14.2

Proportions

Today's Learning Goals:

- Use equivalent ratios to determine whether two ratios form a proportion.
- Use the Cross Products Property to determine whether two ratios form a proportion.

Do Now

Jarrod has the following:

What is the ratio (in fractional form) of apples to oranges?

What is the ratio (in fractional form) of oranges to apples?

If Jarrod gets two more apples, how many oranges should he get so that it is the still the same ratio? Explain.

Review - Ratios

- **A ratio is the comparison of two quantities with the same unit.**
- **A ratio can be written in three ways:**
  - **As a quotient (fraction in simplest form)**
  - **As two numbers separated by a colon (:)**
  - **As two numbers separated by the word "to"**

Review - Ratios

Write the ratio of 25 miles to 40 miles in simplest form.

Which is equivalent to the ratio of 1 soccer ball to 3 basketball?

A 

B 

C 

D 

E 

Which ratio shows the ratio of 3 butterflies to 1 apple?

A 

B 

C 

D 

E 

Review - Rates

- A rate is the comparison of two quantities with different units.
- A rate is written as a quotient (fraction) in simplest form.
- Note: rates have units.

Write the rate of 25 yards to 5 seconds in simplest form.

What are Proportions?

Proportions are EQUAL RATIOS

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

"3 is to 5 as 6 is to 10"

Methods to check if proportional

$\frac{6}{8}$ ***and*** $\frac{12}{16}$

Multiply a number to numerator and denominator one ratio to make it equal to the other one	
Simplify both ratios to simplest form	
Convert each into decimals	

Methods to check if proportional

$\frac{6}{8}$ ***and*** $\frac{12}{16}$

Cross-Multiply. The cross-products should be equal to each other.	

Practice

Tell whether the following are proportional. Indicate how you figured it out.

1. $\frac{1}{2}, \frac{5}{10}$

2. $\frac{4}{6}, \frac{18}{24}$

Practice

Tell whether the following are proportional. Indicate how you figured it out.

3. $\frac{10}{3}, \frac{5}{6}$

4. $\frac{25}{20}, \frac{15}{12}$

Practice

Tell whether the following are proportional. Indicate how you figured it out.

5) 7 inches in 9 hours; 42 inches in 54 hours

6) 12 players from 21 teams; 15 players from 24 teams

Practice

7) **You swim your first 4 laps in 2.4 minutes. You complete 16 laps in 12 minutes. Is the number of laps proportional to your time?**