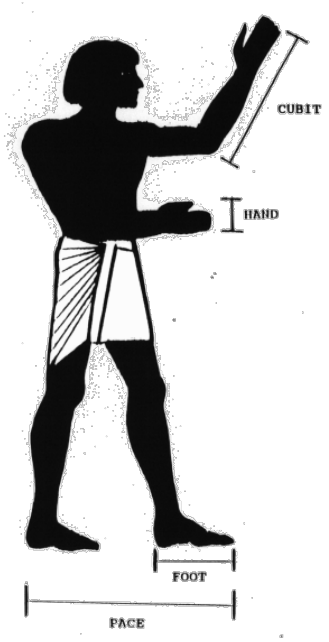
☐ **DO NOW – Geometry Regents Lomac 2014-2015 Date ____. due ____. Dividing a foot into inches** | **5.7f**

(DN) Read the history of the foot in #1 and respond to the prompt.

Name _____ **Per**_____

LO: I can divide a segment into a given number of equal segments.

☐ (1) **A short history of measurment and the foot**



The foot is the primary unit of measure in the United States. The measurement system using the foot is widely believed to have originated from people living along the Nile. A rope with 12 knots was used to survey land along the Nile each year after the floods. The people living along the Nile also used a number system that was based on 60, not 10, and 60 divides evenly by 12. The length of a foot was based on the length of a human foot and an inch was the width of a persons thumb. Twelve thumb widths fit along a foot. As you can imagine, this led to significant measurement variation as each persons foot length and thumb width are different. It became necessary to use a consistent length of foot and inch. Once a standard length was chosen for the foot, it had to be divided into 12 equal segments, each representing one inch.

Today, you will learn two ways of dividing a segment into a specific number of smaller segments. You will then use both methods to divide a foot into 12 equal segments or inches.

Write down 2 things from the text above that struck you as interesting.

_____

_____

_____

_____

_____

☐ (2) ruler, compass, setsquare

(DO AFTER #3, #4 AND THE EXIT TICKET)

Foot into inches posters (start in class, finish for homework)

You and a partner each need an 11x17 piece of paper. One of you will use the method in #3 and the other will use the method in #4 to divide a foot into 12 equal inches.

(1) Draw a line segment that is a foot long (use the measure on a ruler for this part)

(2) Use one of the two methods to divide the foot long segment into 12 inches

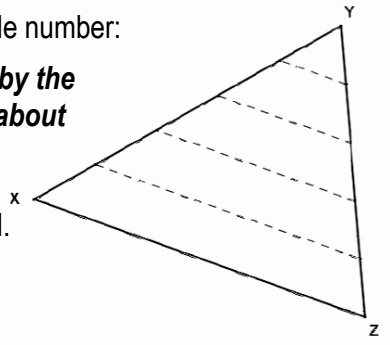
(3) Describe in 2 or 3 sentences why your method works

(4) Use color on your poster to make the method easy to follow

☐ (3)
ruler, compass, setsquare

(a) Get into your time machine, we are going WAY back . . . back to 5.4 and this little number:

"Given △XYZ, $\overline{XY}$ and $\overline{YZ}$ are partitioned into equal length segments by the endpoints of the dashed segments as shown. What can be concluded about the diagram?"

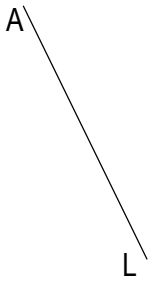


Mark the diagram so we can see the "equal length segments" that are described. What did we conclude?

(b) Let's make our own equal length segments, but -- **NO MEASURING WITH NUMBERS!!**

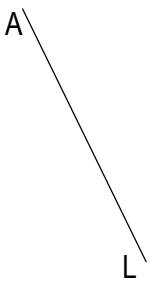
(i) Use ray AT and a compass to construct a segment AD that is divided into 3 equal segments, AB, BC,and CD.

(ii) Okay, that's not so tricky, but how about this! Divide segment AL into 3 equal segments, AE, EF, and FL. (no making AL longer or shorter!! And NO MEASURING WITH NUMBERS!)



How many times did you adjust and restart? Erase? Are all the segments equal? REALLY? Did you use numbers!?! No cheating! How long would this process take to divide into 7 equal segments? 15 equal segments?

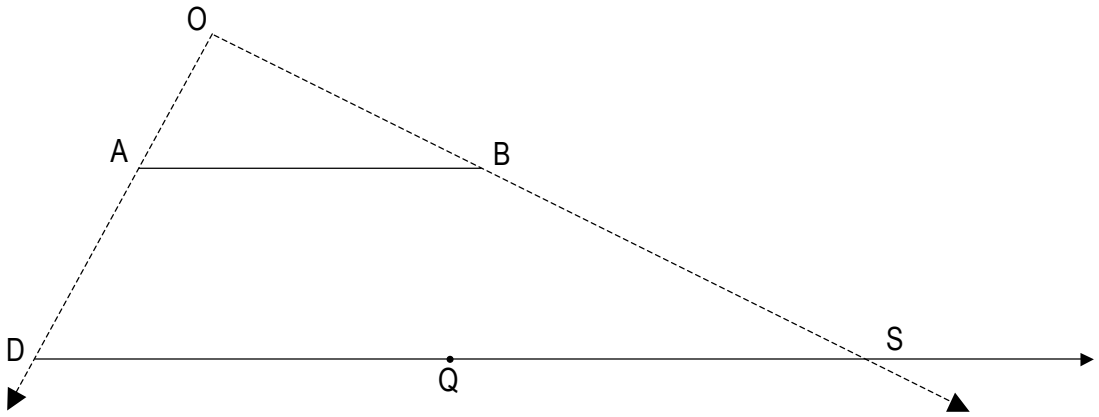
(iii) Okay, part (i) was pretty easy, but part (ii) was a bit more of a challenge. Can we use (i) to help us do (ii)? Here is segment AL again. Draw in ray AT and divide it into 3 equal segments like you did in part (i) and then read below



Put the idea of part (a) together with the 3 equal segments along ray AT. You can do this with a set square and a ruler. (Still . . . NO NUMBERS!!)

☐ (4)
ruler, compass, setsquare

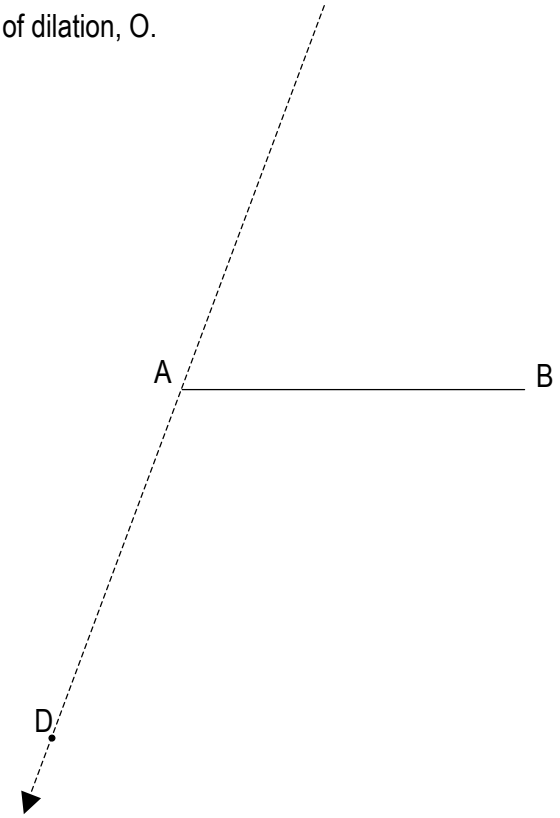
$\overline{AB}$ is a dilation of $\overline{DS}$ about point O. $\overline{DQ}$ and $\overline{QS}$ are equal – mark this in the diagram. Use the diagram to locate point R on $\overline{AB}$ so that $\overline{AR}$ and $\overline{RB}$ are dilations of $\overline{DQ}$ and $\overline{QS}$ about point O.
NO MEASURING WITH NUMBERS!!



Because $\overline{AR}$ and $\overline{RB}$ are dilations of equal segments $\overline{DQ}$ and $\overline{QS}$ about point O,

that means _____ = _____

Divide $\overline{AB}$ into 5 equal segments. Use the idea above by starting at D and making 5 equal segments, $\overline{DE}$, $\overline{EF}$, $\overline{FG}$, $\overline{GH}$, and $\overline{HI}$ along ray DS and dilating them. To draw DS, you will need to use a ruler and setsquare so that _____Use points I and B to find the location of the center of dilation, O.



☐ (5) ruler, compass, setsquare

Exit Ticket

Do the full page handout exit ticket for this lesson

☐ (6) ruler, compass, setsquare

Homework

(1) Using a ruler, draw a segment that is 10cm. This length is referred to as a decimeter. Use the side splitter method (like #3 in this packet) to divide your segment into ten equal-sized pieces. What should be the length of each of those pieces based on your construction? Check the length of the pieces using a ruler. Are the lengths of the pices accurate?

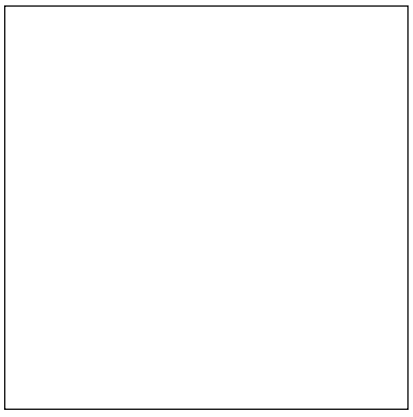
(2) Repeat problem 1 using the dilation method (like #4 in this packet). What should be the length of each of those pieces based on your construction? Check the length of the pieces using a ruler. Are the lengths of the pieces accurate?

☐ (5) ruler, compass, setsquare

Homework

(3) A portion of a ruler that measured whole units is shown below. Determine the location of $5\frac{2}{3}$ units. Use #3 or #4 to help you.

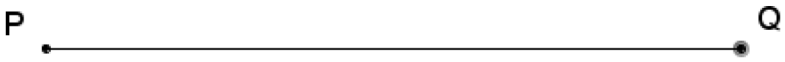
(4) Use the dilation method to create an equally spaced 3x3 grid in the following square. (Hint: divide the top and the left side into 3 equal segments by using the dilation method twice). Use #4 to help you.



Exit Ticket

(1) Use the side splitter method (#3) to divide $\overline{MN}$ int o 7 equal-sized pieces.

(2) Use the dilation method to divide $\overline{PQ}$ into 11 equal-sized pieces.



(3) If the segment below represents the interval from zero to one on the number line, locate and label $\frac{4}{7}$.