PLANE FIGURES: CLOSED FIGURE RELATIONSHIPS

Plane figures in regards to closed figure relationships refer to the **coordinate plane and congruent figures, circles, circle graphs, transformations and symmetry**.

- **Congruent figures have the same size and shape.** By using coordinates on the coordinate plane, figures can be proven congruent.

- **Circles** are figures that have a center, a diameter and radius. Circles can be congruent if the diameter is the same.

- **Circle g**ircle graph c…he circle or the p…

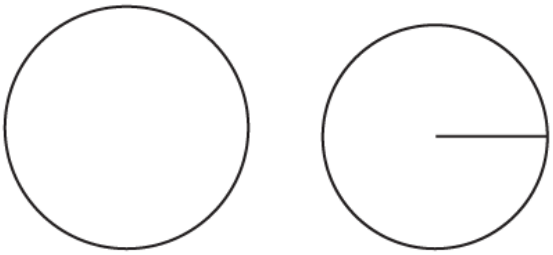
- **Transf…ons and reflecti…** the coordinate plane. A **translation** of a figure keeps the size and shape of a figure, but moves it to a different location. A **rotation** turns a figure about a point on the figure. A **reflection** of a figure produces a mirror image of the figure when it is reflected in a given line.

- **Lines of symmetry** break a figure into equal parts that are mirror images of each other.

How to use plane figures: closed figure relationships

Congruent figures have the same size and shape. Two figures drawn on a coordinate plane can be congruent. Circles can be congruent if they also have the same size and shape.

For example, are the circles congruent?



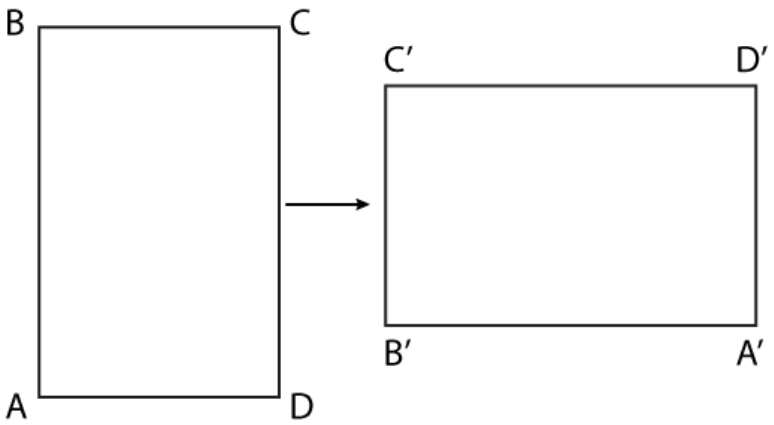
The circles are not congruent because the diameters are diffe… a diam…

Circle gra… …rcle graph has a secti… …e found by multiplying … …nd the percent. F… …en with different color hair and 350 have brown hair, what percent would that be?

Ex. 350 ÷ 500 = .7 or 70% have brown hair.

Transformations are translations, rotations and reflections.

- **A translation moves a figure while maintaining its size and shape**. If a figure is drawn in the coordinate plane, the coordinates can be translated or moved. A translation of 4 units to the right and 3 units up can be found by adding 4 to the x coordinate and adding 3 to the y coordinate of each point in the original figure.
- **A rotation turns a figure** a certain number of degrees about a point in a figure. For example, what would a 90° counter-clockwise rotation about point A look like?



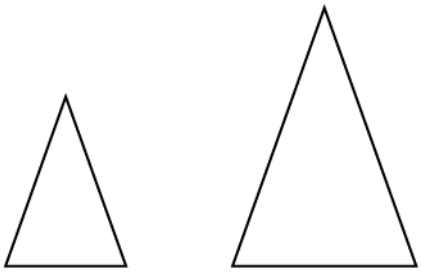
The rectangle when rotated, retains its size and shape, but is turned. The point B has been turned 90° to become point B'.

- **A reflection is a mirror image of a figure** about a line. For example, the letter T reflected in the y-axis would look as follows:

Line of symmetry breaks a figure into equal parts that are mirror images. A heart has vertical line symmetry because it is the only way to break a heart into equal parts that are mirror images of each other.

Try This!

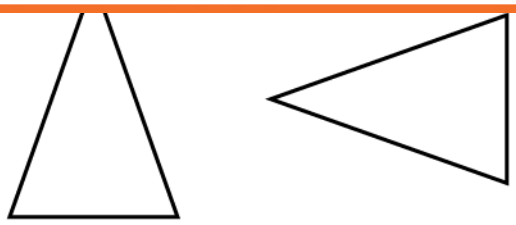
1. Are the figures shown **congruent**?



2. If a **circle graph** represents 150 students and 99 are girls, what percent are girls?

3. The coordinates of a triangle are (1, 2), (5, 2) and ((3, 4). What are the [illegible] of 3 to the left and [illegible]

4. Do the [illegible]



5. What does the letter U in quadrant I, look like when it is **reflected** in the x-axis?

6. How many **lines of symmetry** does the letter **I** have?