

Rotations

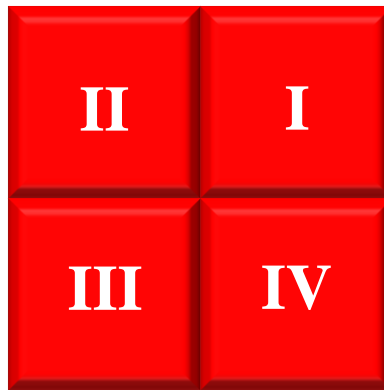
A rotation in this direction is called clockwise...



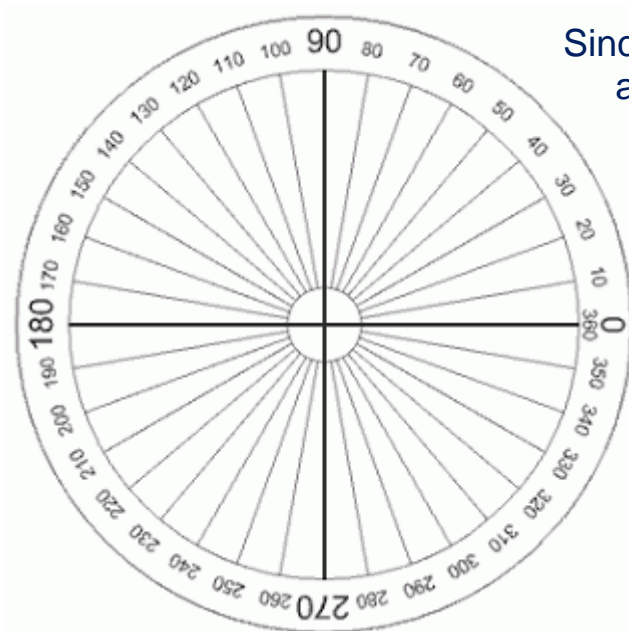
...and the opposite direction is called counterclockwise.



A coordinate plane is divided by a vertical y-axis and a horizontal x-axis into four quadrants. These are labeled in a counterclockwise direction using Roman numerals.



Unless told otherwise, rotations are graphed moving in a counterclockwise direction.



Since a circle consists of 360° , a 90° rotation would move one-quarter of the way around the circle, a 180° rotation would move half-way around, and a 270° rotation would travel three-quarters of the way around the circle.

$90^\circ \rightarrow$ moves 1 quadrant
 $180^\circ \rightarrow$ moves 2 quadrants
 $270^\circ \rightarrow$ moves 3 quadrants

Label your paper 1-20, then answer these questions.

In which quadrant will each point finish after being rotated the given distance and direction?

	Starts in Quadrant	Moves	In this Direction
1.	I	270	Clockwise
2.	II	90	Clockwise
3.	III	180	Counterclockwise
4.	IV	90	Counterclockwise
5.	I	180	Clockwise
6.	II	90	Counterclockwise
7.	III	270	Counterclockwise
8.	IV	270	Counterclockwise
9.	I	90	Clockwise
10.	II	180	Counterclockwise

For the next ten problems, give the new coordinates of the rotated point. To rotate a point clockwise, turn your paper (or computer) one, two or three turns counterclockwise. To rotate a point counterclockwise, rotate your paper clockwise.

	Original Point	Moves	In this Direction
11.	(15, 6)	90	Counterclockwise
12.	(-7, 9)	270	Clockwise
13.	(-29, -4)	180	Counterclockwise

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|-----|-------------|-----|------------------|
| 14. | (8, -5) | 90 | Counterclockwise |
| 15. | (4, 0) | 180 | Clockwise |
| 16. | (0, -3) | 90 | Counterclockwise |
| 17. | (-132, -11) | 270 | Counterclockwise |
| 18. | (7, 4) | 270 | Counterclockwise |
| 19. | (-3, 3) | 90 | Clockwise |
| 20. | (100, 2) | 180 | Counterclockwise |