Name _____ Date _____

Solving Word Problems with Ratios and Proportions

Ratios

A ratio shows a relationship of one amount to another. Ratios may be written several ways. The ratio 3 tablespoons of fertilizer to 2 gallons of water may be written as:

- 3 tablespoons:2 gallons OR 3:2 with a colon
- 3 tablespoons/2 gallons OR 3/2 as a fraction

Write as ratios and fractions.

1. One teacher for every 23 students.

Ratio _____ Fraction _____

2. Add 2 parts cornstarch to 3 parts water.

Ratio _____ Fraction _____

3. One inch on the map equals 27 miles.

Ratio _____ Fraction _____

4. One foot equals 30.5 centimeters.

Ratio _____ Fraction _____

Proportions

A proportion is an equation with two equal ratios. One way to check equal ratios is to **cross multiply**. In a proportion the two products will be equal.

$\frac{2}{3} = \frac{8}{12}$

$3(8) = 2(12)$
$24 = 24$

By using this relationship, it is possible to write an equation when one piece of the proportion is missing or unknown.

Workers picked 600 boxes of strawberries from 10 rows. How many boxes can they pick from 20 rows?

Write a proportion: $\frac{600}{10} = \frac{x}{20}$

Cross multiply: $x(10) = 600(20)$
$x = 12{,}000/10$
$x = 1{,}200$

Workers can pick 1,200 boxes from 20 rows.

Set up a proportion for each problem and solve.

5. Two pounds of nails are used for each 100 square feet of roofing. How many pounds of nails will the roofer need for 1,200 square feet of roof?

Proportion _____ Answer _____

6. Celina's tape measure is marked in centimeters. She is building a birdhouse from plans marked in inches. She needs a board 22 in. long. Celina knows there are 2.54 cm in 1 in. How can she figure out how many centimeters are 22 in.?

Proportion _____ Answer _____

7. On a map 1 inch equals 27 miles. How many miles are in 3 inches?

Proportion _____ Answer _____

8. There are 1,419 ml in 1.5 qts. of corn oil. How many ml are in a one pint (0.5 qt.) bottle?

Proportion _____ Answer _____

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