Ratio, Proportion, and Percent

A _____ is a comparison between two quantities using a quotient, written:

a to b, $a:b$, or $\frac{a}{b}$

ex: 2 bananas to 5 strawberries can be written $\frac{2}{5}$

A _____ says that two ratios are equal.

In general, a proportion $\frac{a}{b} = \frac{c}{d}$ is true if and only if $ad = bc$.

(Note: ad and bc are called cross products.)

Ex 1.

Decide whether each proportion is true or false.

$\frac{3}{4} = \frac{15}{20}$

$\frac{1}{3} = \frac{33}{100}$

Ex 2.

Solve the proportion $\frac{x}{6} = \frac{35}{42}$.

Ex 3.

Solve the equation $\frac{x-2}{5} = \frac{x+1}{3}$.

Ex 4.
Twenty gallons of gasoline costs $77.00. How much would 27 gallons of the same gasoline cost?

A _____ is a ratio where the second number is always 100.
Recall: To use a percent in a calculation, first move the decimal point two places to the left.
ex: $75\% =$ _____, $3\% =$ _____, $0.375 =$ _____, $2.63 =$ _____

Ex 5.
What is 15% of 600?

Ex 6.
32% of what number is 64?

Ex 7.
90 is what percent of 360?

Ex 8.

A calculator with a regular price of $\$13$ is on sale this week at 15% off. Find the amount of the discount and the sale price of the calculator.

Ex 9.

Abraham scored 36 points on a test, which was 90% of the possible points. How many possible points were on the test?

Practice

1. Decide whether the proportion $\frac{4}{12} = \frac{7}{21}$ is true or false.
2. Solve the equation $\frac{2x+8}{4} = \frac{3x-9}{3}$.
3. If 7 shirts cost $87.50, find the cost of 11 shirts.
4. What is 26% of 480?
5. 18% of what number is 108?
6. 8 is what percent of 64?
7. Anna saved $1950, which was 65% of the amount she needed for a used car. What was the total amount she needed for the car?