Geometry Regents Lomac 2015-2016 **Date** 11/3 **due** 11/4 | **Angles Proving Theorems We Use 3.7R**

Name _____ **Per**_____

LO: I can prove the theorems we have been using.

☐ **DO NOW** On the back of this packet

☐ (1) N11, N12 **Need to Know: Theorems and tools to prove them**

☐ A **theorem** is a statement that can be proven. We have used the **theorems** below already. Describe what each one tells us. (You might want to refer to the notes pages N11 and N12)

triangle sum theorem _____

_____

exterior angle theorem _____

_____

vertical angles theorem _____

_____

alternate interior angles theorem_____

_____

alternate exterior angles theorem_____

_____

same side interior angles theorem_____

_____

When proving these theorems, we can use facts that we know and other theorems we have proven. The following can be used as facts for proving. Describe how each one can be useful.

linear pair of angles _____

_____

adjacent angles on a line _____

_____

adjacent angles around a point_____

_____

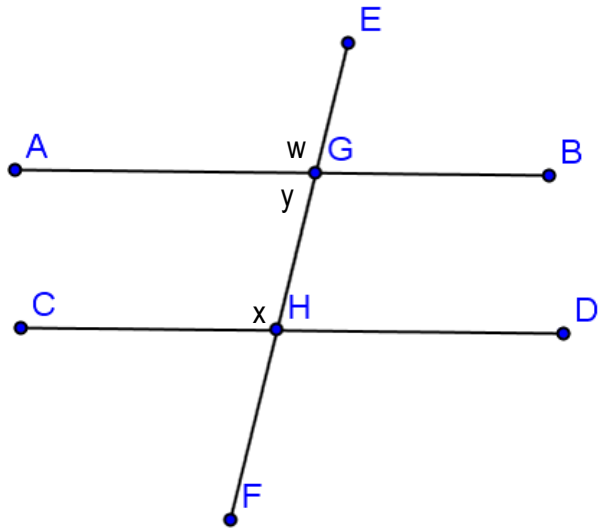
corresponding angles_____

_____

☐ (2) **Angles: Proving Theorems**

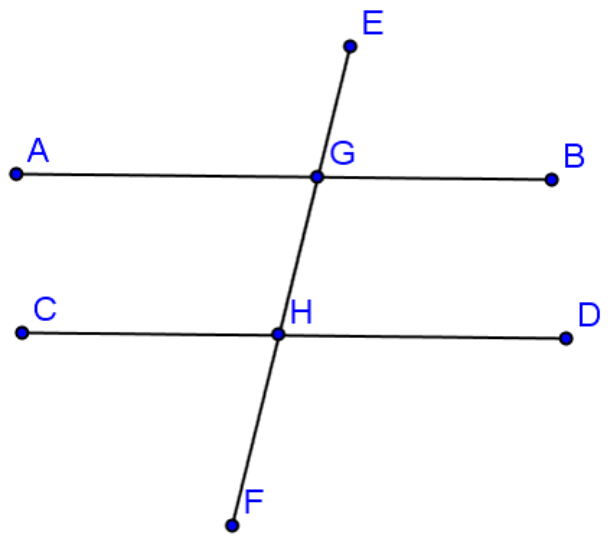
☐ Sometimes it is good to think about where your proof is starting and where it will end. You must start at the top of the proof with the given and work your way to what you are trying to prove, HOWEVER, you may want to start at the end and think backwards about what facts can lead to the conclusion you are proving.

☐ **PROVE: If lines are parallel ($\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$), then same side interior angles are supplementary (sum = 180°).**



I know that . . .	because . . .

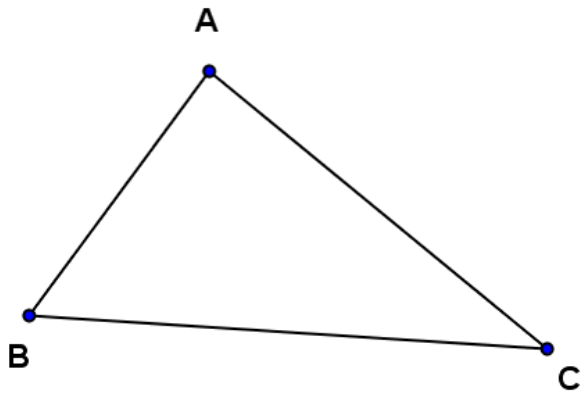
☐ (3) ☐ **PROVE: If lines are parallel ($\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$), then alternate interior angles are congruent.**



I know that . . .	because . . .

☐ (4) ☐ **PROVE: The sum of the angles in a triangle is 180°.**

You will need to add an auxiliary line (label it QR) through point A that is parallel to $\overline{BC}$. Add the letters a,b,c,d, and e to the angles in the diagram. (See activity 3.4 #3 to help you with this proof.)



I know that . . .	because . . .

☐ (5) ☐ **PROVE: If two lines are perpendicular to the same line, then the two lines are parallel to each other.**

Draw a diagram to represent the statement and add letters where needed so that you can name lines and angles.

I know that . . .	**because . . .**

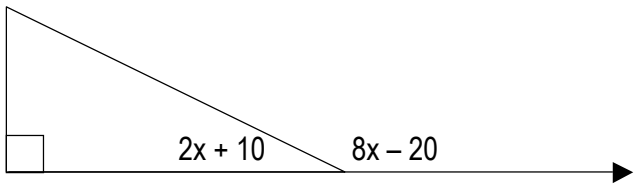
☐ (6) **Exit Ticket**

ON THE LAST PAGE

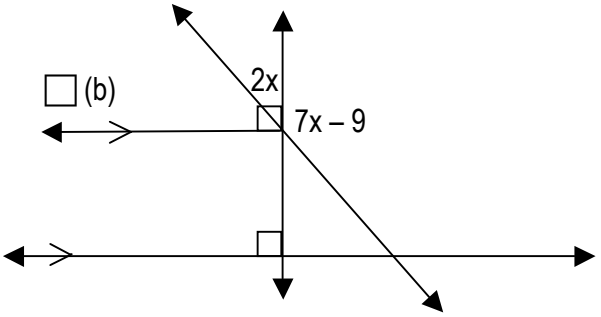
☐ (7) **Homework**

☐ (1) Identify 1 or more relationships, write 1 or more equations, and solve to find the value of *x*.

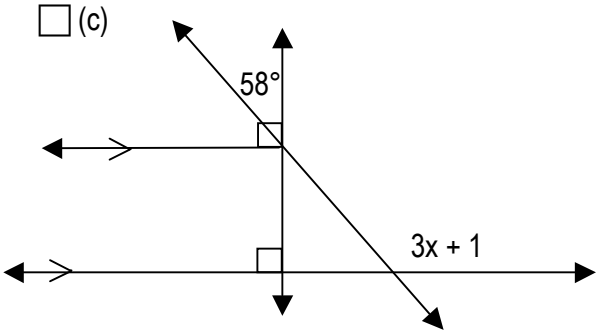
☐ (a)



☐ (b)



☐ (c)



☐ (7) cont. **Homework**

☐ (2)

☐ (a) Construct a 90° angle

☐ (b) Construct a 45° angle

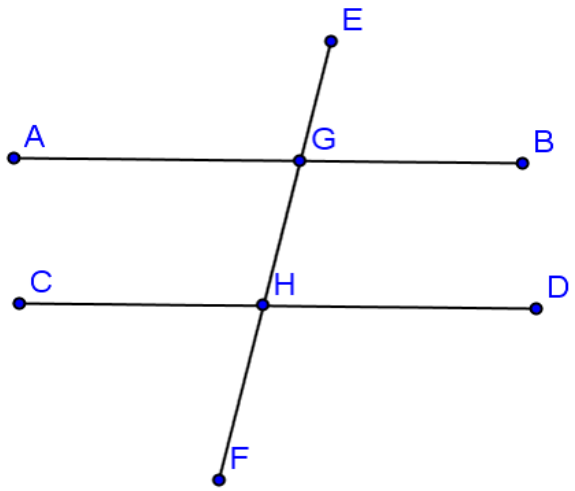
☐ (c) Construct a 22.5° angle

Exit Ticket **Name**_____ **Date** _____ **Per**_____ **3.7R**

(1) The LO (Learning Outcomes) are written below your name on the front of this packet. Demonstrate your achievement of these outcomes by doing the following:

PROVE: If lines are parallel ($\overleftrightarrow{AB} \parallel \overleftrightarrow{CD}$), then alternate interior angles are congruent.

(Add letters to the diagram as needed. Do not add a letter already in use.)



DO NOW **Name**_____ **Date** _____ **Per**_____ **3.7R**

(1) Refer to number 1 for this lesson. Read and define the word “theorem”.

(2) Describe why the cartoon below is supposed to make people smile. REALLY think about it.