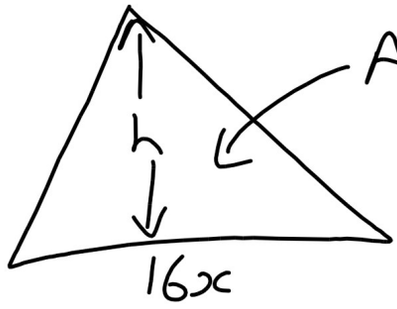
The **area** of a triangle is $64x^2$. It has a **base** equal to $16x$, and an unknown **height**. Determine the height of this triangle. Include a well-labelled diagram in your solution and show how you came up with your answer.

$$A = \frac{b \times h}{2}$$



$\text{Area} = 64x^2$

$\Rightarrow 64x^2 = \frac{16x(h)}{2}$

$64x^2 \times 2 = \frac{16x(h)}{2} \times 2$

$\frac{128x^2}{16x} = \frac{16x(h)}{16x}$

$8x = h$

Height of triangle is $8x$

MTH1W Grade 9 Mathematics

5.4 Multiplying Polynomials by Monomials
The Distributive Property

Goal(s)

- *To distribute a constant through a bracket with two terms*
- *Apply exponent laws to distribute a monomial term with a constant and/or variable through a set of brackets with up to three terms and simplify the result*
- *Solve real-world problems involving the distributive property and represent the results using simplified expressions*

Jun 19-8:29 AM

The **distributive property** allows you to *expand* algebraic expressions by multiplying all terms within a set of brackets by its coefficient. The distributive property states that:

$$a(x+y) = ax + ay$$

When you apply the distributive property, you are **expanding** an expression.

When distributing, multiply the monomial by each term in the polynomial.

Multiply numerical coefficients and apply exponent laws to variables.

Sep 18-2:25 PM

Expand

$3(x+2)$

$= 3(x) + 3(2)$

$= 3x + 6$

$-5(4m-3)$

$= -5(4m) - 5(-3)$

$= -20m + 15$

$(2y+5)(-4)$

$= -4(2y+5)$

$= -4(2y) - 4(5)$

$= -8y - 20$

$2(5a^2 - 7a + 2)$

$= 2(5a^2) + 2(-7a) + 2(2)$

$= 10a^2 - 14a + 4$

$x(x-3)$

$= x(x) + x(-3)$

$= x^2 - 3x$

$p(p^2 - 2p + 1)$

$= p(p^2) + p(-2p) + p(1)$

$= p^3 - 2p^2 + p$

Sep 18-2:25 PM

Determine if the two expressions are equivalent.

$3x^2 + 6x - 12$ and $3x(x + 2 - 4)$

Distribute the bracket and simplify.

$\Rightarrow 3x(x+2-4)$

$= 3x(x) + 3x(2) + 3x(-4)$

$= 3x^2 + 6x - 12x$

$= 3x^2 - 6x$

$\Rightarrow$ The simplified expressions are NOT equivalent.

Expanding and Simplifying Expressions

- apply the distributive property, remove the brackets, then collect like terms and simplify.

$-4(x+3)+2(2x-1)$

$= -4(x) - 4(3) + 2(2x) + 2(-1)$

$= -4x - 12 + 4x - 2$

$= 0x - 14$

$= -14$

$\frac{1}{2}(2w-6)-\frac{2}{3}(9w-6)$

$= \frac{1}{2}(2w) + \frac{1}{2}(-6) - \frac{2}{3}(9w) - \frac{2}{3}(-6)$

$= w - 3 - 6w + 4$

$= -5w + 1$

Sep 18-2:34 PM