

Date: \_\_\_\_\_

Name: \_\_\_\_\_

**Multiplying Polynomials**

2. Expand and simplify.

a)  $(2x + 1)(3x + 7)$

b)  $(3x - 4)(3x + 5)$

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

d)  $(2x - 3)(3x - 2)$

a)  $6x^2 + 17x + 7$

b)  $9x^2 + 3x - 20$

c)  $5x^2 - 7x - 6$

d)  $6x^2 - 13x + 6$

4. Expand and simplify.

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

b)  $(4x - 1)^2$

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

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

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

b)  $16x^2 - 8x + 1$

c)  $9x^2 + 12x + 4$

d)  $25x^2 - 20x + 4$

15. Expand and simplify the expression  $(x + 3)(x + 7) - (x + 5)^2$ .

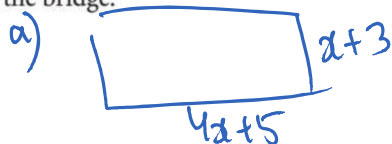
$$= x^2 + 10x + 21 - (x^2 + 10x + 25)$$

$$= -4$$

5. A two-lane bridge has width  $x + 3$  and length  $4x + 5$ .

a) Sketch a rectangle with these dimensions.

b) Find a quadratic expression that represents the area of the bridge.



b)  $A = Lw$   
 $= (x + 3)(4x + 5)$   
 $= 4x^2 + 17x + 15$

In these problems you have to add *and* subtract polynomials. Change the signs on polynomials you are subtracting, but not on ones you are adding.

$$(6x^2 - 4x + 7) + (2x^2 - 3x - 9) = 8x^2 - 7x - 2$$

$$(3x^2 + 5x - 1) - (4x^2 - 2x + 4) = -1x^2 + 7x - 5$$

$$(3x + 5) + (2x - 3) + (4x - 6) = 9x - 4$$

$$(a + b - c) + (a + b + 2c) - (a + b + c) = a + b + \cancel{2c}$$

$$(2x^2 + x - 3) + (x^2 - 2x + 3) - (x^2 + x + 3) - (x^2 - 3x - 12) = x^2 + x + 9$$

$$(x - y - z) + (x - y - z) - (x - y - z) + (x + y + z) = 2x$$

$$(3a^2 + 2b + 4) - (a^2 + b - 1) - (a^2 + 2b - 1) - (a^2 + b - 2) = -2b + 8$$

Solve each equation.

$$8x - (5x - 4) = 25$$

$$8x + (-5x + 4) = 25$$

$$3x + \cancel{4} = 25 - \cancel{4}$$

$$3x = 21$$

$$x = 7$$

$$6x - (4x - 5) = 13$$

$$6x - 4x + 5 = 13$$

$$2x = 8$$

$$x = 4$$

$$10x - (3x + 6) = 8$$

$$10x - 3x - 6 = 8$$

$$7x = 14$$

$$x = 2$$

$$(6x + 9) - (2x - 5) = 38$$

$$6x + 9 - 2x + 5 = 38$$

$$4x + 14 = 38$$

$$4x = 24$$

$$x = 6$$

$$(9x + 10) - (3x + 2) = 74$$

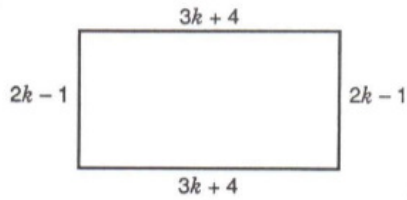
$$9x + 10 - 3x - 2 = 74$$

$$6x + 8 = 74$$

$$6x = 66$$

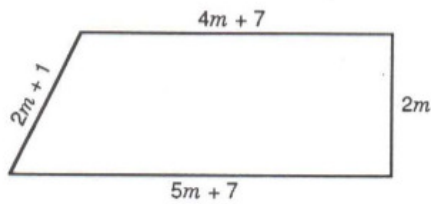
$$x = 11$$

Write a polynomial for the perimeter of each figure.

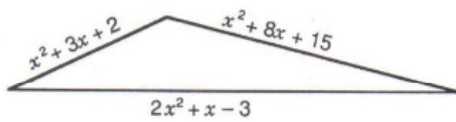


$$\begin{array}{r} 3k + 4 \\ 3k + 4 \\ 2k - 1 \\ 2k - 1 \\ \hline \end{array}$$

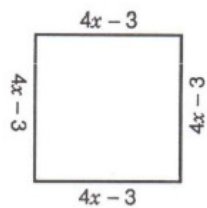
Answer:  $P = 10k + 6$



$$\begin{array}{r} 2m + 1 \\ 4m + 7 \\ 2m \\ \hline 5m + 7 \\ P = 13m + 15 \end{array}$$

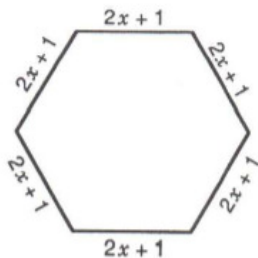


$$\begin{array}{r} x^2 + 3x + 2 \\ x^2 + 8x + 15 \\ \hline 2x^2 + x - 3 \\ P = 4x^2 + 12x + 14 \end{array}$$



$$\begin{array}{r} 4x - 3 \\ 4x - 3 \\ 4x - 3 \\ 4x - 3 \\ \hline \end{array} \quad \text{OR} \quad 4(4x - 3)$$

$$P = 16x - 12$$



$$6(2x + 1)$$

$$P = 12x + 6$$