

learning focus:

- ✓ locate and plot ordered pairs on the coordinate plane
- ✓ reflect points on the coordinate plane
- ✓ find distance between points and create figures on the coordinate plane

COORDINATE PLANE UNIT

8 DAY CCSS-ALIGNED UNIT

6th
GRADE

Unit: Coordinate Plane
Student Handout 4

Name _____
Date _____ Pd _____

GRAPHING RATIONAL NUMBERS

Mr. Griffin asked his students to place the following numbers on both the number lines below.

A: -1.5 B: $\frac{1}{3}$ C: $\frac{5}{3}$ D: -0.75

Correct because they looked like...
are marked.
an appropriate scale to better

the table. Plot any

COORDINATE PLANE UNIT

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COORDINATE PLANE PACING GUIDE

DAY	TOPIC	RESOURCE
DAY 1	Graphing in Quadrant One	Student Handout 1
DAY 2	Intro to the Coordinate Plane	Student Handout 2
DAY 3	Reflections	Student Handout 3
DAY 4	Determining Scale	Student Handout 4
DAY 5	Distance Between Points	Student Handout 5

A MANEUVERING THE MIDDLE® RESOURCE

COORDINATE PLANE



an 8 day CCSS-aligned unit

CCSS: 6.NS.6, 6.NS.6a, 6.NS.6b, 6.NS.6c, 6.NS.8

**ready-to-go, scaffolded
student materials**

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student friendly + real-world
application

Unit: Coordinate Plane
Homework 1

Name _____
Date _____ Pd _____

GRAPHING IN QUADRANT ONE

Mr. Avery forms a picture in the first quadrant of the coordinate plane. Help him determine where the points should go based on the requirements. Start with the point given on the graph and connect the lines as you go in order. Draw a line to connect your last point back to the original point on the graph. Some points already have a location, so list a possible requirement that would result in that location.

POINT	REQUIREMENT
1	The x-coordinate is in the middle of the x-axis
2	
3	The x-coordinate is neither a multiple of 2 nor a multiple of 3
4	
5	The x-coordinate is the sum of the y-coordinate and 4
6	
7	The x-coordinate is twice the y-coordinate

Unit: Coordinate Plane
Student Handout 1

Name _____
Date _____ Pd _____

GRAPHING IN QUADRANT ONE

The students at Northside Middle School are creating a map around the school for incoming 6th graders. Use the map below to describe how students should travel between the locations below.

a. Describe the difference between the x and y coordinates.

b. Yvette is asked to plot the point (7, 0) correctly? Justify your thinking.

SHAPE	COORDINATE PAIR
CIRCLE	(4, 18)
TRIANGLE	(5, 8)
SQUARE	(7, 0)
HEART	(18, 12)
STAR	(13, 7)
TRAPEZOID	(10, 16)
RHOMBUS	(8, 5)

Summarize today's lesson:

ORDERED PAIRS

- An ordered pair describes an exact location on the coordinate plane.
- x-coordinate:** the first number in an ordered pair and indicates movement parallel to the x-axis, or horizontally.
- y-coordinate:** the second number in an ordered pair and indicates movement parallel to the y-axis, or vertically.
- When graphing ordered pairs, always begin at the origin, (0, 0).

Describe the process that you would take to graph the ordered pairs below.

1. The ordered pair (8, 4) means that to plot the point, you will begin at the origin and then move 8 units right and 4 units up.

2. You begin at the origin and travel 5 units to the right and then up 3 units. You will be at what ordered pair?

interactive practice

scaffolded concepts

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GRADE

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streamline your planning
process with unit overviews

COORDINATE PLANE OVERVIEW



STANDARDS

6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

6.NS.6a Recognize opposite signs of numbers as indicating locations on opposite sides of the number line; recognize that the opposite of the opposite of a number is the number itself.

6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; and recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.

6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.

6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

PIC IDEAS

- The coordinate plane is an i
- The coordinate plane is use

ESSENTIAL QUESTION

- How does a reflection across
- What pattern do you notice
- How would a point with the

COORDINATE PLANE PACING GUIDE



DAY 1	DAY 2	DAY 3	DAY 4	DAY 5
Graphing in Quadrant One	Graphing on the Coordinate Plane	Reflections	Graphing Rational Numbers	Distance Between Points
Student Handout 1 Homework 1	Student Handout 2 Homework 2			
DAY 6	DAY 7			
Creating Figures on the Coordinate Plane	Coordinate Plane Unit Study Guide			
Student Handout 6 Homework 6 Mini-Quiz 2	Unit Study Guide			

COORDINATE PLANE OVERVIEW



TOPIC	TEACHING TIPS
The Coordinate Plane	<ul style="list-style-type: none">• This will be students' first experience with all four quadrants of the coordinate plane. Students are now putting both the vertical number line and the horizontal number line together to form a coordinate plane.• Consider pulling up Google Maps or Google Earth and putting in intersections of streets near you. Ask students to explain why this is important and how it applies to the coordinate plane.• If you have a large space outside, use masking tape to mark off a basic coordinate plane. Ask students to place various objects at specific ordered pairs.• Note: A strategy for helping students remember is to draw the letter "C" on the coordinate plane.
Absolute Value and Reflections	<ul style="list-style-type: none">• Students must be confident in their placement of the x- and y-axis in this lesson. The most common mistake is reflecting over the incorrect axis.• The biggest takeaway is that students should be able to observe the change in the x- and y-values when reflected over each axis.
Determining Scale	<ul style="list-style-type: none">• Project a picture that has been zoomed in. Then, ask students to guess the picture. After much discussion, zoom the photo out and reveal the photo. Explain that the coordinate plane can also be "zoomed in". Show a coordinate plane where each line does not represent 1 and help students to make connections as to the scale of the axis.• Note: It might be a good idea to use one color to show reflections over x and another color over y.
Distance Between Points	<ul style="list-style-type: none">• Go back to the Google Maps example and ask students to provide directions from one well known location to another (simple is best). Ask students to then take these skills and transfer them to the coordinate plane. Students can practice "giving directions" to a partner and then checking to see if they followed them correctly.• Consider projecting a simple map on top of a coordinate plane, if possible.

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teaching
ideas

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unit study guide + assessments

✓ quizzes

✓ editable unit test

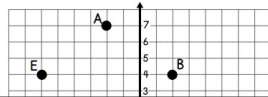
Unit: Coordinate Plane
Mini-Quiz 1

Name _____
Date _____ Pd _____

QUIZ: THE COORDINATE PLANE

Use the coordinate plane at the right to answer the questions below.

1. What ordered pair represents point E?
2. If B is reflected over the x-axis, then what are its coordinates?
3. In which quadrant is point D located?
4. If point A is reflected and the image is located at $(-2, -7)$, what is the reflection?
5. If D is reflected over the y-axis, what are its coordinates?



Unit: Coordinate Plane
Mini-Quiz 1

QUIZ: THE COORDINATE PLANE

Use the coordinate plane at the right to answer the questions below.

1. What ordered pair represents point A?
2. If B is reflected over the x-axis, then what are its coordinates?
3. In which quadrant is point D located?
4. If point A is reflected and the image is located at $(-2, -7)$, what is the reflection?
5. If D is reflected over the y-axis, what are its coordinates?

Unit: Coordinate Plane
Review

Name _____
Date _____ Pd _____

COORDINATE PLANE UNIT STUDY GUIDE

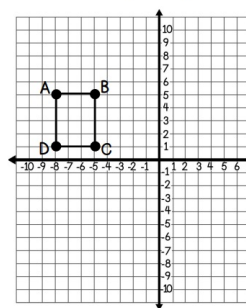
Solve each of the problems below. These represent the types of questions on your test. Be sure to ask questions if you need more help with a topic.

I CAN LOCATE AND PLOT INTEGERS ON THE COORDINATE PLANE.

- | | |
|---------------------|---------------------|
| 1. A: $(-2, 8)$ | 2. B: $(4, 7)$ |
| 3. C: the origin | 4. D: $(6, -5)$ |
| 5. E: quadrant IV | 6. F: on the x-axis |
| 7. G: $(-10, -2)$ | 8. H: $(1, -5)$ |
| 9. I: on the x-axis | 10. J: quadrant I |

I CAN REFLECT POINTS.

11. Reflect the original image over the y-axis.



SIXTH GRADE CURRICULUM

COORDINATE PLANE

UNIT SIX: ANSWER KEYS

answer keys
included

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