Name: _____

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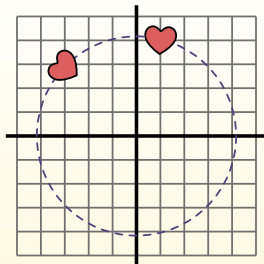
θ = Angle of Rotation

Rotation Formula
$x1 = x \times cos(θ) - y \times sin(θ)$
$y1 = x \times sin(θ) + y \times cos(θ)$

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

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

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. _____

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

Answer Key

Rotate each shape. Answer as the new coordinates.

θ = Angle of Rotation

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

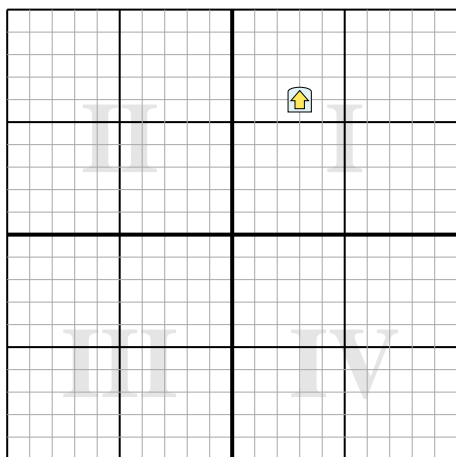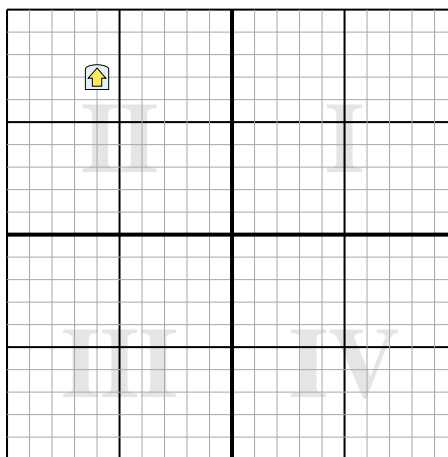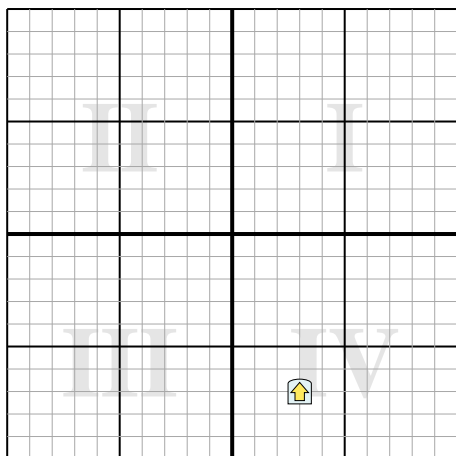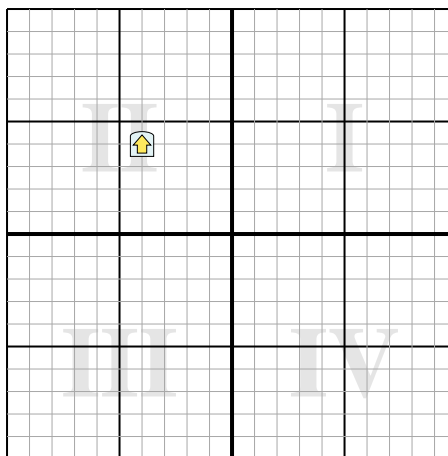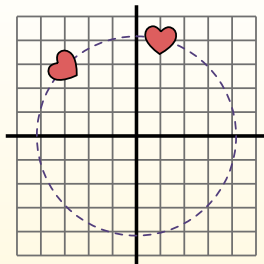In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.
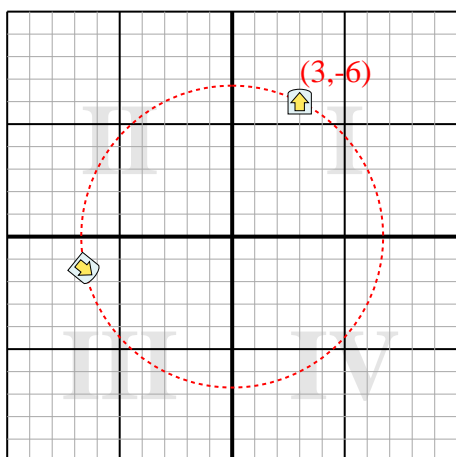
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
   $y1 = 1 \times 0.87 + 4 \times 0.5$
3. $x1 = 0.5 - 3.48$
   $y1 = 0.87 + 2$
4. $x1 = -2.98$
   $y1 = 2.87$
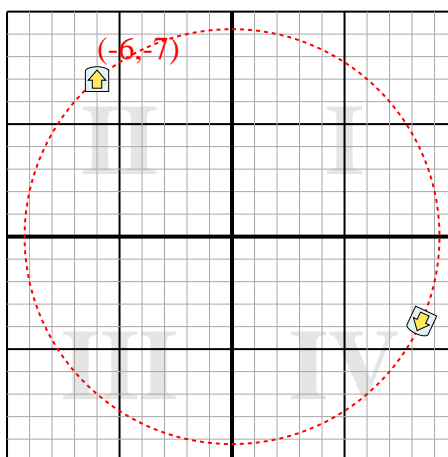5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

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

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

3. **(3,7)**

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

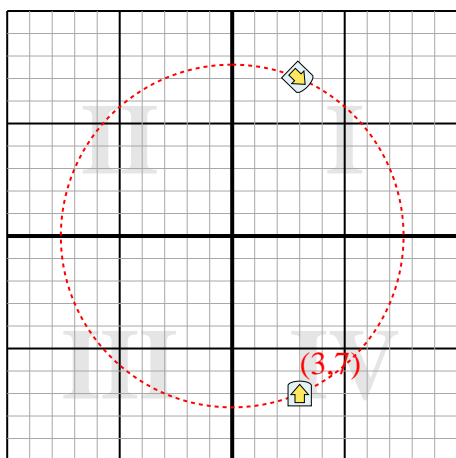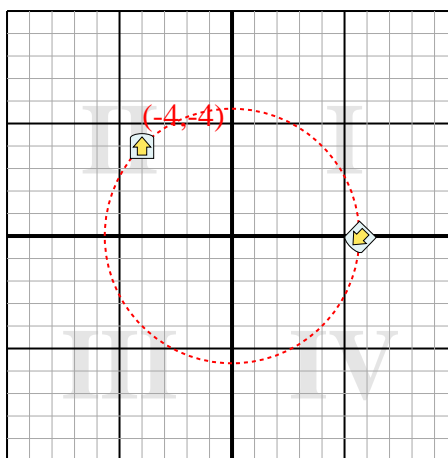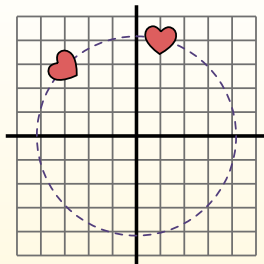**1)** Rotate the shape 231° around the point (0,0).

(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)

Math

1-4 | 75 | 50 | 25 | 0

Rotating Around Axis

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 76° around the point (0,0).

2) Rotate the shape 192° around the point (0,0).

3) Rotate the shape 290° around the point (0,0).

4) Rotate the shape -62° around the point (0,0).

1-4 | 75 | 50 | 25 | 0

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°.
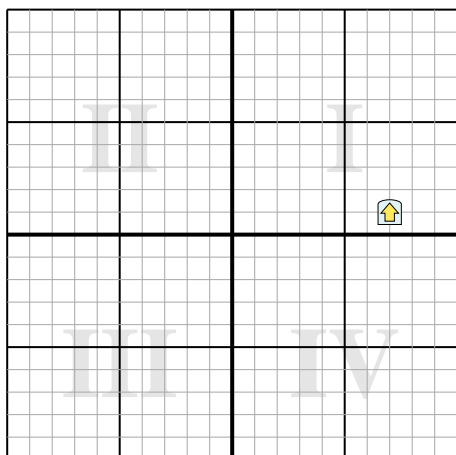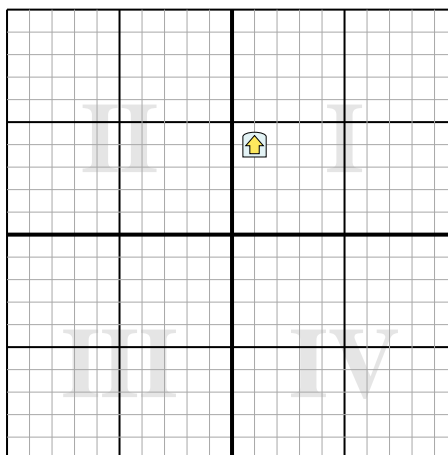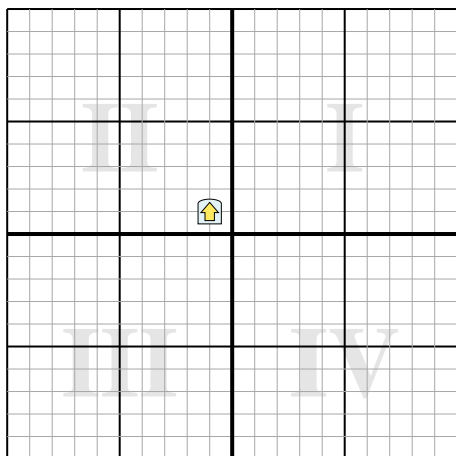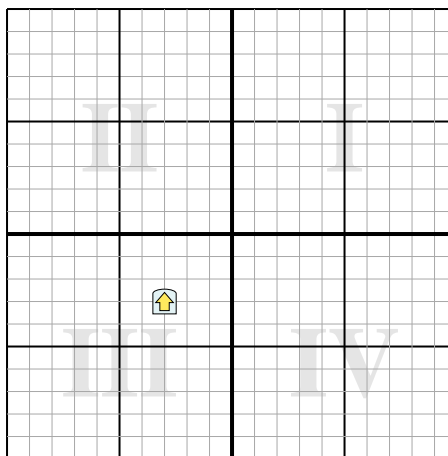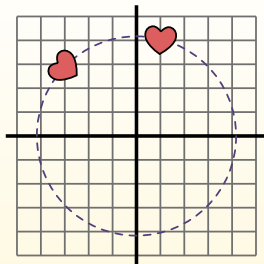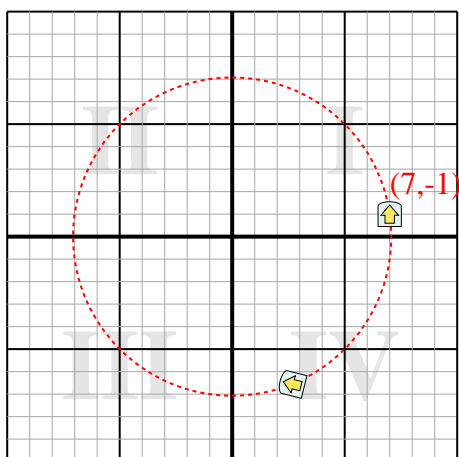
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
   $y1 = 1 \times 0.87 + 4 \times 0.5$
3. $x1 = 0.5 - 3.48$
   $y1 = 0.87 + 2$
4. $x1 = -2.98$
   $y1 = 2.87$
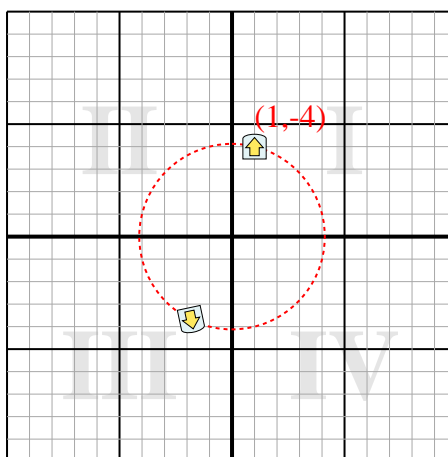5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

1. **(2.7,-6.6)**
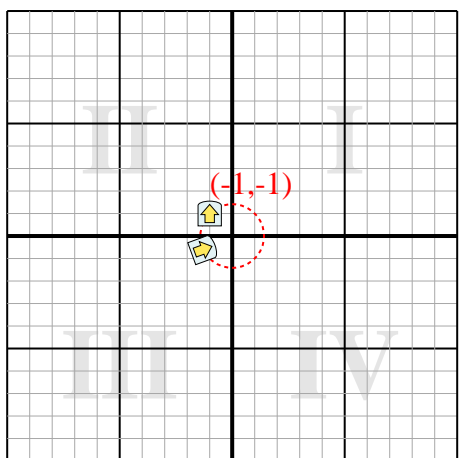
2. **(-1.8,-3.7)**

3. **(-1.3,-0.6)**

4. **(1.2,-4.1)**
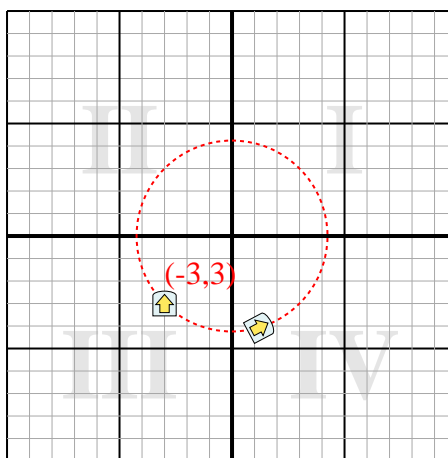
1) Rotate the shape 76° around the point (0,0).
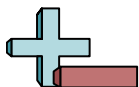
(7,-1)

2) Rotate the shape 192° around the point (0,0).

(1,-4)

3) Rotate the shape 290° around the point (0,0).

(-1,-1)

4) Rotate the shape -62° around the point (0,0).

(-3,3)

Rotating Around Axis	Name:

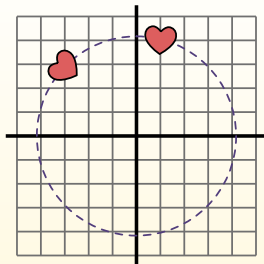**Rotate each shape. Answer as the new coordinates.**

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°.
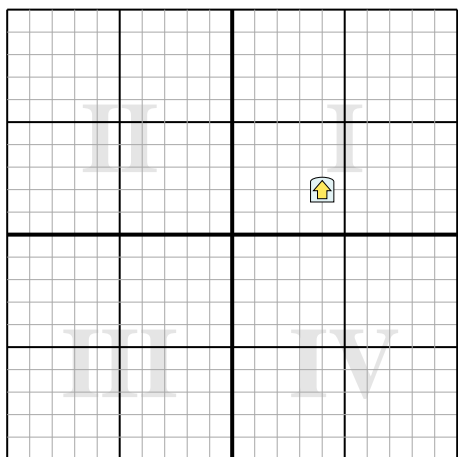
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
   $y1 = 1 \times 0.87 + 4 \times 0.5$
3. $x1 = 0.5 - 3.48$
   $y1 = 0.87 + 2$
4. $x1 = -2.98$
   $y1 = 2.87$
5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).
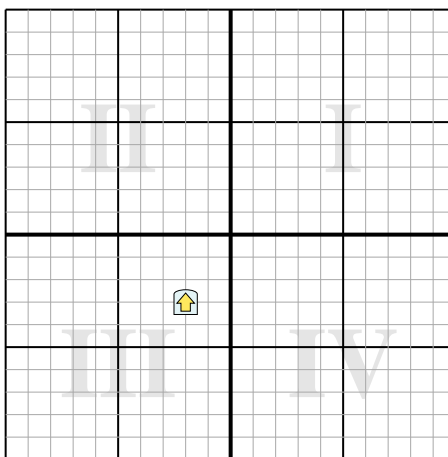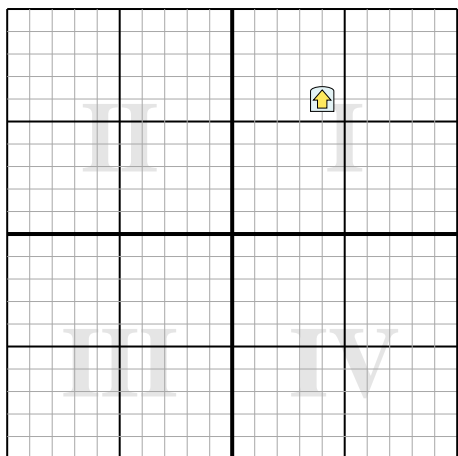
1. _____
2. _____
3. _____
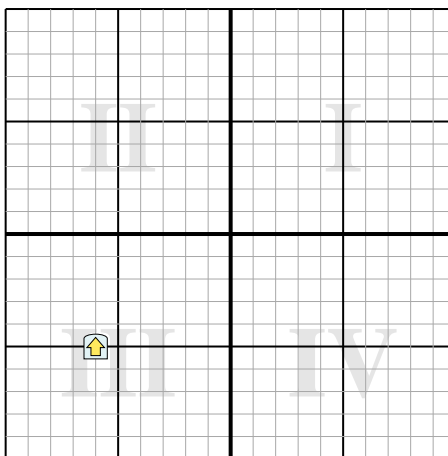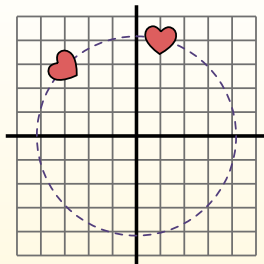4. _____

1) Rotate the shape -230° around the point (0,0).

2) Rotate the shape 149° around the point (0,0).

3) Rotate the shape -184° around the point (0,0).

4) Rotate the shape 216° 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

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

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

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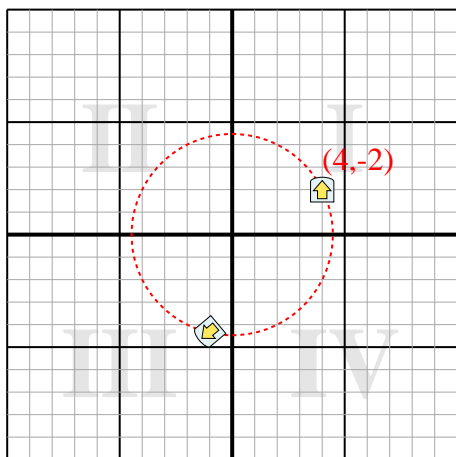 $y1 = 1×sin(60) + 4×cos(60)$

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

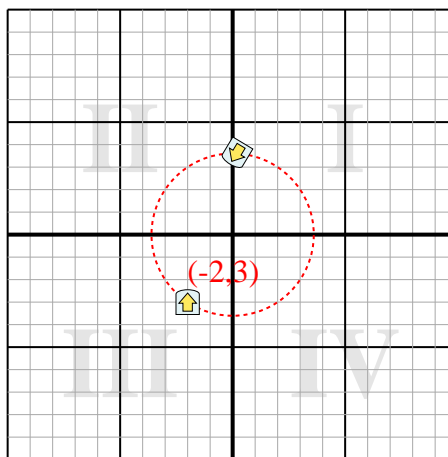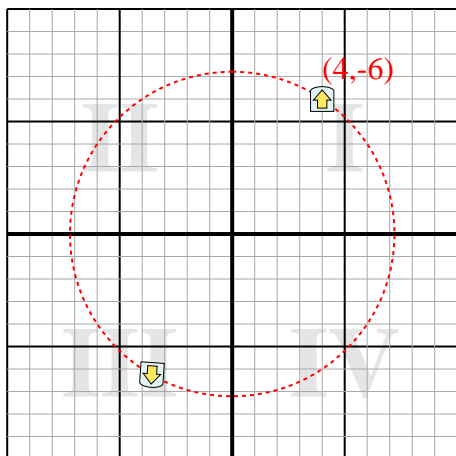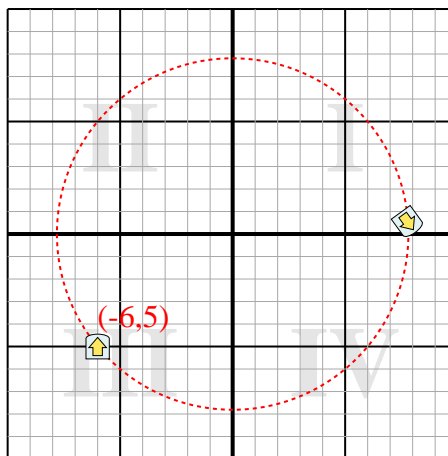5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

1. _____ **(-1,-4.3)**

2. _____ **(0.2,3.6)**

3. _____ **(-3.6,-6.3)**

4. _____ **(7.8,0.5)**

1) Rotate the shape -230° around the point (0,0).

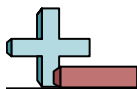(4,-2)

2) Rotate the shape 149° around the point (0,0).

(-2,3)

3) Rotate the shape -184° around the point (0,0).

(4,-6)

4) Rotate the shape 216° around the point (0,0).

(-6,5)

Math

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

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 203° around the point (0,0).

2) Rotate the shape -120° around the point (0,0).

3) Rotate the shape 183° around the point (0,0).

4) Rotate the shape -35° around the point (0,0).

| | Rotating Around Axis | Name: | |

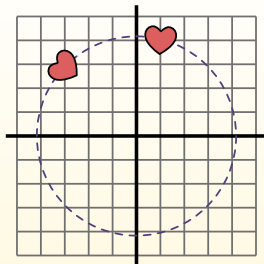**Rotate each shape. Answer as the new coordinates.**

θ = Angle of Rotation

Rotation Formula

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

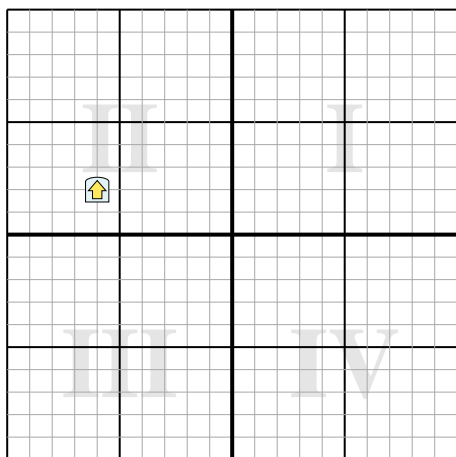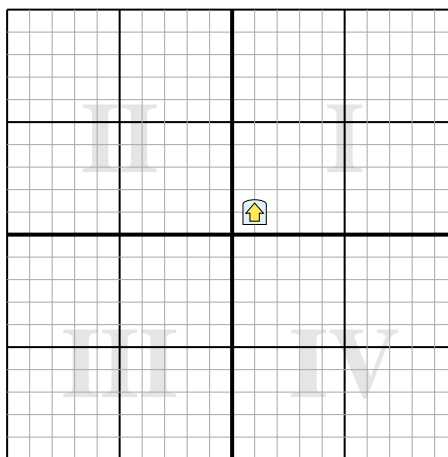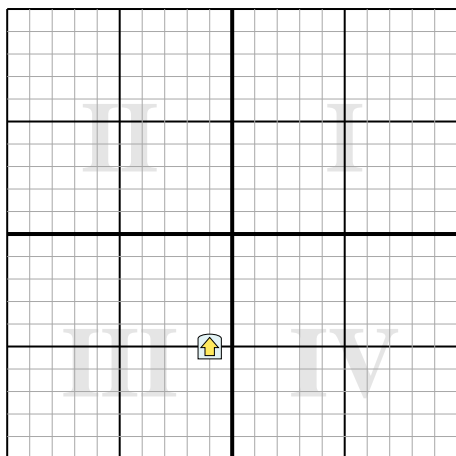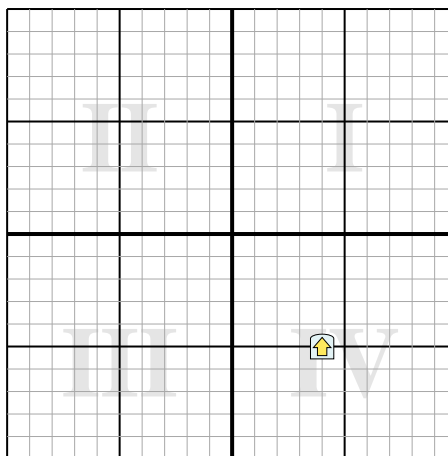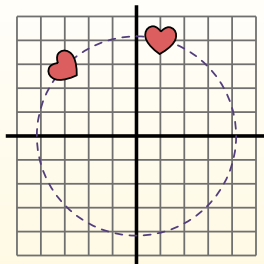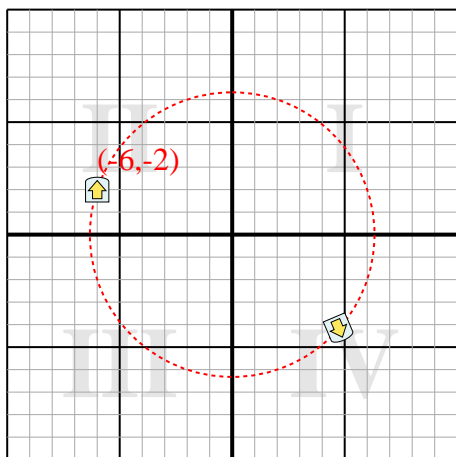In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.

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).
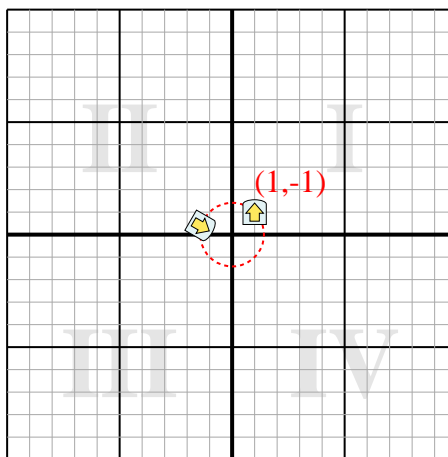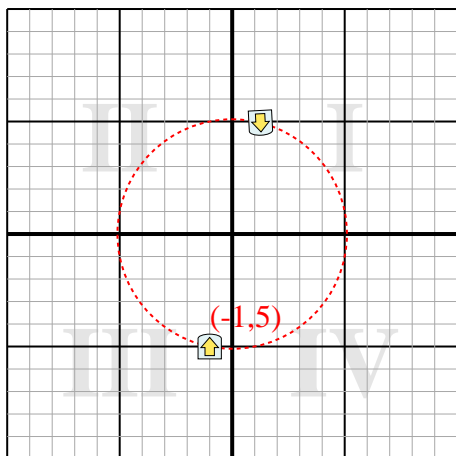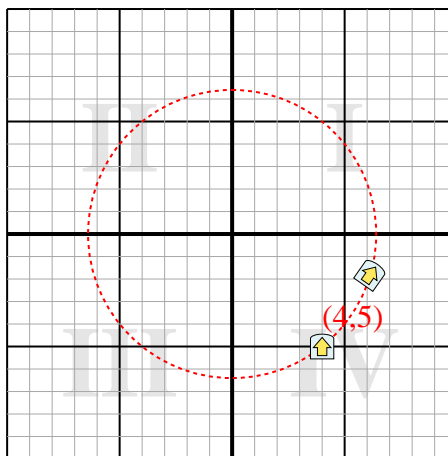
Answers

1. **(4.7,-4.2)**

2. **(-1.4,0.4)**

3. **(1.3,4.9)**

4. **(6.1,-1.8)**

1) Rotate the shape 203° around the point (0,0).

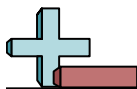(-6,-2)

2) Rotate the shape -120° around the point (0,0).

(1,-1)

3) Rotate the shape 183° around the point (0,0).

(-1,5)

4) Rotate the shape -35° around the point (0,0).

(4,5)

1-4 | 75 | 50 | 25 | 0

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 -154° around the point (0,0).

2) Rotate the shape 182° around the point (0,0).

3) Rotate the shape 204° around the point (0,0).

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

Name:

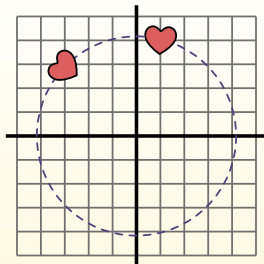**Rotate each shape. Answer as the new coordinates.**

θ = Angle of Rotation

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

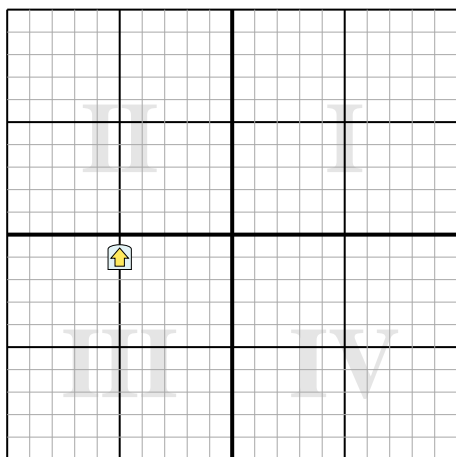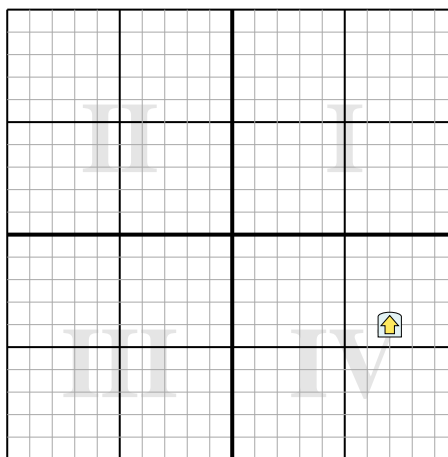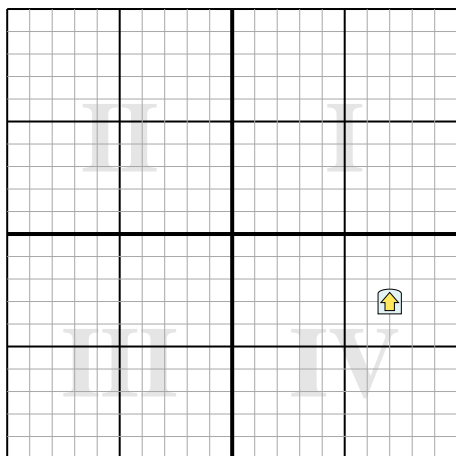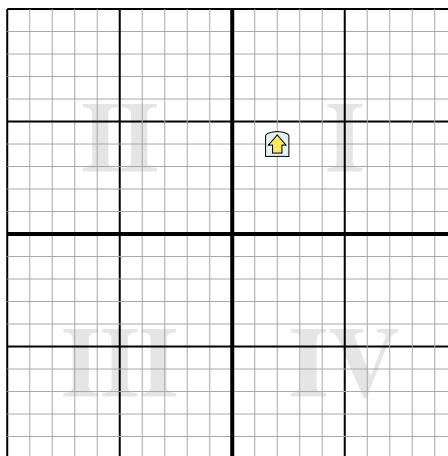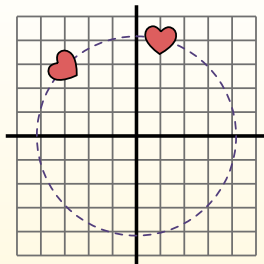In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.
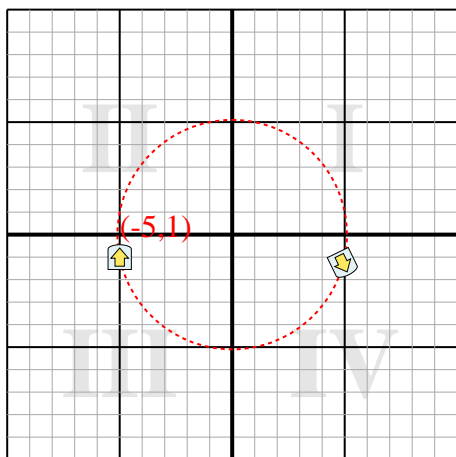
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

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).
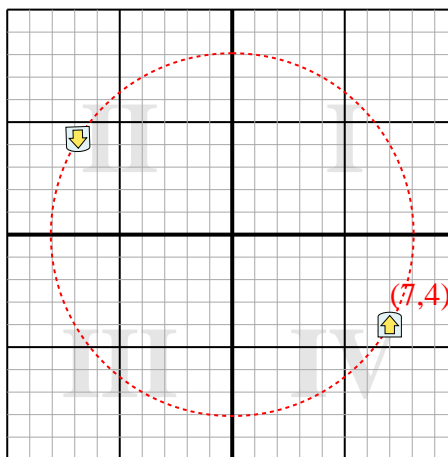
Answers

1. **(4.9,-1.3)**
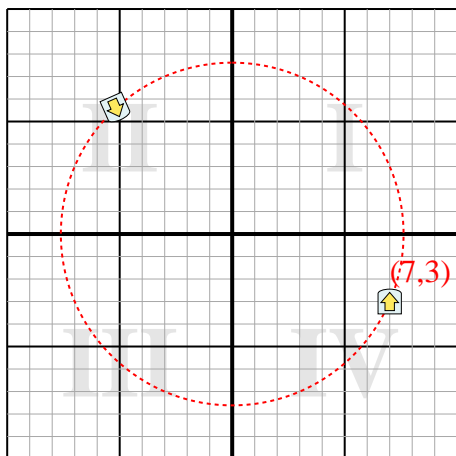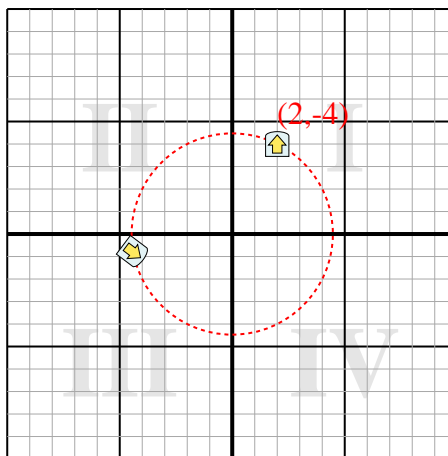
2. **(-6.9,4.2)**

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

4. **(-4.4,-0.8)**

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

(-5,1)

2) Rotate the shape 182° around the point (0,0).

(7,4)

3) Rotate the shape 204° around the point (0,0).

(7,3)

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

(2,-4)

Math

1-4 | 75 | 50 | 25 | 0

Name: _____

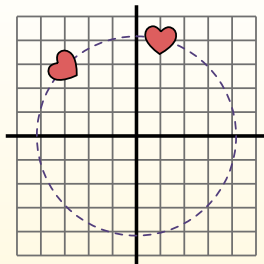**Rotate each shape. Answer as the new coordinates.**

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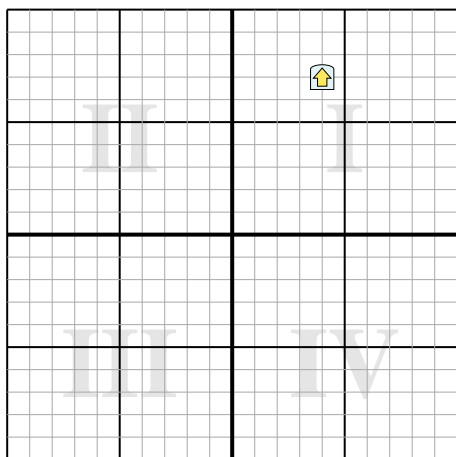
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

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

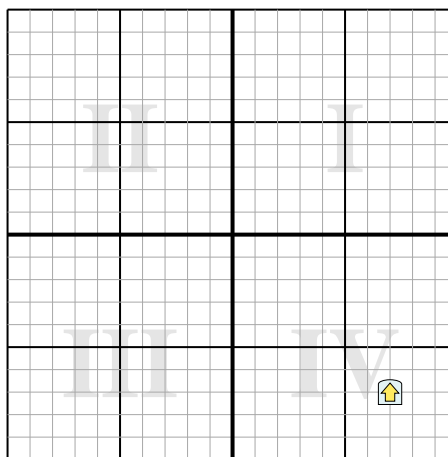5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).
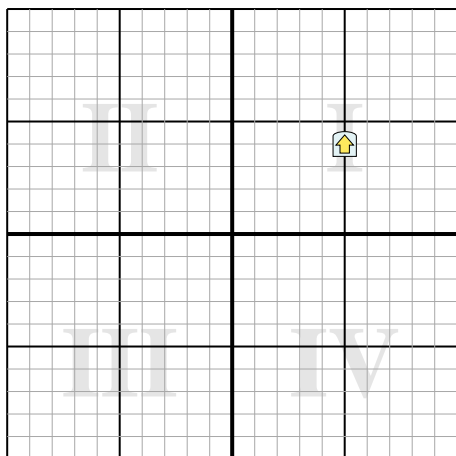
1. _____

2. _____

3. _____

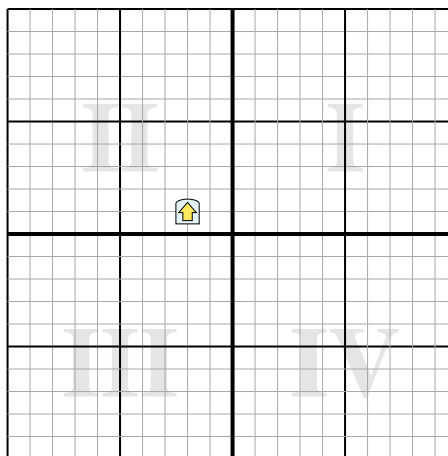4. _____

1) Rotate the shape 99° around the point (0,0).

2) Rotate the shape -40° around the point (0,0).

3) Rotate the shape -292° around the point (0,0).

4) Rotate the shape 45° around the point (0,0).

Name:

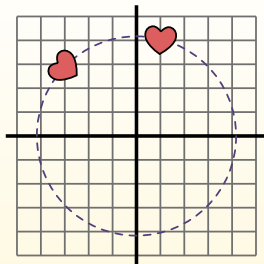**Rotate each shape. Answer as the new coordinates.**

θ = Angle of Rotation

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

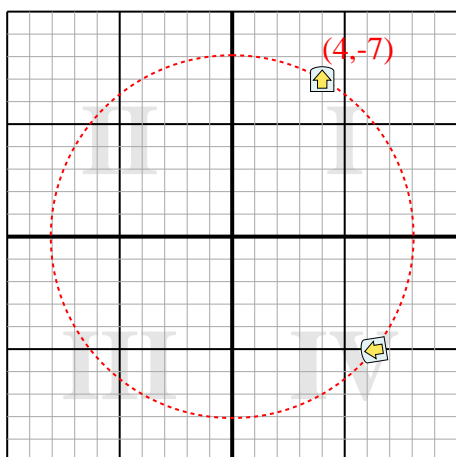In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.

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

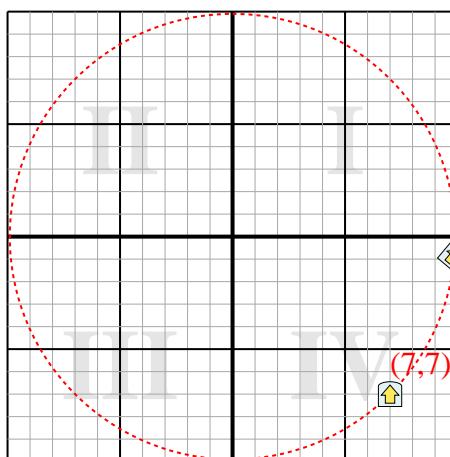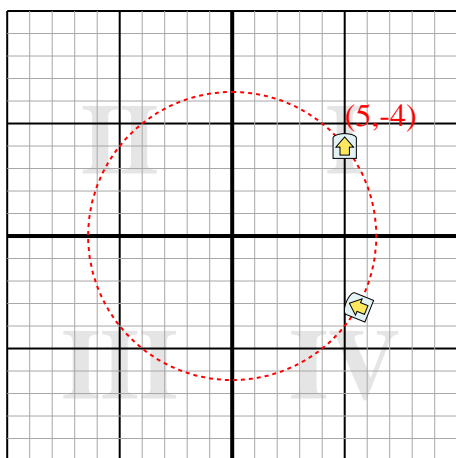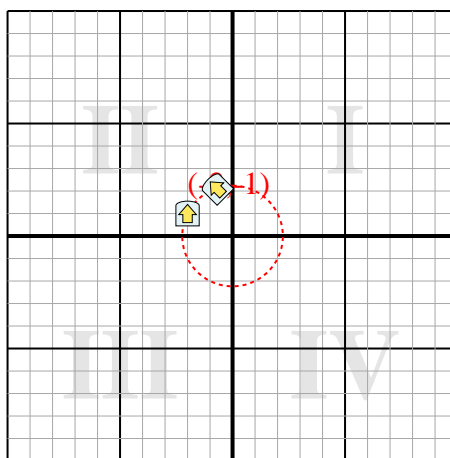**5.** Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).

1. **(6.3,-5)**

2. **(9.9,-0.9)**

3. **(5.6,-3.1)**

4. **(-0.7,2.1)**

1) Rotate the shape 99° around the point (0,0).

(4,-7)

2) Rotate the shape -40° around the point (0,0).

(7,7)

3) Rotate the shape -292° around the point (0,0).

(5,-4)

4) Rotate the shape 45° around the point (0,0).

(⬦,-1)

Rotating Around Axis   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).

Answers

1. _____

2. _____

3. _____

4. _____

1) Rotate the shape -53° around the point (0,0).

2) Rotate the shape 235° around the point (0,0).

3) Rotate the shape 37° around the point (0,0).

4) Rotate the shape -129° around the point (0,0).

Math   www.CommonCoreSheets.com   7

1-4 | 75 | 50 | 25 | 0

Name:

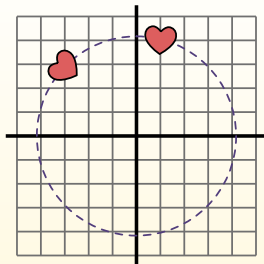**Rotate each shape. Answer as the new coordinates.**

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°.
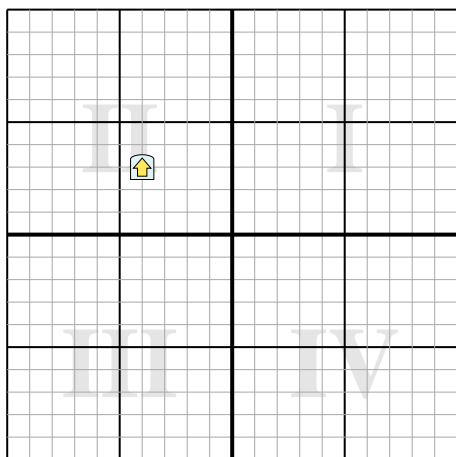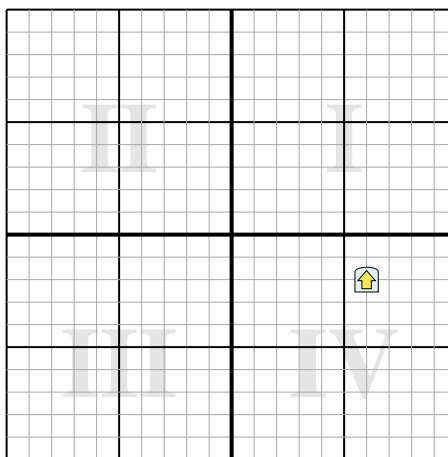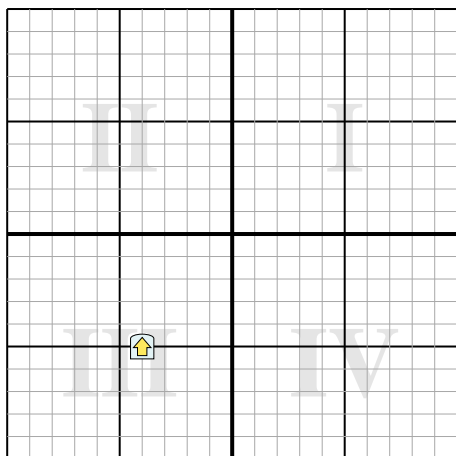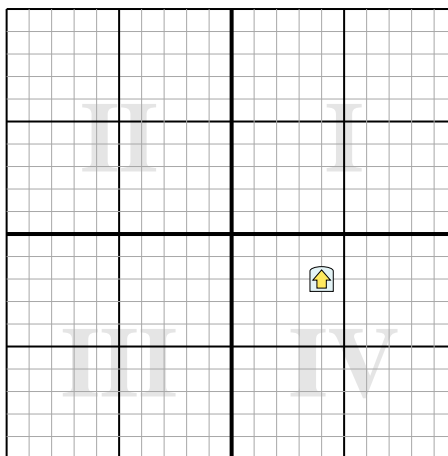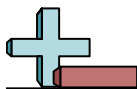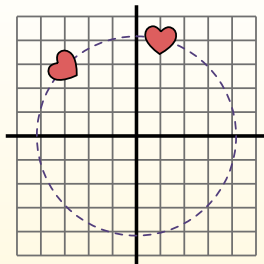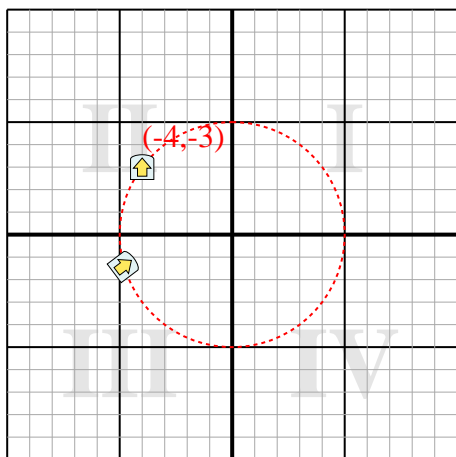
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
   $y1 = 1 \times 0.87 + 4 \times 0.5$
3. $x1 = 0.5 - 3.48$
   $y1 = 0.87 + 2$
4. $x1 = -2.98$
   $y1 = 2.87$
5. Looking at shape, we can see that rotated 60° it is at (-2.98 , 2.87).
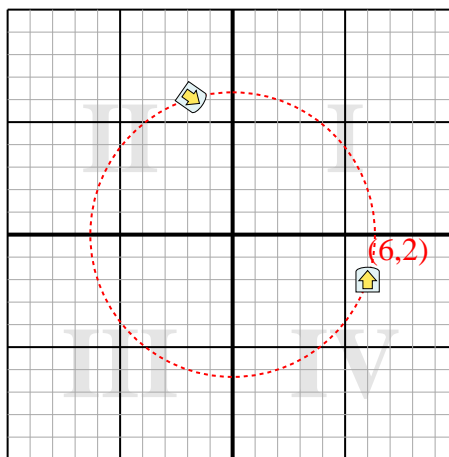
Answers

1. **(-4.8,-1.4)**
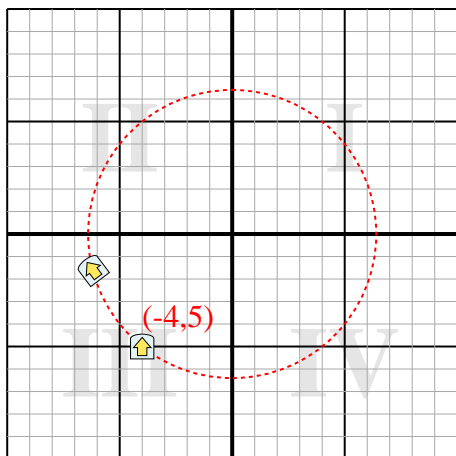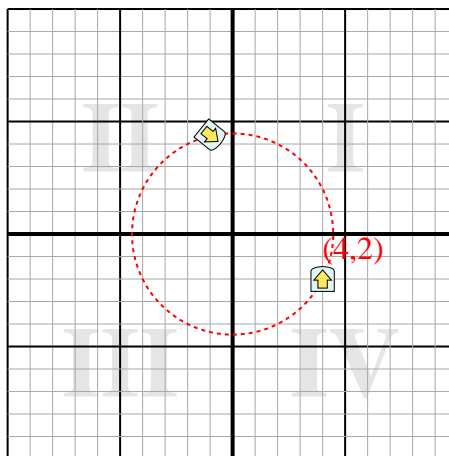
2. **(-1.8,6.1)**

3. **(-6.2,-1.6)**

4. **(-1,4.4)**

1) Rotate the shape -53° around the point (0,0).

(-4,-3)
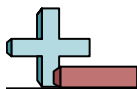
2) Rotate the shape 235° around the point (0,0).

(6,2)

3) Rotate the shape 37° around the point (0,0).

(-4,5)

4) Rotate the shape -129° around the point (0,0).

(4,2)

1-4 | 75 | 50 | 25 | 0

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 -91° around the point (0,0).

2) Rotate the shape -189° around the point (0,0).

3) Rotate the shape -140° around the point (0,0).

4) Rotate the shape 202° around the point (0,0).
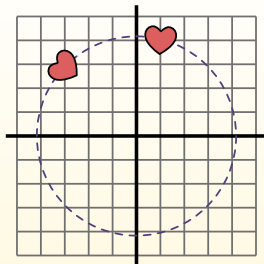
Name:

Rotate each shape. Answer as the new coordinates.

θ = Angle of Rotation

Rotation Formula

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

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

In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.
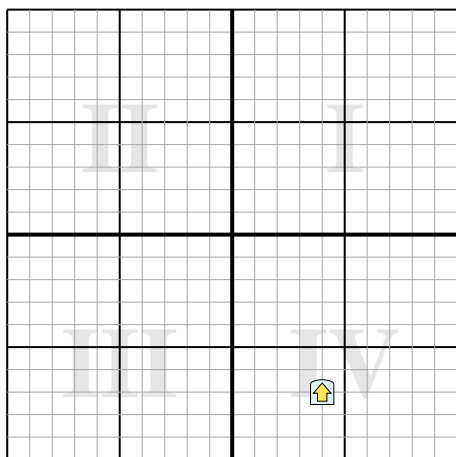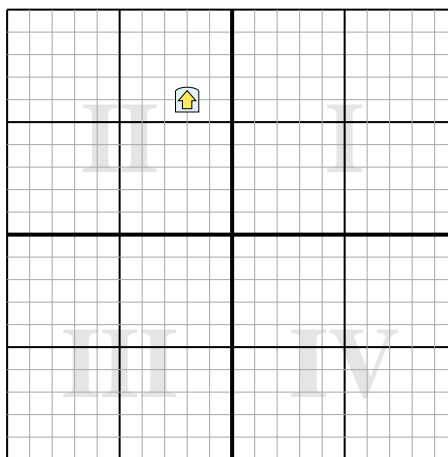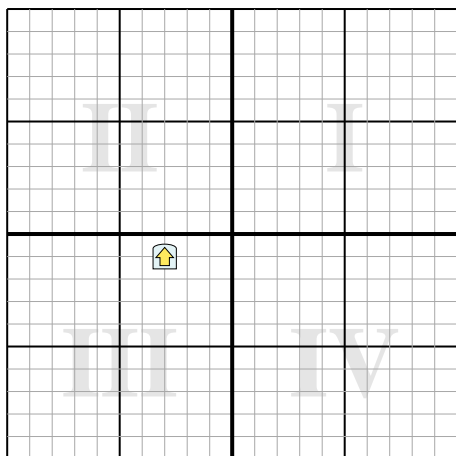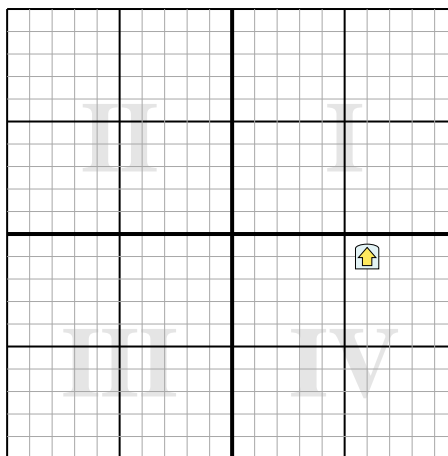
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

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. **(6.9,4.1)**

2. **(2.9,-5.6)**

3. **(2.9,-1.2)**

4. **(-5.2,3.2)**

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1) Rotate the shape -91° around the point (0,0).

(4,7)

2) Rotate the shape -189° around the point (0,0).

(-2,-6)

3) Rotate the shape -140° around the point (0,0).

(-3,1)

4) Rotate the shape 202° around the point (0,0).

(6,1)

Math

8

1-4 | 75 | 50 | 25 | 0

Name:

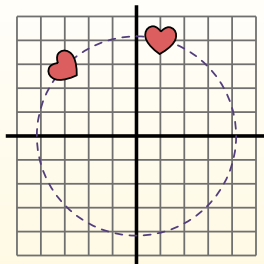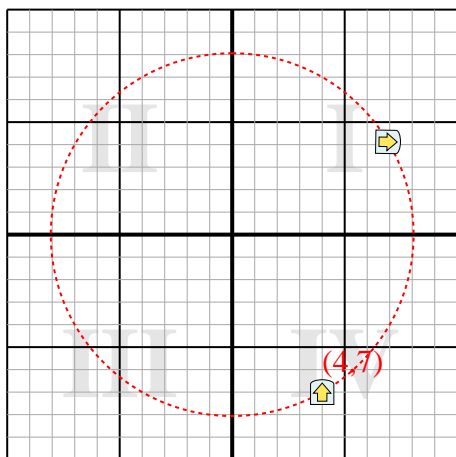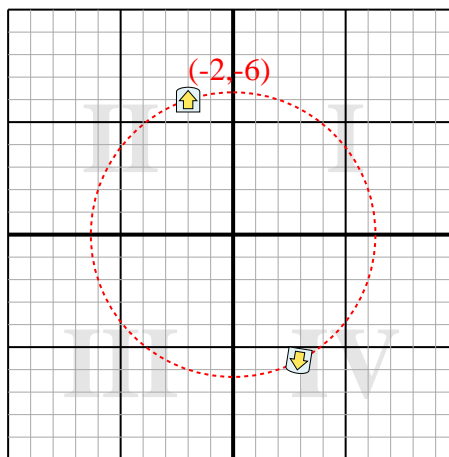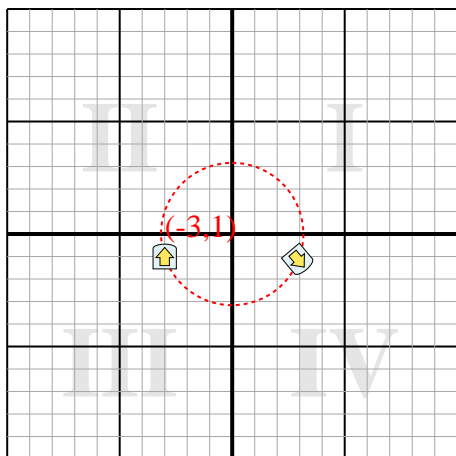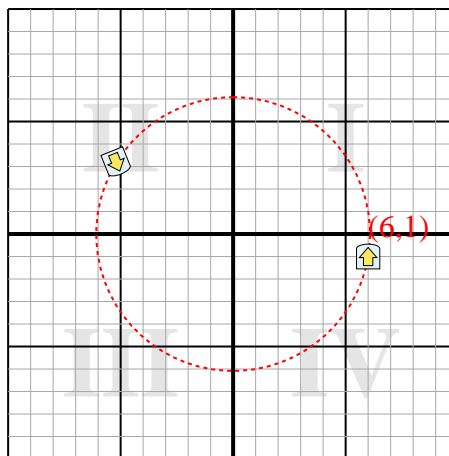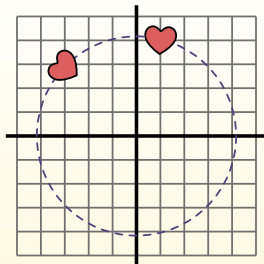**Rotate each shape. Answer as the new coordinates.**

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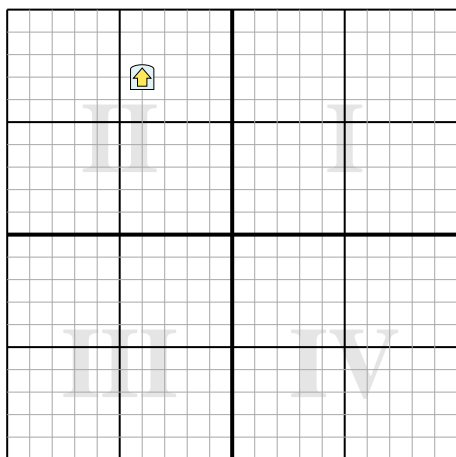
1. $x1 = 1 \times \cos(60) - 4 \times \sin(60)$
   $y1 = 1 \times \sin(60) + 4 \times \cos(60)$

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).
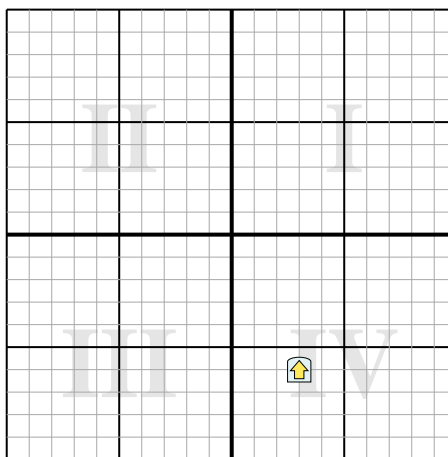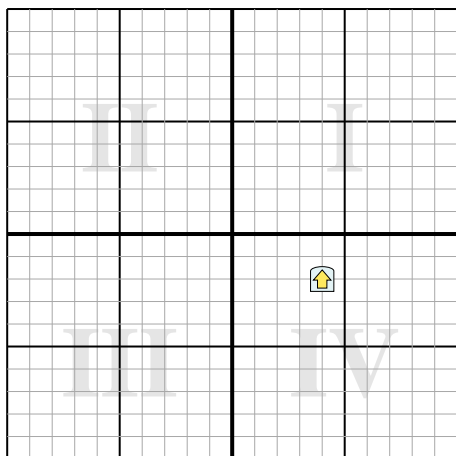
1. _____

2. _____

3. _____

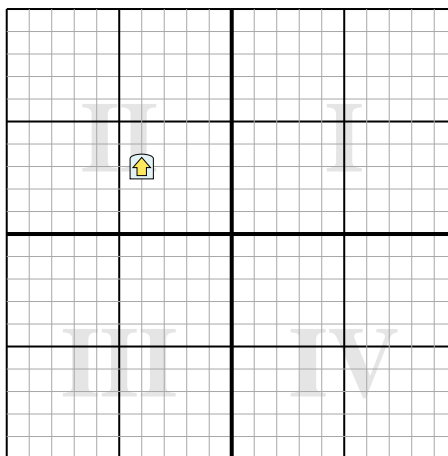4. _____

1) Rotate the shape 91° around the point (0,0).

2) Rotate the shape -105° around the point (0,0).

3) Rotate the shape 248° around the point (0,0).

4) Rotate the shape 140° 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×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).
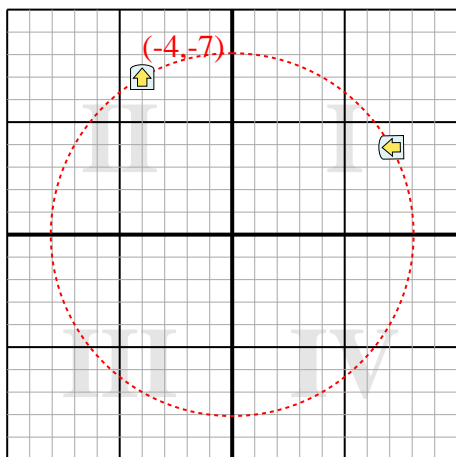
Answers

1. **(7.1,3.9)**

2. **(5,4.5)**
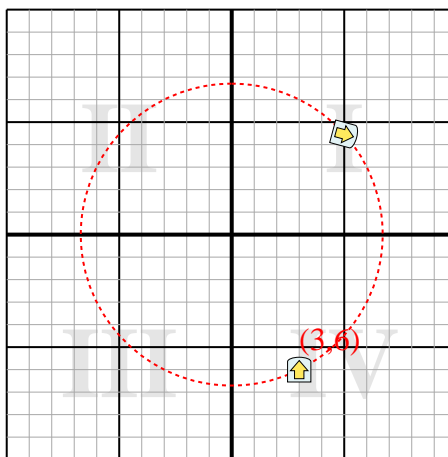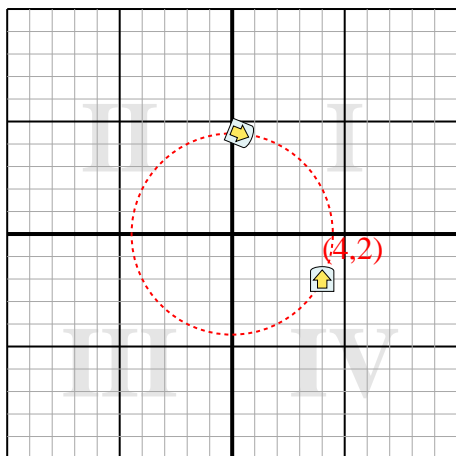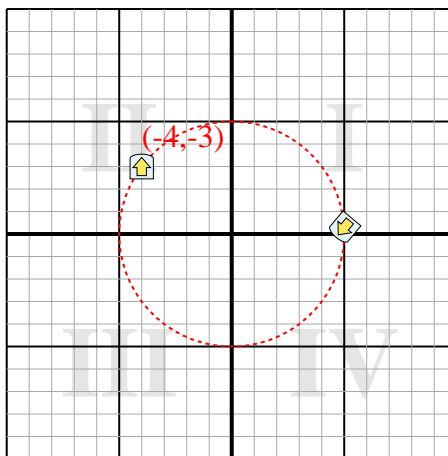
3. **(0.4,4.5)**

4. **(5,0.3)**

1) Rotate the shape 91° around the point (0,0).

(-4,-7)

2) Rotate the shape -105° around the point (0,0).

(3,6)

3) Rotate the shape 248° around the point (0,0).

(4,2)

4) Rotate the shape 140° around the point (0,0).

(-4,-3)

Math

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1-4 | 75 | 50 | 25 | 0

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 255° around the point (0,0).

2) Rotate the shape 95° around the point (0,0).

3) Rotate the shape -55° around the point (0,0).

4) Rotate the shape -34° around the point (0,0).

Name:

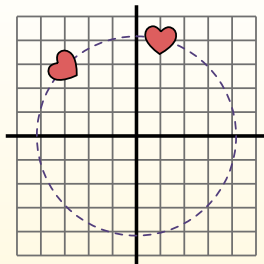**Rotate each shape. Answer as the new coordinates.**

θ = Angle of Rotation

Rotation Formula

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

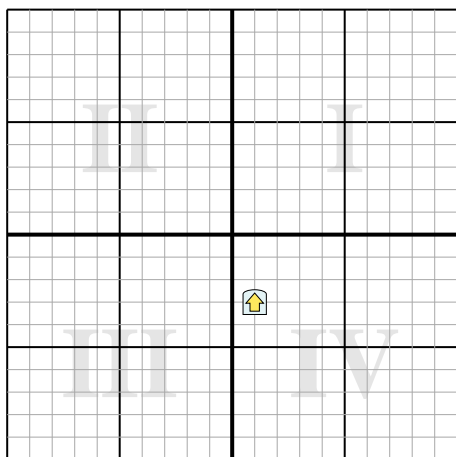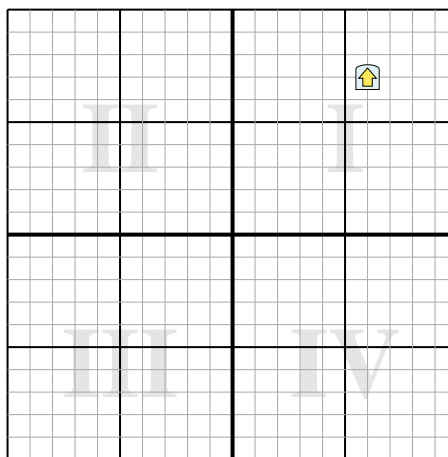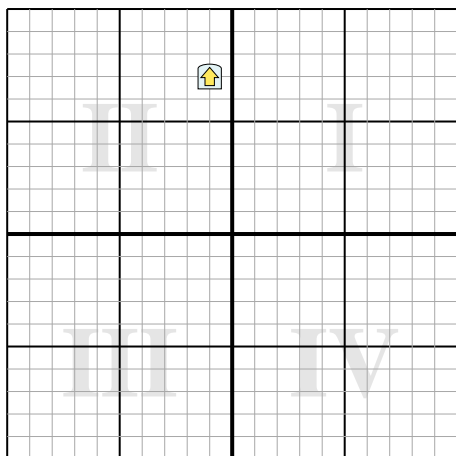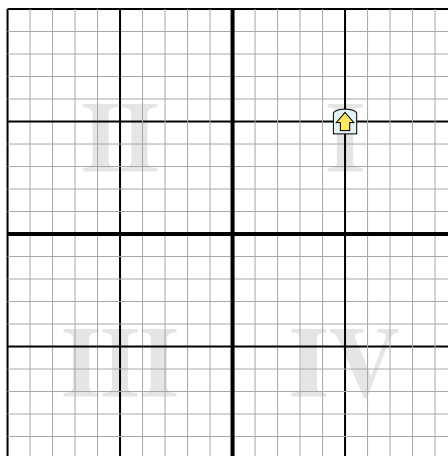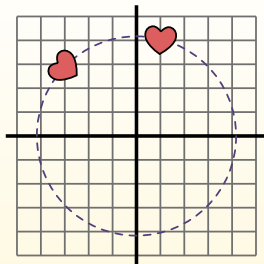In the example to the right the shape is at coordinates (1,4). Lets find the coordinates if we rotated the shape 60°.

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).
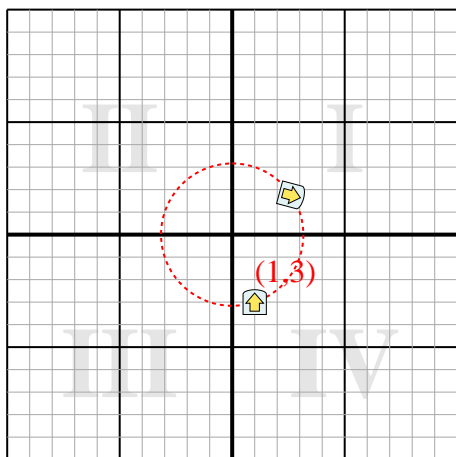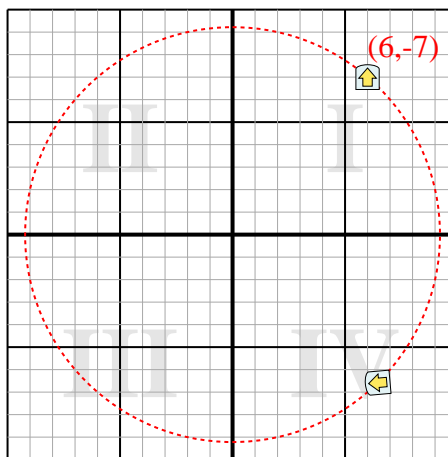
1. **(2.6,1.7)**

2. **(6.5,-6.6)**

3. **(-6.3,3.2)**

4. **(1.3,6.9)**

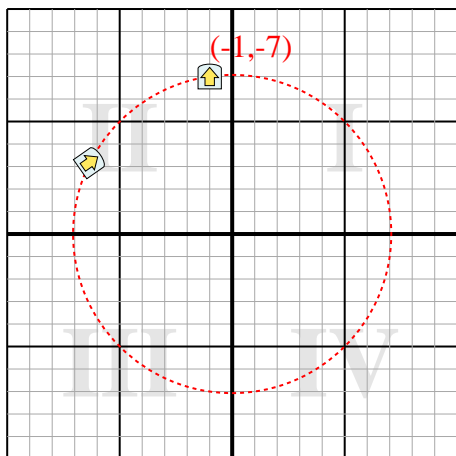**1)** Rotate the shape 255° around the point (0,0).

(1,3)

2) Rotate the shape 95° around the point (0,0).

(6,-7)

3) Rotate the shape -55° around the point (0,0).

(-1,-7)

4) Rotate the shape -34° around the point (0,0).

(5,-5)

1-4 | 75 | 50 | 25 | 0