Geometry CC – Mr. Valentino Name: _____

Unit 10 Lesson 6: Proving Squares on the Coordinate Place Date: _____ Per: _____

And now...SQUARES on the Coordinate Plane

Do Now: List the 2 ways that you can prove a parallelogram is a square:

1. Prove it is a rectangle with a pair of ≅ adjacent sides
2. Prove it is a rhombus with a pair of ⊥ adjacent sides (it has a right ∠)

Therefore, we are going to first prove that the quadrilateral is a parallelogram using distance formula which is going to tell us a great amount of useful information about the quadrilateral.

Let's do it!

1. Quadrilateral DANC has vertices D(-1,0), A(3,3), N(6,-1), and C(2,-4).

Prove that DANC is a square.

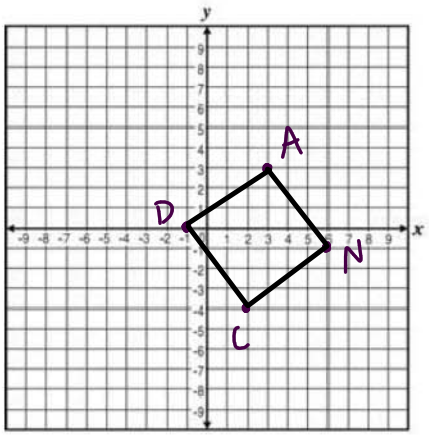
★ 2 slopes
★ neg. recip.

$DA = \sqrt{(-1-3)^2+(0-3)^2}$
$= \sqrt{(-4)^2+(-3)^2} = \sqrt{16+9} = \sqrt{25} = 5$

$CN = \sqrt{(6-2)^2+(-1+4)^2}$
$= \sqrt{(4)^2+(3)^2} = \sqrt{16+9} = \sqrt{25} = 5$

$AN = \sqrt{(6-3)^2+(-1-3)^2}$
$= \sqrt{(3)^2+(-4)^2} = \sqrt{9+16} = \sqrt{25} = 5$

$DC = \sqrt{(-1-2)^2+(0+4)^2}$
$\sqrt{(-3)^2+(4)^2} = \sqrt{9+16} = \sqrt{25} = 5$



★ DANC is a P b/c it has ≅ opp sides.

★ DANC is a rhombus b/c it has 4 ≅ sides.

Slope $DA = \frac{\Delta y}{\Delta x} = \frac{3-0}{3+1} = \frac{3}{4}$

Slope $AN = \frac{\Delta y}{\Delta x} = \frac{-1-3}{6-3} = \frac{-4}{3}$

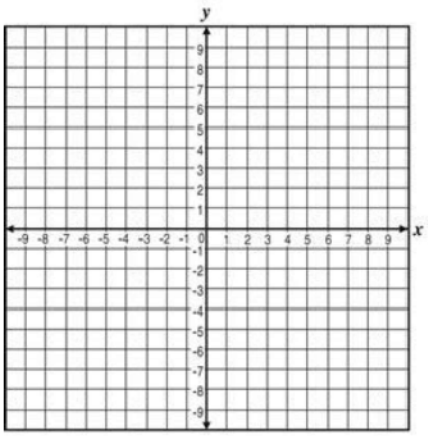
negative reciprocals

★ DANC is a square, b/c it is a rhombus with adjacent ⊥ sides (it has a right ∠).

HW

2) Quadrilateral LOVE has vertices L(-2,-1), O(1,6), V(8,3), and E(5,-4).

Prove that LOVE is a square.



HW

3) Mr. Valentino is experimenting with a new drawing program on his computer. He created quadrilateral TINO with coordinates T(-2,3), I(-5,-4), N(2,-1), and O(5,6). Mr. Valentino believes that he has created a rhombus but not a square. Prove that Mr. Valentino is correct.