NOTE SHEET - Examples of problems using rates

Given 1 foot = 12 inches. Rate → $\frac{1 \text{ foot}}{12 \text{ inches}}$ or $\frac{12 \text{ inches}}{1 \text{ foot}}$

How many inches in 24 feet?

set up → $24 \text{ feet} \times \frac{12 \text{ inches}}{1 \text{ foot}}$

work → $24 \times 12 \div 1$

$288 \div 1 =$ **288 inches** (Answer)

How many feet in 24 inches?

set up → $24 \text{ inches} \times \frac{1 \text{ foot}}{12 \text{ inches}}$

work → $24 \times 1 \div 12$

$24 \div 12 =$ **2 feet** (Answer)

A car gets 25 miles per gallon of gasoline. Rate → $\frac{25 \text{ miles}}{1 \text{ gallon}}$ or $\frac{1 \text{ gallon}}{25 \text{ miles}}$

How many gallons are needed to travel 100 miles?

set up → $100 \text{ miles} \times \frac{1 \text{ gallon}}{25 \text{ miles}}$

work → $100 \times 1 \div 25$

$100 \div 25 =$ **4 gallons** (Answer)

How far can it travel on 100 gallons of gas?

set up → $100 \text{ gallons} \times \frac{25 \text{ miles}}{1 \text{ gallon}}$

work → $100 \times 25 \div 1$

$2500 \div 1 =$ **2,500 miles** (Answer)

You get paid $12 an hour. Rate → $\frac{\$12}{1 \text{ hour}}$ or $\frac{1 \text{ hour}}{\$12}$

How many hours do you need to work to make $48?

set up → $\$48 \times \frac{1 \text{ hour}}{\$12}$

work → $48 \times 1 \div 12$

$48 \div 12 =$ **4 hours** (Answer)

How much would you get paid for 48 hours of work?

set up → $48 \text{ hours} \times \frac{\$12}{1 \text{ hour}}$

work → $48 \times 12 \div 1$

$576 \div 1 =$ **$576** (Answer)

Oranges are being sold at a price of 3 for $1. Rate → $\frac{3 \text{ oranges}}{\$1}$ or $\frac{\$1}{3 \text{ oranges}}$

How much would 15 oranges cost?

set up → $15 \text{ oranges} \times \frac{\$1}{3 \text{ oranges}}$

work → $15 \times 1 \div 3$

$15 \div 3 =$ **$5** (Answer)

How many oranges can you get for $15?

set up → $\$15 \times \frac{3 \text{ oranges}}{\$1}$

work → $15 \times 3 \div 1$

$45 \div 1 =$ **45 oranges** (Answer)

NOTE SHEET - Examples of problems using rates

A school has a boy-to-girl ratio of 3 to 4. Rate → $\frac{3 \text{ boys}}{4 \text{ girls}}$ or $\frac{4 \text{ girls}}{3 \text{ boys}}$

If there are 120 girls, how many boys are there?

Set up → $120 \text{ girls} \times \frac{3 \text{ boys}}{4 \text{ girls}}$

Work → $120 \times 3 \div 4$

$360 \div 4 =$ **Answer: 90 boys**

If there are 120 boys, how many girls are there?

Set up → $120 \text{ boys} \times \frac{4 \text{ girls}}{3 \text{ boys}}$

Work → $120 \times 4 \div 3$

$480 \div 3 =$ **Answer: 160 girls**

There are 24 hours in a day. Rate → $\frac{24 \text{ hours}}{1 \text{ day}}$ or $\frac{1 \text{ day}}{24 \text{ hours}}$

How many days are in 48 hours?

Set up → $48 \text{ hours} \times \frac{1 \text{ day}}{24 \text{ hours}}$

Work → $48 \times 1 \div 24$

$48 \div 24 =$ **Answer: 2 days**

How many hours are in 48 days?

Set up → $48 \text{ days} \times \frac{24 \text{ hours}}{1 \text{ day}}$

Work → $48 \times 24 \div 1$

$1,152 \div 1 =$ **Answer: 1,152 hours**

Each student brings 4 apples. Rate → $\frac{1 \text{ student}}{4 \text{ apples}}$ or $\frac{4 \text{ apples}}{1 \text{ student}}$

How many apples do 12 students bring?

Set up → $12 \text{ students} \times \frac{4 \text{ apples}}{1 \text{ student}}$

Work → $12 \times 4 \div 1$

$48 \div 1 =$ **Answer: 48 apples**

How many students would we need to have 12 apples?

Set up → $12 \text{ apples} \times \frac{1 \text{ student}}{4 \text{ apples}}$

Work → $12 \times 1 \div 4$

$12 \div 4 =$ **Answer: 3 students**

A pint is equal to 2 cups. Rate → $\frac{1 \text{ pint}}{2 \text{ cups}}$ or $\frac{2 \text{ cups}}{1 \text{ pint}}$

How many pints are equal to 10 cups?

Set up → $10 \text{ cups} \times \frac{1 \text{ pint}}{2 \text{ cups}}$

Work → $10 \times 1 \div 2$

$10 \div 2 =$ **Answer: 5 pints**

How many cups are equal to 10 pints?

Set up → $10 \text{ pints} \times \frac{2 \text{ cups}}{1 \text{ pint}}$

Work → $10 \times 2 \div 1$

$20 \div 1 =$ **Answer: 20 cups**