

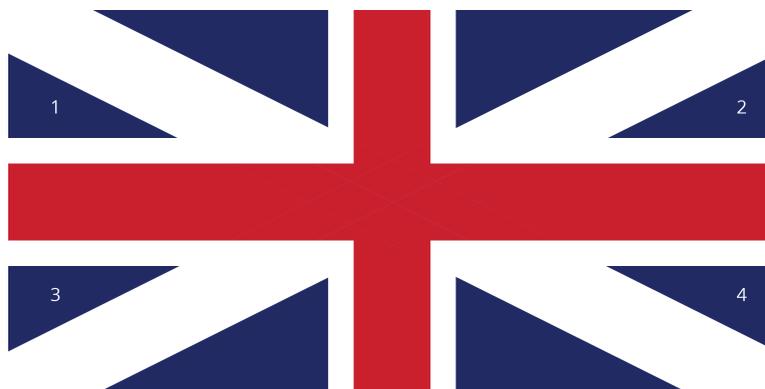
## Lesson 9 Practice Problems

1. Here is the design for the flag of Trinidad and Tobago.



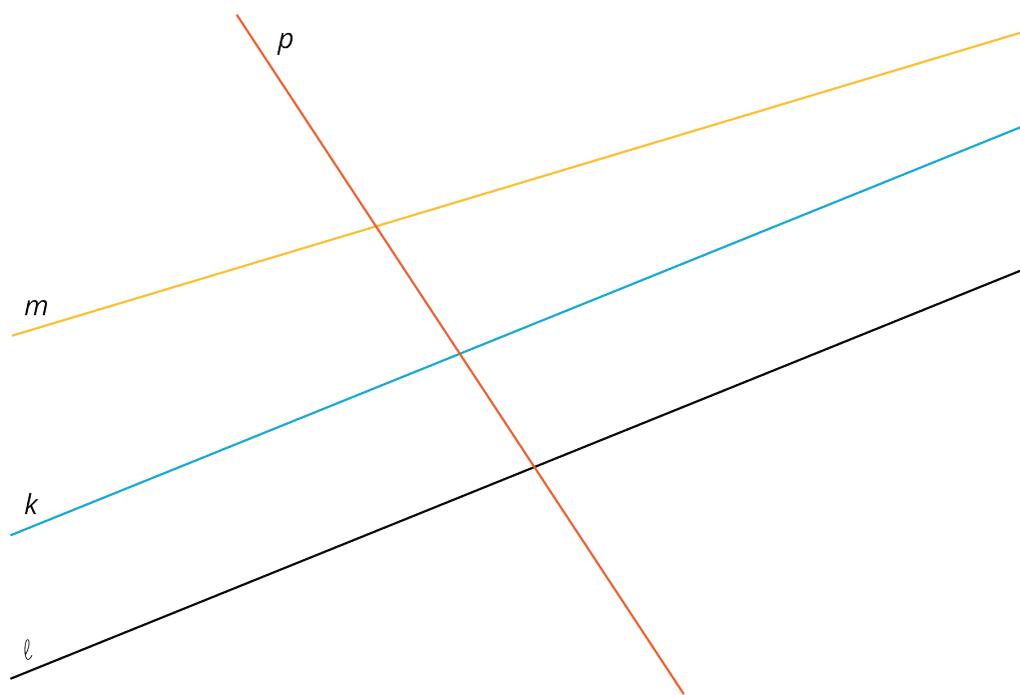
Describe a sequence of translations, rotations, and reflections that take the lower left triangle to the upper right triangle.

2. Here is a picture of an older version of the flag of Great Britain. There is a rigid transformation that takes Triangle 1 to Triangle 2, another that takes Triangle 1 to Triangle 3, and another that takes Triangle 1 to Triangle 4.



- Measure the lengths of the sides in Triangles 1 and 2. What do you notice?
- What are the side lengths of Triangle 3? Explain how you know.
- Do all eight triangles in the flag have the same area? Explain how you know.

3. a. Which of the lines in the picture is parallel to line  $\ell$ ? Explain how you know.



- b. Explain how to translate, rotate or reflect line  $\ell$  to obtain line  $k$ .

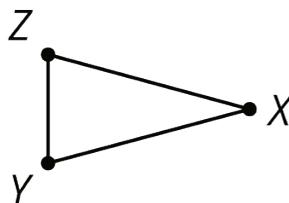
- c. Explain how to translate, rotate or reflect line  $\ell$  to obtain line  $p$ .

(From Unit 1, Lesson 8.)

4. Point  $A$  has coordinates  $(3, 4)$ . After a translation 4 units left, a reflection across the  $x$ -axis, and a translation 2 units down, what are the coordinates of the image?

(From Unit 1, Lesson 5.)

5. Here is triangle  $XYZ$ :



Draw these three rotations of triangle  $XYZ$  together.

- Rotate triangle  $XYZ$  90 degrees clockwise around  $Z$ .
- Rotate triangle  $XYZ$  180 degrees around  $Z$ .
- Rotate triangle  $XYZ$  270 degrees clockwise around  $Z$ .

(From Unit 1, Lesson 7.)