

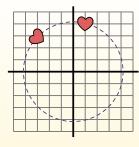
Rotate each shape. Answer as the new coordinates.

 $\theta$  = Angle of Rotation

## **Rotation Formula**

$$x1 = x \times \cos(\theta) - y \times \sin(\theta)$$
$$y1 = x \times \sin(\theta) + y \times \cos(\theta)$$

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



1.  $x1 = 1 \times \cos(60) - 4 \times \sin(60)$ 

$$y1 = 1 \times \sin(60) + 4 \times \cos(60)$$

2. 
$$x1 = 1 \times 0.5 - 4 \times 0.87$$
  
 $y1 = 1 \times 0.87 + 4 \times 0.5$ 

$$3. x1 = 0.5 - 3.48$$

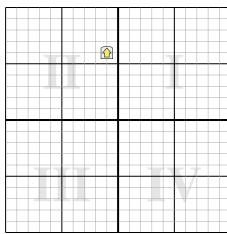
$$y1 = 0.87 + 2$$

**4.** 
$$x1 = -2.98$$

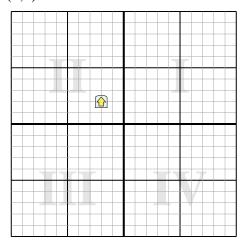
$$y1 = -2.98$$
  
 $y1 = 2.87$ 

**5.** Looking at shape, we can see that rotated 
$$60^{\circ}$$
 it is at (-2.98, 2.87).

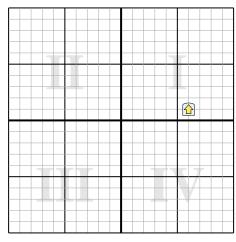
1) Rotate the shape 291° around the point (0,0)..



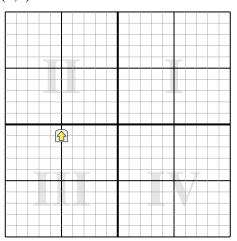
2) Rotate the shape  $134^{\circ}$  around the point (0,0)..



3) Rotate the shape 234° around the point (0,0)..



4) Rotate the shape  $71^{\circ}$  around the point (0,0)..



1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

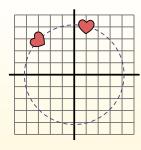
4. \_\_\_\_\_

 $\theta$  = Angle of Rotation

## **Rotation Formula**

$$x1 = x \times \cos(\theta) - y \times \sin(\theta)$$
  
$$y1 = x \times \sin(\theta) + y \times \cos(\theta)$$

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



1.  $x1 = 1 \times \cos(60) - 4 \times \sin(60)$  $y1 = 1 \times \sin(60) + 4 \times \cos(60)$ 

Name:

**2.**  $x1 = 1 \times 0.5 - 4 \times 0.87$ 

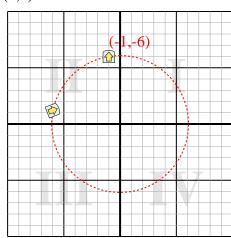
$$y1 = 1 \times 0.87 + 4 \times 0.5$$

- 3. x1 = 0.5 3.48y1 = 0.87 + 2
- **4.** x1 = -2.98 y1 = 2.87
- **5.** Looking at shape, we can see that rotated  $60^{\circ}$  it is at (-2.98, 2.87).

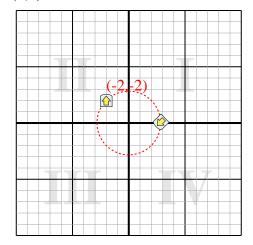
**Answers** 

- (-**6**,**1**.**2**)
- **(2.8,0)**
- <sub>3.</sub> (-4.3,4.3)
- 4. **(-2.6,4.4)**

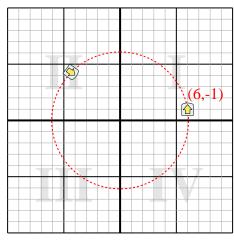
1) Rotate the shape  $291^{\circ}$  around the point (0,0)..



2) Rotate the shape  $134^{\circ}$  around the point (0,0)..



3) Rotate the shape  $234^{\circ}$  around the point (0,0)..



4) Rotate the shape  $71^{\circ}$  around the point (0,0)..

