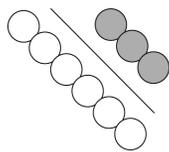


Using Two-Term Ratios

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.

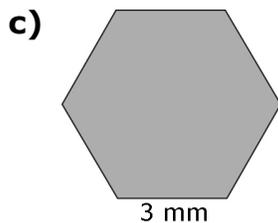
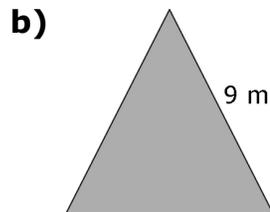
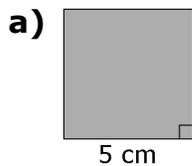
A **part-to-whole ratio** compares one part of a group to the whole group.

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 $\frac{1}{3}$, $0.\bar{3}$, $33.\bar{3}\%$.

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



2. Write each ratio in #1 as an equivalent ratio in lowest terms.
3. Write each ratio in #1 as a decimal and a percent.

4. Identify the missing value to make an equivalent fraction.

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

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

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

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

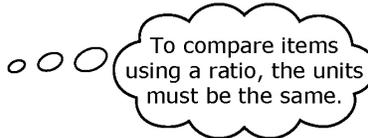
Using Proportional Reasoning

A **proportion** is a relationship that says that two ratios are equal.

A proportion can be expressed in fraction form.

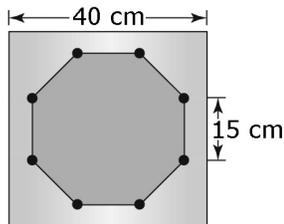
$$\begin{array}{c} \times 7 \\ \frac{1}{2} = \frac{7}{14} \\ \times 7 \end{array}$$

$$\begin{array}{c} \div 5 \\ \frac{5 \text{ cm}}{45 \text{ cm}} = \frac{1 \text{ cm}}{9 \text{ cm}} \\ \div 5 \end{array}$$

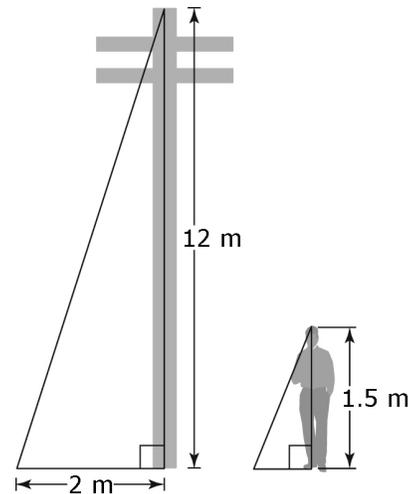


5. Set up a proportion for each situation.

- 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?



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?

