**H. Geometry - Bellwork #12 Date: \_\_\_\_\_\_\_\_\_\_**

**Theorems to Prove Quadrilaterals are Parallelograms:**

* If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
* If both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
* If an angle of a quadrilateral is supplementary to both consecutive angles, then the quadrilateral is a parallelogram.
* If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.
* If one pair of opposite sides of a quadrilateral are both congruent and parallel, then the quadrilateral is a parallelogram.

**Is there enough information to prove the quadrilateral is a parallelogram? If so, write a theorem as justification why it is a parallelogram.**

A

D

C

B

E

1) $\overbar{AD}||\overbar{BC}$ and $\overbar{AD}≅\overbar{BC}$ 2) $\overbar{AE}≅\overbar{EC}$ and $\overbar{DE}≅\overbar{EB}$ 3) $\overbar{AB}||\overbar{CD}$ and $\overbar{AD}≅\overbar{BC}$

4) ∠ADC ≅ ∠CBA and 5) ∠DAB is supplementary to ∠ADC 6) ΔAED ≅ ΔCEB

 ∠BAD ≅ ∠DCB ∠ABC is supplementary to ∠BCD

Turn to the back for more ☺

**Determine the value of x and y so that the quadrilateral is a parallelogram.**

A

D

C

B

E

1) 2) 3)

 AE = x2 – 45, EC = -3x - 5

 DE = 2y2, EB = -3y + 2