Name: Key Date: _____ Hour: _____

Coordinate Classification Practice

Determine whether the figure is a trapezoid, a parallelogram, a square, a rhombus or a general quadrilateral given the vertices. Show your work! Graph the figure to help you.

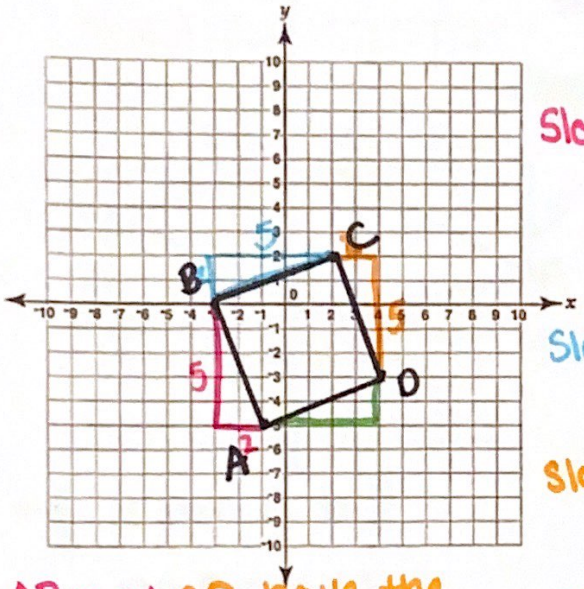
Here are the questions: the following pages give you room to graph and write out your solutions. Please make sure you complete all parts of the question.

1. $A(-1, -5), B(-3, 0), C(2, 2), D(4, -3)$
2. $B(-9, 1), E(2, 3), F(12, -2), G(1, -4)$
3. $B(1, 3), E(7, -3), F(1, -9), G(-5, -3)$

Solutions and work must be shown for students to earn credit for the 3 questions.

No work = No credit ☹

1. $A(-1, -5), B(-3, 0), C(2, 2), D(4, -3)$



Slopes:

Slope AB $= -\frac{5}{2}$

$\rightarrow \perp$ $\angle B = 90°$

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

$\rightarrow \perp$ $\angle C = 90°$

Slope CD $= -\frac{5}{2}$

$\rightarrow \perp$ $\angle D = 90°$

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

Distances:

$5^2 + 2^2 = AB^2$

$25 + 4 = AB^2$

$29 = AB^2$

$\sqrt{29} = AB$

$5^2 + 2^2 = BC^2$

$\sqrt{29} = BC$

$5^2 + 2^2 = CD^2$

$\sqrt{29} = CD$

$5^2 + 2^2 = AD^2$

$\sqrt{29} = AD$

AB and CD have the same slope so: AB // CD

BC and AD have same slope so: AD // BC

All sides $= \sqrt{29}$ so ALL sides are $\cong$

Conclusion:

ABCD IS a parallelogram because AB // CD and AD // BC (op. sides are parallel)

ABCD IS a rhombus because all sides are $\cong$ $(= \sqrt{29})$

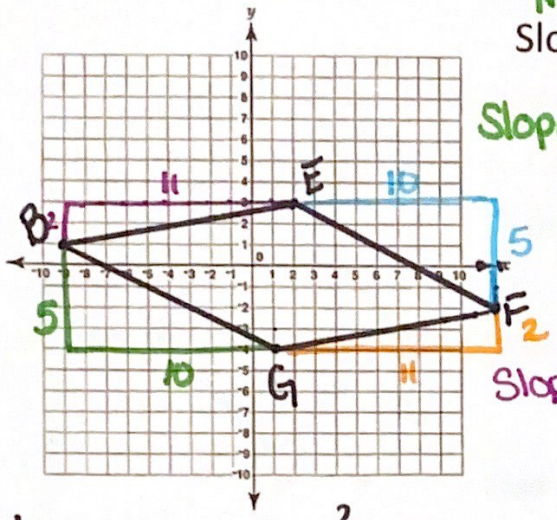
ABCD IS a rectangle because all consecutive sides are $\perp$ (all $\angle = 90°$)

ABCD IS a square because all sides are $\cong$ AND it has 4 Right $\angle$s (consecutive sides are $\perp$)

(is or is not)

2. $B(-9, 1), E(2, 3), F(12, -2), G(1, -4)$

Must simplify all slopes + Distances



Slopes:

Slope $BG = -\frac{5}{10} = -\frac{1}{2}$

Slope $BE = \frac{2}{11}$

$-\frac{1}{2}$ is NOT $\perp$ to $\frac{2}{11}$

So NO Right $\angle$s

BG and EF have the same slopes and BE and GF have the same slopes

So: BG // EF and BE // GF

Slope $EF = -\frac{5}{10} = -\frac{1}{2}$

Slope $GF = \frac{2}{11}$

Distances:

$5^2 + 10^2 = BG^2$

$25 + 100 = BG^2$

$\sqrt{125} = \sqrt{BG^2}$

$\sqrt{125} = \sqrt{25}\sqrt{5}$

$5\sqrt{5} = BG$

$2^2 + 11^2 = BE^2$

$4 + 121 = BE^2$

$\sqrt{125} = BE$

$5\sqrt{5} = BE$

$5^2 + 10^2 = EF^2$

$5\sqrt{5} = EF$

$2^2 + 11^2 = GF$

$5\sqrt{5} = GF$

Conclusion:

BEFG IS a parallelogram because op. sides have the same slope (op. sides are //)

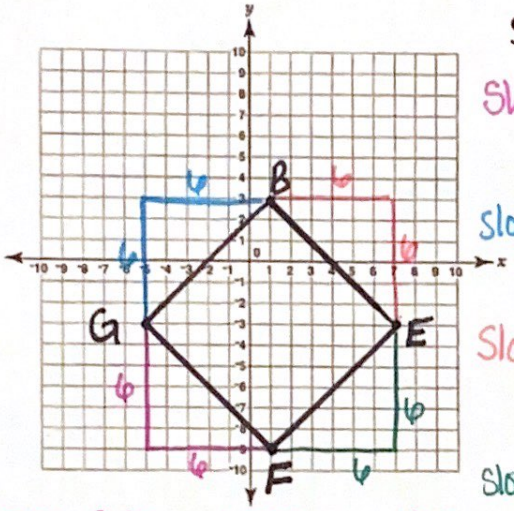
BEFG IS a rhombus because all sides are $\cong$ $(= 5\sqrt{5})$

BEFG IS NOT a rectangle because it does not have $\perp$ slopes (No Right $\angle$s)

BEFG ISNOT a square because it does not have $\perp$ slopes (No Right $\angle$s)

(is or is not)

3. $B(1, 3), E(7, -3), F(1, -9), G(-5, -3)$



Slopes:

Slope $GF = \frac{-6}{6} = -1$

slope $GB = \frac{6}{6} = 1$

Slope $BE = \frac{-6}{6} = -1$

Slope $FE = \frac{6}{6} = 1$

Slopes GF and BE are the same and slopes GB and FE are the same so: $GF \parallel BE$ and $GB \parallel FE$.

Consecutive slopes are $\perp$

So All $\angle s = 90°$

Distances:

oh look! a $45°-45°-90°$!

$6^2+6^2 = GF^2$

$6\sqrt{2} = GF$

$6^2+6^2 = GB^2$

$6\sqrt{2} = GB$

$6^2+6^2 = BE^2$

$6\sqrt{2} = BE$

$6^2+6^2 = FE^2$

$6\sqrt{2} = FE$

all sides are $\cong$!!!

Conclusion:

BEFG is a parallelogram because op. sides are $\parallel$ (have the same slope)

BEFG is a rhombus because all sides are $\cong$ (all sides $= 6\sqrt{2}$)

BEFG is a rectangle because consecutive sides are $\perp$ (all $\angle s = 90°$)(all Right $\angle s$)

BEFG is a square because all sides are $\cong$ AND it has 4 Right $\angle s$.

(is or is not)