

**Distance Formula**

The distance between any two points  $P(x_1, y_1)$  and  $Q(x_2, y_2)$  on a coordinate grid is given by

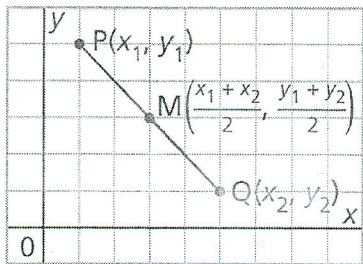
**Strategy 1:** Create a right triangle then use the Pythagorean Theorem  $a^2 + b^2 = c^2$  OR

**Strategy 2:** Use the formula:  $PQ = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

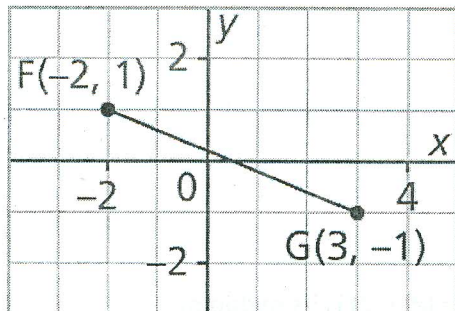
**Midpoint Formula**

The  $M$  is the midpoint of a line segment with endpoints  $P(x_1, y_1)$  and  $Q(x_2, y_2)$ , the coordinates of  $M$

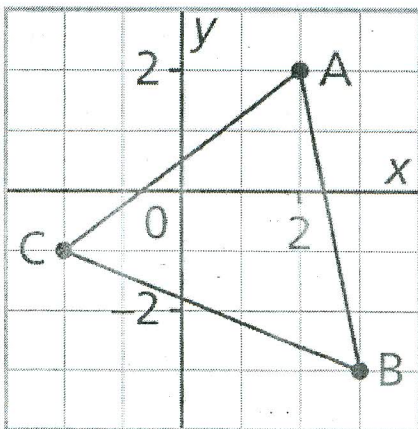
are:  $\left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$



1. Calculate the length of Line FG.



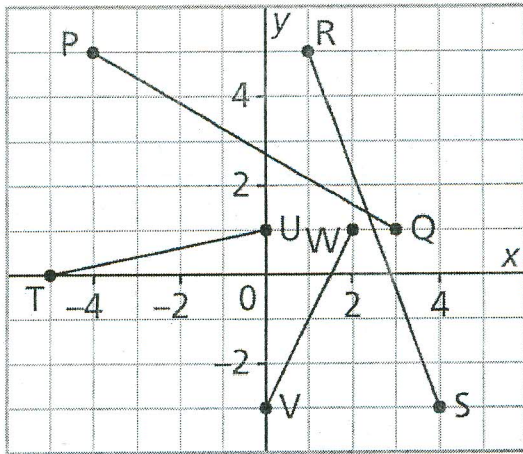
2. Determine whether the  $\triangle ABC$  is isosceles.



3. Determine the length of the line segment with each pair of endpoints.

a) $J(5, 9), K(5, -4)$	b) $M(-2, 7), N(6, 7)$	c) $P(-4, -3), Q(-4, 11)$	d) $R(-1, 0), S(8, 0)$
------------------------	------------------------	---------------------------	------------------------

4. Determine the coordinate of M for each line segment.



5. Point  $P(-1, 5)$  is one endpoint of line segment  $PQ$ . Point  $M(3, 2)$  is its midpoint. Determine the coordinates of the other endpoint,  $Q$ .