

Cartesian Classroom

Beacon Learning - Annette Nixon - Santa Rosa District Schools

Description

The classroom is turned into a human Cartesian coordinate plane, thereby introducing students to the characteristics of the coordinate system.

Materials

- Masking tape
- Index cards with coordinates
- Overhead
- Transparency of coordinate plane

Preparations

1. Divide the room into four quadrants with masking tape on the floor (see attachment). Arrange desks into rows, be sure a row of desks is over each axis, and place one in the center at the origin.
2. Make a card for each desk with its appropriate ordered pair.
3. Be sure to have an overhead transparency of the coordinate plane.

Procedures

1. Begin with a discussion of what the Cartesian coordinate system is, who developed it, and why. (Relate that Rene Descartes came up with the system while lying in bed for a nap. He saw a fly on the ceiling, and he wondered how he could give the exact location of the fly.) Review what the students already know of the coordinate plane and plotting points. They should have previous knowledge of plotting points in the first quadrant.

2. Define the following vocabulary on overhead:

- origin
- axes
- quadrant
- ordered pair
- abscissa
- ordinate

(Some of this can be done through the discovery method. For example, give a list of ordered pairs, name all of the x-coordinates and tell students that these are abscissas. Ask them for the definition of abscissa.) Be sure to point out and label, positive and negative, the four quadrants, and the ordered pairs associated with points on the x- and y-axes. Plot a few points on the overhead as examples, or possibly ask for volunteers to plot them.

3. The floor should be taped into a coordinate plane (see attachment). Question students to find out who is sitting at the origin. Ask them to determine which are the positive directions and which are the negative directions. Continue with similar questions until students have mastered the vocabulary.

Examples:

- Everyone in quadrant I stand up.
- Everyone on the x-axis stand up.
- Everyone with a positive abscissa stand up.

4. Pass out ordered pair cards. Ask students to move to their new seats.

Assessments

Do an informal assessment by checking to see if students stand at the appropriate times when questioned about locations on the coordinate plane. Once students have had an opportunity to locate new seats, validate the students' choices.

Extensions

Students design their own picture on a four quadrant plane, and they give the coordinates on a separate sheet of paper.