Rotate each shape. Answer as the new coordinates.

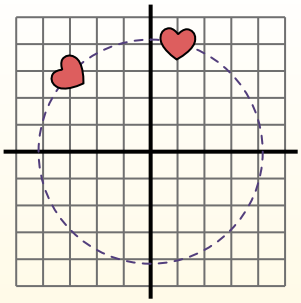
θ = Angle of Rotation

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

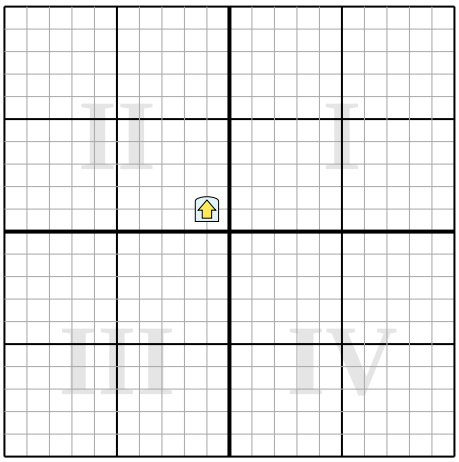
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

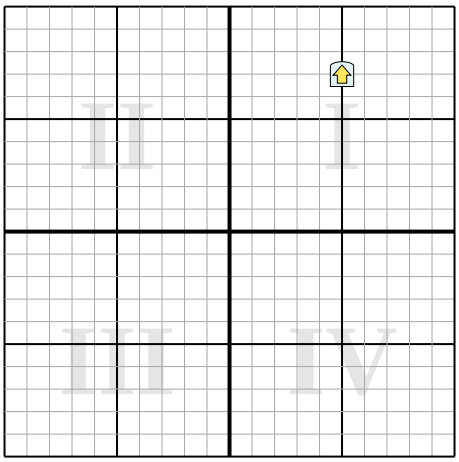
4. $x1 = -2.98$
$y1 = 2.87$

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

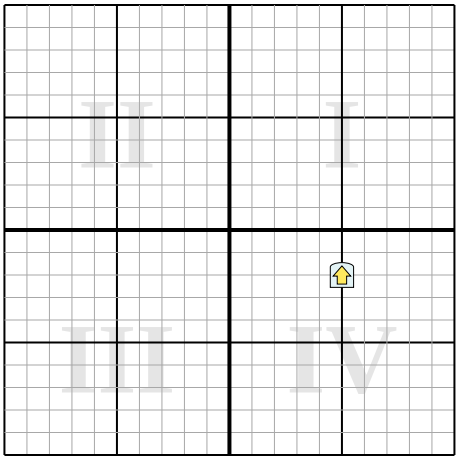
1) Rotate the shape -53° around the point (0,0).



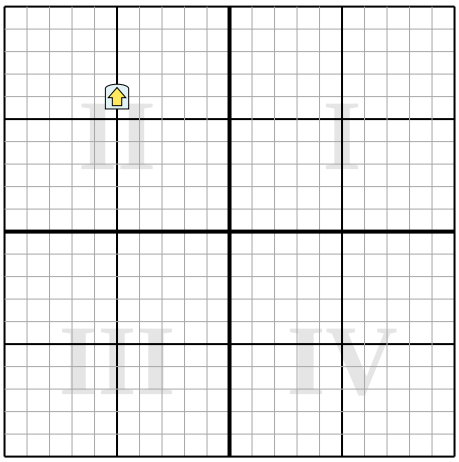
2) Rotate the shape 85° around the point (0,0).



3) Rotate the shape 166° around the point (0,0).



4) Rotate the shape 49° around the point (0,0).



Answers

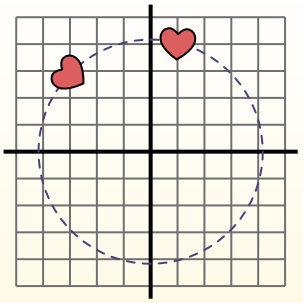
1. _____
2. _____
3. _____
4. _____

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)

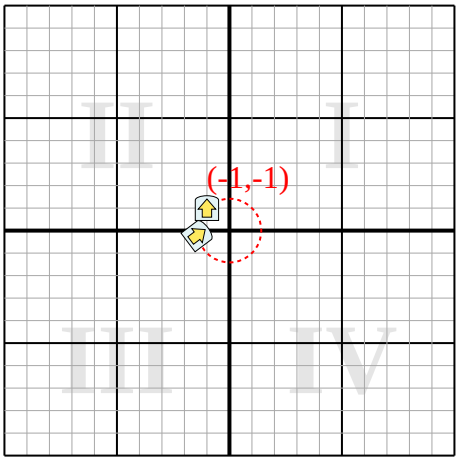
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

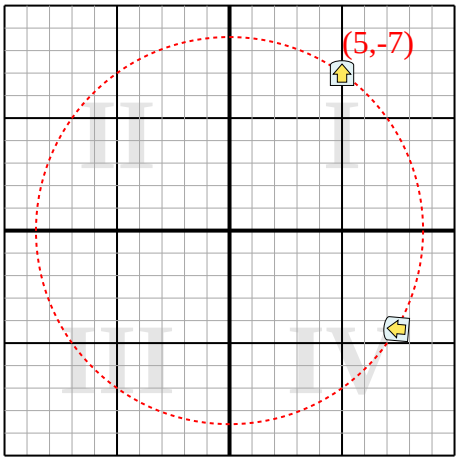
4. x1 = -2.98
y1 = 2.87

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

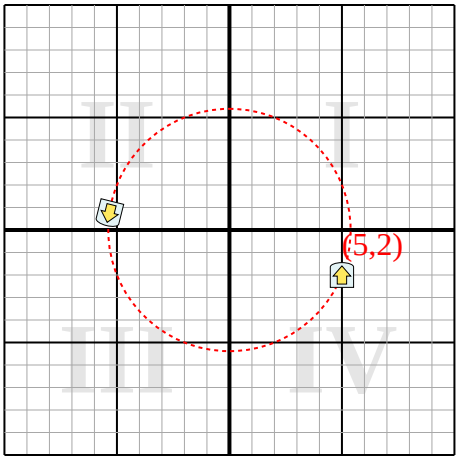
1) Rotate the shape -53° around the point (0,0).



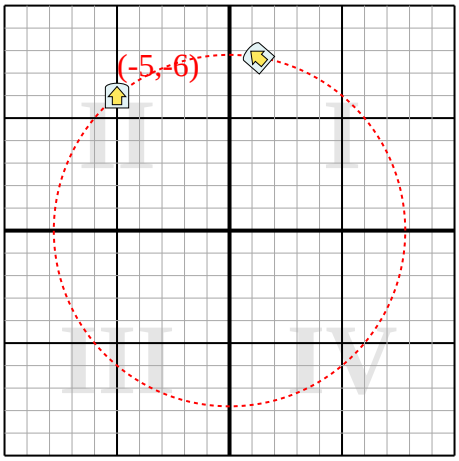
2) Rotate the shape 85° around the point (0,0).



3) Rotate the shape 166° around the point (0,0).



4) Rotate the shape 49° around the point (0,0).



Answers

1. **(-1.4,-0.2)**
2. **(7.4,-4.4)**
3. **(-5.3,0.7)**
4. **(1.2,7.7)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

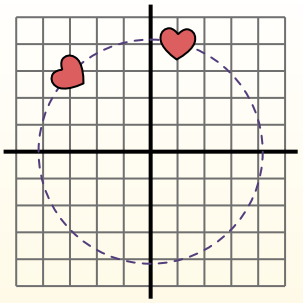
θ = Angle of Rotation

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

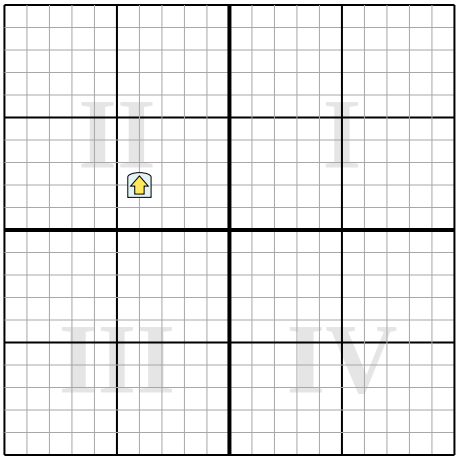
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

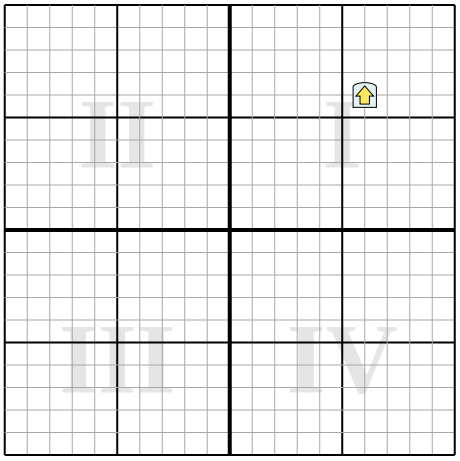
4. $x1 = -2.98$
$y1 = 2.87$

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

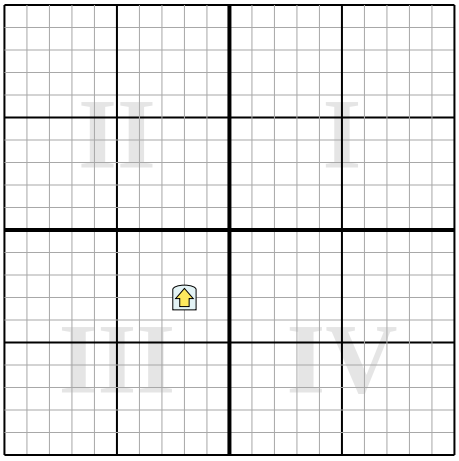
1) Rotate the shape -293° around the point (0,0).



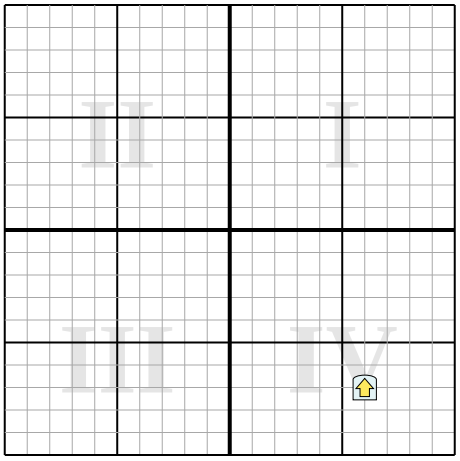
2) Rotate the shape -121° around the point (0,0).



3) Rotate the shape -196° around the point (0,0).



4) Rotate the shape 145° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

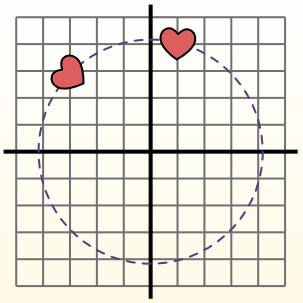
1-4	75	50	25	0

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)

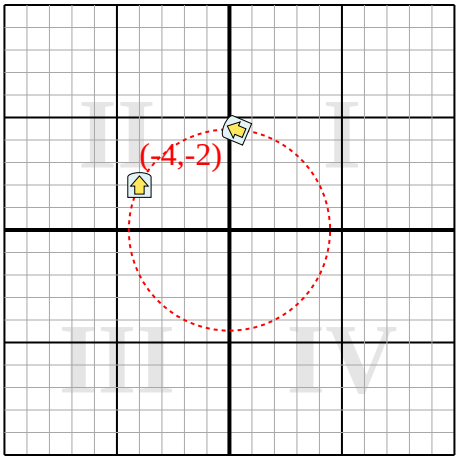
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

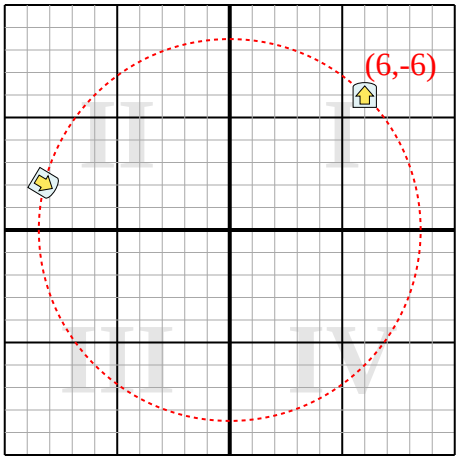
4. x1 = -2.98
y1 = 2.87

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

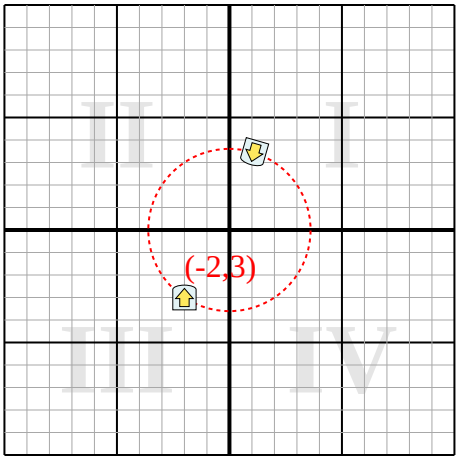
1) Rotate the shape -293° around the point (0,0).



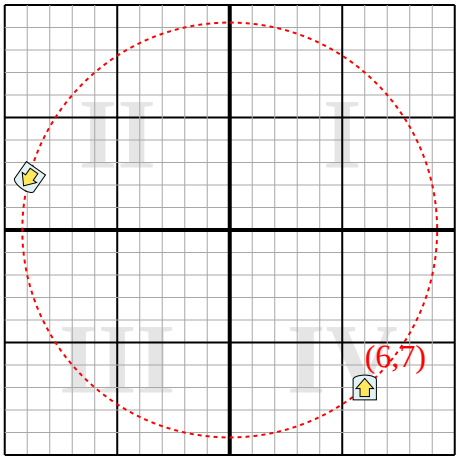
2) Rotate the shape -121° around the point (0,0).



3) Rotate the shape -196° around the point (0,0).



4) Rotate the shape 145° around the point (0,0).



Answers

1. **(0.3,4.5)**
2. **(-8.2,2.1)**
3. **(1.1,3.4)**
4. **(-8.9,2.3)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

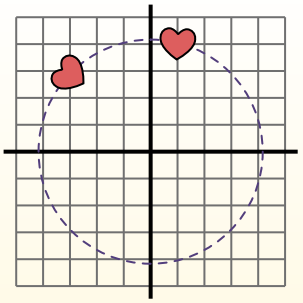
θ = Angle of Rotation

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

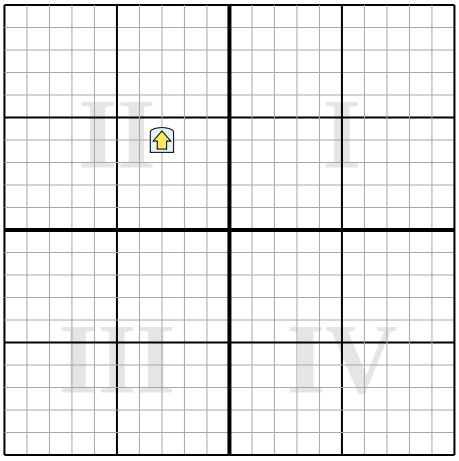
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

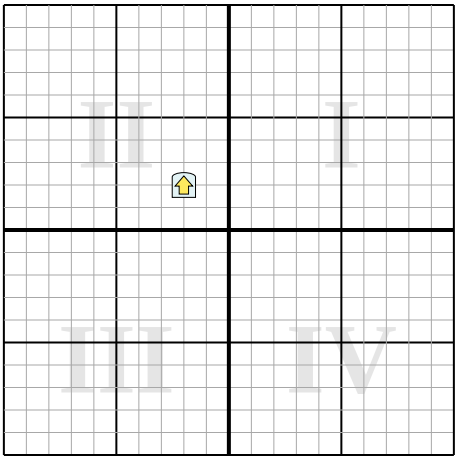
4. $x1 = -2.98$
$y1 = 2.87$

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

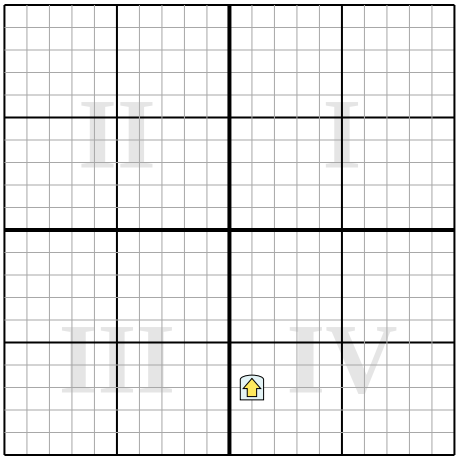
1) Rotate the shape -259° around the point (0,0).



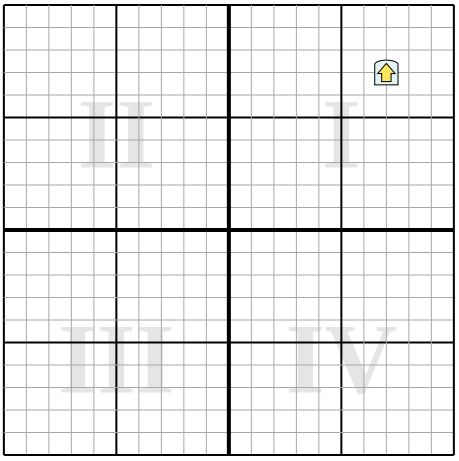
2) Rotate the shape -174° around the point (0,0).



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



4) Rotate the shape -96° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

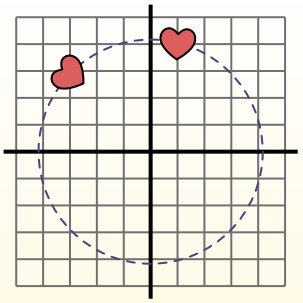
1-4	75	50	25	0

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)

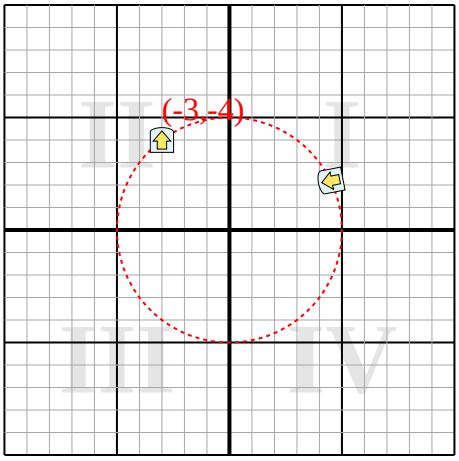
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

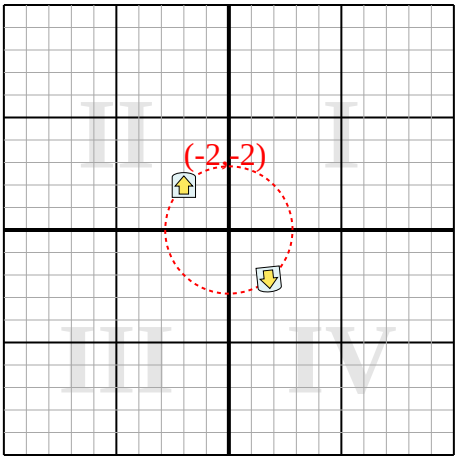
4. x1 = -2.98
y1 = 2.87

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

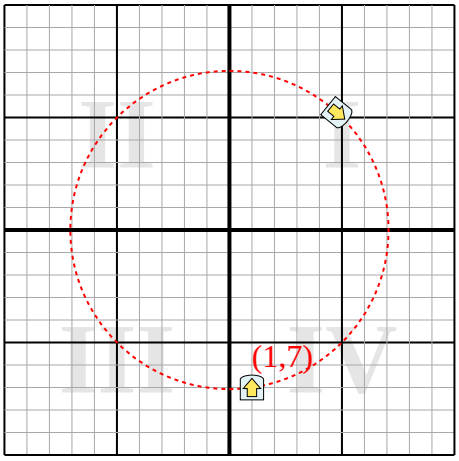
1) Rotate the shape -259° around the point (0,0).



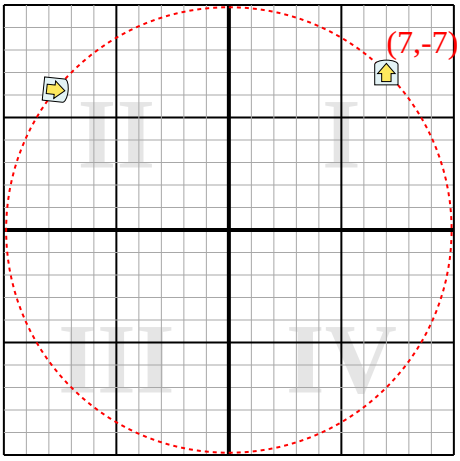
2) Rotate the shape -174° around the point (0,0).



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



4) Rotate the shape -96° around the point (0,0).



Answers

1. **(4.5,2.2)**
2. **(1.8,-2.2)**
3. **(4.8,5.2)**
4. **(-7.7,6.2)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

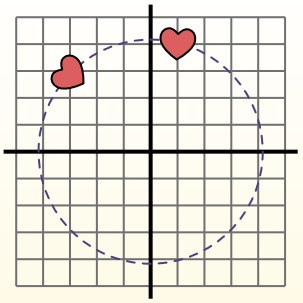
θ = Angle of Rotation

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

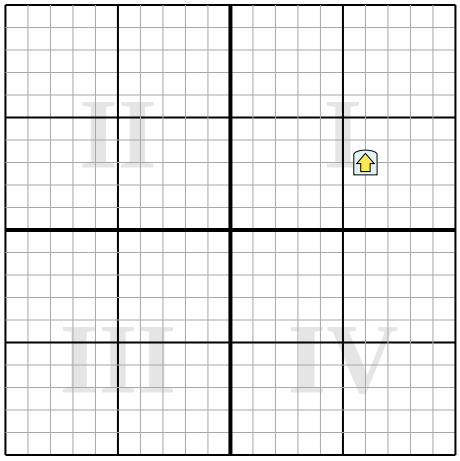
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

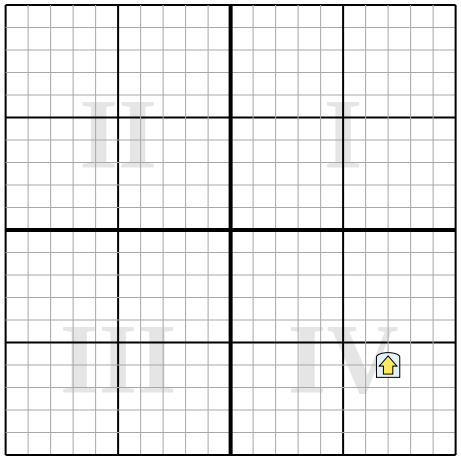
4. $x1 = -2.98$
$y1 = 2.87$

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

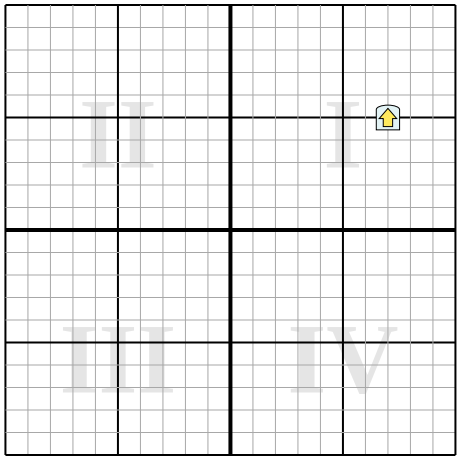
1) Rotate the shape 303° around the point (0,0).



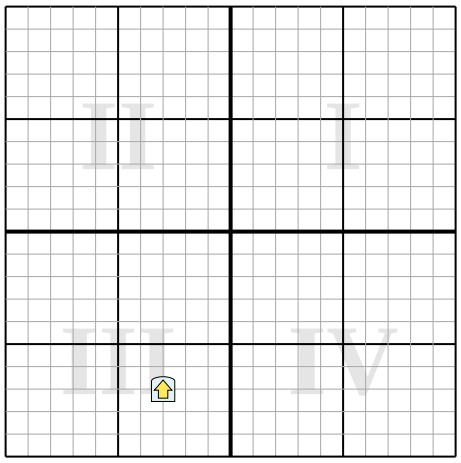
2) Rotate the shape -182° around the point (0,0).



3) Rotate the shape 251° around the point (0,0).



4) Rotate the shape 98° around the point (0,0).



Answers

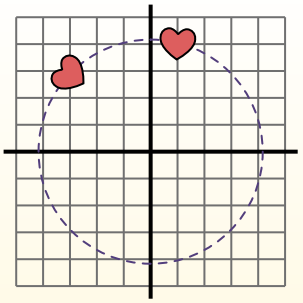
1. _____
2. _____
3. _____
4. _____

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)

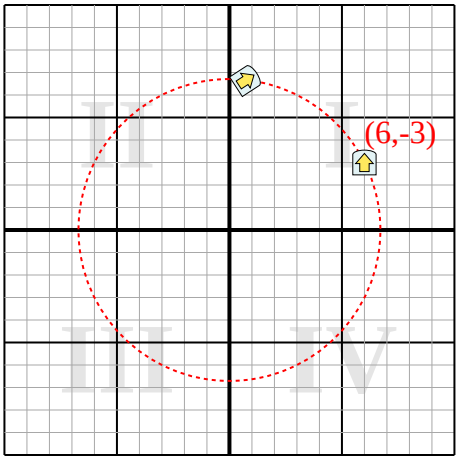
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

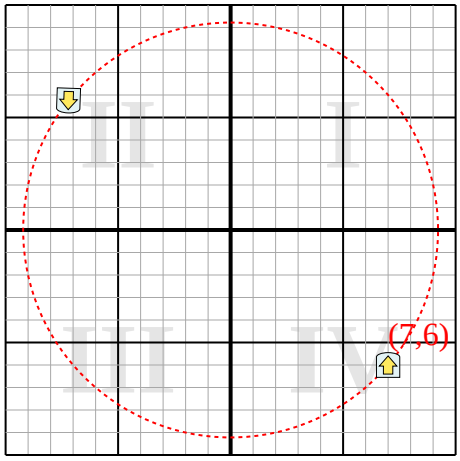
4. x1 = -2.98
y1 = 2.87

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

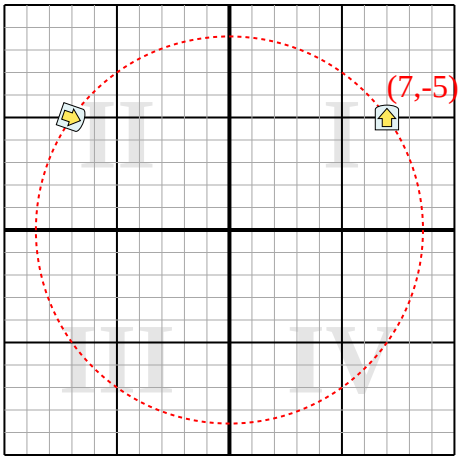
1) Rotate the shape 303° around the point (0,0).



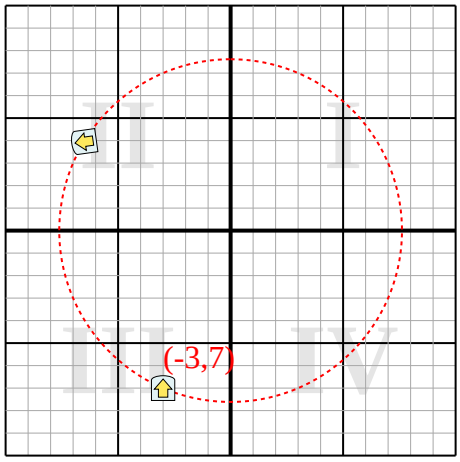
2) Rotate the shape -182° around the point (0,0).



3) Rotate the shape 251° around the point (0,0).



4) Rotate the shape 98° around the point (0,0).



Answers

1. **(0.8,6.7)**
2. **(-7.2,5.8)**
3. **(-7,5)**
4. **(-6.5,3.9)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

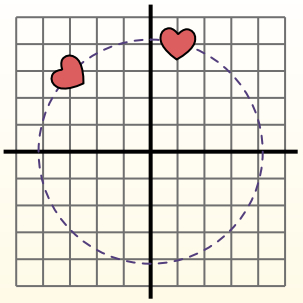
θ = Angle of Rotation

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

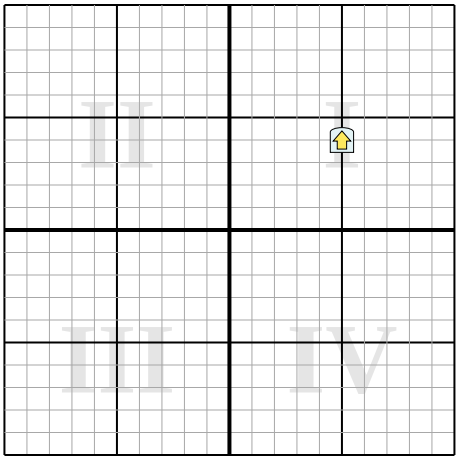
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

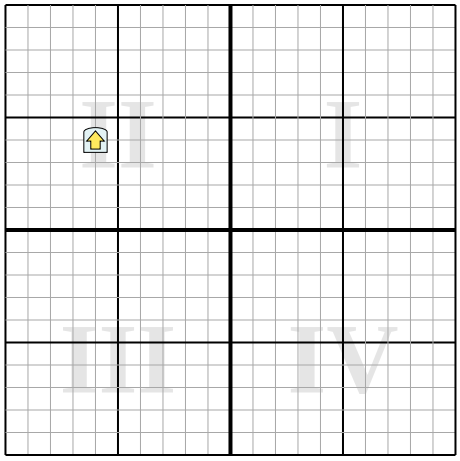
4. $x1 = -2.98$
$y1 = 2.87$

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

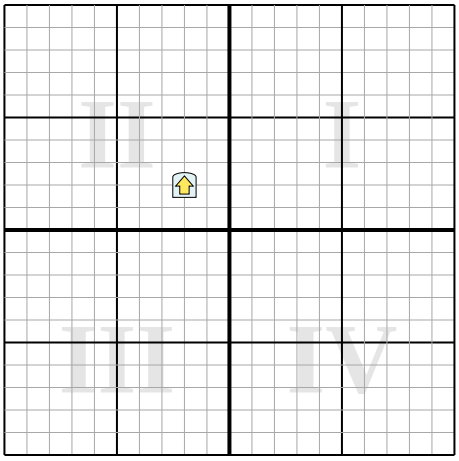
1) Rotate the shape 161° around the point (0,0).



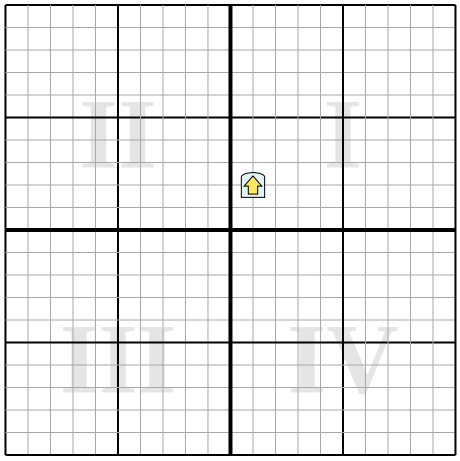
2) Rotate the shape -234° around the point (0,0).



3) Rotate the shape -201° around the point (0,0).



4) Rotate the shape 195° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

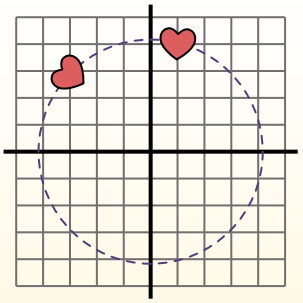
1-4	75	50	25	0

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)

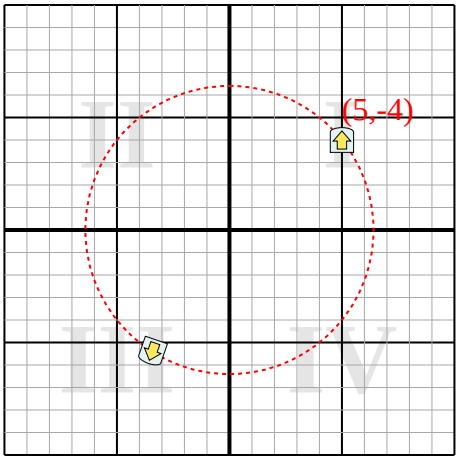
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

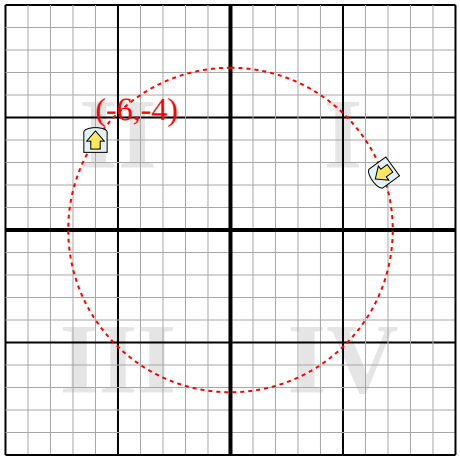
4. x1 = -2.98
y1 = 2.87

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

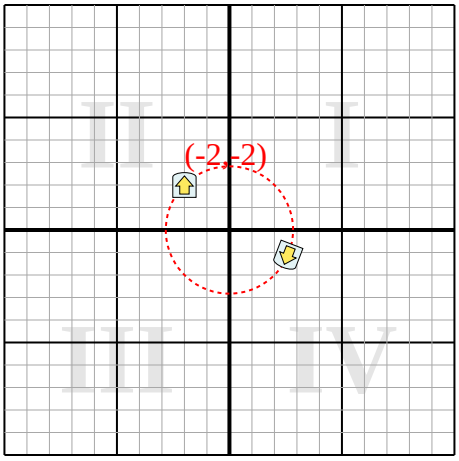
1) Rotate the shape 161° around the point (0,0).



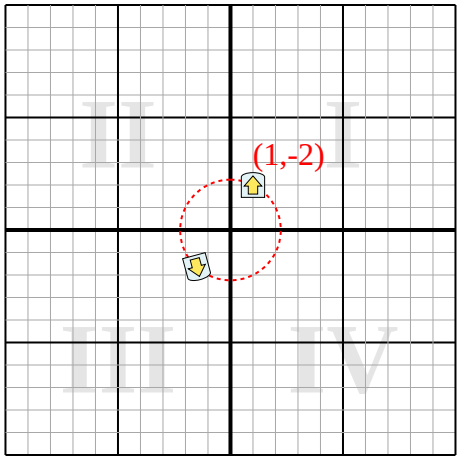
2) Rotate the shape -234° around the point (0,0).



3) Rotate the shape -201° around the point (0,0).



4) Rotate the shape 195° around the point (0,0).



Answers

1. **(-3.4,-5.4)**
2. **(6.8,2.5)**
3. **(2.6,-1.2)**
4. **(-1.5,-1.7)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

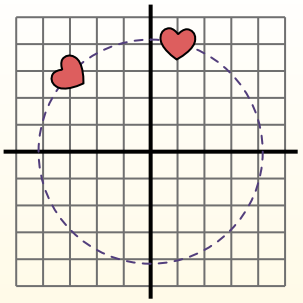
θ = Angle of Rotation

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

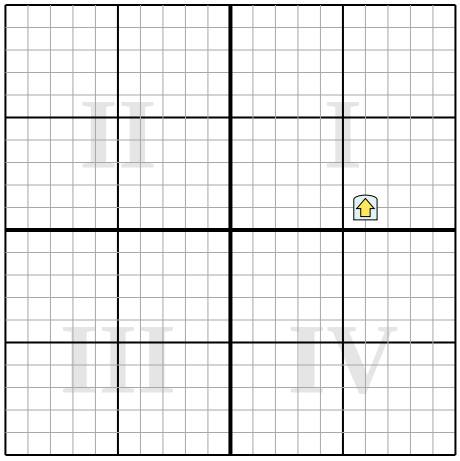
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

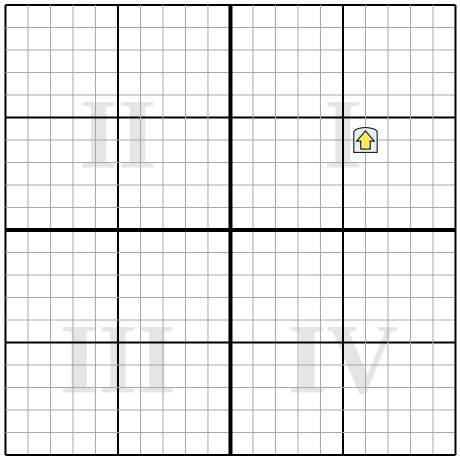
4. $x1 = -2.98$
$y1 = 2.87$

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

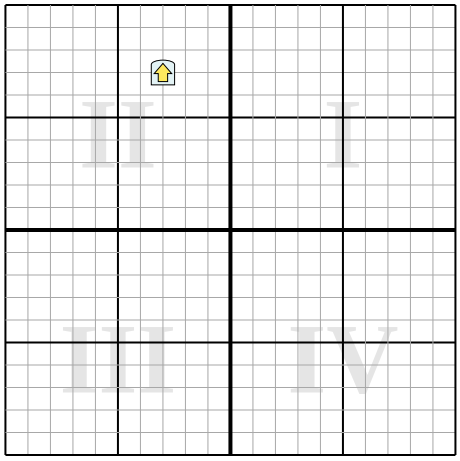
1) Rotate the shape 106° around the point (0,0).



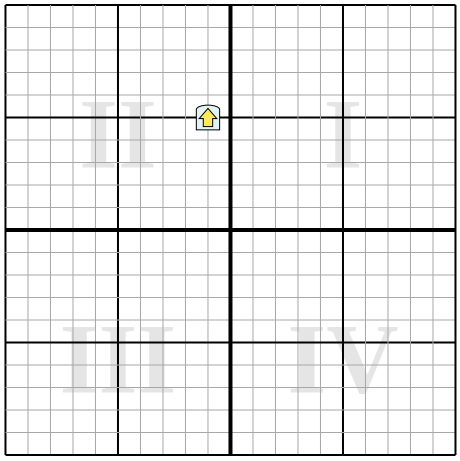
2) Rotate the shape 308° around the point (0,0).



3) Rotate the shape -106° around the point (0,0).



4) Rotate the shape -193° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

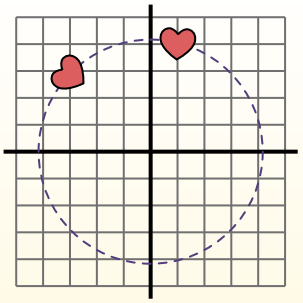
1-4	75	50	25	0

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)

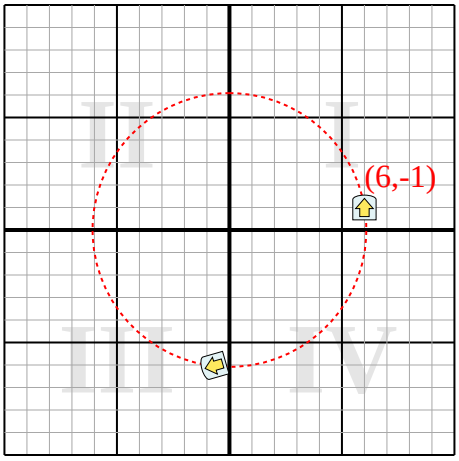
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

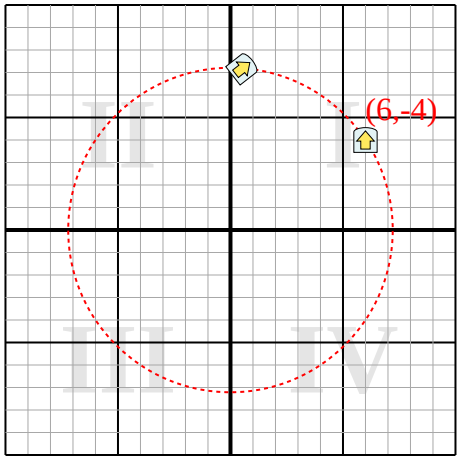
4. x1 = -2.98
y1 = 2.87

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

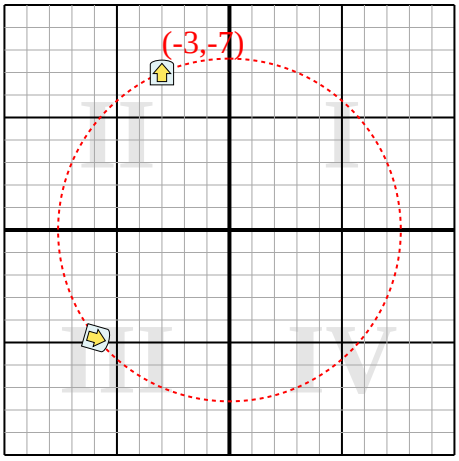
1) Rotate the shape 106° around the point (0,0).



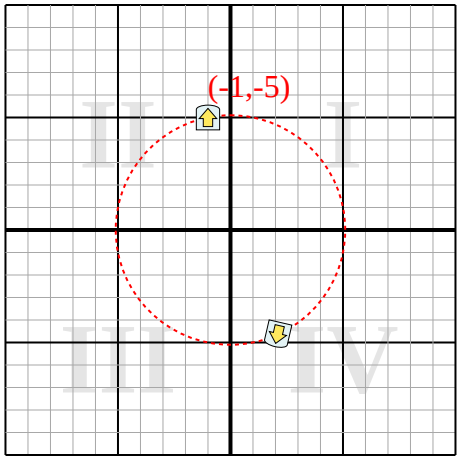
2) Rotate the shape 308° around the point (0,0).



3) Rotate the shape -106° around the point (0,0).



4) Rotate the shape -193° around the point (0,0).



Answers

1. **(-0.7,-6)**
2. **(0.5,7.2)**
3. **(-5.9,-4.8)**
4. **(2.1,-4.6)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

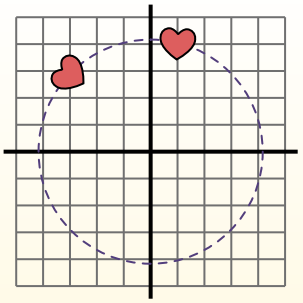
θ = Angle of Rotation

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

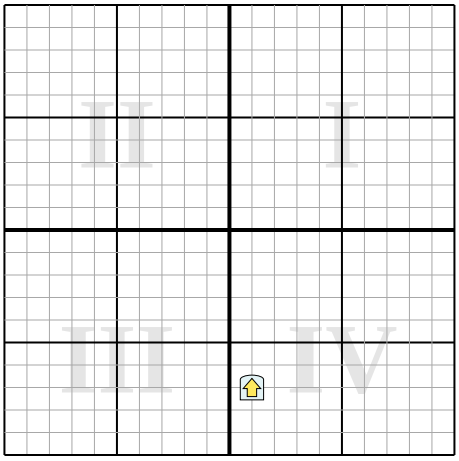
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

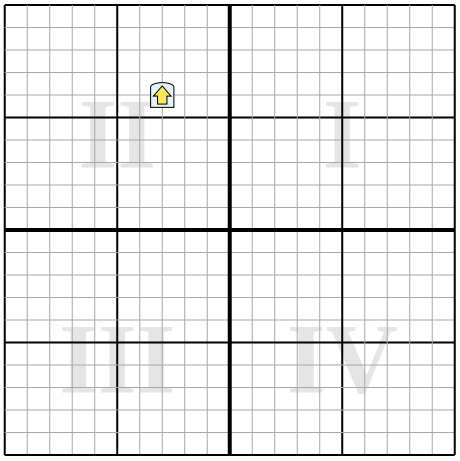
4. $x1 = -2.98$
$y1 = 2.87$

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

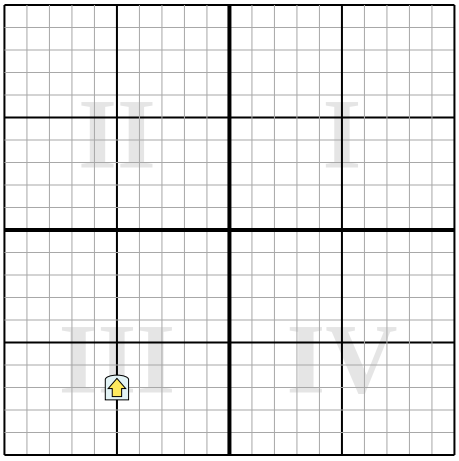
1) Rotate the shape 326° around the point (0,0).



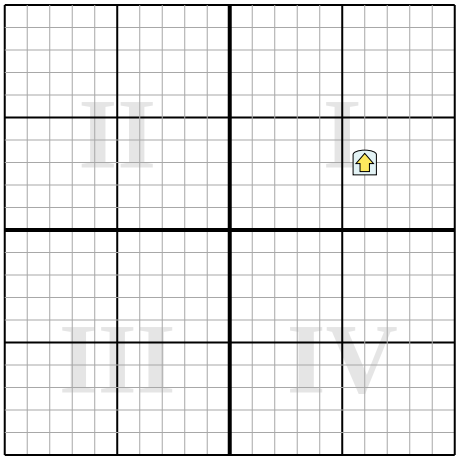
2) Rotate the shape 120° around the point (0,0).



3) Rotate the shape -136° around the point (0,0).



4) Rotate the shape 123° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

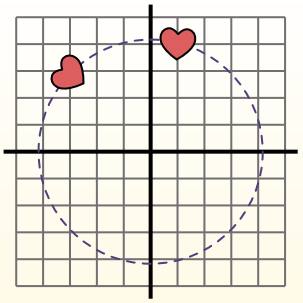
1-4	75	50	25	0

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)

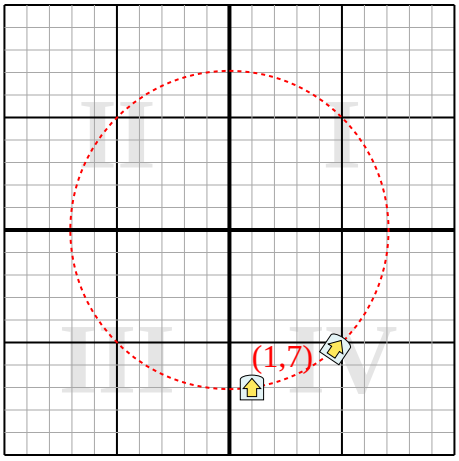
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

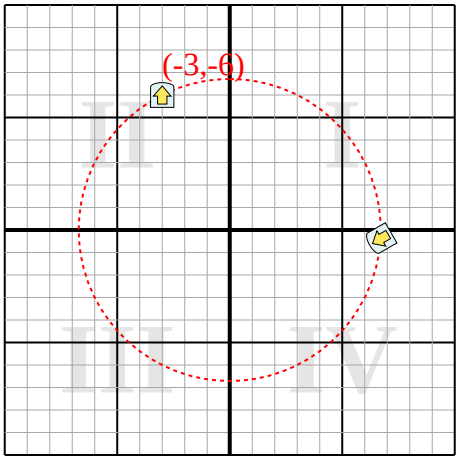
4. x1 = -2.98
y1 = 2.87

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

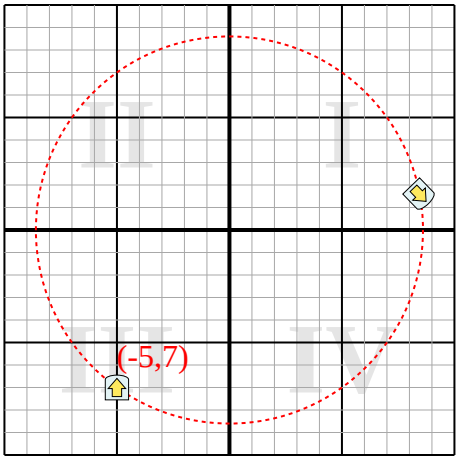
1) Rotate the shape 326° around the point (0,0).



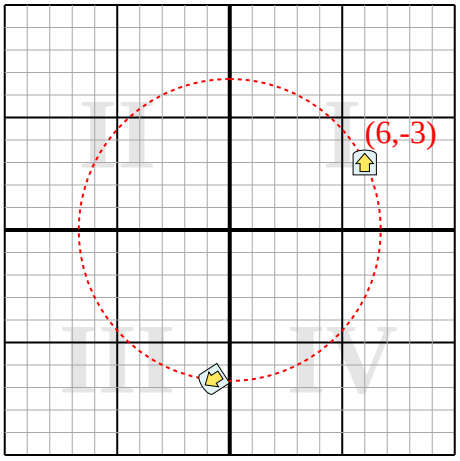
2) Rotate the shape 120° around the point (0,0).



3) Rotate the shape -136° around the point (0,0).



4) Rotate the shape 123° around the point (0,0).



Answers

1. **(4.7,-5.2)**
2. **(6.7,-0.4)**
3. **(8.5,1.6)**
4. **(-0.8,-6.7)**

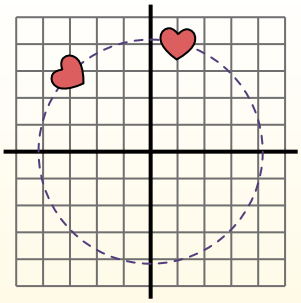
Rotate each shape. Answer as the new coordinates.

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)

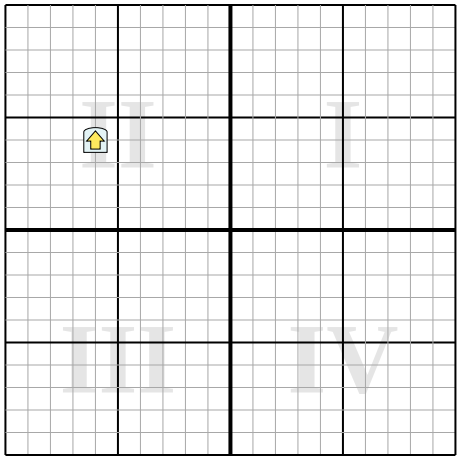
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

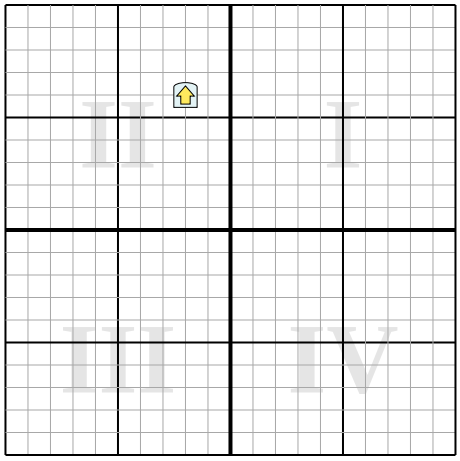
4. x1 = -2.98
y1 = 2.87

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

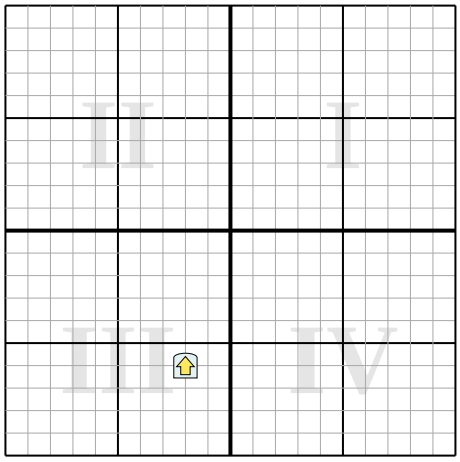
1) Rotate the shape -124° around the point (0,0).



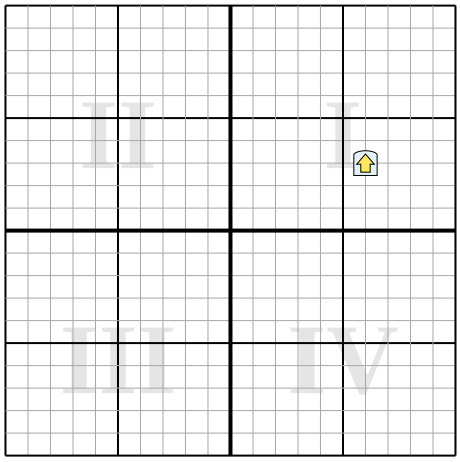
2) Rotate the shape -131° around the point (0,0).



3) Rotate the shape 46° around the point (0,0).



4) Rotate the shape 64° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

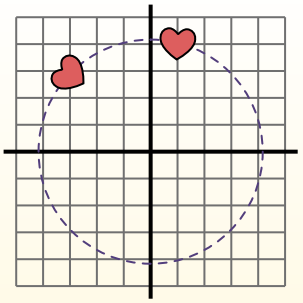
1-4	75	50	25	0

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)

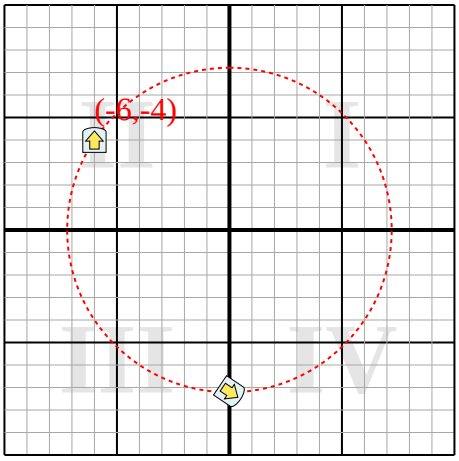
2. x1 = 1×0.5 - 4×0.87
y1 = 1×0.87 + 4×0.5

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

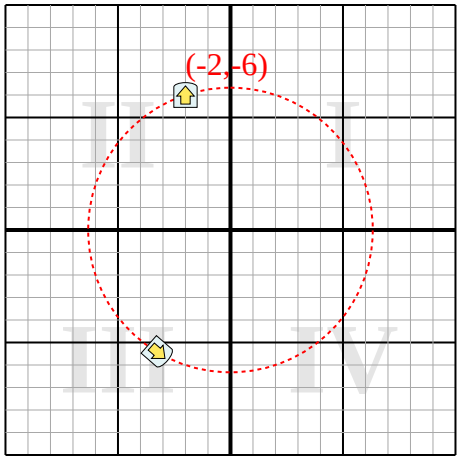
4. x1 = -2.98
y1 = 2.87

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

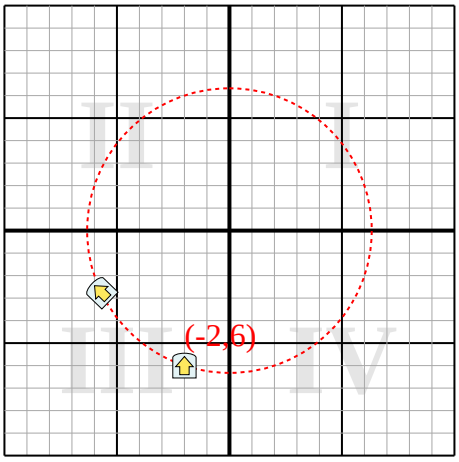
1) Rotate the shape -124° around the point (0,0).



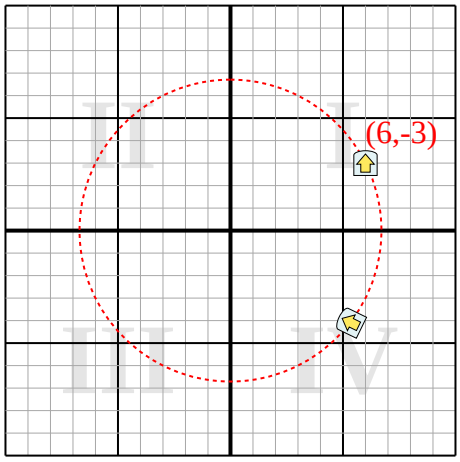
2) Rotate the shape -131° around the point (0,0).



3) Rotate the shape 46° around the point (0,0).



4) Rotate the shape 64° around the point (0,0).



Answers

1. **(0,-7.2)**
2. **(-3.2,-5.4)**
3. **(-5.7,-2.7)**
4. **(5.3,-4.1)**

Rotate each shape. Answer as the new coordinates.

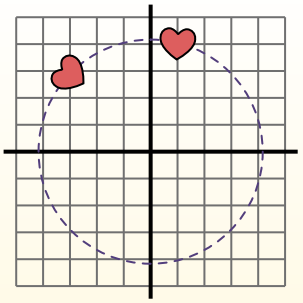
θ = Angle of Rotation

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

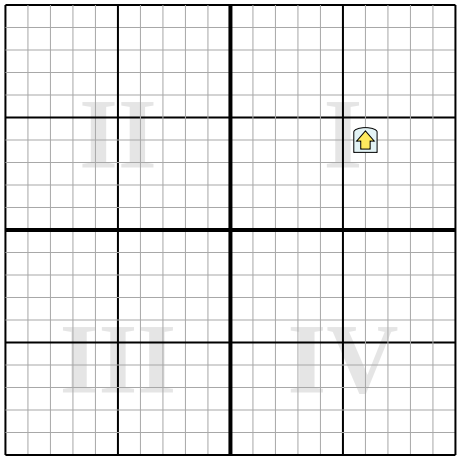
2. $x1 = 1 \times 0.5 - 4 \times 0.87$
$y1 = 1 \times 0.87 + 4 \times 0.5$

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

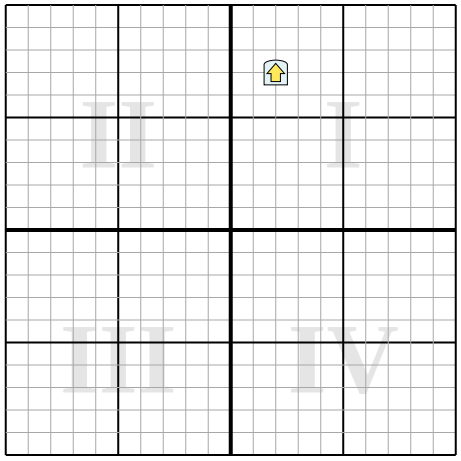
4. $x1 = -2.98$
$y1 = 2.87$

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

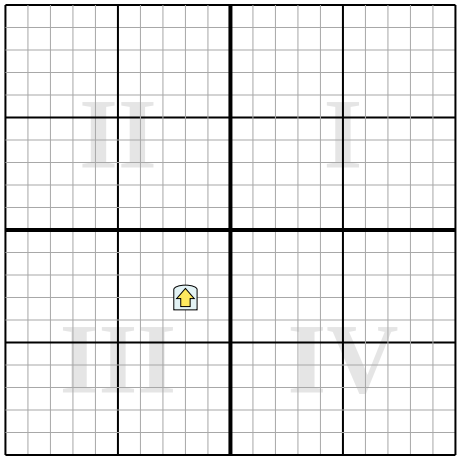
1) Rotate the shape -79° around the point (0,0).



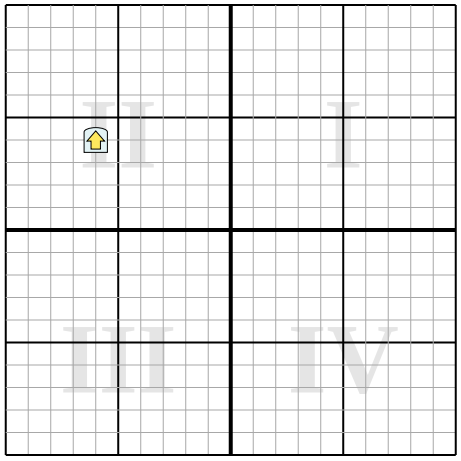
2) Rotate the shape 156° around the point (0,0).



3) Rotate the shape -160° around the point (0,0).



4) Rotate the shape -33° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

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)
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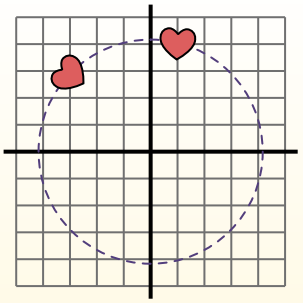

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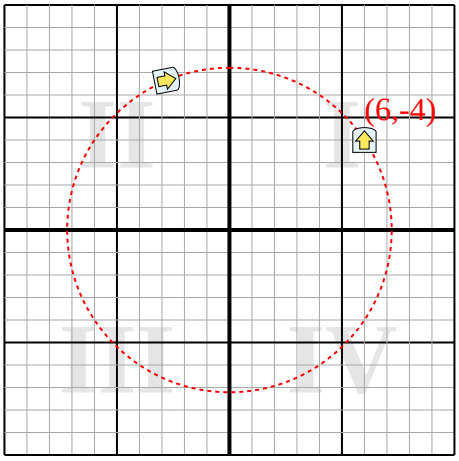

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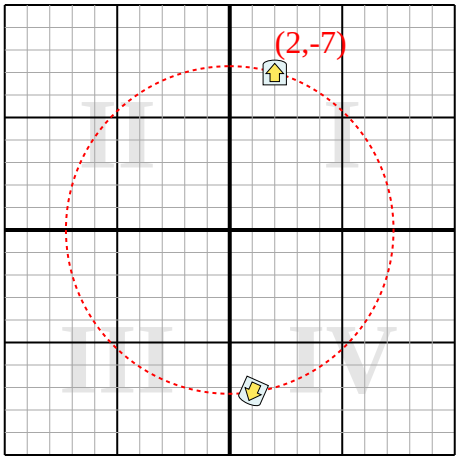

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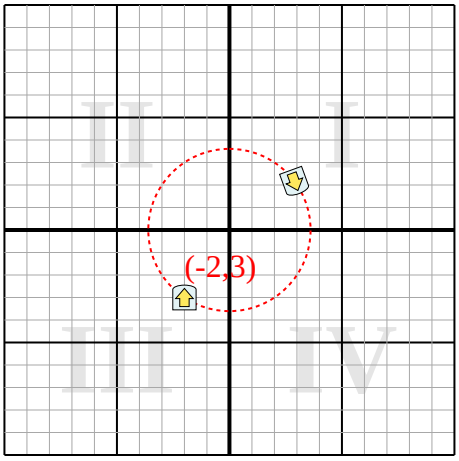

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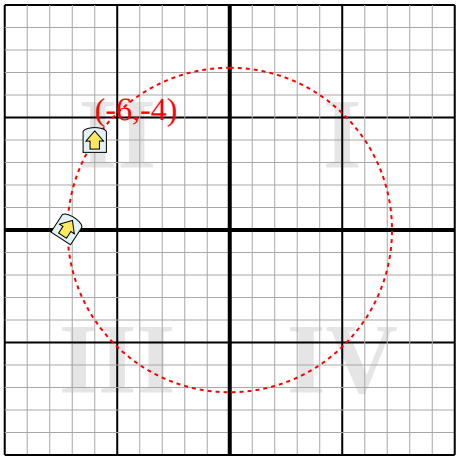

Answers

1. **(-2.8,6.7)**
2. **(1,-7.2)**
3. **(2.9,2.1)**
4. **(-7.2,0.1)**

1-4	75	50	25	0

Rotate each shape. Answer as the new coordinates.

θ = Angle of Rotation

Rotation Formula

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

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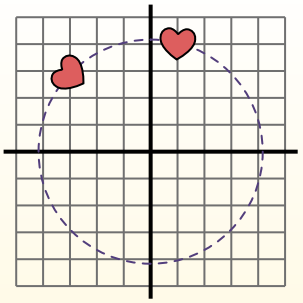

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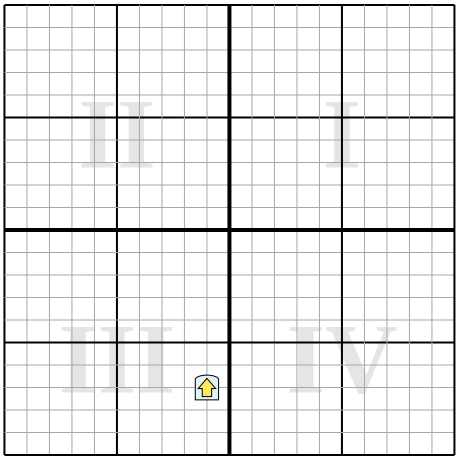
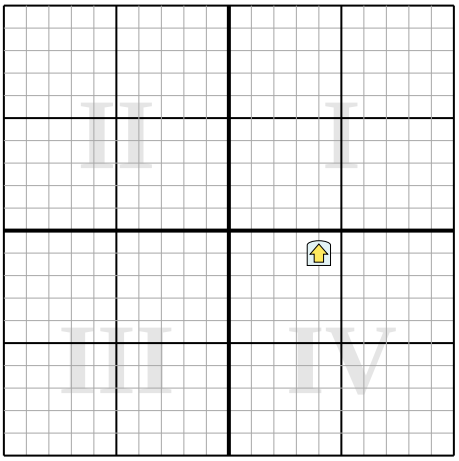
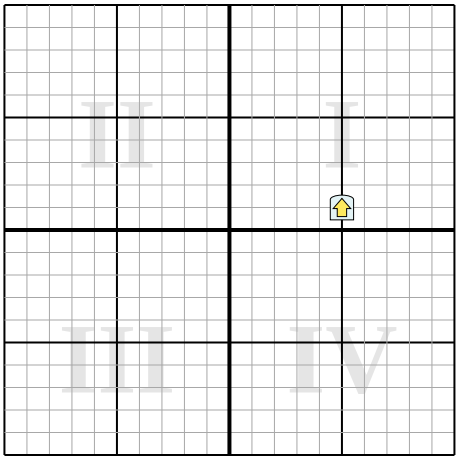


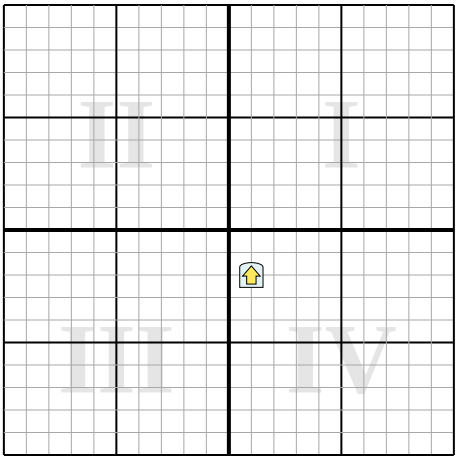
2) Rotate the shape 68° around the point (0,0).



3) Rotate the shape 215° around the point (0,0).



4) Rotate the shape -135° around the point (0,0).



Answers

1. _____
2. _____
3. _____
4. _____

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)
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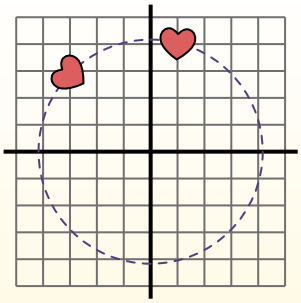

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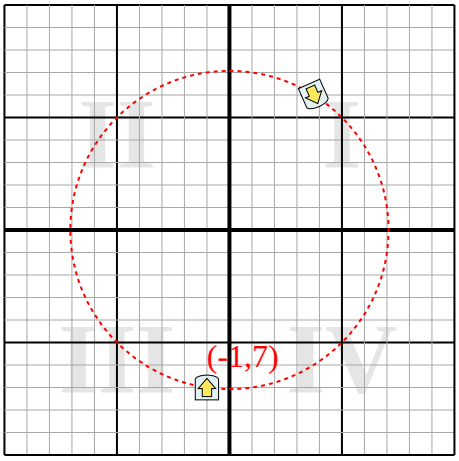

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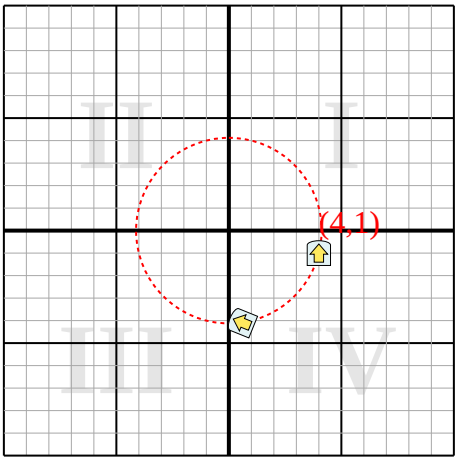

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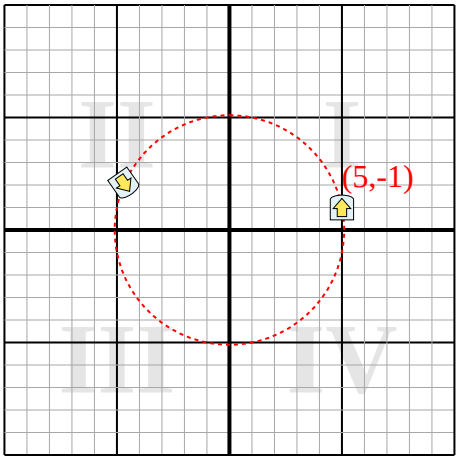

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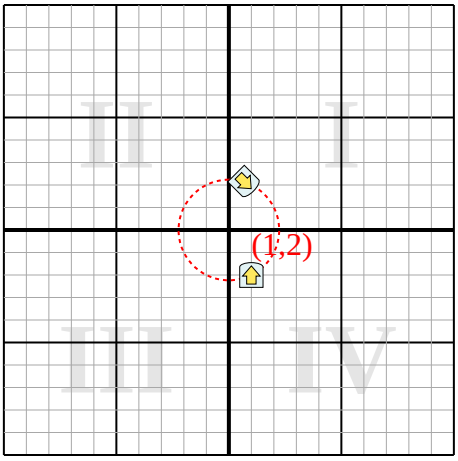

Answers

1. **(3.8,6)**
2. **(0.6,-4.1)**
3. **(-4.7,2)**
4. **(0.7,2.1)**

1-4	75	50	25	0