

- 18.** A reflection over a vertical line that passes through the top vertex and the base of the triangle will divide the triangle into two equal halves and, thus, map it onto itself.
- 19.** A reflection over a vertical line that passes through the center of both circles
- A reflection over a horizontal line that passes through the point where both circles intersect
- A 180° rotation
- 20.** Any line that extends from a vertex to the angle opposite the vertex divides the figure into equal halves. There are 5 vertices, so there are five lines of symmetry.
- 21.** A rotation of 45° maps the figure onto itself. The figure also has rotational symmetry for any multiple of 45° that is less than 360° . These angles are 90° , 135° , 180° , 225° , 270° and 315° .
- 22.** The sides of a square are perpendicular to each other. This means that rotations of 90° create an identical image. The rotational angles are 90° , 180° and 270° .
- 23.** Lines that pass through a vertex of the outer triangle and the opposite vertex of the inner triangle divide the figure into equal halves. There are three lines that do this. The outer triangle has three equal sides, so one-third of a full rotation will create an identical image. Two-thirds of a full rotation will also. The angles of rotation are 120° and 240° .
- 24.** Answer may vary. Sample: DID can have horizontal reflectional symmetry; MOM has vertical reflectional symmetry, 8118 can have both horizontal and vertical reflectional symmetry as well as 180° rotational and point symmetry.

- 25.** You could visualize folding each flag along a line of reflection to find reflection symmetry. For example, fold the Jamaican flag along a horizontal line that passes through the center of the "X."

To find rotational symmetry, you could visualize rotating the flag about its center. For example, rotate the Jamaican flag 180° to see that it has rotational symmetry. If neither of these methods reveals symmetry, then there is not any. For example, folding the Saint Kitts and Nevis flag along any line will not create any equal halves. Rotating it about its center will never create an identical image. This means that this flag does not have any symmetry.

- 26.** The structure of each snowflake is based on a regular hexagon. In a hexagon, lines that pass through opposite vertices or midpoints of opposite sides create equal halves. This means that a hexagon has six lines of reflection. A hexagon has six equal sides, so rotating it one-sixth of a full rotation will create an identical image. This means that there is rotational symmetry at 60° or any multiple of 60° .