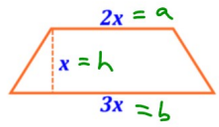
Determine a simplified expression for the area of the trapezoid below.



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

$A = \frac{2x+3x}{2} \times x$

$A = \frac{5x}{2} \times \frac{x}{1} \Rightarrow A = \frac{5x^2}{2}$

How could you determine the height if the area is $250\ cm^2$?

$250 = \frac{5x^2}{2}$

$250 \times 2 = \frac{5x^2}{2} \times 2$

$\frac{500}{5} = \frac{5x^2}{5}$

$100 = x^2$

$\sqrt{100} = \sqrt{x^2} \Rightarrow$ Height would be 10cm

$10 = x$

Express in exponential notation.

$2 \times 2 \times 2 \times 2 \times 2 = 2^5$

$m \times m \times m \times m \times m = m^5$

Simplify using exponent laws.

$4^5 \times 4^7 = 4^{5+7} = 4^{12}$

$h^3 \times h^2 = h^{3+2} = h^5$

$\frac{5^{10}}{5^3} = 5^{10-3} = 5^7$

$\frac{w^{12}}{w^6} = w^{12-6} = w^6$

Create a summary of how to apply the exponent rules to variable expressions.

$x^m \times x^n = x^{m+n}$

$x^m \div x^n = x^{m-n}$

MTH1W Grade 9 Mathematics

5.3 Multiplying and Dividing Monomials

Goal(s) *- To multiply/divide monomials by multiplying the coefficients and adding/ subtracting the exponents with the same base*

- Simplify multi-step expressions involving multiplication and division of monomials

- Solve problems involving the multiplication and division of monomials

Jun 19-8:29 AM

When a monomial is multiplied by another monomial the resulting product will also be a monomial.

$$(3x) \times 7 = 21x$$

To multiply a monomial by another monomial, multiply the coefficients together and add the exponents powers with the same base.

$$(-2x^3) \times (4x^2) = (-2)(4)(x^3)(x^2)$$

$$= (-8)(x^{3+2})$$

$$= -8x^5$$

Multiply

$5w \times 6 =$ $(5)(6)(w)$

$= 30w$

$g^2 \times (-4g^3) =$ $(-4)(g^{2+3})$

$= -4g^5$

$(5b^{-4})(8b^7) =$ $(5)(8)(b^{-4+7})$

$= 40b^3$

$-3(4x^5)(-9x^6) =$ $(-3)(4)(-9)(x^{5+6})$

$= 108x^{11}$

When a monomial is divided by another monomial the resulting product will also be a monomial.

$$21x \div 7 = 3x$$

To divide a monomial by another monomial, divide the coefficients together and subtract the exponents powers with the same base.

$(4x^3) \div (-2x^2) = (4) \div (-2)(x^3) \div (x^2)$

$= (-2)(x^{3-2})$

$= -2x^1$

$= -2x$ ← Don't tend to write exponents of one

Divide

$30w \div 6 =$ $(30 \div 6)(w)$

$= 5w$

$12g^6 \div (-4g^3) =$ $(12 \div -4)(g^{6-3})$

$= -3g^3$

$(56b^4) \div (8b^{-7}) =$ $(56 \div 8)(b^{4-(-7)})$

$= 7b^{11}$

$(-3x^5)(4x^5) \div (-2x^6) =$ $\left(\frac{-3 \times 4}{-2}\right)(x^{5+5-6})$

$= 6x^4$

Simplify

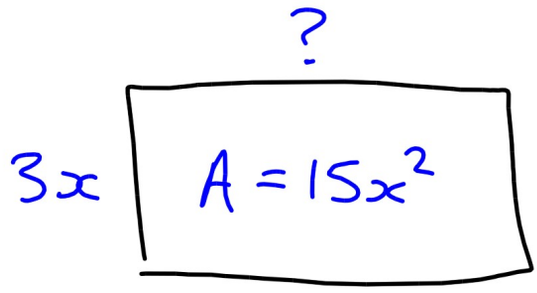
$\frac{-2(9x^3)}{6x}$ $= \left(\frac{-2 \times 9}{6}\right)(x^{3-1})$

$= -3x^2$

$\frac{4w(6w^2x^3)}{8wx}$ $= \left(\frac{4 \times 6}{8}\right)(w^{1+2-1})(x^{3-1})$

$= 3w^2x^2$

The area of a rectangle is given by the expression $15x^2$. The width of the rectangle is $3x$. Determine the length of the rectangle.



Let n = length of rectangle

$A = n \times w$

$\frac{15x^2}{3x} = \frac{n(3x)}{3x}$

$5x = n$

Length of the rectangle is $5x$