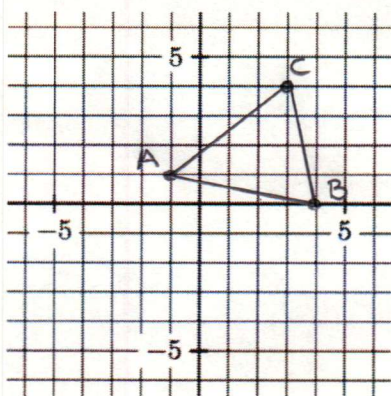


Notes 8.8 Geometry Constructions & Congruence

Warmup

Find the perimeter of the  $\triangle ABC$ , show all work

- A (-1, 1)
- B (4, 0)
- C (3, 4)



$$\overline{AB} = \sqrt{(-1-4)^2 + (1-0)^2} = \sqrt{26} \approx 5.10$$

$$\overline{BC} = \sqrt{(4-3)^2 + (0-4)^2} = \sqrt{17} \approx 4.12$$

$$\overline{CA} = \sqrt{(3-1)^2 + (4-1)^2} = \sqrt{25} = 5$$

$$P = 5.10 + 4.12 + 5$$

$$P = 14.22$$

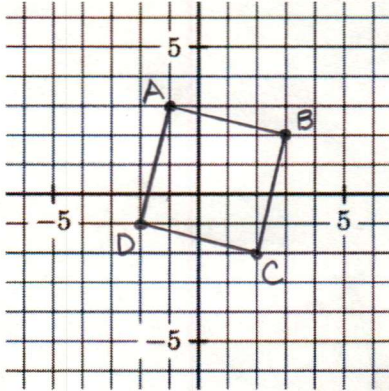
Notes

Classify quadrilaterals using both slope and side length.

| Slope   | Side Length  |
|---|--|
| 2 Sets of Parallel Sides <ul style="list-style-type: none"> <li>○ Perpendicular Sides                             <ul style="list-style-type: none"> <li>◆ Square</li> <li>◆ Rectangle</li> </ul> </li> <li>○ No Perpendicular Sides                             <ul style="list-style-type: none"> <li>◆ Parallelogram</li> <li>◆ Rhombus</li> </ul> </li> </ul> | 4 Congruent Sides <ul style="list-style-type: none"> <li>○ Rhombus</li> <li>○ Square</li> </ul>  |
| 1 Set of Parallel Sides <ul style="list-style-type: none"> <li>○ Trapezoid</li> </ul>   | 2 Different sets of Congruent Sides <ul style="list-style-type: none"> <li>○ Kite</li> <li>○ Rectangle</li> <li>○ Parallelogram</li> </ul> |
| No Parallel Sides <ul style="list-style-type: none"> <li>○ Kite</li> <li>○ Quadrilateral</li> </ul>   | 2 Congruent Sides and 2 Non-Congruent Sides <ul style="list-style-type: none"> <li>○ Isosceles Trapezoid</li> </ul>                        |
|   | No Congruent Sides <ul style="list-style-type: none"> <li>○ Quadrilateral</li> <li>○ Trapezoid</li> </ul>                                  |

Classify the shape by first find the slope of each side, then finding the length of each side.

- A (-1, 3)
- B (3, 2)
- C (2, -2)
- D (-2, -1)

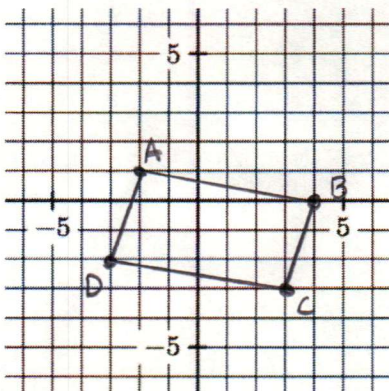


| Side            | Slope                                 | Length                                  |
|-----------------|---------------------------------------|---|
| $\overline{AB}$ | $m = \frac{3-2}{-1-3} = \frac{1}{-4}$ | $\sqrt{(-1-3)^2 + (3-2)^2} = \sqrt{17}$ |
| $\overline{BC}$ | $m = \frac{2-2}{3-2} = \frac{4}{1}$   | $\sqrt{(3-2)^2 + (2-2)^2} = \sqrt{17}$  |
| $\overline{CD}$ | $m = \frac{-2-1}{2-2} = \frac{-1}{4}$ | $\sqrt{(2-2)^2 + (-2-1)^2} = \sqrt{17}$ |
| $\overline{DA}$ | $m = \frac{3-1}{-1-2} = \frac{4}{1}$  | $\sqrt{(-1-2)^2 + (3-1)^2} = \sqrt{17}$ |

Shape: Square

Because Adjoining sides are all  $90^\circ$  (perpendicular)  
and all 4 sides are congruent

- A (-2, 1)
- B (4, 0)
- C (3, -3)
- D (-3, -2)



| Side            | Slope                                 | Length                                  |
|-----------------|---------------------------------------|---|
| $\overline{AB}$ | $m = \frac{1-0}{-2-4} = \frac{1}{-6}$ | $\sqrt{(-2-4)^2 + (1-0)^2} = \sqrt{37}$ |
| $\overline{BC}$ | $m = \frac{0-3}{4-3} = \frac{3}{1}$   | $\sqrt{(4-3)^2 + (0-3)^2} = \sqrt{10}$  |
| $\overline{CD}$ | $m = \frac{-3-2}{3-3} = \frac{-1}{6}$ | $\sqrt{(3-3)^2 + (-3-2)^2} = \sqrt{37}$ |
| $\overline{DA}$ | $m = \frac{1-2}{-2-3} = \frac{3}{1}$  | $\sqrt{(-2-3)^2 + (1-2)^2} = \sqrt{10}$ |

Shape: Parallelogram

Because Both sets of opposite sides are parallel and  
opposite sides are congruent