

9.15 HW Parallelogram and Rectangle Proofs

Name: Key

Directions: Identify the Quadrilateral PQRS, with the given points. SHOW ALL WORK!!!

1) Plot Quadrilateral PQRS: P(-1, 2) Q(2, 4) R(3, -1) S(0, -3)

2) What shape does it appear to be? parallelogram

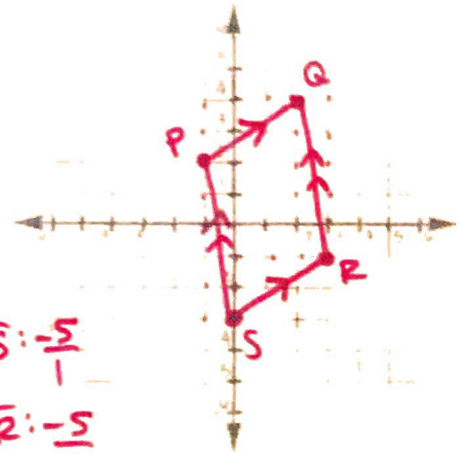
3) What do you have to show? Both pairs of opp sides are parallel.

4) Check off all that apply:

Slope of

$$\overline{PQ}: \frac{2}{3} \quad \overline{PS}: \frac{-5}{1}$$

$$\overline{SR}: \frac{2}{3} \quad \overline{QR}: \frac{-5}{1}$$



- opposite sides parallel
- consecutive sides perpendicular
- four congruent sides
- Only 1 pair of opposite sides parallel
- Congruent legs
- two pairs of congruent sides (consecutive)

5) Which shape is it? parallelogram

6) Why?

Both pairs of opp. sides are parallel

7) Plot Quadrilateral ABCD: A(0, 2), B(6, -2), C(4, -5), D(-2, -1)

8) What shape does it appear to be? rectangle

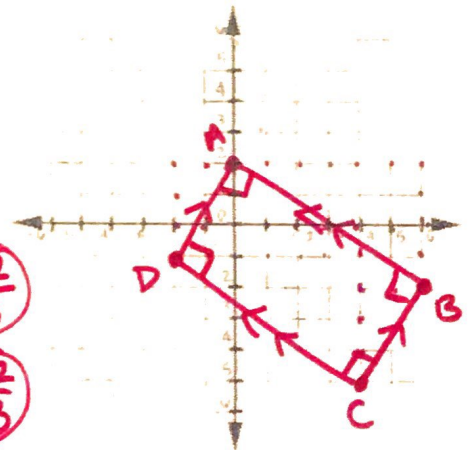
9) What do you have to show? opposite sides  $\parallel$  & 4 right  $\angle$ 's.

10) Check off all that apply:

Slope of

$$\overline{AD}: \frac{3}{2} \quad \overline{DC}: \frac{-4}{6} = \frac{-2}{3}$$

$$\overline{CB}: \frac{3}{2} \quad \overline{AB}: \frac{-4}{6} = \frac{-2}{3}$$



- opposite sides parallel
- consecutive sides perpendicular
- four congruent sides
- Only 1 pair of opposite sides parallel
- Congruent legs
- two pairs of congruent sides (consecutive)

11) Which shape is it? rectangle

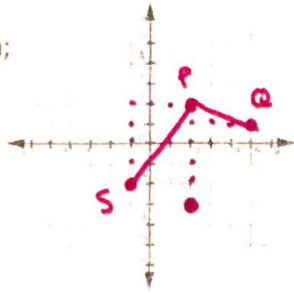
12) Why?

opp. sides  $\parallel$  & 4 rt  $\angle$ 's.

Directions: State the ordered pair that is needed to make the following figure.

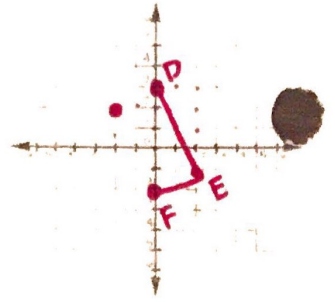
- 13) PQRS will be a parallelogram;  
 P(2, 2), Q(5, 1), S(-1, -2)

$$R(2, -3)$$



- 14) DEFG will be a rectangle;  
 D(0, 3), E(2, -1), F(0, -2)

$$G(-2, 2)$$



Directions: Solve each problem.

- 15) Prove that ABCD is a parallelogram when A(-2, 3), B(4, 3), C(2, -2), & D(-4, -2)

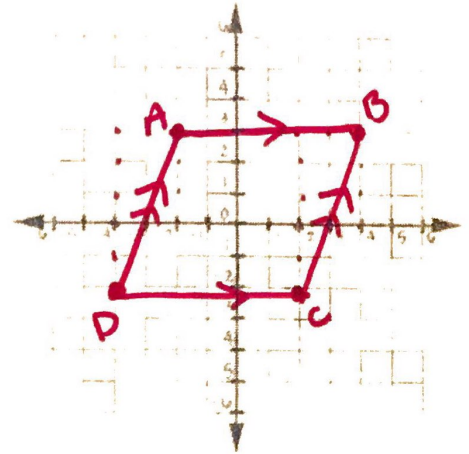
$$\text{Slope of } \overline{AB} = 0$$

$$\overline{DC} = 0$$

$$\overline{AD} = \frac{5}{2}$$

$$\overline{BC} = \frac{5}{2}$$

Opposite sides  
are  $\parallel$ .



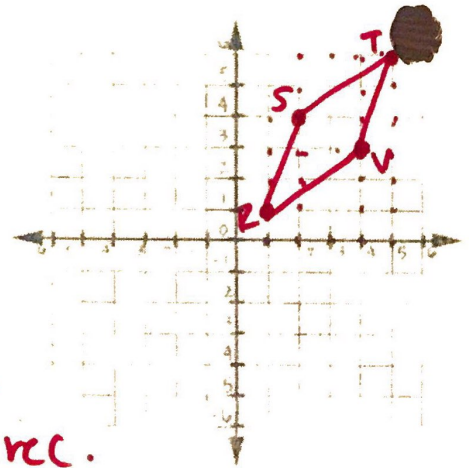
- 16) Prove that RSTV is a rectangle when R(1, 1), S(2, 4), T(5, 6), and V(4, 3)

Slope of

$$\overline{RS} = \frac{3}{1} \quad \overline{ST} = \frac{2}{3}$$

$$\overline{TV} = \frac{3}{1} \quad \overline{RV} = \frac{2}{3}$$

Not a rectangle. Sides are  
not  $\perp$  bc slopes are not opp. rec.



- 17) Determine whether ABCD is a parallelogram, a rectangle, or neither  
 when A(1, 1), B(2, 4), C(5, 6), & D(4, 3).

It is a parallelogram because  
the opposite sides are  $\parallel$ .

