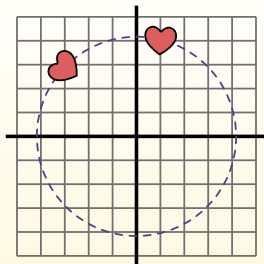


**Rotate each shape. Answer as the new coordinates.** θ = Angle of Rotation**Rotation Formula**

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

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

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



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

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

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

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

$$3. \quad x1 = 0.5 - 3.48$$

$$y1 = 0.87 + 2$$

$$4. \quad x1 = -2.98$$

$$y1 = 2.87$$

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

Answers

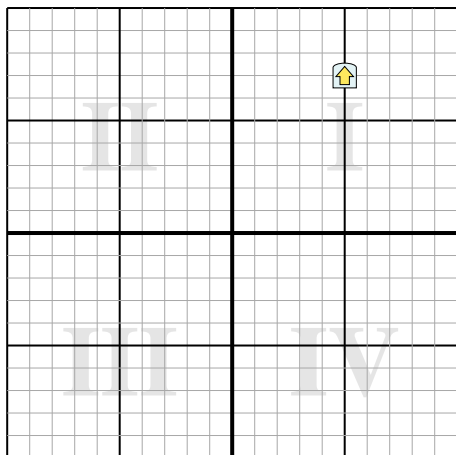
1. _____

2. _____

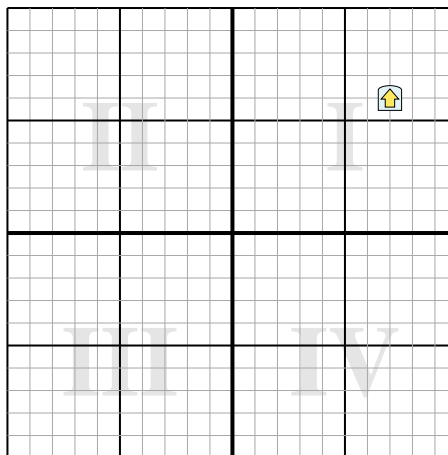
3. _____

4. _____

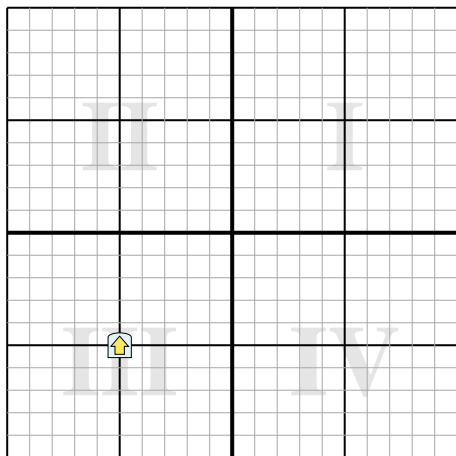
- 1) Rotate the shape -52° around the point (0,0).



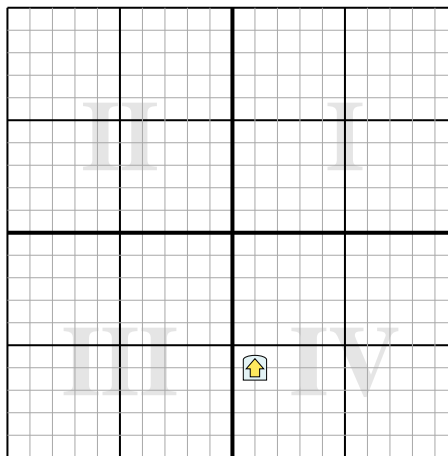
- 2) Rotate the shape -154° around the point (0,0).



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



- 4) Rotate the shape 86° around the point (0,0).

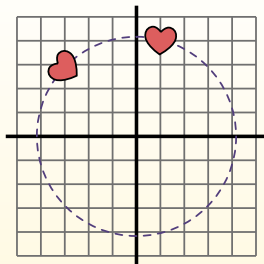


**Rotate each shape. Answer as the new coordinates.** θ = Angle of Rotation**Rotation Formula**

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

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

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



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

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

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

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

3. $x1 = 0.5 - 3.48$

$$y1 = 0.87 + 2$$

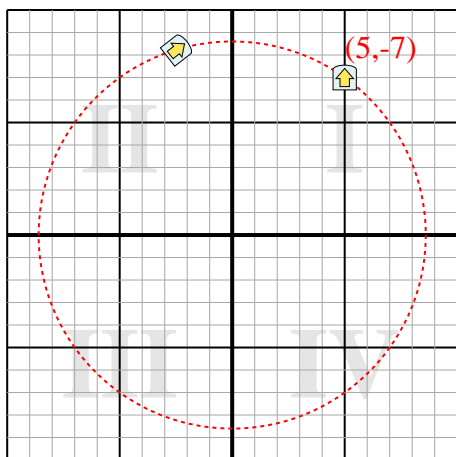
4. $x1 = -2.98$

$$y1 = 2.87$$

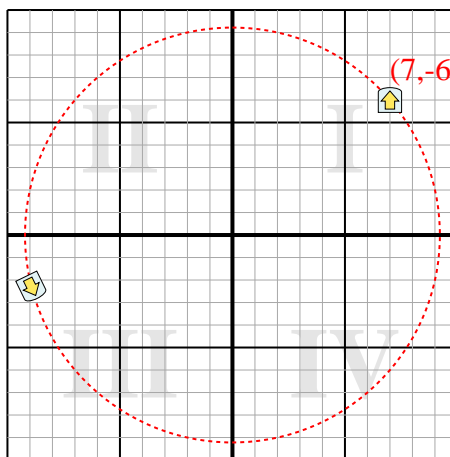
5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

Answers1. **(-2.4,8.2)**2. **(-8.9,-2.3)**3. **(-6.5,2.9)**4. **(-5.9,-1.4)**

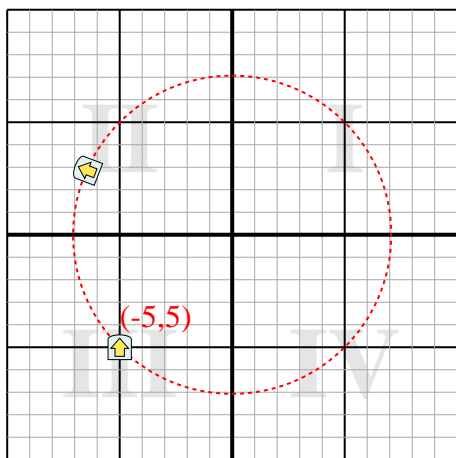
1) Rotate the shape -52° around the point (0,0).



2) Rotate the shape -154° around the point (0,0).



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



4) Rotate the shape 86° around the point (0,0).

