

BE-1A Tuesday 10-26-10

① DEFINE A RATIO.

② DEFINE A PROPORTION.

③ WHAT PROPERTY OF PROPORTIONS
can be used to solve them?

④ Use the property of ③ to
solve: (A) $\frac{x}{7} = \frac{8}{2}$

$$(B) \frac{3}{5} = \frac{6}{2x}$$

• Homework Review: Pg 158 11-13, 19-22

Proportions CAN include grouping symbols, use the "cross-products are equal" property to solve:

⑥ $\frac{2x+4}{3} = \frac{5}{8}$

$\frac{(2x+4)}{3} = \frac{5}{8}$ CROSS
PRODUCTS

$$8(2x+4) = 15$$

$$16x + 32 = 15$$

$$\quad -32 \quad -32$$

$$\frac{16x}{16} = \frac{-17}{16}$$

$$\boxed{x = -\frac{17}{16}}$$

A SCALE is a type of RATIO used in maps, models, etc.

It is useful in proportions.

(EX) Map SCALE is 1 inch = 70 miles
How far is 3 inches on the map?

$$\begin{array}{l} \text{MAP} \rightarrow \frac{1 \text{ inch}}{70 \text{ miles}} = \frac{3 \text{ inches}}{d \text{ miles}} \leftarrow \text{MAP} \\ \text{REAL} \rightarrow \end{array}$$

$$1d = 3 \cdot 70 = 210 \text{ miles}$$

$$\begin{array}{l} \text{OR} \\ \text{REAL} \rightarrow \frac{70 \text{ miles}}{1 \text{ inch}} = \frac{d \text{ miles}}{3 \text{ inches}} \leftarrow \text{REAL} \\ \text{MAP} \rightarrow \end{array}$$

$$1d = 70 \cdot 3 = 210 \text{ miles}$$

*

BOTH SIDES OF = MUST MATCH EXACTLY

$$\frac{\text{miles}}{\text{inch}} = \frac{\text{miles}}{\text{inch}} \quad \text{OR} \quad \frac{\text{inches}}{\text{miles}} = \frac{\text{inches}}{\text{miles}}$$

(Ex)

A scale model car is 1:25

If the model's length is 8 in.,
how long is the real car?

$$\begin{array}{l} \text{model} \rightarrow \frac{1 \text{ in}}{25 \text{ in}} \\ \text{car} \rightarrow \frac{8 \text{ in}}{l} \end{array} =$$

$$1l = 8 \cdot 25$$

$$\boxed{l = 200 \text{ inches}} \approx \frac{200}{12}$$

$$= \frac{100}{6}$$

$$= \frac{50}{3} = \boxed{16.6 \text{ ft.}}$$

more useful

"RATES" ARE ONE OF THE MORE COMMON AND USEFUL TYPES OF PROBLEMS THAT PROPORTIONS ARE USEFUL FOR.

(EX) Bicycle $\Rightarrow$ 30 miles in 4 hours.
At this rate, how far can you ride in 6 hours?

$$\frac{30 \text{ mi}}{4 \text{ hours}} = \frac{d \text{ mi}}{6 \text{ hours}}$$

$$\frac{4d}{4} = \frac{180}{4}$$

$$\boxed{d = 45 \text{ miles}}$$

NOTE: $\frac{\text{mi}}{\text{hr}} = \frac{\text{mi}}{\text{hr}}$

OR $\frac{\text{hr}}{\text{mi}} = \frac{\text{hr}}{\text{mi}}$

"3 out of 4"
ARE KNOWN
3
NUMBERS

Homework:

Pg. 159 # 31 to 34
