Name:

**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 231° around the point (0,0).

**2)** Rotate the shape -205° around the point (0,0).
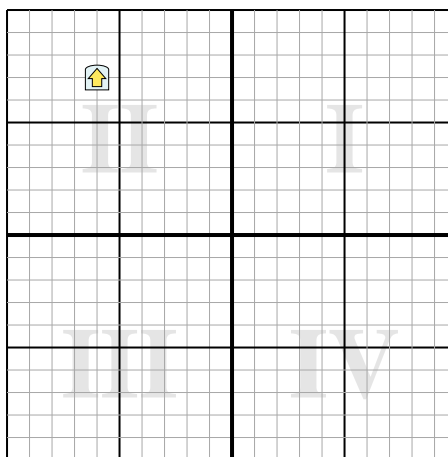
**3)** Rotate the shape -134° around the point (0,0).

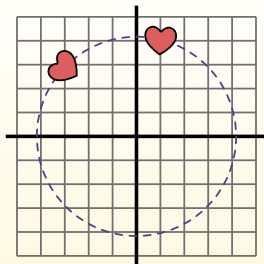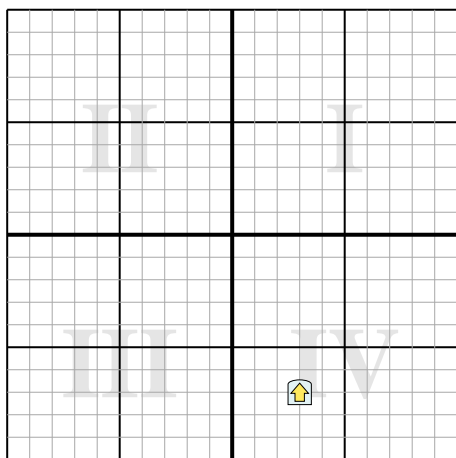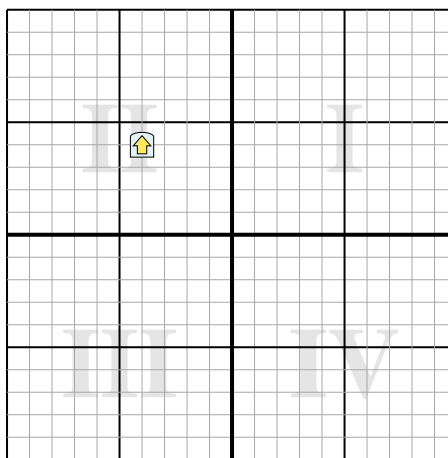**4)** Rotate the shape -224° around the point (0,0).

1-4 | 75 | 50 | 25 | 0
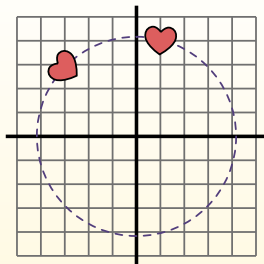
Name:

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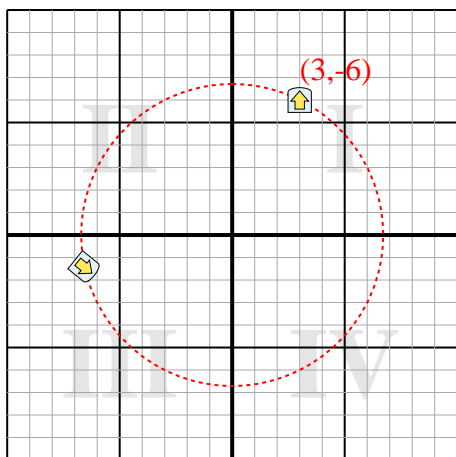
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

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).
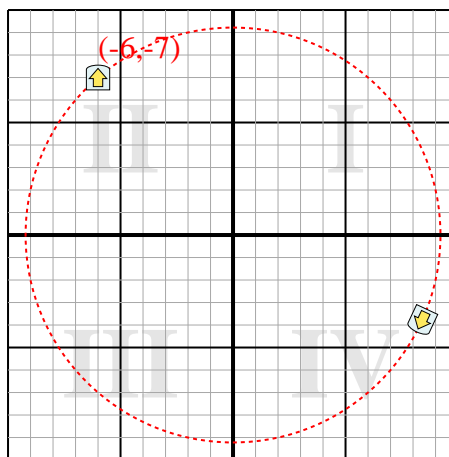
1. **(-6.6,-1.4)**

2. **(8.4,-3.8)**

3. **(3,7)**

4. **(5.7,-0.1)**

**1)** Rotate the shape 231° around the point (0,0).

(3,-6)

**2)** Rotate the shape -205° around the point (0,0).

(-6,-7)

**3)** Rotate the shape -134° around the point (0,0).

(3,7)

**4)** Rotate the shape -224° around the point (0,0).

(-4,-4)