

Algebra Monday 10-8-12 Class Notes

Ch. 1-8 RATES, RATIOS, AND PROPORTIONS

Vocabulary: ratio, proportion, rates,
unit rates, dimensional analysis,
conversion factor, scale,
corresponding sides, similar shapes

$$\frac{a}{b} = \frac{c}{d}$$

$$d \cdot \frac{a}{b} = \frac{c}{d} \cdot d \quad \text{MULT. BY } d, \text{ GCE}$$

$$\frac{da}{b} = c$$

$$\cancel{b} \cdot \frac{da}{\cancel{b}} = c \cdot b \quad \text{mult. by } b, \text{ GCE}$$

NOTE: $da = ad$

$$ad = bc$$

NOTE: $cb = bc$

$$\therefore \frac{a}{b} = \frac{c}{d}$$

"the cross-products of a proportion
ARE EQUAL"

LOOK
FLASH
CARD!!

Ch. 1-9 Applications of Proportions

- Similar figures $\Rightarrow$ Corresponding sides are in proportion

$$\triangle ABC \sim \triangle DEF$$

$\uparrow$
 Similar

- Maps (drawn to scale)
- scale models (ex. "N" scale RR = 1:160)
- scale drawings (ex. blueprints)
- shadows
- many more!

ws
①

$$\frac{7}{m} = \frac{5}{10}$$

$$\frac{5m}{5} = \frac{70}{5}$$

$$m = 14$$

CR

$$\frac{7}{(14)} = \frac{5}{10} \quad \checkmark$$

①

$$\frac{3}{6} = \frac{6N}{10}$$

$$\frac{36N}{36} = \frac{30}{36}$$

$$N = \frac{5}{6}$$

$$\frac{3}{6} = \frac{5}{10} \quad \checkmark$$

$$\frac{1}{2} = \frac{3N}{5}$$

$$\frac{6N}{6} = \frac{5}{6}$$

$$N = \frac{5}{6}$$

(17)

$$\frac{7}{3} = \frac{N+5}{2}$$

$$3(N+5) = 14$$

$$\begin{array}{r} 3N + 15 = 14 \\ -15 \quad -15 \\ \hline 3N = -1 \end{array}$$

$$\frac{3N}{3} = \frac{-1}{3}$$

$$\boxed{N = -\frac{1}{3}}$$

ck

$$\frac{7}{3} \stackrel{?}{=} \frac{(-\frac{1}{3}) + 5}{2}$$

$$\frac{7}{3} \stackrel{?}{=} \frac{-\frac{1}{3} + \frac{15}{3}}{2}$$

$$\frac{7}{3} \stackrel{?}{=} \frac{\frac{14}{3}}{2}$$

$$\frac{7}{3} \stackrel{?}{=} \frac{14}{6} \quad \checkmark$$

(21)

$$\frac{5}{2} = \frac{b+3}{6}$$

$$2(b+3) = 30$$

$$\begin{array}{r} 2b + 6 = 30 \\ -6 \quad -6 \\ \hline 2b = 24 \end{array}$$

$$\frac{2b}{2} = \frac{24}{2}$$

$$\boxed{b = 12}$$

ck

$$\frac{5}{2} \stackrel{?}{=} \frac{(12) + 3}{6}$$

$$\frac{5}{2} \stackrel{?}{=} \frac{15}{6} \quad \checkmark$$

$$\textcircled{43} \quad \frac{4}{x} = \frac{10}{7x-1}$$

$$4(7x-1) = 10x$$

$$\begin{array}{r} 28x - 4 = 10x \\ -28x \quad -28x \end{array}$$

$$\frac{-4}{-18} = \frac{-18x}{-18}$$

$$\boxed{\frac{2}{9} = x}$$

$$\frac{4}{x} = \frac{10}{7x-1}$$

$$10x = 4(7x-1)$$

$$\begin{array}{r} 10x = 28x - 4 \\ -10x \quad -10x \end{array}$$

$$\begin{array}{r} 0 = 18x - 4 \\ +4 \quad +4 \end{array}$$

$$\frac{4}{18} = \frac{18x}{18}$$

$$\boxed{\frac{2}{9} = x}$$

CK

$$\frac{4}{\left(\frac{2}{9}\right)}$$

$$\frac{36}{2}$$

$$18$$

$$18 \div$$

$$\frac{?}{=}$$

$$\frac{?}{=}$$

$$\frac{?}{=}$$

$$\frac{?}{=}$$

$$\frac{10}{7\left(\frac{2}{9}\right)-1}$$

$$\frac{10}{\frac{5}{9}}$$

$$\frac{90}{5}$$

$$18$$

$$= \frac{10}{\frac{14}{9} - \frac{9}{9}}$$

$$\frac{10}{\frac{5}{9}}$$

$$\frac{90}{5}$$

$$18 \checkmark$$