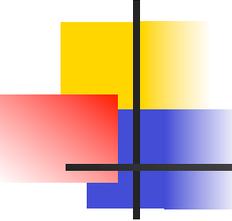


# RATIOS and PROPORTIONS

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# RATIOS & PROPORTIONS

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Are the following proportions?

$$\frac{4}{9} = \frac{3}{7}$$

$$\frac{4}{9} = \frac{9}{20}$$

$$\frac{4}{9} = \frac{12}{27}$$

$$\frac{4}{9} = \frac{8}{18}$$

$$4 \times 7 = 9 \times 3$$

$$4 \times 20 = 9 \times 9$$

$$4 \times 27 = 9 \times 12$$

$$4 \times 18 = 9 \times 8$$

$$28 = 27$$

$$80 = 81$$

$$108 = 108$$

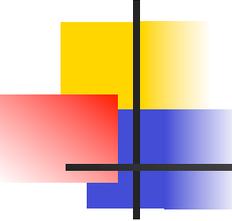
$$72 = 72$$

FALSE – Not a proportion

FALSE – Not a proportion

TRUE – this is a proportion

TRUE – this is a proportion



# RATIOS & PROPORTIONS

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Find the missing numbers to make the following proportions.

$$\frac{3}{\square} = \frac{9}{21}$$

$$3 \times 21 = x \times 9$$

$$\frac{63}{9} = \frac{9x}{9}$$

$$7 = x$$

$$\frac{\square}{4} = \frac{5}{10}$$

$$x \times 10 = 4 \times 5$$

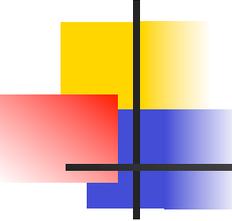
$$\frac{10x}{10} = \frac{20}{10}$$

$$x = 2$$

$$\frac{1}{4} = \frac{\cancel{3}}{\cancel{12}} = \frac{9}{\square}$$

$$1 \times x = 4 \times 9$$

$$x = 36$$



# RATIOS & PROPORTIONS

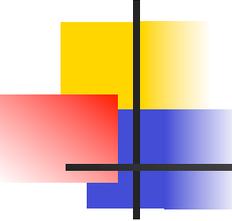
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- A **ratio** is a comparison of two numbers by division.
- To write ratios, use the word *to*, a colon, or a fraction bar.

EXAMPLE #1: You have an image 5" wide and 7" long. Write the ratio of width to length.

Words: 5 to 7      Colon: 5:7      Fraction:  $\frac{5}{7}$

When describing images we use 5x7



# RATIOS & PROPORTIONS

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- A **proportion** is a statement that two ratios are equal.

EXAMPLE#2: Is  $\frac{2}{5} = \frac{6}{15}$  a proportion?

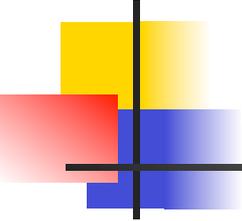
Find the cross products.

$$2 \times 15 = 5 \times 6$$

$$30 = 30$$

TRUE

If TRUE, the statement is a proportion.



# RATIOS & PROPORTIONS

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Or you can solve using equivalent fractions:

Reduce the fraction

$$\frac{\blacksquare}{5} = \frac{4}{10} = \frac{2}{5}$$

**Equivalent Fractions** are two fractions that represent the same number (they are equal)