

Creating Constellations on a Coordinate Plane

Grade Level/Subject: Science or math (Could be simplified to 3rd grade level by making the coordinates all positive.)

Key Concept: Constellations can be represented graphically.
Constellation names and identities are a subjective human creation.

Description: Students will explore the patterns of constellations by plotting star locations on a coordinate grid.

Materials Needed:

APH Graphical aid for Mathematics for each visually impaired student

[Graph paper and pencils for sighted students]

List of coordinate points only for each constellation in each student's reading medium

List of constellation names for each set of points for future identification

Procedures:

Review parts of graph board:

 Axes made from yarn and flat thumbtacks. Pushpins and rubber bands ready to use in upper right corner

Review Quadrants:

 Quadrant I is upper right corner and where positive, positive ordered pairs are graphed. Going counterclockwise,

 Quadrant II is upper left with negative x values and positive y values

 Quadrant III is lower left with both values negative.

 Quadrant IV is lower right with positive x values and negative y values.

Review axes:

X axis is horizontal, Y axis is vertical

Review how to plot points with positive values:

Plot (2, 4) Count x value horizontally to the right for a positive value, then y value vertically up for the y value. Insert pushpin at that point.)

Review how to plot points with negative values:

Plot (-2, 4) (For negative x value count to the left.)

Plot (-2, -4) (For negative y value count down.)

Plot (2, -4). Connect points with rubber band(s). Identify the shape.

Talk about stars being like points of light in the sky and people connecting them, identifying shapes and giving them names. We will plot location of star points and try to name the pictures ourselves.

Pass out an unnamed list of coordinates to each student.

Help individuals as needed as they plot the points.

As students finish, suggest that they may want to connect the stars and name their constellations.

When everyone has had a chance to look for patterns and suggest names of their constellations, tell the conventional names on the key and let students look at one another's constellations.

Sample Constellations:

Orion (The Hunter)

(-5,9 a.k.a. Bet-el-geuse); (-2,-1); (-3,-9); (0,0); (2,1); (5,8); (7,-7)

Cygnus (the Swan)

(-9,8); (-5,-3); (-4,6); (-1,0); (5,-4); (6,6); (7,-9); (10,10)

Teapot (part of Sagittarius, the Archer)

(-10,0); (-8,4); (-8,-2); (0,6); (3,2) (3,-4); (7,1)

Leo (the Lion)

(-18,-6); (-11,0); (-9,-5); (1,4); (2,2); (4,0); (4,8); (6,7); (6,-5)

Cassiopea (A queen from Greek mythology)

(-9,7); (-5,-1); (0,0); (4,-5) (10,0)

Big Dipper (part of Ursa Major, the Great Bear)

(-18,3); (-11,4); (-6,3); (1,1); (3,-5) (13,-5); (15,3)