



## Rotating Around Axis

Name: \_\_\_\_\_

Rotate each shape. Answer with the new coordinates.

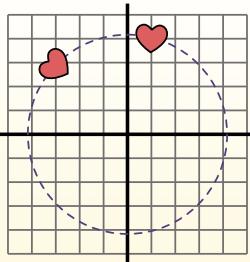
$\theta$  = Angle of Rotation

### Rotation Formula

$$x_1 = x \cos(\theta) - y \sin(\theta)$$

$$y_1 = x \sin(\theta) + y \cos(\theta)$$

In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.



1.  $x_1 = 1 \cos(60) - 4 \sin(60)$   
 $y_1 = 1 \sin(60) + 4 \cos(60)$

2.  $x_1 = 1 \times 0.5 - 4 \times 0.87$   
 $y_1 = 1 \times 0.87 + 4 \times 0.5$

3.  $x_1 = 0.5 - 3.48$   
 $y_1 = 0.87 + 2$

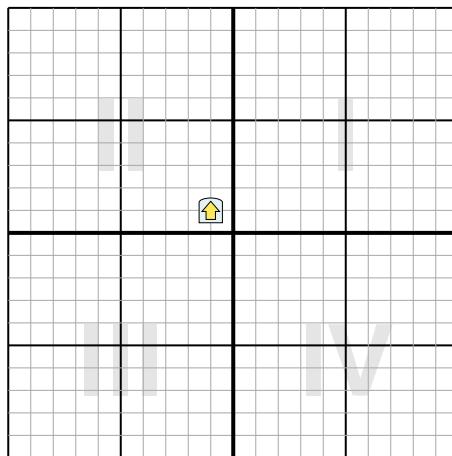
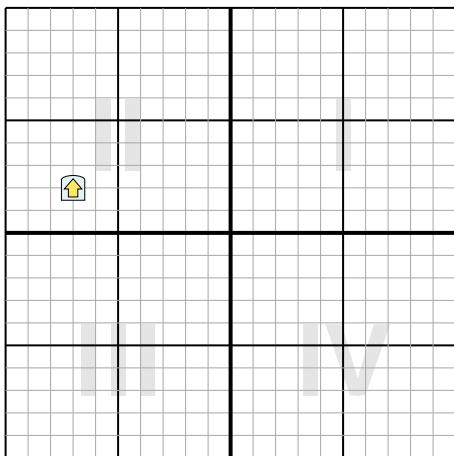
4.  $x_1 = -2.98$   
 $y_1 = 2.87$

5. Looking at shape, we can see that rotated 60° it is at (-2.98, 2.87).

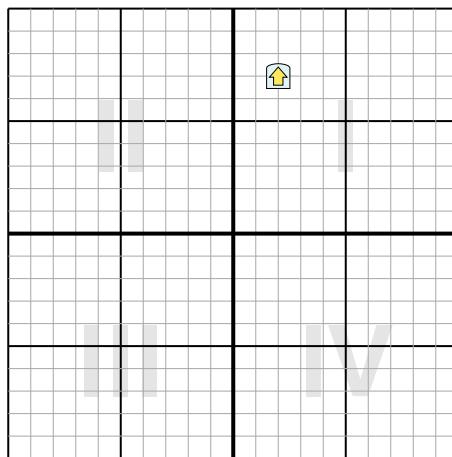
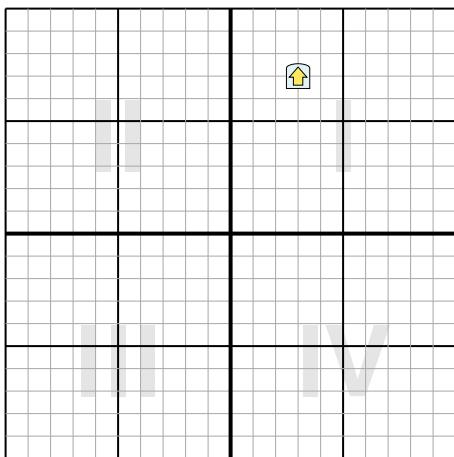
## Answers

1. \_\_\_\_\_  
 2. \_\_\_\_\_  
 3. \_\_\_\_\_  
 4. \_\_\_\_\_

1) Rotate the shape  $-247^\circ$  around the point (0,0).  
 2) Rotate the shape  $272^\circ$  around the point (0,0).



3) Rotate the shape  $200^\circ$  around the point (0,0).  
 4) Rotate the shape  $63^\circ$  around the point (0,0).





## Rotating Around Axis

Name: **Answer Key**

Rotate each shape. Answer with the new coordinates.

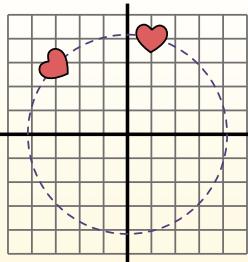
$\theta$  = Angle of Rotation

### Rotation Formula

$$x_1 = x \cos(\theta) - y \sin(\theta)$$

$$y_1 = x \sin(\theta) + y \cos(\theta)$$

In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.



$$1. \quad x_1 = 1 \cos(60) - 4 \sin(60)$$

$$y_1 = 1 \sin(60) + 4 \cos(60)$$

$$2. \quad x_1 = 1 \times 0.5 - 4 \times 0.87$$

$$y_1 = 1 \times 0.87 + 4 \times 0.5$$

$$3. \quad x_1 = 0.5 - 3.48$$

$$y_1 = 0.87 + 2$$

$$4. \quad x_1 = -2.98$$

$$y_1 = 2.87$$

5. Looking at shape, we can see that rotated 60° it is at (-2.98, 2.87).

## Answers

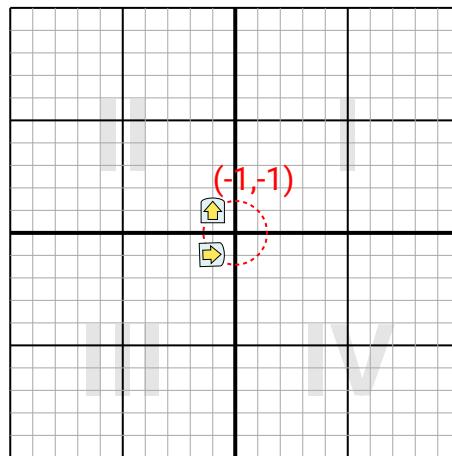
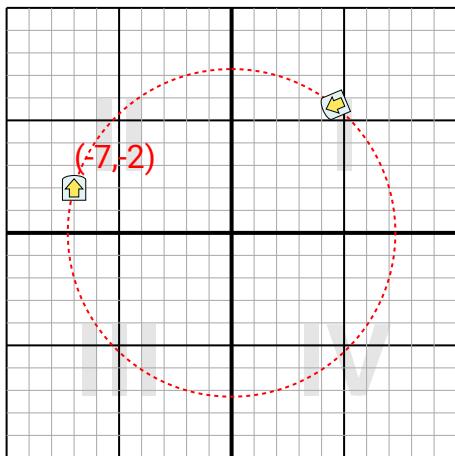
1. **(4.6,5.7)**

2. **(-1,-1)**

3. **(-5.2,-5.6)**

4. **(7.1,1.4)**

1) Rotate the shape  $-247^\circ$  around the point (0,0). 2) Rotate the shape  $272^\circ$  around the point (0,0).



3) Rotate the shape  $200^\circ$  around the point (0,0). 4) Rotate the shape  $63^\circ$  around the point (0,0).

