

KEY POINTS

Section 2.3
Expanding &
Factoring

- Expanding using the distributive law
- Factoring quadratic expressions
- Perfect Squares
- Difference of squares

Warm-Up

Simplify the following equations.

1. $2x^4 - 3x + 5 + 4x^4 + 6x^2 - 5x$

2. $(3x^2 + 4x - 3) - (5x^2 + 9x - 4)$

Background

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There are many situations where we will expand mathematical situations and then combine like terms.

Given the following equation how would you simplify it?

$$(z - 4)(z - 2)$$

Background

One way to simplify it is by using the distributive law.

$$(z - 4)(z - 2)$$

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Try It!

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

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Try It!

$$(w - 9)^2$$

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Background

Using the distributive law is one way to simplify our mathematical situations, however there are other ways to simplify that may make more sense to you. Let's do the rectangle diagram.

$$(z - 4)(z - 2)$$

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Try It!

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

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Background

We also have a method known as the foil method.

$$(z - 4)(z - 2)$$

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Try it!

$$(w - 9)^2$$

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Try it!

Pick one of the methods we used to combine like terms and simplify.

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

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Background

In the first part of our lesson we were working with equations that were in factored form and changed them to general form. Now we are going to work backwards.

We are given an equation: $x^2 - 6x - 27$

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Try it!

We are given an equation: $y^2 - 13y + 36$

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Try it!

We are given an equation: $2x^2 + x - 6$

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Background

There are also so special rules that we can use, that don't require a lot of manipulation.

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Perfect Squares

$$(x + r)^2 = x^2 + 2xr + r^2$$

Difference of Squares

$$(x^2 - r^2) = (x - r)(x + r)$$

$$(x - r)^2 = x^2 - 2xr + r^2$$

Try it!

$$x^2 - 225$$

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$$(x + 14)^2$$

$$(x - 14)^2$$

Homework

Pages 45-46
#2-24 even, 27-57 odd

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Key Points

Section 2.4
Algebraic
Fractions

- Canceling is really dividing a common factor from the numerator and denominator
- Canceling expressions is valid only when the factor being canceled is not zero
- Rules for operations on algebraic Fractions

Discussion

What are some things that you know about fractions?

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Algebraic
Fractions

Examples

When we are dealing with algebraic fractions, the easiest way to approach them is to first see if anything can factor out, if something factors out it will make the fraction easier to work with.

$$\frac{10x+10}{5}$$

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Algebraic
Fractions

Examples

$$\frac{4m-8n}{-6m-3n}$$

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Fractions

Examples

$$\frac{6+x}{2x+12}$$

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Fractions

Examples

$$\frac{2}{x+y} \cdot \frac{x^2y}{5}$$

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Algebraic
Fractions

<p>Section 2.4 Algebraic Fractions</p>	<p>Examples</p> $\frac{t^2-4t+3}{t^2-4} \cdot \frac{t-2}{t-3}$	<p>Examples</p>
<p>Section 2.4 Algebraic Fractions</p>		$\frac{(x^2-x-12)/4x}{(x^2+2x-3)/4x-4}$

Practice

Simplify

$$\frac{6x-6}{3}$$

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Fractions

Practice

Simplify

$$\frac{10m+20n}{-15m-5n}$$

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Fractions

Practice

Simplify

$$\frac{5a^3 + 10a}{10a^2 + 20}$$

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Practice

Factor and simplify $\frac{3-x}{2x-6}$

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Practice

Factor and simplify $\frac{2k^2 - 8}{2 - k}$

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Algebraic
Fractions

Practice

Express as a single fraction
 $\frac{j}{7} + \frac{2j}{7}$

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Fractions

Practice

Express as a sum of two algebraic fractions

$$\frac{5x+y}{6}$$

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Practice

Simplify the expression

$$\frac{c}{25} + \frac{h}{30}$$

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Fractions

Practice

Express as a single fraction.

$$\frac{3}{p} + \frac{2}{p+2}$$

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Practice

Express as a single fraction

$$\frac{t}{s+t} - \frac{s}{s-t}$$

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Fractions

<p>Section 2.4 Algebraic Fractions</p>	<p>Practice</p>		<p>Practice</p>
<p>Express as a single fraction</p> $\frac{3}{v+w} * \frac{vw^2}{7}$ $\frac{3/(v+w)}{vw^2/7}$		<p>Section 2.4 Algebraic Fractions</p>	<p>Express as a single fraction</p> $\frac{z^2+z-6}{z^2-1} * \frac{z-1}{z-2}$

Practice

Express as a single fraction

$$\frac{(r^2 - 25)/5r}{(r^2 - 10r + 25)/(5r - 25)}$$

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Fractions

Homework

Pages 53-54
1-11 odd, 14-24 even, 25-35, 51-55

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