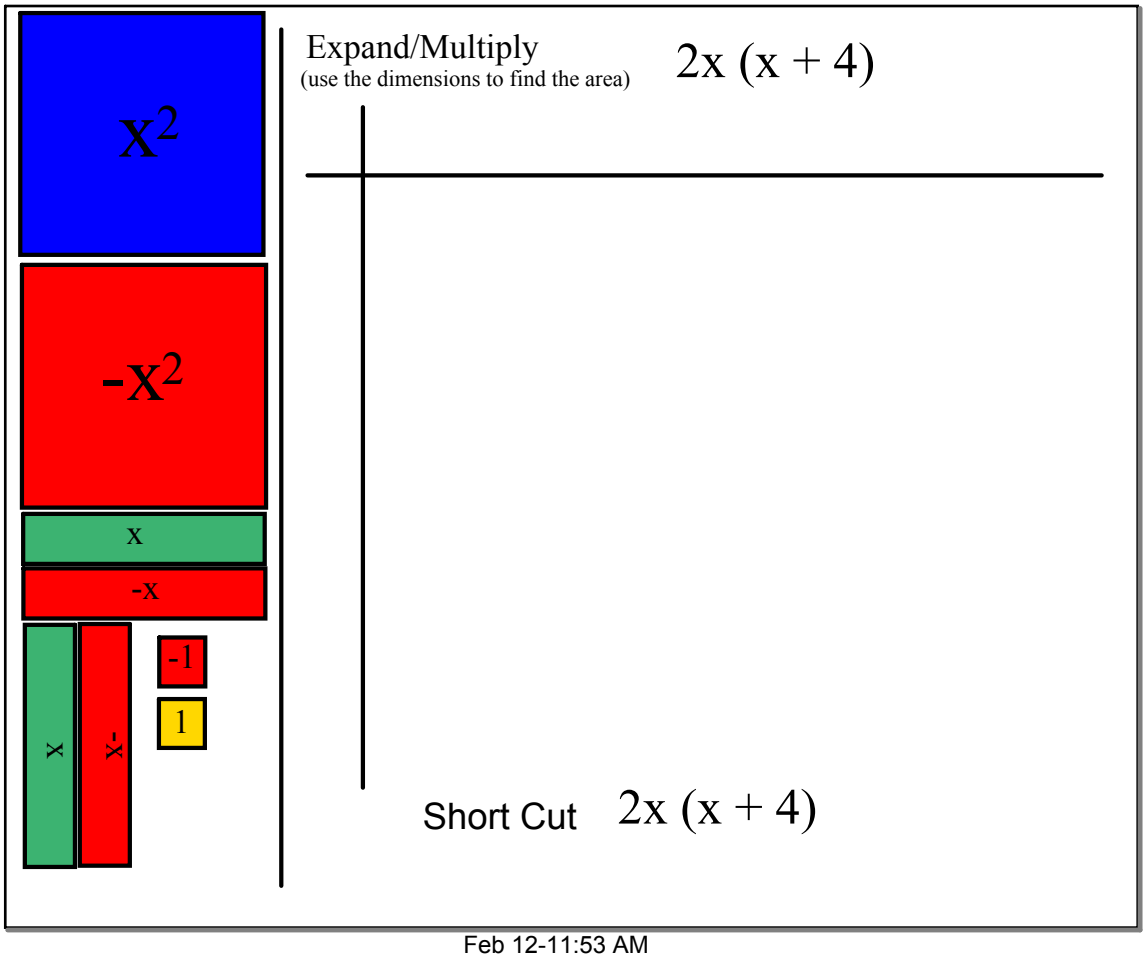
Common Factoring - Revisited

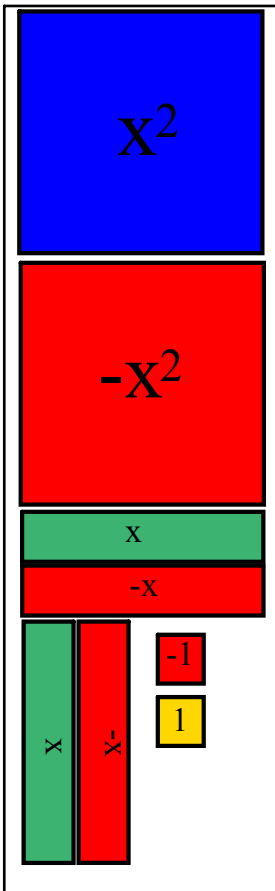
Learning Goal:

By the end of today, I will be able to Common Factor the polynomial expressions with degrees higher than one.

Sep 23-3:49 PM



Feb 12-11:53 AM



Expand/Multiply
(use the dimensions to find the area) $(x+1)(x-3)$

Short Cut $(x+1)(x-3)$

Feb 12-11:53 AM

Expand the following:

4x (x - 5)

(x - 4)(2x + 1)

5(x+1)(2x-3)

Sep 23-4:01 PM

Consolidation questions (10 min)

Page 85 - #1a, 3, 4b, 5abc

Sep 23-4:02 PM

A rectangle has an area of 60 m^2, what could be the dimensions?

Nov 26-2:13 PM

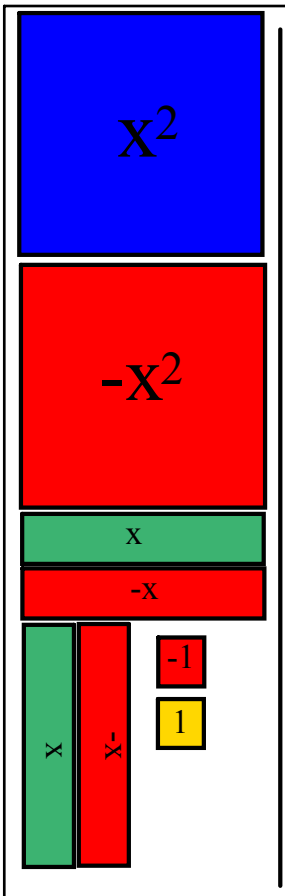
FACTOR means to use the area to find the dimensions of the rectangular area.

There may be more than one answer.

Ex. Find the dimensions of the rectangle with an area of 16 m^2

Factoring can be done using an algebraic approach or a graphical (area model) approach.

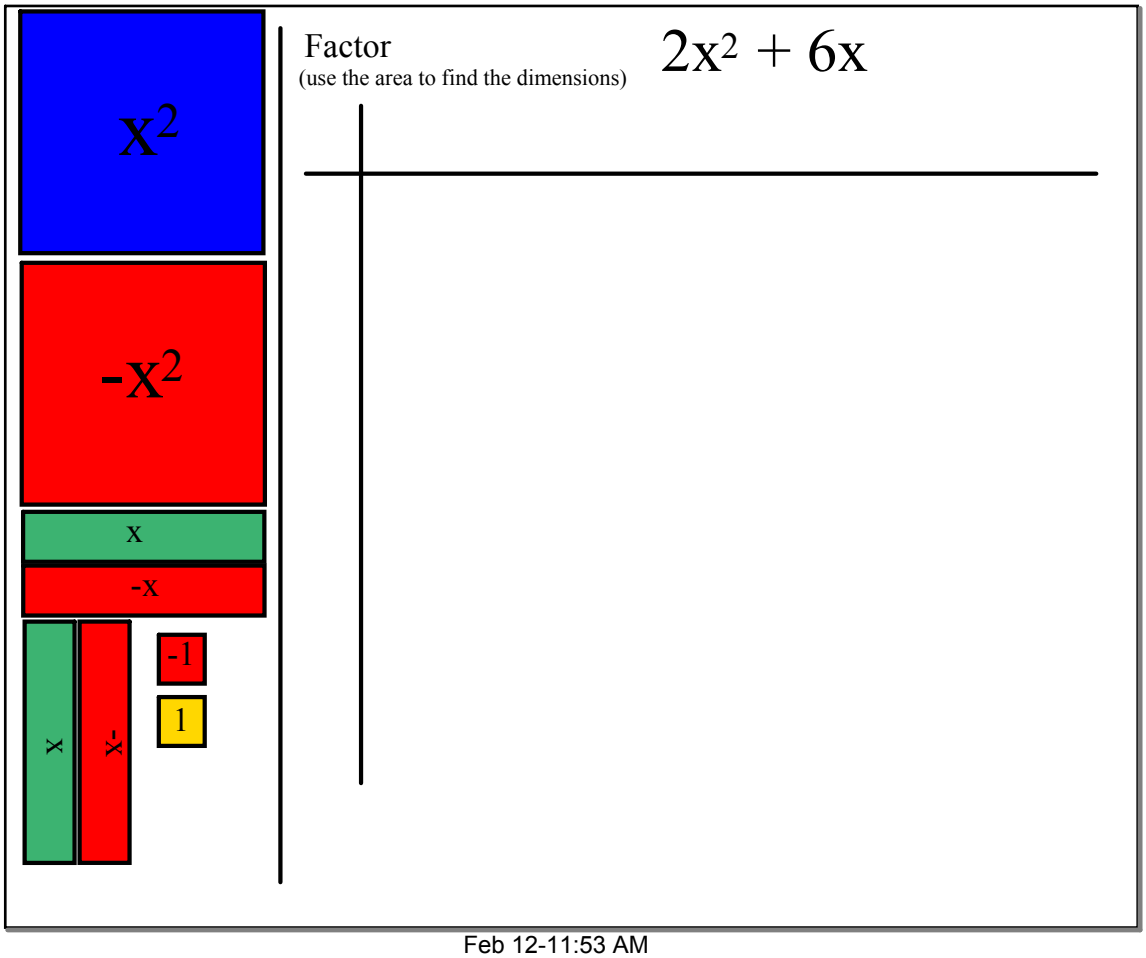
Nov 24-1:43 PM



Factor
(use the area to find the dimensions)

$4x + 6$

Feb 12-11:53 AM



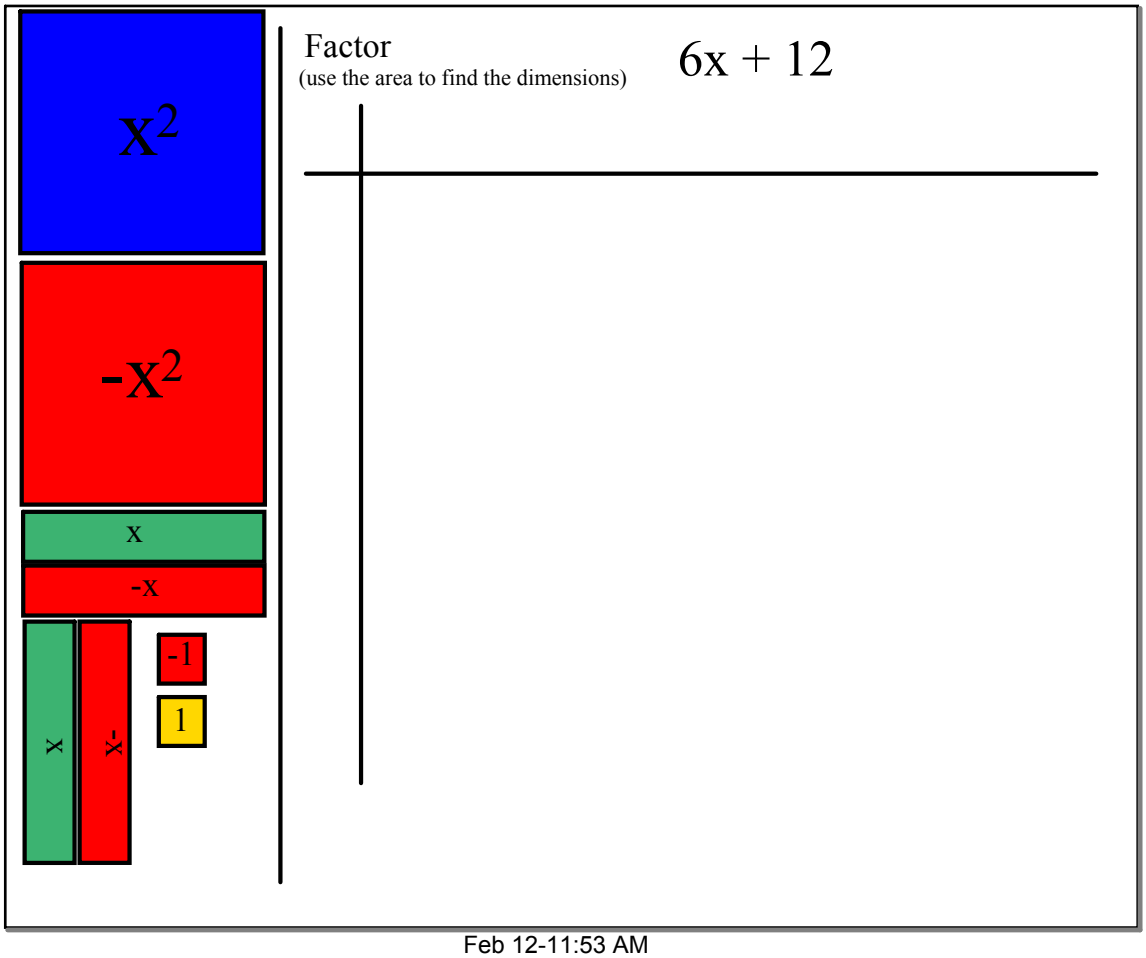
Feb 12-11:53 AM

Factor the following using your Algetiles:

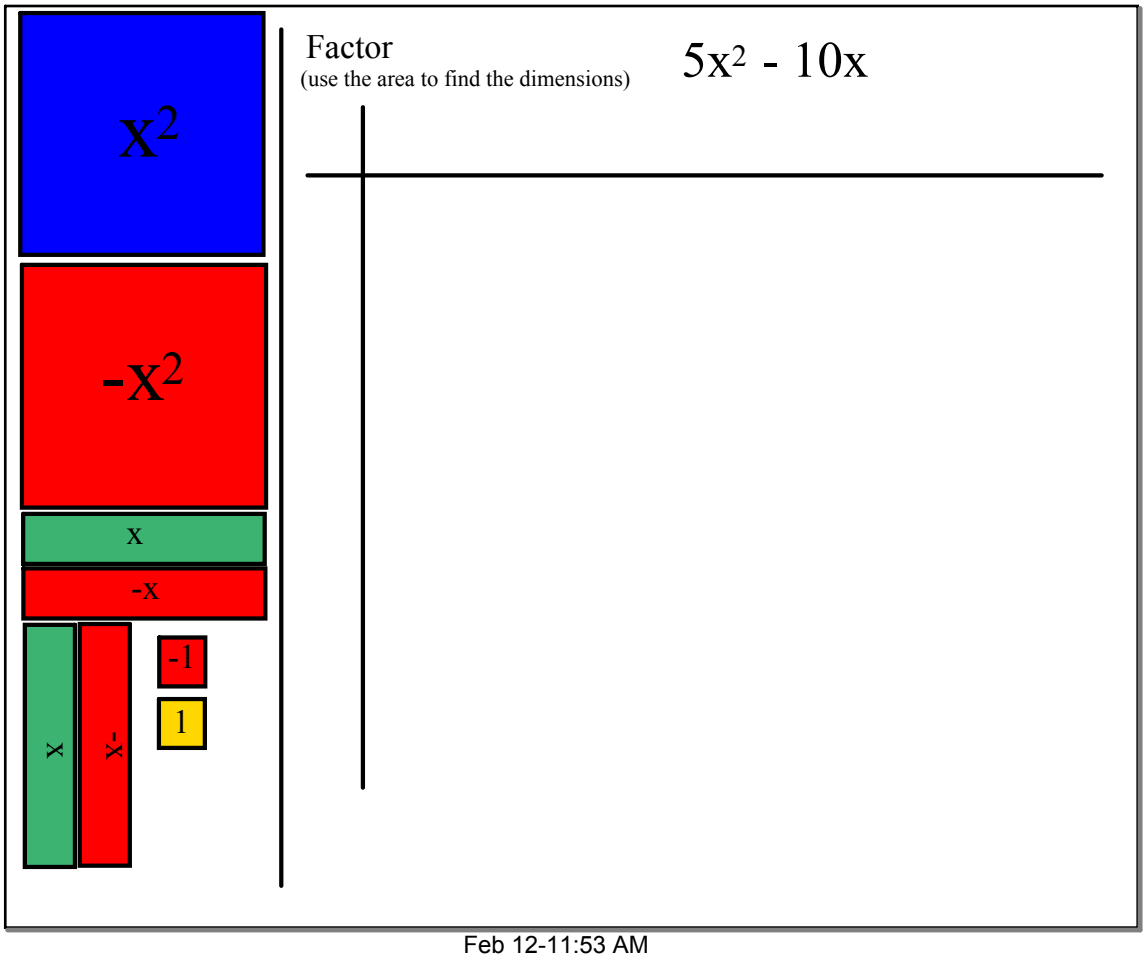
(a) $6x + 12$

(b) $5x^2 - 10x$

Nov 24-1:47 PM



Feb 12-11:53 AM



Feb 12-11:53 AM

Algebraic Approach

Greatest Common Factor
(Finding the GCF between two or more terms)
An algebraic approach to factoring.

Mar 30-9:23 AM

Greatest Common Factor - Definitions

Factors - factors are numbers that act as "building blocks" to create larger numbers, through the operation of multiplication

ie. 12 = 4 x 3 Therefore, 4 and 3 are factors of 12

12 = 6 x 2 Therefore, 6 and 2 are also factors of 12

Prime Factors - Prime factors consist of the "prime" numbers; numbers that are divisible by themselves and "1" only

Prime Numbers

1, 2, 3, 5, 7, 11, 13, 17, 19, 23, 29, 31, 37, 41,....

ie. 12 = 2 x 2 x 3 (broken down into its Prime Factors)

ie. 36 = 2 x 2 x 3 x 3 (broken down into its Prime Factors)

Mar 30-9:23 AM

Finding the Greatest Common Factor

The Greatest Common Factor (GCF) is the largest factor (number/building block) that is shared between two or more terms.

ie. The GCF of the numbers 18 and 27 would be 9.

We can see this by writing each number in a factored form.

$18 = 9 \times 2$ and $27 = 9 \times 3$

The difficulty in finding the GCF arrises when we have more challenging numbers and when unknowns are introduced.

Mar 30-9:23 AM

Finding the Greatest Common Factor

Find the Greatest Common Factor (GCF) between the following three terms: 24, 48, 60

24 48 60

24 = 12 x 2	48 = 12 x 4	60 = 10 x 6
24 = 6 x 2 x 2	48 = 6 x 2 x 2 x 2	60 = 5 x 2 x 3 x 2
24 = 3 x 2 x 2 x 2	48 = 3 x 2 x 2 x 2 x 2	60 = 5 x 3 x 2 x 2

What factors do ALL of the terms have in common?

24 = **3** x **2** x **2** x 2 48 = **3** x **2** x **2** x 2 x 2 60 = 5 x **3** x **2** x **2**

All of the terms have a "2 x 2 x 3" in common, when this is multiplied out it is a product of "12".

Therefore the GCF for 24, 48 and 60, is "12".

24 = **12** x 2 48 = **12** x 4 60 = 5 x **12**

Mar 30-9:23 AM

Finding the Greatest Common Factor

Find the Greatest Common Factor (GCF) between the following three terms: $8a^2$, 16a, $12a^3$

$8a^2$ 16a $12a^3$

$8a^2$ = (4) (2) (a) (a) 16a = (4) (4) (a) $12a^3$ = (4) (3) (a) (a) (a)
$8a^2$ = (2) (2) (2) (a) (a) 16a = (2) (2) (2) (2) (a) $12a^3$ = (2) (2) (3) (a) (a) (a)

What factors do ALL of the terms have in common?

$8a^2$ = (2) **(2) (2) (a)** (a) 16a = (2) (2) **(2) (2) (a)** $12a^3$ = **(2) (2)** (3) **(a)** (a) (a)

All of the terms have a "2 x 2 x a" in common, when this is multiplied out it is a product of "4a".

Therefore the GCF for $8a^2$, 16a and $12a^3$, is "4a".

$8a^2$ = **(4a)** (2a) 16a = **(4a)** (4) $12a^3$ = **(4a)** ($3a^2$)

Mar 30-9:23 AM

Self Check

Find the Greatest Common Factor (GCF) between the following three terms: 16, 24, 40

16 24 40

What factors do ALL of the terms have in common?

Mar 30-9:23 AM

Self Check

Find the Greatest Common Factor (GCF) between the following three terms: $18a^2$, $27a$, $45a^3$

$18a^2$ $27a$ $45a^3$

What factors do ALL of the terms have in common?

Mar 30-9:23 AM

Factor (find the dimensions) of the following:

(use algebra or an area model)

$4x + 6$ $2x^2 + 6x$ $4x^2 - 10x$

Nov 24-1:37 PM

Consolidation Questions:

Page 93 #3b, 5b,d, 6a,b, 15a,b

Handout

Sep 23-4:03 PM

Attachments

MCF3M1 - Task - GCF.doc