# What's Going On?

**Checking In**          Homework Logs

**Minds on**          Distribute, FOIL and ...?

**Action!**          Multiplying Polynomials

**Consolidation**          Hey functions, are you equivalent?

**Learning Goal - I will be able to multiply polynomials and determine if various functions and expressions are equivalent.**

**Checking In**

# F.F.M.

Get your little books.

Determine whether the given functions are equivalent.

$f(x) = x(5 - x) - 2(2x - x^2)$

$f(1) = 1(5 - 1) - 2(2(1) - (1)^2)$

$= 4 - 2$

$= 2$

$g(x) = 4x^2(x - 1) - 3x^2 + 5x$

$g(1) = 4(1)^2(1 - 1) - 3(1)^2 + 5(1)$

$= 0 - 3 + 5$

$= 2$

Through inspection; $f(0) = g(0)$

and $f(1) = g(1)$

g. 89 #8f

## Checking In

# F.F.M.

Get your little books.

Determine whether the given functions are equivalent.

$f(x) = x(5 - x) - 2(2x - x^2)$

$= 5x - x^2 - 4x + 2x^2$

$= x^2 + x$

$g(x) = 4x^2(x - 1) - 3x^2 + 5x$

$= 4x^3 - 4x^2 - 3x^2 + 5x$

$= 4x^3 - 7x^2 + 5x$

$f(x) \neq g(x)$

## Checking In

Homework Logs

# Hand 'em in!

## Checking In

# Recapping Yesterday

**To determine if two functions / expressions are equivalent:**

- simplify them algebraically

    If they both simplify to the same expression, they're the same!

- substitute the same value(s) for the variable(s) into each function / expression.

    If, for any value, the resulting value is different they are not the same.

    *this method will NEVER tell you that two function / expressions are equivalent$

**Minds on**

# Everything You Ever Wanted to Know About Multiplication

**NEW TERM**

The **commutative property** of multiplication says that the order in which you multiply numbers does not matter!

$$a \times b = b \times a$$

**NEW TERM**

The **distributive property** says that when a polynomial is expanded, each of its terms is multiplied by the number outside of the brackets.

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

**NEW TERM**

The **associative property** of multiplication says that you can multiply in any order.

$$a(bc) = (ab)c$$

**Minds on**

Distribute, FOIL and ...

**Simplify.**

a) $2x(x - 3)$

b) $(3x - 2)(2x + 1)$

c) $(x - 2)(x^2 - 3x + 7)$

**Minds on**

Distribute, FOIL and ...

**Simplify.**

$2x(x - 3)$

$= 2x^2 - 6x$

Gr. 9

**Minds on**

Distribute, FOIL and ...

**Simplify.**

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

$$= 6x^2 + 3x - 4x - 2$$

$$= 6x^2 - x - 2$$

**Minds on**
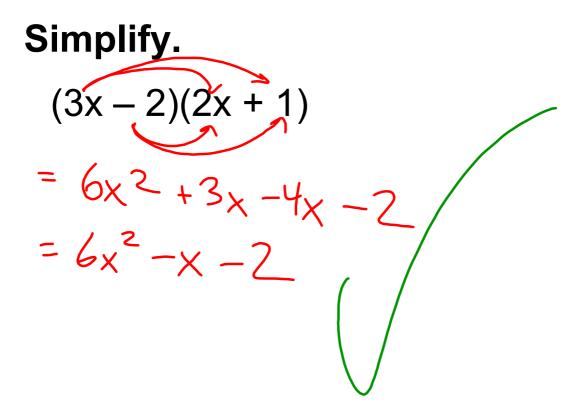
Distribute, FOIL and ...

## Simplify.

$$(x - 2)(x^2 - 3x + 7)$$

$$= x^3 - 3x^2 + 7x - 2x^2 + 6x - 14$$

$$= x^3 - 5x^2 + 13x - 14$$

**Action!**

# Multiplying Polynomials

**Example 1:** A rectangular prism has length (x + 1), width (x − 2) and a height of (x + 5). Calculate the volume of the shape.

$$V = l \times w \times h$$

$$V = (x+1)(x-2)(x+5)$$

$$V = (x^2 - 2x + x - 2)(x+5)$$

$$V = (x^2 - x - 2)(x+5)$$

$$V = -2x - x^2 + x^3 - 10 - 5x + 5x^2$$

$$V = x^3 + 4x^2 - 7x - 10$$

## Consolidation

# Hey functions, are you equivalent?

Are the given functions equivalent?

$$f(x, y, z) = (2x + 3y + 4z)^2$$

$$= (2x + 3y + 4z)(2x + 3y + 4z)$$

$$f(0,1,1) = (2(0) + 3(1) + 4(1))^2$$

$$= 49$$

and

$$g(x, y, z) = 4x^2 + 9y^2 + 16z^2$$

$$g(0,1,1) = 4(0)^2 + 9(1)^2 + 16(1)^2$$

$$= 25$$

$$f(0,1,1) \neq g(0,1,1) \quad \therefore f(x,y,z) \neq g(x,y,z)$$

## Consolidation

**NEW TERMS**

Commutative Property

Distributive Property

Associative Property

**Consolidation**

# Homework!

# **Pg. 95**: 1 - 6, 7, 8, 9, 14

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