

## Review Pg. 156#10

### U3L3 – 2.5 Distance on the Plane

Students will develop a formula to calculate the distance between any two points on the Cartesian Plane.

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Complete the following investigation:

1. Sketch a coordinate grid and choose any two points on the grid (you don't necessarily need to use graph paper for this but you can if you like). Call these points A and B. Label point A with coordinates  $(x_1, y_1)$  and B with  $(x_2, y_2)$ .
2. Join these two points with a straight line segment. Create a right triangle that has this line as its hypotenuse, one side parallel to the y-axis, and one side parallel to the x-axis. What are the coordinates of the vertex with the right angle?
3. Write an expression for how you could calculate the length of the vertical side of the triangle.
4. Write an expression for how you could calculate the length of the horizontal side of the triangle.
5. Write an expression for the distance between A and B.

In general then a formula for the distance between any two points  $A(x_1, y_1)$  and  $B(x_2, y_2)$  is:

### **Examples**

1. Find the length of the line segment with end points  $A(-1, 0)$  and  $B(5, 2)$ .
  
  
  
  
  
  
  
  
  
  
  
2. A triangle has vertices  $A(-1, -1)$ ,  $B(2, 0)$  and  $C(1, 3)$ . Find the lengths and slopes of the sides of the triangle. What kind of triangle is this?

3. An airplane at coordinates (150, 136), which is heading for Sudbury (0,0), has to be diverted because of poor weather conditions to either North Bay (85,-10) or Timmins (-10, 155). If the airplane is carrying enough fuel to get to Sudbury, which alternate airport would it be safe to head for?

\*Read the Key Ideas on pg. 160.

Ex.Pg. 162 – 165 # 2alt,4,5alt,6i,ii, (7 – 8)all,11