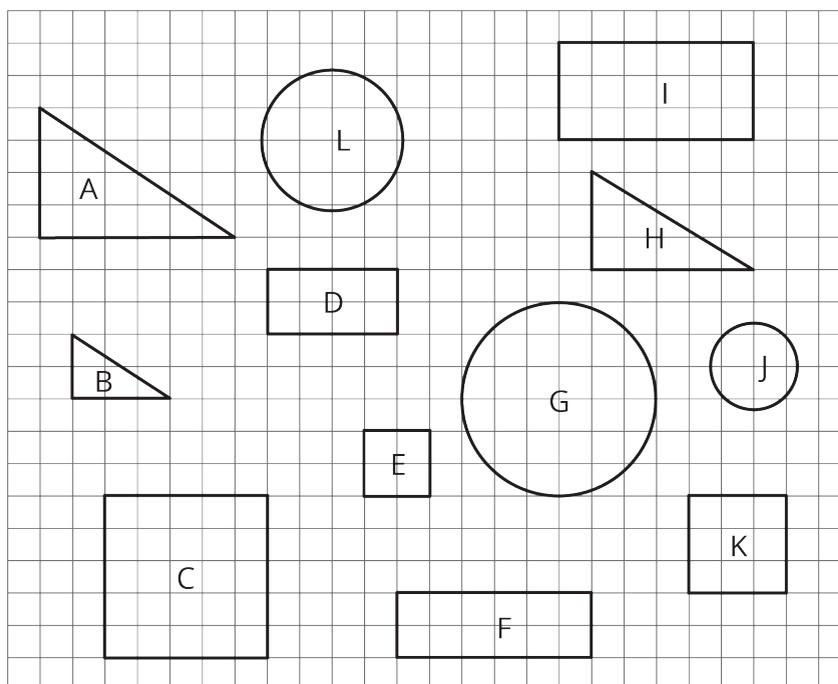


# Lesson 1: Lots of Flags

## 1.1: Scaled or Not?

1. Which of the geometric objects are scaled versions of each other?



2. Pick two of the objects that are scaled copies and find the scale factor.

## 1.2: Flags Are Many Sizes

One standard size for the United States flag is 19 feet by 10 feet. On a flag of this size, the union (the blue rectangle in the top-left corner) is  $7\frac{5}{8}$  feet by  $5\frac{3}{8}$  feet.

There are many places that display flags of different sizes.

- Many classrooms display a U.S. flag.
- Flags are often displayed on stamps.
- There was a flag on the space shuttle.
- Astronauts on the Apollo missions had a flag on a shoulder patch.



1. Choose one of the four options and decide on a size that would be appropriate for this flag. Find the size of the union.

2. Share your answer with another group that used a different option. What do your dimensions have in common?

## 1.3: What Percentage Is the Union?

On a U.S. flag that is 19 feet by 10 feet, the union is  $7\frac{5}{8}$  feet by  $5\frac{3}{8}$  feet. For each question, first estimate the answer and then compute the actual percentage.

1. What **percentage** of the flag is taken up by the union?

2. What percentage of the flag is red? Be prepared to share your reasoning.

### Are you ready for more?

The largest U.S. flag in the world is 225 feet by 505 feet.

1. Is the ratio of the length to the width equivalent to 1 : 1.9, the ratio for official government flags?

2. If a square yard of the flag weighs about 3.8 ounces, how much does the entire flag weigh in pounds?

### Lesson 1 Summary

Imagine you have a painting that is 15 feet wide and 5 feet high. To sketch a scaled copy of the painting, the ratio of the width and height of a scaled copy must be equivalent to 15 : 5. What is the height of a scaled copy that is 2 feet across?

width	height
15	5
2	$h$

We know that the height is  $\frac{1}{3}$  the width, so  $h = \frac{1}{3} \cdot 2$  or  $\frac{2}{3}$ .

Sometimes ratios include fractions and decimals. We will be working with these kinds of ratios in the next few lessons.