

$$x^2 x^5$$

$$a^3 a$$

$$y^3 y^3$$

$$w^{27} w^{42}$$

The product rule for exponents:

Use properties of exponents to help you simplify each of the following

$$x^{44} x^{17}$$

$$(a^4 b^2)(a^7 b)$$

$$(3x^6)(-2x^5)$$

$$(4y^{12})\left(\frac{y^{12}}{4}\right)$$

Completely simplify each of the following.

$$(x^2)^3$$

$$(t^4)^2$$

$$(w^3)^2$$

$$(u^{20})^4$$

The power rule for exponents:

Completely simplify each of the following.

$$(ab)^4$$

$$(2x)^3$$

Product to a power rule for exponents:

Completely simplify each of the following.

$$(4x^5)^3$$

$$\left(-2w^2\right)^4$$

$$\left(3t^{12}\right)\left(-t^{64}\right)$$

$$\left(\frac{1}{2}r^7\right)^5$$

$$\left(-2s^4t\right)^7$$

Proportions

An equation that equates two fraction, $\frac{a}{b} = \frac{c}{d}$, is called a proportion; in this context each fraction is called a ratio. *Proportions and ratios are one of the most commonly used mathematical concepts in modern day society!*

Solve each proportion

$$\frac{x}{2} = \frac{7}{5}$$

$$\frac{4}{t} = \frac{9}{2.5}$$

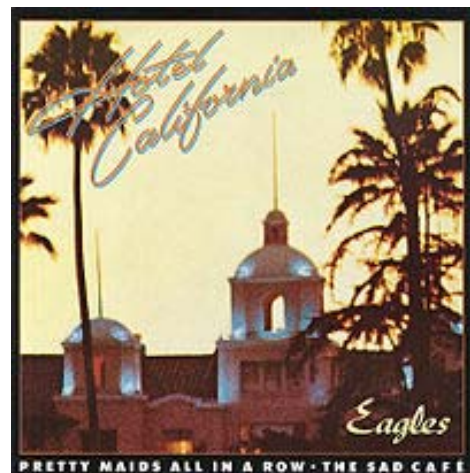
$$\frac{y - y_1}{x - x_1} = \frac{m}{1}; \text{ solve for } y$$

Four out of every 73 rock albums sold in 1977 was recorded by the Eagles. The Eagles sold a total of 2.6 million albums in 1977. How many rock albums total were sold in 1977.

Define your variable to be the **total number of rock albums sold**.

The equation comes from the proportion.

Solve and check your equation and then state your conclusion using a complete sentence.



Even goldfishes need their space; specifically, fish people recommend that you have no more than 3 goldfish per gallon of water in your tank. Suppose that you buy a spherical tank with a radius of 10 inches. What is the maximum number of goldfish you should put into this tank?

Use the formula $V = \frac{4}{3}\pi r^3$ to find the volume of the tank and then convert the volume to gallons.

There are 231 in³ in one gallon.

Dude, major space violation!

