Date: _____

Using Two-Term Ratios

A *part-to-part ratio* compares different parts of a group to each other.
The ratio of white circles to grey circles is 6:3 or 6 to 3.
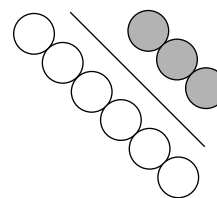The ratio in lowest terms is 2:1 or 2 to 1.
A *part-to-whole ratio* compares one part of a group to the whole group.
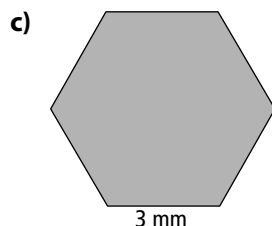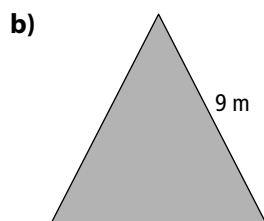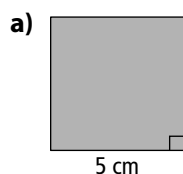The ratio of white circles to the total number of circles is 6:9 or 6 to 9.
The ratio in lowest terms is 2:3 or 2 to 3.
A part-to-whole ratio can be written as a fraction, a decimal, and a percent.
The ratio of $\frac{\text{grey}}{\text{total}}$ is $\frac{3}{9}$ or $\frac{1}{3}$, $0.\overline{3}$, $33.\overline{3}\%$.

1. For each regular polygon, what is the ratio of one side length to the perimeter? Use ratio notation.

a)

5 cm

b)

9 m

c)

3 mm

2. Write each ratio in #1 as an equivalent ratio in lowest terms. Show your thinking.

3. Write each ratio in #1 as a decimal and a percent. Show your calculations.

4. Identify the missing value to make an equivalent fraction. Justify your response.

a) $\frac{3}{4} = \frac{\square}{8}$

b) $\frac{4}{7} = \frac{12}{\square}$

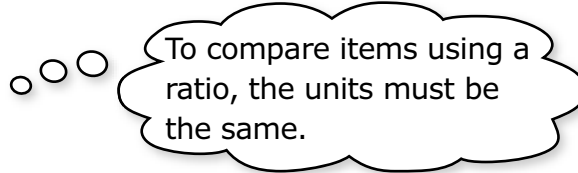c) $\frac{\square}{5} = \frac{3}{15}$

d) $\frac{7}{\square} = \frac{49}{14}$

Using Proportional Reasoning

A *proportion* is a relationship that says two ratios are equal.
A proportion can be expressed in fraction form.

$\times 7$

$\frac{1}{2} = \frac{7}{14}$

$\times 7$

$\div 5$

$\frac{5 \text{ cm}}{45 \text{ cm}} = \frac{1 \text{ cm}}{9 \text{ cm}}$

$\div 5$

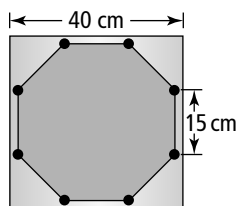To compare items using a ratio, the units must be the same.

5. Set up a proportion for each situation.

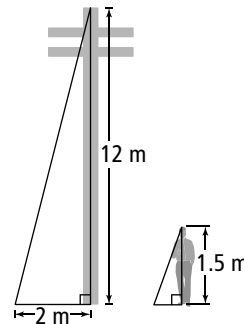**a)** On a diagram of a machine part, 2 cm represents 200 cm. The actual length of the part is 100 cm. This distance is 1 cm on the diagram.

b) On a map, 1 cm represents 500 m. Linda wants to ride her bike 3500 m. This distance is 7 cm on the map.

c) A diagram of a hot tub shows the actual 3-m length of one side of the hot tub as 15 cm. The 8-m length of the square deck around the hot tub is shown as 40 cm.

6. A telephone pole that is 12 m tall casts a shadow that is 2 m long. What is the length of the shadow cast by a student who is 1.5 m tall?

12 m

1.5 m

2 m

7. The distance between Town B and Town C is 56 km. The distance shown on the map is 7 cm in length. What is the actual distance between Town A and Town C if it is represented on the same map by a length of 12.5 cm?

A

B

C

56 km