Study the student model below. Then solve problems 16–18.

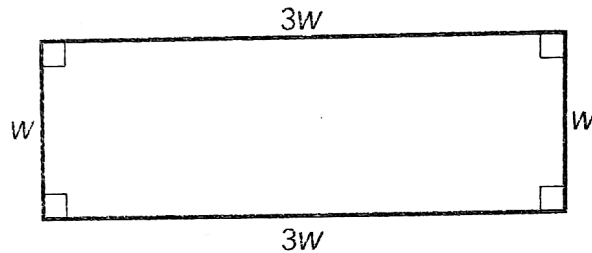The student drew a diagram to help write expressions for the perimeter.

The length of a rectangle is three times its width, w. Write three different expressions to describe its perimeter.

Use what you know about rectangles and perimeter to draw a diagram.

Expression 1:
$3w + w + 3w + w$, the sum of all 4 sides

Expression 2:
$2(3w) + 2(w)$, the sum of twice the length and twice the width

Expression 3:
$2(3w + w)$, twice the sum of the length and the width

Solution: $3w + w + 3w + w$; $2(3w) + 2(w)$; $2(3w + w)$

Pair/Share

How could you use the distributive property to write one of the expressions for the perimeter?

16 The expression $12c - 18$ represents the perimeter of a regular hexagon. Write two different expressions to describe its perimeter. Then write an expression for the length of one of its sides.
Show your work.

The sides of a regular polygon are all the same length.

Pair/Share

How might drawing a diagram help you solve the problem?

Solution: _____

_____

Part 4: Guided Practice

Is $\frac{1}{4}(8y - 12)$ equivalent to $2y - 12$? Explain why or why not.

Show your work.

Solution: _____

_____

_____

Which expression below is equivalent to $-3x + 5(x + 2)$? Circle the correct answer.

A $2x + 2$

B $-x + 2$

C $2x + 10$

D $-8x + 10$

Kaitlin chose **A** as the correct answer. How did she get that answer?

_____

_____

_____

_____

I know that the distributive property works the same for fractions as for whole numbers.

Pair/Share

What is another way to tell whether or not two expressions are equivalent?

Which operation must I perform first in this problem?

Pair/Share

How would you help Kaitlin understand her error?

Solve the problems.

1 Which of the following expressions is equivalent to $-\frac{1}{4}y - 2\frac{1}{4}y + \frac{1}{2}(4 - 2y)$?

   A $-3y + 2$

   B $-3\frac{1}{2}y + 2$

   C $-4y + 4$

   D $-4\frac{1}{2}y + 2$

2 In the following equation, c and d are both integers.

$$4cx - 5c = -12x + d$$

What is the value of c? _____

What is the value of d? _____

3 Consider the equation below.

$$5(3a - 1) - 2(3a + 2) = 3(a + 2) + v$$

Select two expressions that are equivalent to v.

   A $-a - 10$

   B $3(5a + 2)$

   C $6a - 7$

   D $3(2a - 5)$

   E $6a - 15$

   F $3(a + 2)$

   G $6(a - 15)$

   H $-6a - 4$

4 The length of a side of an equilateral triangle is $x - 4.5$. First express its perimeter as a sum. Next express its perimeter as a product. Explain why the two expressions are equivalent.

_____

_____

_____

_____

_____

5 Each of the two congruent sides of an isosceles triangle is $2n + 7$ and the third side is $3n$. Draw and label the triangle. Then write two equivalent expressions for its perimeter.

Show your work.

_____

_____

_____

✓ **Self Check** *Go back and see what you can check off on the Self Check on page 125.*