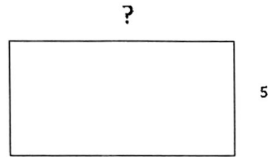

I can factor expressions to solve problems.

Example Type 1: AREA

Together



1) The area of a rectangle is found by multiplying its length by its width. The rectangle above has a width of 5 units. The area of the rectangle is $15x + 40$ square units. What is the length of the rectangle?

$$\frac{15x + 40}{5} = 3x + 8$$

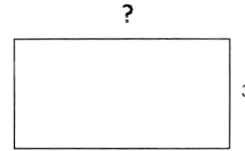
2) A rectangle has a width of 4 units. The area of the rectangle is $12x + 24$ square units. What is the length of the rectangle?

$$\frac{12x + 24}{4} = 3x + 6$$

3) A rectangle has a length of $3x + 4$ units. The area of the rectangle is $12x + 16$ square units. What is the width of the rectangle?

$$\frac{12x + 16}{3x + 4} = 4$$

On Your Own



1) The area of a rectangle is found by multiplying its length by its width. The rectangle above has a width of 3 units. The area of the rectangle is $12x + 9$ square units. What is the length of the rectangle?

$$\frac{12x + 9}{3} = 4x + 3$$

2) A rectangle has a width of 7 units. The area of the rectangle is $21x + 14$ square units. What is the length of the rectangle?

$$\frac{21x + 14}{7} = 3x + 2$$

3) A rectangle has a length of $5x + 9$ units. The area of the rectangle is $30x + 54$ square units. What is the width of the rectangle?

$$\frac{30x + 54}{5x + 9} = 6$$

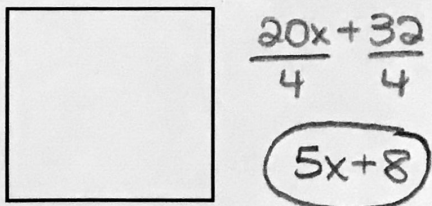
Example Type 2: PERIMETER

Together

1) The perimeter of a square is $4(x + 5)$. What does $x + 5$ represent?

$x + 5$ is length of each side

2) The perimeter of a square can be written by the expressions $20x + 32$. What is the length of one side of the square?

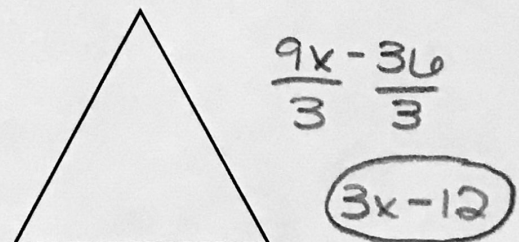


On Your Own

1) The perimeter of a triangle is represented by the expression $3(a + 9)$. What does this tell us about the triangle?

$a + 9$ is the length of each side

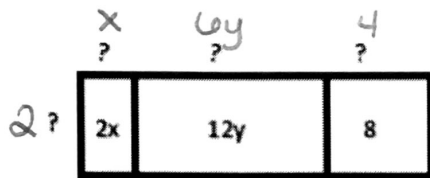
2) The perimeter of an equilateral triangle can be represented by the expression $9x - 36$. What is the length of one side of the triangle?



Example Type 3: RECTANGULAR ARRAY

Together

1)

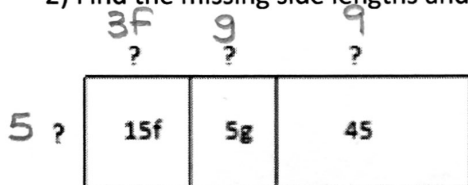


Write the area of the rectangle:

As a sum $2x + 12y + 8$

As a product of two factors $2(x + 6y + 4)$

2) Find the missing side lengths and the area.



Write the area of the rectangle:

As a sum $15f + 5g + 45$

As a product of two factors $5(3f + g + 9)$

Example Type 4: REAL WORLD PROBLEMS

Together

1) Lucy mows five lawns. The total earned is $5(x + 30)$. What does $x + 30$ represent?

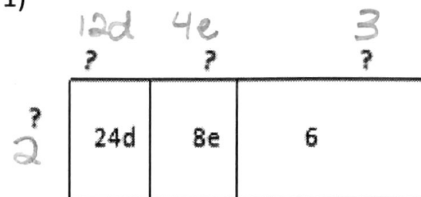
$x + 30$ is the amount earned for each lawn

2) Jill works 4 hours per day. She charges an hourly fee and an additional \$8. She uses the expression $12x + 24$ to show how much she made over the course of 3 days, where x = the hourly rate. **Write an equivalent expression** that shows how much she makes per day.

$$3(4x + 8)$$

On Your Own

1)

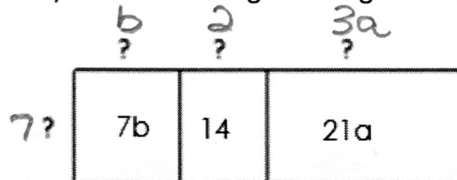


Write the area of the rectangle:

As a sum $24d + 8e + 6$

As a product of two factors $2(12d + 4e + 3)$

2) Find the missing side lengths and the area.



Write the area of the rectangle:

As a sum $7b + 14 + 21a$

As a product of two factors $7(b + 2 + 3a)$

On Your Own

1) Mariah earns $x + 20$ for each article she writes in the paper. If her final payment is $6(x + 20)$, how many articles did she write?

She writes 6 articles

2) Jen works 8 hours per day. She charges an hourly fee and an additional \$10. She uses the expression $32h + 40$ to show how much she made over the course of 4 days, where x = the hourly rate. **Write an equivalent expression** that shows how much she makes per day.

$$4(8h + 10)$$