

Name: \_\_\_\_\_

## The Distance and Midpoint Formulas

- 1) The vertices of a triangle are  $P(1,-1)$ ,  $Q(7,1)$ , and  $R(3,3)$ .
  - 1) Show that  $\triangle PQR$  is an isosceles triangle.
  - 2) Show that  $\triangle PQR$  is a right triangle using the Pythagorean Theorem.
  - 3) Show that the midpoint of the hypotenuse is equidistant from all the vertices.
  
- 2) The vertices of a triangle are  $L(1,-1)$ ,  $M(7,-3)$ , and  $N(2,2)$ .
  - 1) Show that  $\triangle LMN$  is a scalene triangle.
  - 2) Show that  $\triangle LMN$  is a right triangle using the Pythagorean Theorem.
  - 3) Show that the midpoint of  $\overline{MN}$  is equidistant from the vertices.
  
- 3) The vertices of  $\triangle DEF$  are  $D(-2,-3)$ ,  $E(5,0)$ , and  $F(-2,3)$ .  
 Show that  $\overline{DE} \cong \overline{FE}$ .
  
- 4) The figure shows the arrangement of desks in a classroom. Ashman, Bari and Camilla are seated at  $A(3, 1)$ ,  $B(6, 4)$  and  $C(8, 6)$  respectively. Do you think they are seated in a line? Give reasons for your answer using the distance formula.

