Graphing Integers On A Coordinate Plane

Summary

Plot ordered pairs on a coordinate plane and identify the coordinates for a point on a coordinate plane.

Main Core Tie

Mathematics Grade 5

Strand: GEOMETRY (5.G) Standard 5.G.1

Materials

Starter problems on a transparency for timings.
Transparency of a map with coordinates
a large X you cut out or print on a paper
graphing calculators

- journal page
(attached)

Background for Teachers

Enduring Understanding (Big Ideas):
Ordered pairs can be used to identify points on a coordinate plane
Essential Questions:

When is a coordinate system used in real life?
How can ordered pairs be represented symbolically and graphically?

Skill Focus:
Graphing ordered pairs and identifying coordinates
Vocabulary Focus:
Coordinate plane, quadrant, axes, x-axis, y-axis, origin, ordered pair, coordinates, point
Ways to Gain/Maintain Attention (Primacy):
Timing, game, technology, art (graphed picture), journaling, writing

Intended Learning Outcomes

Starter: Have students number their paper with four columns as shown. Give each column as a 1-minute timing. Students will write answers only.

1. -5 + 5	1. -5 -- 5	1. 3 x 5	1. 15 ÷ 5
2. 6 + 3	2. 6 -- (- 3)	2. -3 x 5	2. -15 ÷ 5
3. 7 + -5	3. 7 -- 5	3. -3 x -5	3. -15 ÷ -5
4. -2 + -2	4. -2 -- 2	4. 6 • -2	4. 6/-2
5. -8 + 9	5. -8 -- (-9)	5. -9 • -2	5. -9/-3
6. 10 + 5	6. 10 -- -5	6. 5 • -5	6. 5/-5
7. -4 + -5		7. -8 x -3	7. -8 ÷ -8
8. 4 + -8		8. -4 x 5	8. -4 ÷ 4
9. -3 + 3		9. -1 x -1	9. -1 ÷ -1
10. -8 + -8		10. 7 • -3	10. 12/-3

Lesson Segment 1: When is a coordinate system used in real life?
Put a map on a transparency and ask the students to locate a city given coordinates from the map.
Discuss need for ordered pairs or coordinates, for a coordinate system, for an origin.
Divide the class into two teams. Explain the game:

Each team should pick a "Seeker" and a "Guide". The Seeker will be blindfolded. The Seeker will stand in an open area of the room walking as directed by the Guide, who will give directions in the form of, "Take ___ steps to your right (or left, forward, backward). The rest of the team will suggest to their Guide (in whispers) what directions to give their Seeker. The Seeker faces the front of the room at all times, never turning, and may only move right, left, forward, or backward. The team will be timed on how long it takes to get their Seeker to the Target (a large X).
Begin by blindfolding the Seeker from one team, and facing the Seeker towards the front of the room. Remind the seek they may not turn at all. Place a large X on a diagonal from the Seeker. The team gives suggestions to the Guider as to what to say to the Seeker until the Seeker reaches the X. When the team begins, a timer should be started. When the Seeker has reached the target, the other team will have a turn. The team who takes the least time getting the Seeker to the target, wins.
Discuss need for *ordered pairs or coordinates*, for a *coordinate system*, for an *origin*. Place a *coordinate plane* on the overhead. If an invisible coordinate plane could be placed on the Earth, we could easily identify specific locations and travel to those locations. Longitude and Latitude lines are similar to a coordinate plane, except they are laid on a sphere rather than a plane.
Lesson Segment 2: How can ordered pairs be represented symbolically and graphically?
Using the transparency, show students how to write coordinates (similar to the directions they gave in the game) for a given location or point. Have students complete their journal page (attached) for your examples as you select students to come to the overhead to place a point at that location. Explain that we always give directions in a certain order (thus, ordered pairs). Just like going to your room in a hotel. You must first walk across the floor or the hall before getting into the elevator.
Lesson Segment 3: Practice
Have student's pair up to plot a point on the graphing calculator. Each person plots a point and has their partner identify the coordinates for that point.
Assign students appropriate practice from a text or worksheet where a picture is drawn using ordered pairs.

Assessment Plan

observation, questions, performance task

Bibliography

This lesson plan created by Linda Bolin.

Authors

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