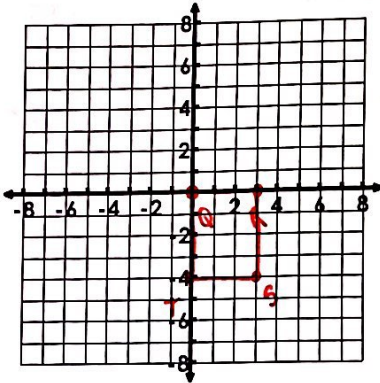


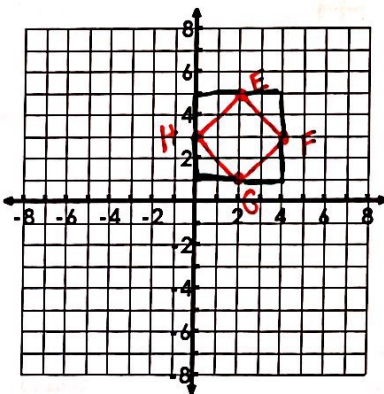
Day 4 – Proofs in the Coordinate Plane – Practice

1. Will these points form a rectangle? Prove it with algebraic evidence.
 Q (0, 0); R (3, 0); S (3, -4); T (0, -4)



yes, horizontal and vertical lines always intersect at a 90° angle.

2. What shape makes up the following coordinates? Prove it with algebraic evidence.
 E (2, 5), F(4, 3), G (2, 1), H (0, 3)



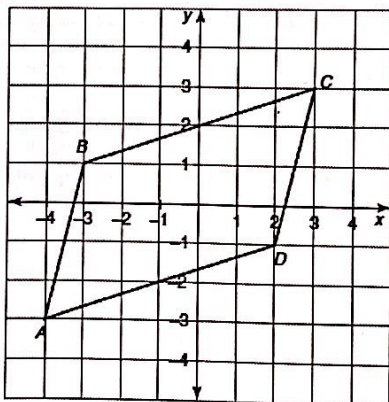
LOOKS like a square \rightarrow prove 4 sides are \cong
 \rightarrow prove 4 right angles

Sides
 all sides are $2^2 + 2^2 = c^2$
 $8 = c^2$
 $2\sqrt{2} = c$

Angles
 Slope of EF: -1
 GF: 1
 HG: -1
 HE: 1

Square because all sides are $2\sqrt{2}$ in length and the slopes are negative reciprocals, so the angles are 90° .

3. Maria classified the following shape as a parallelogram. Is she correct? Prove why or why not.



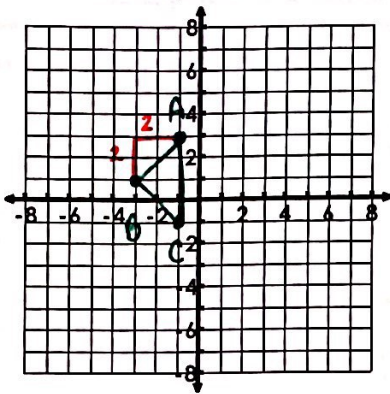
\hookrightarrow prove opp sides are \cong or opp sides are parallel

Slope of BC: $\frac{2}{6} = \frac{1}{3}$
 AD: $\frac{2}{6} = \frac{1}{3}$
 CD: 4
 BA: 4

It is a parallelogram as opposite sides are parallel (same slopes)

4. Prove or disprove that the points $A(-1, 3)$, $B(-3, 1)$ and $C(1, -1)$ make up an equilateral triangle.

↳ All sides are \cong

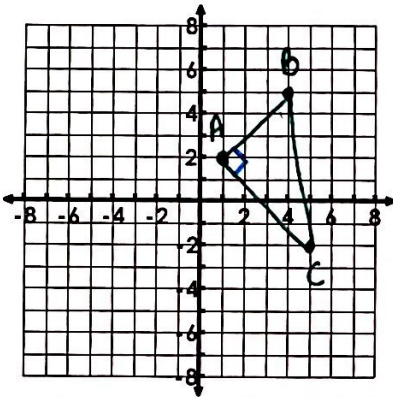


Lengths
 $AC: 4$
 $AB: 2\sqrt{2}$
 $BC: 2\sqrt{2}$

This is an isosceles Δ , not equilateral since AC is not the same as AB and BC .

5. Do the points $A(1, 2)$, $B(4, 5)$ and $C(5, -2)$ form a right triangle?

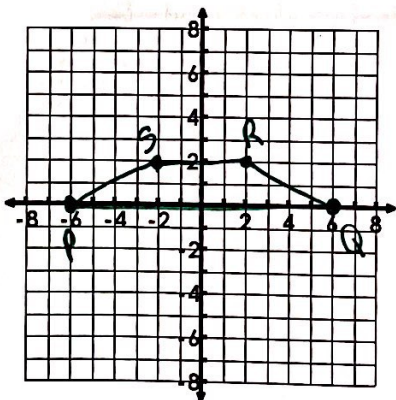
↳ $90^\circ \rightarrow$ negative reciprocals



Slope of $AB: 1$
 Slope of $AC: -1$

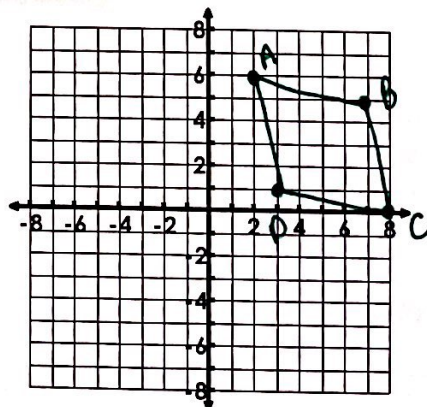
Yes it is a right triangle

6: Isosceles Trapezoid PQRS has vertices at $P(-6, 0)$, $Q(6, 0)$, $R(2, 2)$, and S . Find the coordinates of point S .



$S(-2, 2)$

7: If the points $A(2, 6)$, $B(7, 5)$, & $C(8, 0)$ are the vertices of rhombus ABCD, what are the coordinates of vertex D ?



$D(3, 1)$