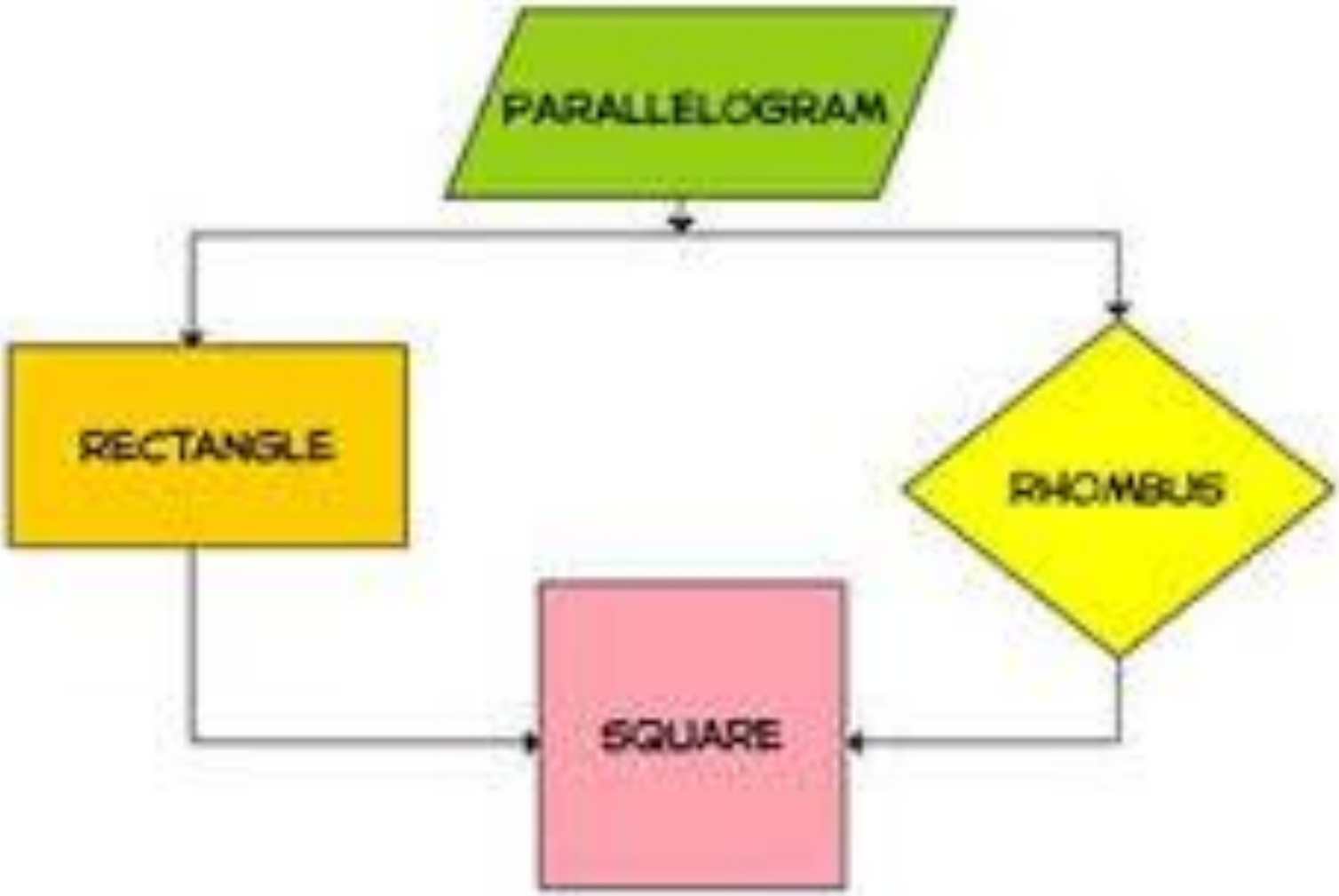
G3d Conditions for Special Parallelogram Proofs

Show that the quadrilateral with vertices $E(-1, 5)$, $F(2, 4)$, $G(0, -3)$, and $H(-3, -2)$ is a parallelogram.
(hint: you can do any of the ways we've covered)

$$\text{slope of } \overline{EF} = \text{slope of } \overline{GH} = -\frac{1}{3}$$

$$EF = GH = \sqrt{10}$$

Since one pair of opposite sides are || and ≅, *EFGH* is a parallelogram by Theorem 6-3-1.


PARALLELOGRAM
RECTANGLE
RHOMBUS
SQUARE

G3c Conditions for Special Parallelogram Proofs

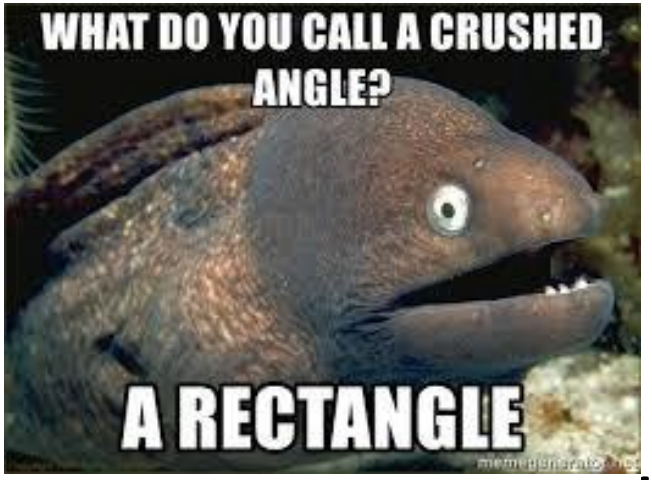
Objective: I can use coordinate geometry to prove that a given quadrilateral is a rectangle, rhombus, or square.

Homework: page 422-423: 4, 5, 9, 10, 20-23, 28, Quiz next week (Wednesday) AND a TEST! (Friday)

G3c Conditions for Special Parallelogram Proofs

April 12th, 2018

What do you call a crushed angle?



How did the square get to the park?

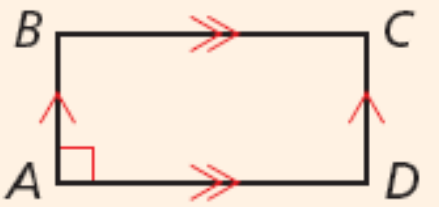
G3c Conditions for Special Parallelogram Proofs

April 12th, 2018

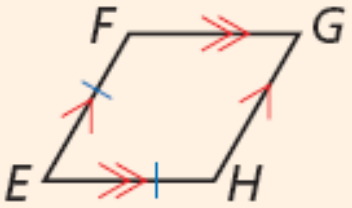
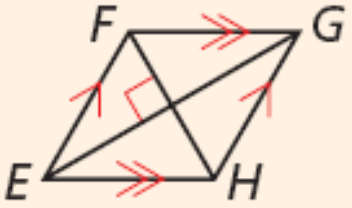
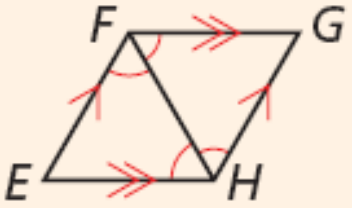
Use the website to match each quadrilateral to a set of special parallelogram conditions/properties!

https://www.geogebra.org/m/fyFP4EwG#material/ZnYkbW3N

Theorems — Conditions for Rectangles

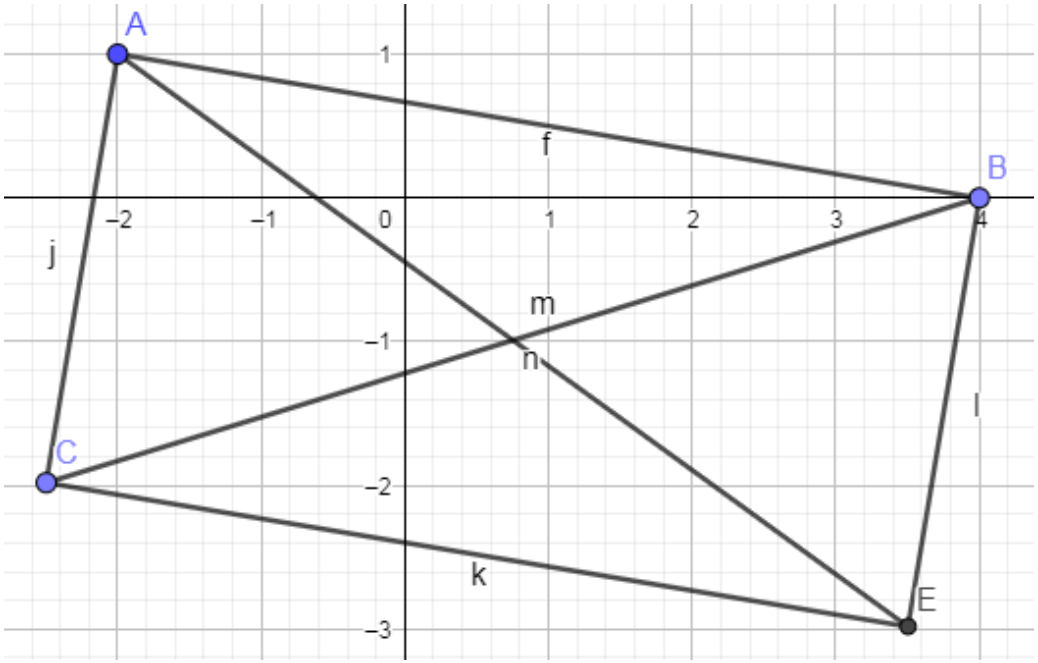
THEOREM	EXAMPLE
6-5-1 If one angle of a parallelogram is a right angle, then the parallelogram is a rectangle. (▱ with one rt. ∠ → rect.)	
6-5-2 If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle. (▱ with diags. ≅ → rect.)	 $\overline{AC} \cong \overline{BD}$

Theorems Conditions for Rhombuses

	THEOREM	EXAMPLE
6-5-3	If one pair of consecutive sides of a parallelogram are congruent, then the parallelogram is a rhombus. (▱ with one pair cons. sides ≅ → rhombus)	
6-5-4	If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus. (▱ with diags. ⊥ → rhombus)	
6-5-5	If one diagonal of a parallelogram bisects a pair of opposite angles, then the parallelogram is a rhombus. (▱ with diag. bisecting opp. ∠s → rhombus)	

Use coordinate geometry to determine the most precise name for the quadrilateral with the given vertices:

A(-2, 1), B(4, 0), D(-2.5, -2), C(3.5, -3)



Use coordinate geometry to determine the **most precise** name for the quadrilateral with the given vertices.

A(0, 5) B(6, 4) C(5, -2) D(-1, -1)

Square

P(-9, 4) Q(6, 9) R(9, 0) S(-6, -5)

Rectangle

Exit Ticket

Use the diagonals to determine whether a parallelogram with vertices $A(2, 7)$, $B(7, 9)$, $C(5, 4)$, and $D(0, 2)$ is a rectangle, rhombus, or square. Give all the names that apply.

$AC \neq BD$, so $ABCD$ is not a rect. or a square. The slope of $AC = -1$, and the slope of $BD = 1$, so ~~$AC \perp BD$.~~ $ABCD$ is a rhombus.