Starter

1. How can you tell if two lines are parallel just by looking at their equations?

Same slope, different y-int.

2. How can you tell if two lines are perpendicular just by looking at their equations?

opp. reciprocal slopes,

3. How can you prove a quadrilateral is a parallelogram?

opp sides / opp. sides ≅

4. How can you prove a quadrilateral is a rectangle?

opp sides ≅ / opp sides ‖   + ∠'s are 90°

5. How can you prove a quadrilateral is a square?

all sides ≅ and all ∠'s 90°

6. How can you prove a triangle is equilateral?

all sides ≅

7. How can you prove a quadrilateral is an isosceles trapezoid?

upper ∠'s ≅ lower ∠'s ≅ non parallel sides ≅, bases are parallel

8. How can you prove a triangle is a right triangle?

1 right ∠

Properties of Quadrilaterals

Fill in the blank.

1. A _____Quad_____ is a four-sided polygon.

2. A parallelogram is a quadrilateral in which both pairs of opposite sides are $\cong$ / ‖ _____.

3. A _____Rectangle_____ is a parallelogram in which at least one angle is a right angle.

4. A _____Rhombus_____ is a parallelogram in which at least two consecutive sides are congruent.

5. A square is a parallelogram that is both a _____Rectangle_____ and a rhombus.

6. A trapezoid is a quadrilateral with exactly _____1_____ pair(s) of parallel sides.

Mar 13-2:00 PM

Properties of Quadrilaterals

True or False? If False, explain why.

1. A quadrilateral is a parallelogram if one pair of opposite sides are congruent and one pair of opposite sides are parallel.

False (1 pair || + ≅)

2. A quadrilateral is a parallelogram if each pair of consecutive angles are complementary.

False, supplementary

3. If the diagonals of a parallelogram are congruent, then it is a rectangle.

True

4. If the diagonals of a quadrilateral are perpendicular bisectors of each other, then the quadrilateral is a rhombus.

True

5. If the parallel sides of a trapezoid are congruent, then the trapezoid is isosceles.

False, non-parallel sides ≅

6. If a parallelogram contains a pair of consecutive sides that are congruent, then it is a square.

*False, counterexample: rhombus*

Pull

1. False because one pair is both congruent and parallel.

2. False because they are supplementary.

3. True

4. True

5. False because the non-parallel sides have to be congruent for a trapezoid to be isosceles.

6. False because it would be a rhombus (needs right angles to be a square)

Mar 13-2:24 PM

Example

Given points: (-1, 2), (3, 2), (2, -1), and (-2, -1)

Do these points determine a parallelogram?

A   B

(-1,2)   (3,2)

X

(-2,-1)   (2,-1)

D   C
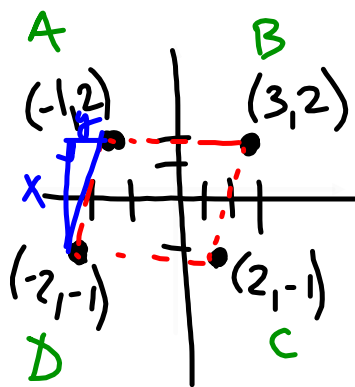
① opp sides ||

or

② opp sides ≅

or

③ 1 pair || + ≅

$$\sqrt{x^2 + y^2} = d^2$$

$$\sqrt{(x_2-x_1)^2 + (y_2-y_1)^2}$$

$$m\overline{BC} = \frac{2--1}{3-2} = \frac{3}{1}$$

$$m\overline{AD} = \frac{2--1}{-1--2} = \frac{3}{1}$$

$$m\overline{AB} = \frac{2-2}{3--1} = 0$$

$$m\overline{DC} = \frac{-1--1}{-2-2} = 0$$

Distance Formula

To find distance between 2 points:

$$d = \sqrt{(y_2 - y_1)^2 + (x_2 - x_1)^2}$$

Mar 21-9:27 AM

Partner Problems: Applying Parallel and Perpendicular Lines

Materials needed:

Directions:

- **Worksheet**
- **Notebook Paper**
- **Pencil**
- **Calculator**
- **Slope Formula**

1) Sketch the graph

2) Find the slope of all the sides

3) Write the conclusion

Mar 13-2:35 PM

<u>Homework</u>

p. 247 #23, 26

p. 252 #5, 12

p. 258 #4

p. 261 #~~22~~, 23

Mar 21-8:55 AM