

## 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.

• C  
C  
• C  
C  
• T  
r  
c  
s  
t  
p  
re  
line.



**PREVIEW**

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

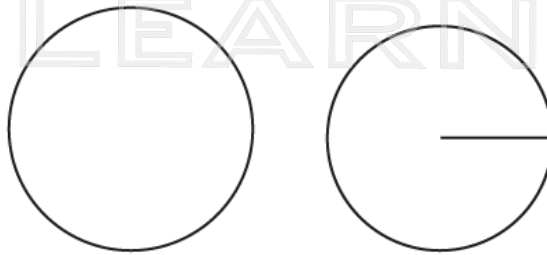
- **Lines of symmetry** break a figure into equal parts that are mirror images of each other.



## 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?



Circ  
has  
mul  
perc  
diffe  
be?



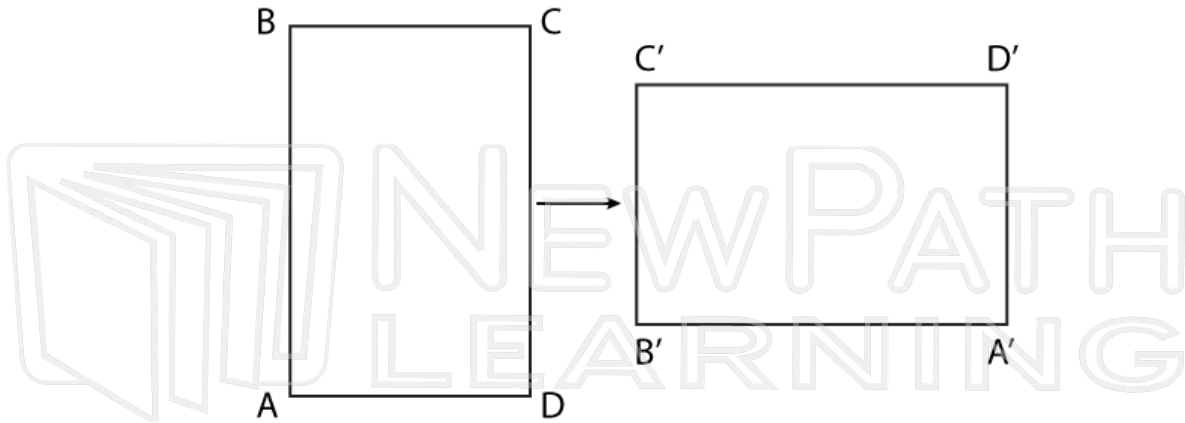
**PREVIEW**

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

aph  
d by  
n  
at

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  $90^\circ$  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  $90^\circ$  to become point B'.

• A  
e



PREVIEW

Please [Sign In](#) or [Sign Up](#) to download the printable version of this worksheet

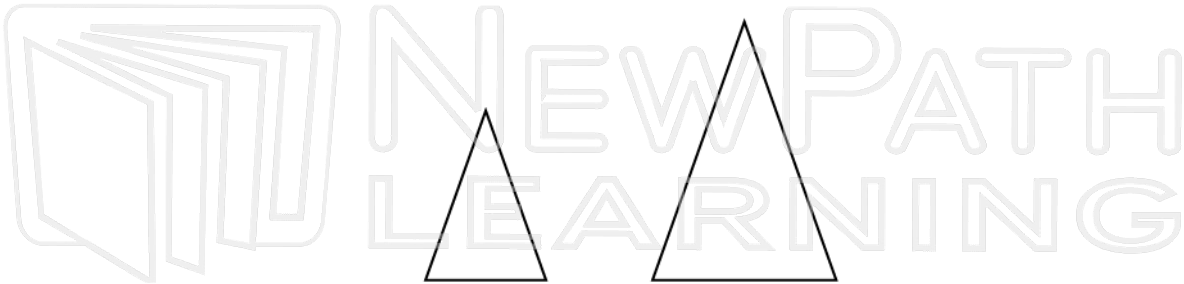
S:

**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 area of a square is 144 cm<sup>2</sup>. What is the length of one side of the square?

4. Draw a circle with a radius of 3 cm. Calculate its circumference and area.



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?