Assignment

Write

In your own words, describe what a directed line segment is.

Remember

The midpoint of a line segment is the point on the segment that is equidistant from the endpoints of the line segment.
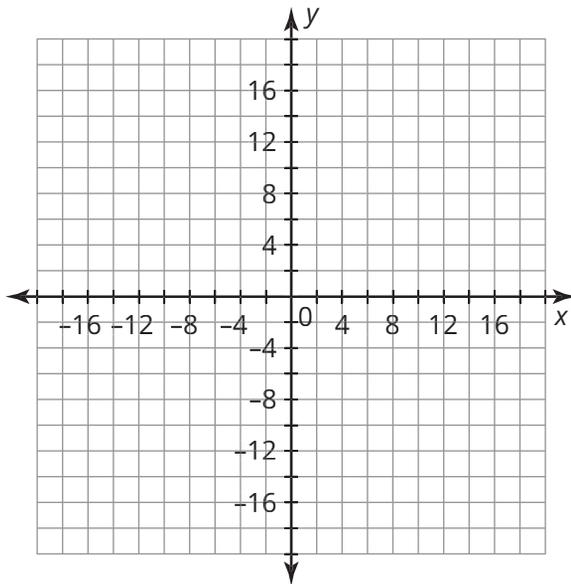
The Midpoint Formula states that the midpoint between any two points on a coordinate plane, (x_1, y_1) and (x_2, y_2) is $\left(\dfrac{x_1 + x_2}{2}, \dfrac{y_1 + y_2}{2}\right)$.

The Triangle Proportionality Theorem states: "If a line parallel to one side of a triangle intersects the other two sides, then it divides the two sides proportionally."

Practice

1. Graph the three points on the coordinate plane.

   A (−10, 3), B (−4, 3), C (−7, 11)

2. Connect the three points to form triangle ABC.
3. Solve for the coordinates of M_1, the midpoint of side AC.
4. Solve for the coordinates of M_2, the midpoint of side BC.
5. Connect the two midpoints M_1 and M_2.
6. Calculate the distance between points M_1 and M_2.
7. Calculate the distance between points A and B.
8. Compare the length of the midsegment (line segment M_1M_2) of the triangle to the length of the base of the triangle (line segment AB).

Stretch

1. A point that divides a line segment into a 3 : 1 ratio is located at $(5\frac{3}{4}, 8\frac{1}{2})$. The endpoints of the line segment have x-coordinates of −1 and 8 and their y-coordinates are different. Identify possible y-coordinates for the line segment's endpoints.

Review

1. A wall with a height of 75 feet casts a shadow that is 120 feet long. A nearby pole casts a shadow that is 600 feet long. Draw a diagram to represent the situation. Then, determine the height of the pole.

2. Two friends are shooting photos together to submit to an inline skating magazine. Brian is standing on top of a ramp that is 14 meters high. There are two flags on the ramp, one labeled A and one labeled B. Brian's friend, Neville, is going to try and get pictures of Brian when he is passing flag A and when he is passing flag B. Flag A is located 2 meters above the ground. The distance from the the point on the ground under flag A and flag B is 12 meters. Determine the horizontal distance across the bottom of the ramp.

3. Consider the circle with its center at point O. Determine the information that is needed to show that $MN \cong VZ$.
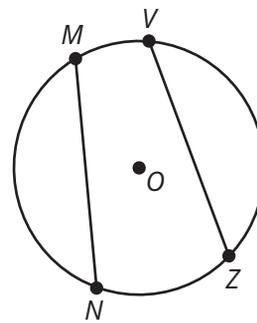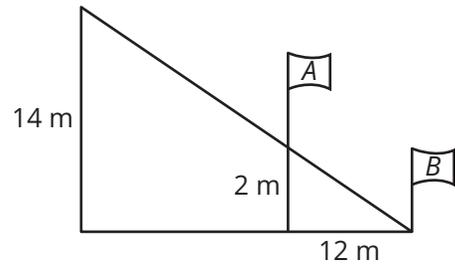
4. Provide the reasons to complete the proof.

Given: $\angle 2 \cong \angle 3$
Prove: $\angle 1 \cong \angle 4$
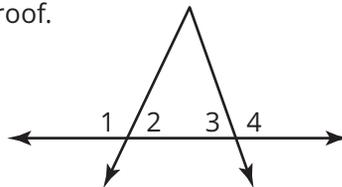
Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair. $\angle 3$ and $\angle 4$ form a linear pair.	1.
2. $m\angle 1 + m\angle 2 = 180°$ $m\angle 3 + m\angle 4 = 180°$	2.
3. $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$	3.
4. $\angle 2 \cong \angle 3$	4.
5. $m\angle 2 = m\angle 3$	5.
6. $m\angle 1 = m\angle 4$	6.
7. $\angle 1 \cong \angle 4$	7.