



MasterMath

Number Sense

PROPORTIONS



Proportions



Proportions

Proportions

A proportion is an equation stating that two ratios are equivalent

$$\frac{1}{2} = \frac{2}{4}$$
$$\frac{1}{2} \neq \frac{2}{5}$$

Proportions

Proportions

Is $\frac{1}{3}$
proportional to $\frac{5}{15} = \frac{5 \div 5}{15 \div 5} = \frac{1}{3}$

Proportions

Proportions

Is $\frac{2}{6} = \frac{2 \div 2}{6 \div 2} = \frac{1}{3}$
proportional to $\frac{4}{16} = \frac{4 \div 4}{16 \div 4} = \frac{1}{4}$

Proportions

You try it!

Is $\frac{3}{5}$ proportional to $\frac{9}{15}$

Proportions

You try it!

Is $\frac{3}{5}$ proportional to $\frac{9}{15}$

$$\frac{9}{15} = \frac{9 \div 3}{15 \div 3} = \frac{3}{5}$$

Proportional

Cross Products

If 2 fractions are proportional, their cross products are equal.

$$\frac{1}{2} = \frac{2}{4}$$

$$1 \times 4 = 4 \quad 2 \times 2 = 4$$

Proportional

Cross Products

If 2 fractions are proportional, their cross products are equal.

$$\frac{1}{6} \neq \frac{2}{5}$$

$$1 \times 5 = 5 \quad 6 \times 2 = 12$$

Not Proportional

You try it!

Use cross products to determine if these fractions are Proportional: **5/8** and **15/25**



Proportional

You try it!

Use cross products to determine if these fractions are Proportional: **5/8** and **15/25**

$$\begin{array}{r} 5 \\ \hline 8 \end{array} \quad \begin{array}{r} 15 \\ \hline 25 \end{array}$$
$$5 \times 25 = 125$$
$$8 \times 15 = 120$$

Proportional

You try it!

You and your friend both have summer jobs helping your mothers. Your mother has you help her 3 hours per day, and pays you \$10. Your friend works 4 hours each day and his mom pays him \$12. Are your pay rates proportional?

Proportional

You try it!

You and your friend both have summer jobs helping your mothers. Your mother has you help her 3 hours per day, and pays you \$10. Your friend works 4 hours each day and his mom pays him \$12. Are your pay rates proportional?

$$\frac{3 \text{ hrs}}{\$10}$$

$$\frac{4 \text{ hrs}}{\$12} = \frac{1}{3}$$

$$\frac{3}{10} \quad \frac{4}{12}$$

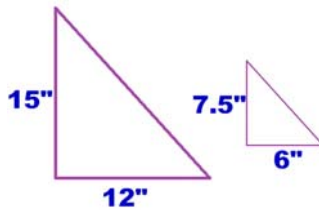
$$3 \times 12 = 36$$

$$4 \times 10 = 40$$

Proportional

You try it!

Are these triangles proportional? (hint: if the ratios of the base to the height of the two triangles are proportional, the triangles are proportional)



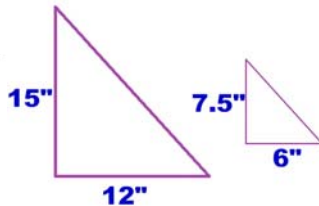
Proportional

You try it!

Are these triangles proportional? (hint: if the ratios of the base to the height of the two triangles are proportional, the triangles are proportional)

$$\frac{12}{15} = \frac{12 \div 3}{15 \div 3} = \frac{4}{5}$$

$$\frac{6}{7.5} = \frac{12}{15} = \frac{4}{5}$$



Proportional
