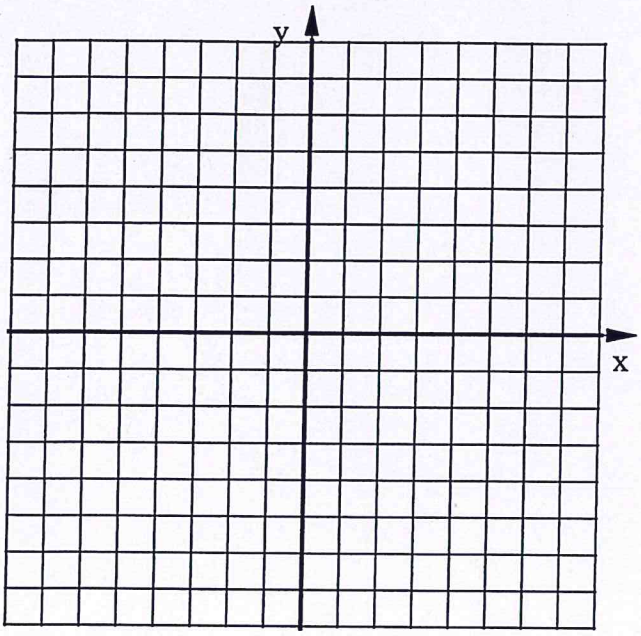
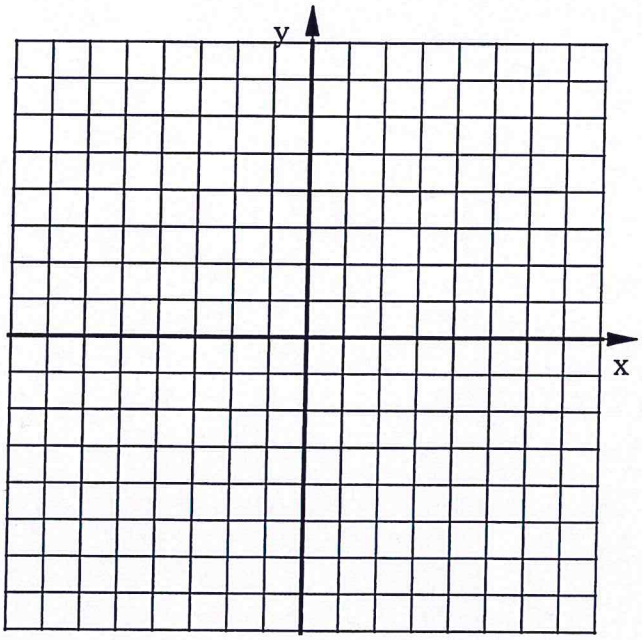
Bellwork Geometry Friday, January 31, 2020

For each problem plot the four points and connect them to form a quadrilateral. Then use slope, distance formula, and/or midpoint formula to determine the most precise name for the figure: Parallelogram, Rhombus, or Neither.

1. $A(-2,2)$ $B(-1,-6)$ $C(8,-4)$ $D(7,4)$



2. $A(2,-2)$ $B(7,3)$ $C(0,4)$ $D(-5,-1)$



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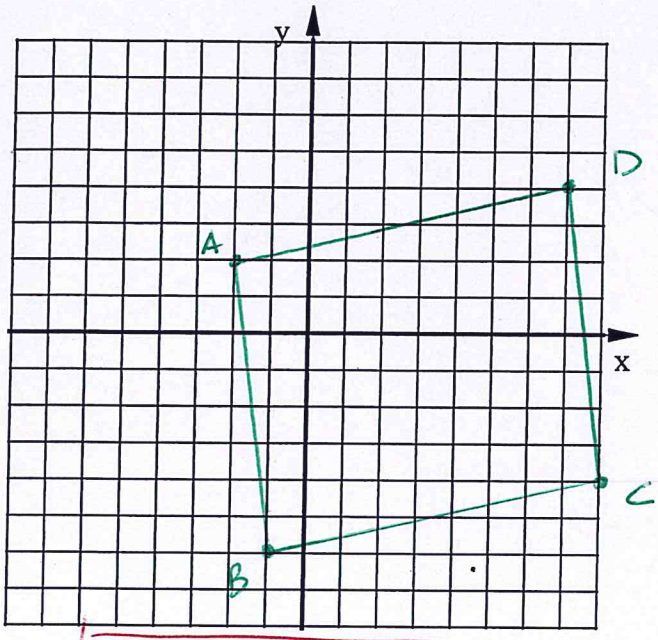
Below is one method:



IS IT A ll-gram? Do diagonals bisect each other

midpt AC: $\left(\frac{8+-2}{2}, \frac{2+-4}{2}\right) = (3,-1)$

midpt BD: $\left(\frac{-1+7}{2}, \frac{-6+4}{2}\right) = (3,-1)$

* ABCD is a ll-gram b/c diag bisect each other

IS IT A Rhombus? ARE DIAGONALS $\perp$?

m of AC: $m = \frac{2--4}{-2-8} = \frac{6}{-10} = -\frac{3}{5}$

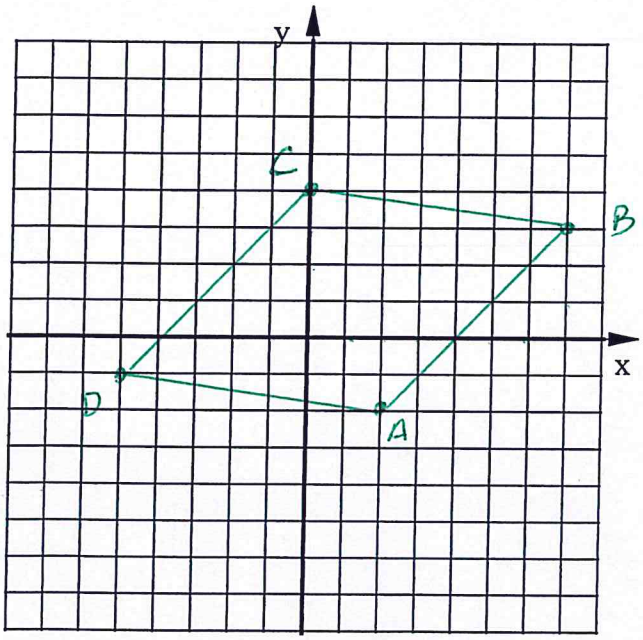
m of BD: $m = \frac{4--6}{7--1} = \frac{10}{8} = \frac{5}{4}$

ABCD is NOT a Rhombus b/c slopes of diag are not opposite reciprocals (they are not $\perp$)

Therefore, ABCD is just a Parallelogram

2. $A(2,-2)$ $B(7,3)$ $C(0,4)$ $D(-5,-1)$

Here's another method:



Find the lengths of all 4 sides

length of AB: $\sqrt{(7-2)^2+(3--2)^2} = \sqrt{5^2+5^2} = \sqrt{50}$

length of BC: $\sqrt{(7-0)^2+(4-3)^2} = \sqrt{49+1} = \sqrt{50}$

length of CD: $\sqrt{(0--5)^2+(4--1)^2} = \sqrt{25+25} = \sqrt{50}$

length of AD: $\sqrt{(2--5)^2+(-1--2)^2} = \sqrt{49+1} = \sqrt{50}$

Therefore, ABCD is a Rhombus because all 4 sides are $\cong$