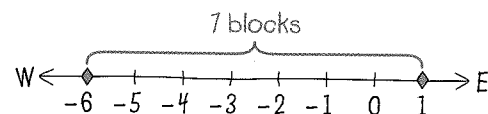
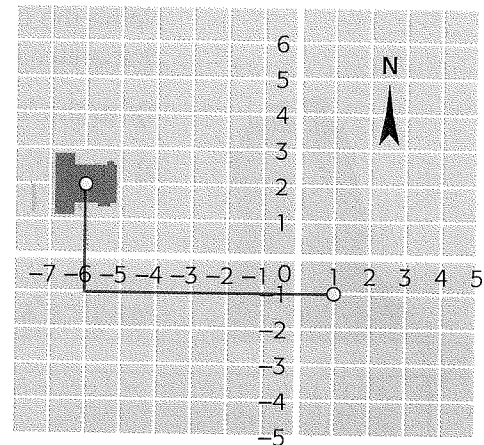


Example 3 Calculating distance using points

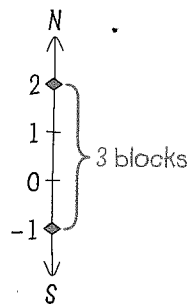
Nick plans to walk west and then north to get from the theatre to the mall. How far will he travel in each direction?



Nick's Solution



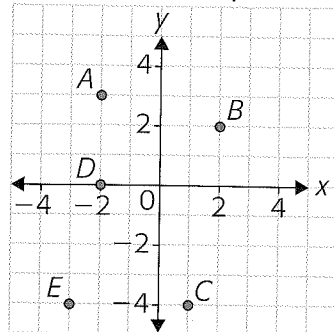
First I used a horizontal number line to compare the x -coordinates.



Then I used a vertical number line to compare the y -coordinates.

I will travel 7 blocks west and 3 blocks north.

2nd quadrant 1st quadrant



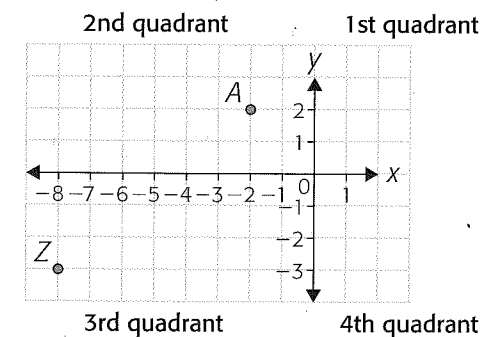
3rd quadrant 4th quadrant

A Checking

- Name the coordinates of each point shown.
- Plot the points $(2, 3)$, $(-1, 4)$, $(-3, -5)$, $(4, -6)$, and $(0, 0)$ on a Cartesian coordinate system.
- Identify the distance between the points.
 - $(-8, 3)$ and $(-5, 3)$
 - $(3, 3)$ and $(3, -7)$
 - $(5, -4)$ and $(-2, -4)$

B Practising

- Plot each set of points on a Cartesian coordinate system. Connect the points to form a polygon. Name the polygon.
 - $A(0, 5)$, $B(4, 5)$, $C(4, 0)$
 - $D(-3, 1)$, $E(-3, -3)$, $F(-1, -4)$, $G(-1, 0)$
- Copy and complete each statement. Write “above” or “below” in the green box.
 - $(4, -5)$ is $(-4, -3)$ because $\square < \square$.
 - $(-7, -1)$ is $(-4, -3)$ because $\square > \square$.
- Plot the points $(-11, 28)$, $(-18, 15)$, $(-15, -28)$, and $(-29, -15)$.
 - Which point is farthest right?
 - Which point is lowest?
- List five points that have opposite integers as their x -coordinate and y -coordinate.
 - Plot your points on a Cartesian coordinate system.
 - What pattern do these points form?
 - As the first coordinate of a point increases, what happens to the position of the point?
- A and Z are two vertices of a right triangle. What are the coordinates of the other vertex? Give two possible answers.



- Draw a parallelogram that has $(-5, -3)$ as its top right vertex. State the coordinates of the other vertices. Explain how you determined these coordinates.
- The diagonals of a rectangle intersect at $(0, 0)$. The rectangle is 6 units long and 4 units wide. Determine the coordinates of the vertices of the rectangle.
- How is the location of $(3, -4)$ different from the location of $(-4, 3)$?