LESSON MAKER PRO

Polar Point Patrol

Locate points using distance and direction.

HIGH SCHOOL · G.GPE.C.10

G.GPE.C.10 "Plot points on a polar coordinate grid."

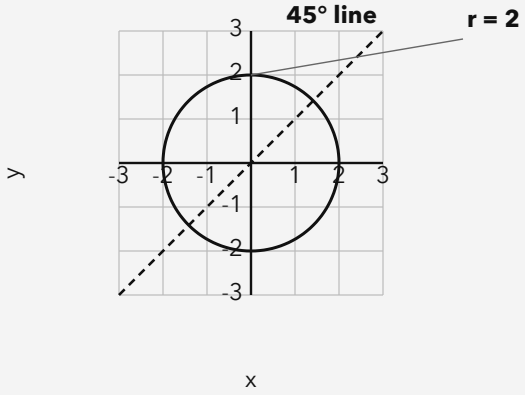
NAME _____ DATE _____

PLOT A POLAR POINT

In (r, θ), r is the distance from the origin. Measure θ counterclockwise from the positive x-axis, then move r units along that ray.

WORKED EXAMPLE

Plot P = (2, 45°) on the grid. Where does P lie?



1. Find the 45° ray above the positive x-axis.
2. Follow it to the r = 2 circle and mark P.

Answer: P is in quadrant I where the 45° ray meets the r = 2 circle.

PRACTICE 4 problems

1 Where would you plot A = (1, 0°)? Give its Cartesian coordinates.

ANSWER _____

2 Where would you plot B = (3, 90°)? Give its Cartesian coordinates.

ANSWER _____

3 Where would you plot C = (4, 180°)? Give its Cartesian coordinates.

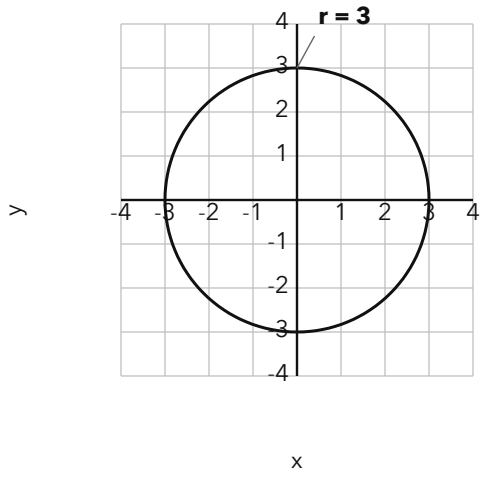
ANSWER _____

4 Where would you plot D = (1, 270°)? Give its Cartesian coordinates.

ANSWER _____

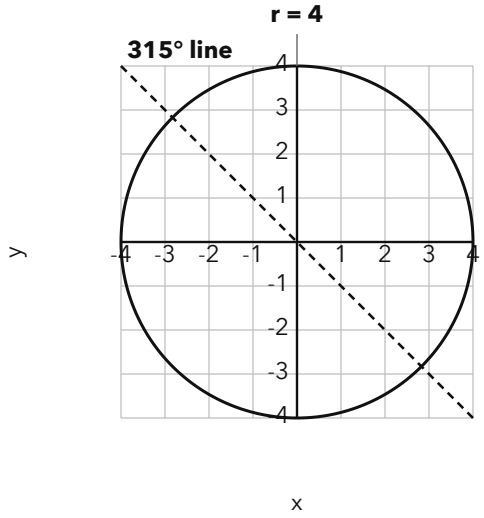
APPLY IT Show your work

1 A game map uses the origin as your starting point. Plot a supply crate at (3, 180°) on the grid. Give its Cartesian coordinates.



ANSWER _____

2 A drone leaves its launch point at the origin. Plot its position at (4, 315°) on the grid. Which quadrant is it in?



ANSWER _____

CHALLENGE One step up

Do (3, 120°) and (-3, 300°) mark the same point? Explain. For a negative radius, move opposite the angle's ray.

WORK SPACE AND ANSWER

ANSWER KEY

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Where would you plot A = (1, 0°)? Give its Cartesian coordinates.	**(1, 0)**
2	Where would you plot B = (3, 90°)? Give its Cartesian coordinates.	**(0, 3)**
3	Where would you plot C = (4, 180°)? Give its Cartesian coordinates.	**(-4, 0)**
4	Where would you plot D = (1, 270°)? Give its Cartesian coordinates.	**(0, -1)**

PART 2 · APPLY IT

1. **(-3, 0)** The 180° ray points left along the x-axis. Move 3 units from the origin.
2. **Quadrant IV** Follow the 315° ray to the r = 4 circle. The ray lies below the positive x-axis.

CHALLENGE

Yes. Moving 3 units opposite the 300° ray follows the 120° ray, so both coordinates mark the same point.

For the plotted points, accept a clear mark at the correct circle and ray intersection. The dashed diagonal lines extend in both directions, so check that students choose the stated ray.