

Math 7H - Unit 2a

Day 5 - Factoring Linear Expressions

Lesson Objectives:

- I can model how to factor a linear expressions with algebra tiles.
- I can apply properties of operations as strategies to factor linear expressions with rational coefficients.

Create a rectangle using 24 square units. Are there other possibilities?

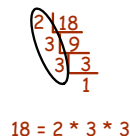
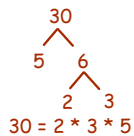


Copy and complete the table to show ALL of the different sizes of rectangles with an area of 24 square units.

Length	Width	Area
6	4	24
8	3	24
12	2	24
24	1	24

The area is the measure of the surface enclosed by a geometric figure. To find the area of a rectangle, multiply the length of the rectangle by the width.

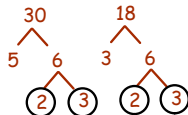
To **factor** a number means to write it as a product of its factors. Think "factor trees" or the "cake method".



The **greatest common factor** (GCF) of two numbers is the greatest number that is a factor of both.

$$18 = 2 * 3 * 3$$

$$30 = 2 * 3 * 5$$



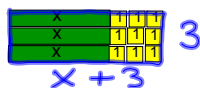
$$\begin{array}{r} 2 \overline{) 18 \ 30} \\ \underline{3 \ 9 \ 15} \\ 3 \ 5 \end{array}$$

The GCF of 18 and 30 is 6.

Rules for Modeling Factoring

1. Big squares can't touch little squares.
2. All little squares must be grouped together.
3. Only things with the same side lengths can touch.

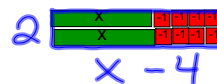
Create a rectangle using 3 Xs and 9 square units. *Hint* Use the GCF to help.



Write an expression that could be used to describe the area of the rectangle.

$$3x + 9 = 3(x + 3)$$

Create a rectangle using 2 Xs and -8 square units. *Hint* Use the GCF to help.



Write an expression that could be used to describe the area of the rectangle.

$$2x - 8 = 2(x - 4)$$



A linear expression is in **factored form** when it is expressed as the product of its factors. To "factor" is to undo the distributive property.

$$ab + ac = a(b + c)$$

$$ab - ac = a(b - c)$$

Factor each expression.

1. $3x + 6$
 $3(x+2)$

2. $15x + 10$
 $5(3x+2)$

3. $7x + 3$
cannot be factored

4. $30x + 40$
 $10(3x+4)$

Factor each expression.

1. $\frac{2}{3}x + 6$
 $\frac{2}{3}(x+9)$
 $6 \div \frac{2}{3} = 36 \times \frac{3}{2} = 9$

2. $\frac{5}{6}x - 30$
 $\frac{5}{6}(x-36)$
 $30 \div \frac{5}{6} = 36 \times \frac{6}{5} = 36$

3. $0.5x + 3$
 $0.5(x+6)$
 $3 \div 0.5 = 6$

4. $1.2x - 6$
 $1.2(x-5)$
 $6 \div 1.2 = 5$

Homework

Factoring Expressions WKS

* Individual Think Time *



What to do if you get stuck...

1. Reread the problem. Did you write it down correctly?
2. Reread your notes. Is there a problem similar that we did together in class?
3. Find a problem similar in your book. Try this one to see if it helps.
4. Skip the problem until the end of Individual Think Time. Then ask an "educated" question of a neighbor or Mrs. Call.

Today we're working by...

