5)$

4.

$(4x - 11y)(4x + 11y)$

5.

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

6.

$10(x^2 - 1)$

$10(x + 1)(x - 1)$

7.

$(x + y)(x + y)$

$(x + y)^2$

8.

$(x - 4)(x - 4)$

$(x - 4)^2$

9.

$$(7x - 2)(7x - 2)$$

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

10.

$$(x + 6)^2$$

11.

$$(4x + 3)^2$$

12.

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

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

Practice 2

1.

$$(6x + 5)(6x - 5)$$

2.

$$(10x - y)(10x + y)$$

3.

$$\left(\frac{1}{3}x - \frac{1}{2}\right)\left(\frac{1}{3}x + \frac{1}{2}\right)$$

4.

$$(5x - 8)(5x + 8)$$

5.

$$2\left(\frac{1}{9}x^2 - 25\right)$$

$$2\left(\frac{1}{3}x - 5\right)\left(\frac{1}{3}x + 5\right)$$

6.

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

$$7x(x - 2)(x + 2)$$

7.

$$(x - 6y)^2$$

8.

$$(8x - 1)^2$$

9.

$$(x + 7)^2$$

10.

$$\left(\frac{1}{2}x + 1\right)^2$$

11.

$$12(x^2 - 2x + 1)$$

$$12(x - 1)^2$$

12.

$$\frac{1}{3}(4x^2 - 28x + 49)$$

$$\frac{1}{3}(2x - 7)^2$$

Targeted Review

Problem	1-2	3	4-6	7	8-9	10	11	12	13
Lesson Origin	20	21	20	21	19	11	18	21	21

1.

$$40x^2 + 59x + 21$$

2.

$$48x^4 + 12x^3y$$

3.

Factoring and the Distributive Property are inverses of one another.

4.

$$A = lw; l = x^2 + 5x + 4, w = 3x + 2$$

$$A = (3x + 2)(x^2 + 5x + 4)$$

$$A = 3x^3 + 15x^2 + 12x + 2x^2 + 10x + 8$$

$$A = 3x^3 + 17x^2 + 22x + 8$$

$$3x^3 + 17x^2 + 22x + 8 \text{ square units}$$

5.

$$A = \frac{1}{2}bh; b = 4x, h = 2x + 3$$

$$A = \frac{1}{2}(4x)(2x + 3)$$

$$A = \frac{1}{2}(8x^2 + 12x)$$

$$A = 4x^2 + 6x$$

$$4x^2 + 6x \text{ square units}$$

6.

$$\text{Shaded Area} = (A = lw) - (A = \frac{1}{2}bh)$$

$$\text{Shaded Area} = (3x^3 + 17x^2 + 22x + 8) - (4x^2 + 6x)$$

$$\text{Shaded Area} = 3x^3 + 17x^2 + 22x + 8 - 4x^2 - 6x$$

$$\text{Shaded Area} = 3x^3 + 13x^2 + 16x + 8$$

$$3x^3 + 13x^2 + 16x + 8 \text{ square units}$$

7.

$$(10x^2y - 15xy) + (-2x + 3)$$

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

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

8.

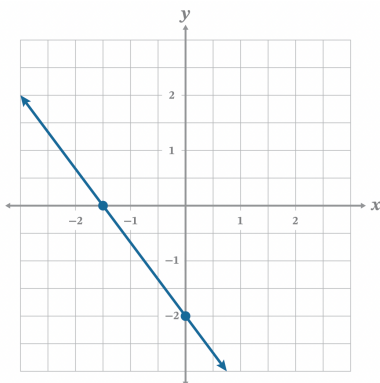
$$\frac{(7x^2y^5)^3 \cdot x^{-1}y^3}{7^3x^5y^{18}} = 7^3x^6y^{15} \cdot x^{-1}y^3$$

9.

$$2x^5y^4 \cdot 6xy^8 \cdot 2xy^{-2} = 2 \cdot 6 \cdot 2 \cdot x^7y^{10}$$

$$24x^7y^{10}$$

10.



x-intercept: $(-\frac{3}{2}, 0)$

y-intercept: $(0, -2)$

11.

$$P = 2l + 2w, l = w + 3, P = 4.5w$$

$$(4.5w) = 2(w + 3) + 2w$$

$$4.5w = 2w + 6 + 2w$$

$$4.5w = 4w + 6$$

$$0.5w = 6$$

$$w = 12$$

$$l = (12) + 3 = 15 \text{ units}$$

$$P = 4.5(12) = 2(15) + 2(12) = 54 \text{ units}$$

The rectangle is 15 units by 12 units, and the perimeter is 54 units.

12. B

A) $x(2x^2 + 2x)$

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

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

D) x

Distractor Rationale:

A) This answer removes the final term instead of factoring out x and leaving 1.

C) This has 2 as part of the GCF, but it is not common among all terms.

D) This lists the correct GCF but does not include the complete answer.

Factor out the GCF: x , remember that $\frac{x}{x} = 1$

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

13. A

A) $(x - 1)(10y + 27)$

B) $10y(x - 1) + 27(x - 1)$

C) $(x + 1)(10y - 27)$

D) not factorable

Distractor Rationale:

B) This answer is the middle step but not the final answer.

C) This answer has the addition and subtraction symbols reversed.

D) The problem is factorable.

$$10xy - 10y + 27x - 27$$

$$(10xy - 10y) + (27x - 27)$$

$$10y(x - 1) + 27(x - 1)$$

$$(x - 1)(10y + 27)$$