

Name: _____

Date: _____

Learning Goal 1.2Factor trinomials of the form $ax^2 + bx + c$.

Factor the following expression. Expand your answer to check your work.

a. $2x^2 + 15x + 7$

$$14 \times 1 = 2 \times 7 = 14$$

$$14 + 1 = 15$$

$$= 2x^2 + 14x + x + 7$$

$$= 2x(x + 7) + (x + 7)$$

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

b. $2x^2 + 5x + 2$

$$4 \times 1 = 2 \times 2 = 4$$

$$4 + 1 = 5$$

$$= 2x^2 + 4x + x + 2$$

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

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

c. $6x^2 + 7x + 2$

$$3 \times 4 = 6 \times 2 = 12$$

$$3 + 4 = 7$$

$$= 6x^2 + 3x + 4x + 2$$

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

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

d. $8p^2 - 18p - 5$

$$(-20) \times 2 = 8 \times (-5) = -40$$

$$(-20) + 2 = -18$$

$$= 8p^2 - 20p + 2p - 5$$

$$= 4p(2p - 5) + (2p - 5)$$

$$= (2p - 5)(4p + 1)$$

e. $24h^2 - 20h - 24$
 $= 4(6h^2 - 5h - 6)$

$$(-9) \times 4 = 6 \times (-6) = -36$$

$$(-9) + 4 = -5$$

$$= 4(6h^2 - 9h + 4h - 6)$$

$$= 4(3h(2h - 3) + 2(2h - 3))$$

$$= 4(2h - 3)(3h + 2)$$

f. $3s^2 - 13s - 10$

$$(-15) \times 2 = 3 \times (-10) = -30$$

$$(-15) + 2 = -13$$

$$= 3s^2 - 15s + 2s - 10$$

$$= 3s(s - 5) + 2(s - 5)$$

$$= (s - 5)(3s + 2)$$