

- **Ratio:** compares two Quantities using Division $\frac{380 \text{ miles}}{6.9 \text{ hrs}}$

5 girls : 7 boys $\frac{7 \text{ boys}}{12}$ 7 boys out of 12 students

- **Rate:** compare 2 quantities with different units. $\frac{380 \text{ miles}}{6.9 \text{ hrs}}$ $\frac{\$6.50}{2 \text{ boxes of cereal}}$

- **Unit Rate** simplify/divide the rate so the DENOMINATOR is 1.

$$\frac{380 \text{ miles}}{6.9 \text{ hr}} = \frac{55.1 \text{ mph}}{1 \text{ hr}} = \frac{55.1 \text{ mi.}}{1 \text{ hr.}}$$

• Common Rates and Unit Rates

Rate	rate	Unit Rate	Abbreviation	Name
I drove 876 miles in 13 hours.	$\frac{876 \text{ miles}}{13 \text{ hrs.}}$	$\frac{67.4 \text{ miles}}{1 \text{ hour}}$ (67.4 mph)	mph or $\frac{\text{mi}}{\text{hr}}$	Average speed
I drove 297 miles on 27 gallons of gas.	$\frac{297 \text{ mi}}{27 \text{ gal}}$	$\frac{11 \text{ mi}}{1 \text{ gal}}$ 11 mpg	mpg or $\frac{\text{mi}}{\text{gal}}$	Gas mileage
I paid \$11.60 for 4 pounds of candy.	$\frac{\$11.60}{4 \text{ lbs.}}$	$\frac{\$2.90}{1 \text{ lbs}}$	$\frac{\text{dollars}}{\text{weight}}$	unit price

Ex. 1: I went on a road trip! I traveled 1180 miles in 16 hours. How fast did I drive? How many miles did I drive in one hour?

$$\frac{1180 \text{ mi.}}{16 \text{ hrs.}} \div 16 = \frac{73.75 \text{ mph}}{1 \text{ hr}} = 73.75 \text{ mi}$$

Ex. 2: I filled up my car with gas a couple of days ago. My receipt shows that I paid \$20.03 for 11.583 gallons of gas. How much did I pay per gallon?

Pump#: 8
11.583G @
 BL R/Self

██████████
 \$ 20.03

$$\frac{\$20.03}{11.583 \text{ gal}} = \frac{\$1.73}{1 \text{ gal}}$$

Total \$ 20.03

Ex. 3: Anna loves to read. She usually reads 5 books every 2 weeks. How many books does she read each week? How many books would Anna read in 12 weeks?

$$\frac{5 \text{ books}}{2 \text{ weeks}} \rightarrow 5 \div 2 \rightarrow \frac{2.5 \text{ books}}{1 \text{ week}} \cdot 12 = \frac{30 \text{ books}}{12 \text{ weeks}}$$

or we could do $\frac{5 \text{ books} \cdot 6}{2 \text{ weeks} \cdot 6} = \frac{30 \text{ books}}{12 \text{ weeks}}$

Ex. 4: Lexi painted 2 faces in 8 minutes at the Crafts Fair. At this rate, how many faces can she paint in 40 minutes?

$$\frac{2 \text{ faces}}{8 \text{ mins}} \rightarrow \frac{1 \text{ face}}{4 \text{ min}} \text{ or } \frac{.25 \text{ faces}}{1 \text{ min}}$$

$$\text{or } \frac{8 \text{ mins} \cdot 5}{2 \text{ faces} \cdot 5} = \frac{40 \text{ min}}{10 \text{ faces}}$$

$$\frac{8 \text{ mins}}{2 \text{ faces}} \rightarrow \frac{4 \text{ min} \cdot 10}{1 \text{ face} \cdot 10} = \frac{40 \text{ min}}{10 \text{ faces}}$$