Rotate each shape. Answer as the new coordinates.

θ = Angle of Rotation

Rotation Formula
x1 = x×cos(θ) - y×sin(θ)
y1 = x×sin(θ) + y×cos(θ)

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×cos(60) - 4×sin(60)
y1 = 1×sin(60) + 4×cos(60)

2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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).

1. _____

2. _____

3. _____

4. _____

1) Rotate the shape -282° around the point (0,0).

2) Rotate the shape 127° around the point (0,0).
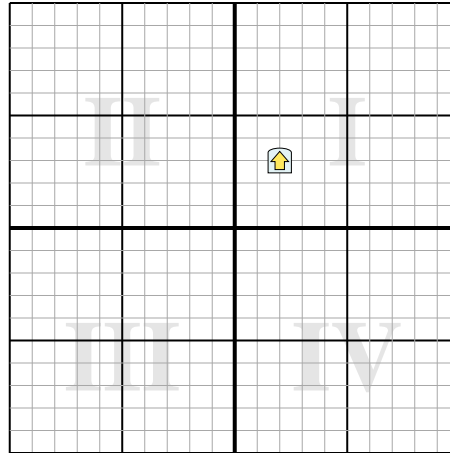
3) Rotate the shape 305° around the point (0,0).
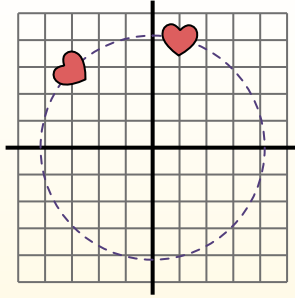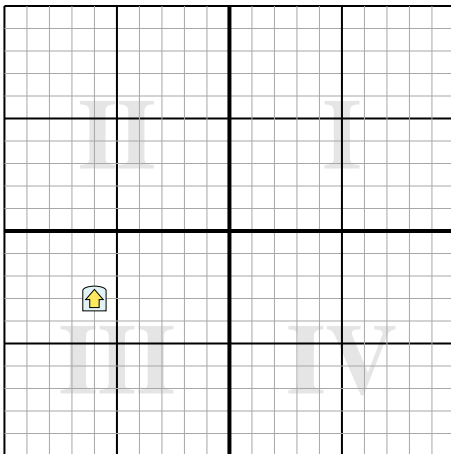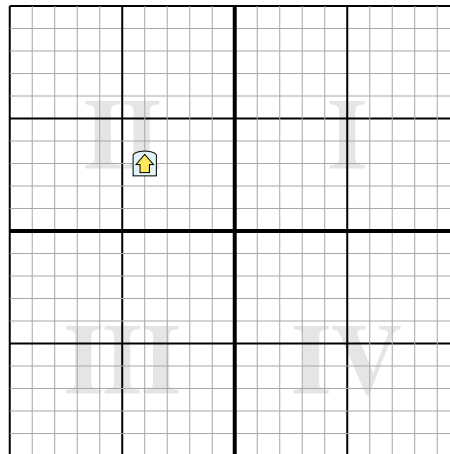

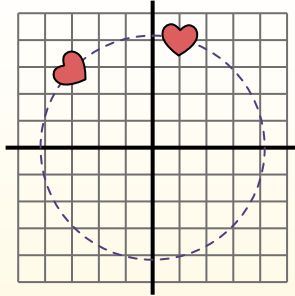**4)** Rotate the shape 279° around the point (0,0).

Name:

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

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

3. $x1 = 0.5 - 3.48$
$y1 = 0.87 + 2$

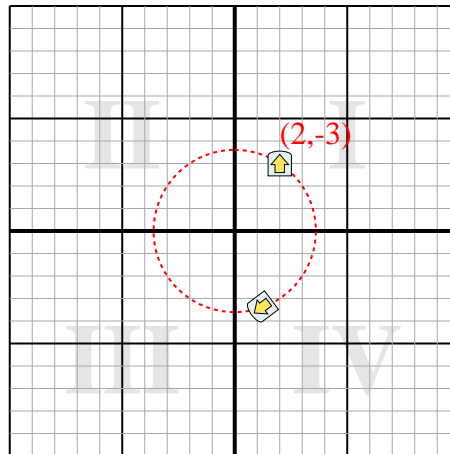**4.** $x1 = -2.98$
$y1 = 2.87$

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

Answers

1. **(5.4,8.3)**
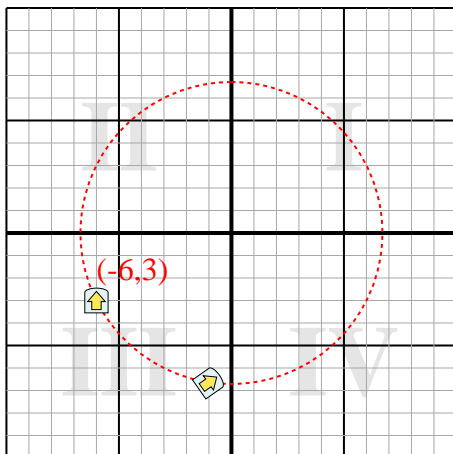
2. **(1.2,-3.4)**

3. **(-1,-6.6)**

4. **(-3.6,-3.5)**

1) Rotate the shape -282° around the point (0,0).

(-7,-7)

2) Rotate the shape 127° around the point (0,0).

(2,-3)

3) Rotate the shape 305° around the point (0,0).

(-6,3)

4) Rotate the shape 279° around the point (0,0).

(-4,-3)

Math

1-4 | 75 | 50 | 25 | 0