

Name Schlansky  
Mr. Schlansky

Date \_\_\_\_\_  
Geometry



## Coordinate Geometry Trapezoid Proofs

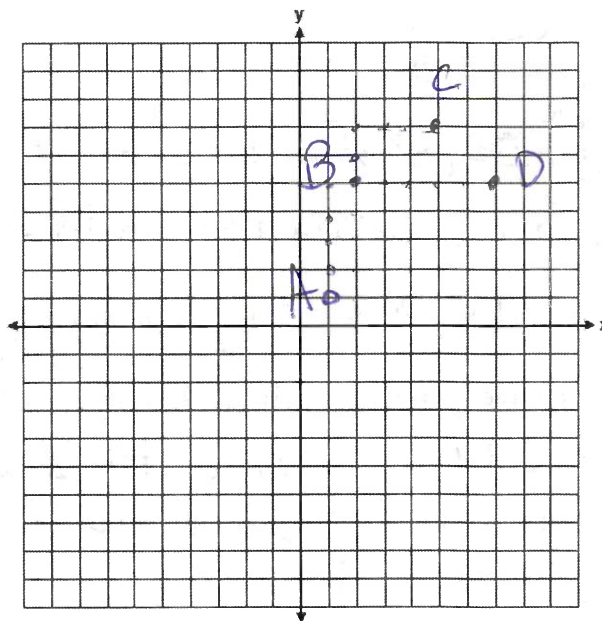
1. Quadrilateral ABCD has vertices A(1,1), B(2,5), C(5,7) and D(7,5). Prove that quadrilateral ABCD is a trapezoid.

1) ABCD is a trapezoid because it has 1 pair of opposite sides parallel.

$$2) m\overline{BC} = \frac{2}{3}$$

$$m\overline{AD} = \frac{4}{6} = \frac{2}{3}$$

3)  $\overline{BC} \parallel \overline{AD}$  because they have the same slope



2. Quadrilateral DEFG has vertices D(1,3), E(-1,1), F(-1,-2), G(4,3). Prove that DEFG is an isosceles trapezoid.

1) DEFG is an isosceles trapezoid because it has 1 pair of opposite sides parallel and it has congruent legs

$$2) m\overline{ED} = \frac{2}{2} = 1$$

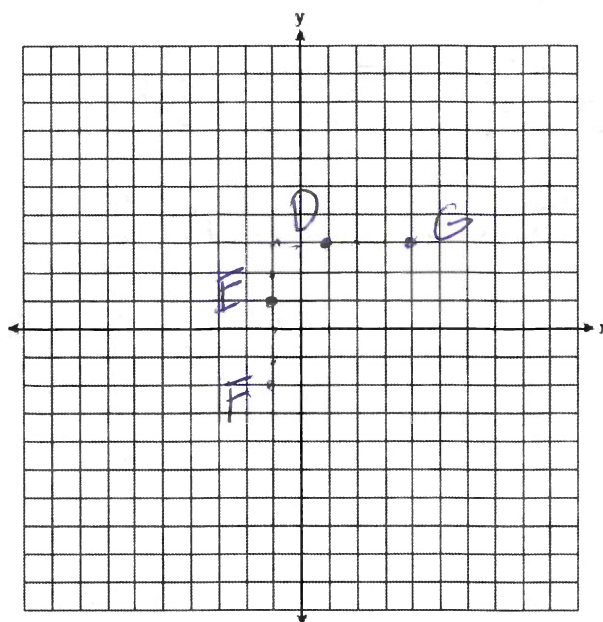
$$m\overline{FG} = \frac{2}{2} = 1$$

$$d\overline{FE} = 3$$

$$d\overline{DG} = 3$$

3)  $\overline{ED} \parallel \overline{FG}$  because they have the same slope.

$\overline{FE} \cong \overline{DG}$  because they have the same distance.



3. Given  $C(-7,-3)$ ,  $A(-7,2)$ ,  $M(-1,5)$ ,  $I(3,2)$ . Prove  $CAMI$  is an isosceles trapezoid.

1)  $CAMI$  is an isosceles trapezoid because it has 1 pair of opposite sides parallel and it has congruent legs.

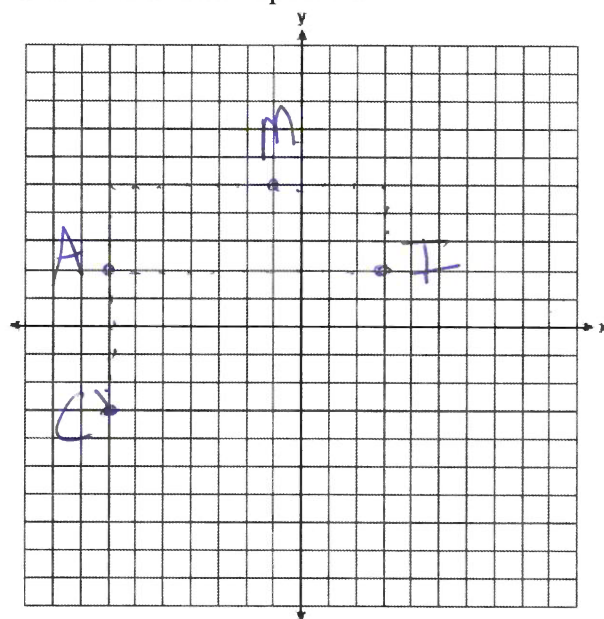
$$2) m \overline{AM} = \frac{3}{6} = \frac{1}{2}$$

$$m \overline{CI} = \frac{5}{10} = \frac{1}{2}$$

$$d \overline{AC} = 5$$

$$d \overline{MI} = \sqrt{4^2 + 3^2} = \sqrt{16 + 9} = \sqrt{25} = 5$$

3)  $\overline{AM} \parallel \overline{CI}$  because they have the same slope  
 $\overline{AC} \cong \overline{MI}$  because they have the same distance



4. Given  $M(-5,7)$ ,  $I(-1,10)$ ,  $L(9,5)$ ,  $O(-3,-4)$ . Prove  $MILO$  is an isosceles trapezoid.

1)  $MILO$  is an isosceles trapezoid because it has 1 pair of opposite sides parallel and congruent legs.

$$2) m \overline{MI} = \frac{3}{4}$$

$$m \overline{OL} = \frac{9}{12} = \frac{3}{4}$$

$$d \overline{MO} = \sqrt{2^2 + 11^2} = \sqrt{4 + 121} = \sqrt{125}$$

$$d \overline{IL} = \sqrt{10^2 + 5^2} = \sqrt{100 + 25} = \sqrt{125}$$

3)  $\overline{MI} \parallel \overline{OL}$  because they have the same slope  
 $\overline{MO} \cong \overline{IL}$  because they have the same distance.

