Making Rulers

Individuals, Partners **30 minutes**

Materials: cardstock strips, pattern blocks, writing implements, standard rulers (optional)

Introduce the Activity

Each participant is given a sentence strip and a pattern block to use to make a ruler. (This can be a good follow-up to "Partner Match," since everyone ends up with a strip in that activity.)

Ask participants to create a ruler using their pattern block. Do not give detailed instructions, but ask participants to think about what makes a ruler work.

Make the Rulers

As participants are working to make their rulers, circulate to provide scaffolding.

- Are they ***iterating*** their pattern block to create their units?
- Are they creating a ***consistent unit*** by placing the same pattern block in the same orientation for each iteration?
- Are they leaving ***no gaps and no overlaps*** between units?
- Are they ***marking and numbering the units***? Where are the numbers—in the spaces or at the marks?

Use the Rulers

Ask partners to swap rulers. Ask everyone to measure a writing implement and write down their results. Have partners report back to one another on the utility of their homemade ruler.

Use this opportunity to address any confusion or misconceptions about how rulers work. (See samples of homemade rulers on following page.)

Conclude the Activity

Emphasize to participants the importance of consistent pattern block units, which are entirely arbitrary, but very useful if used "fairly." You may want participants to examine standards rulers in light of their experience of having to construct their own.

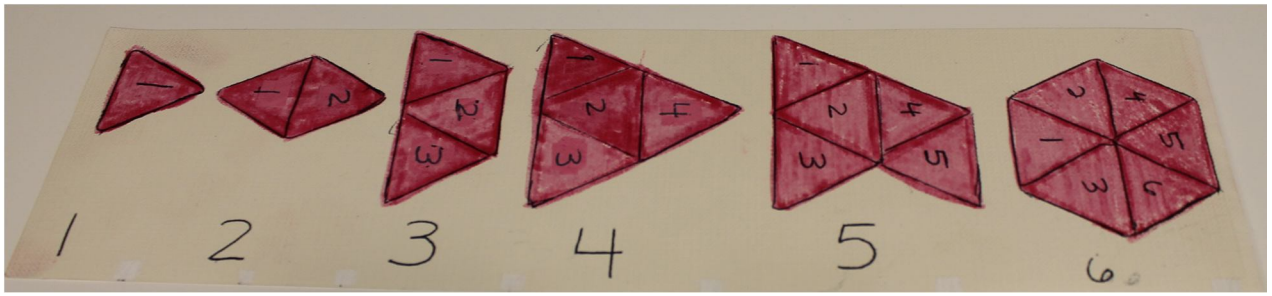
Making Rulers Emphasizes:

- Measurement must be fair.
- Units are an important aspect of measurement. Changing the unit changes the measurement (but not the size)!
- Measurement is never entirely precise.

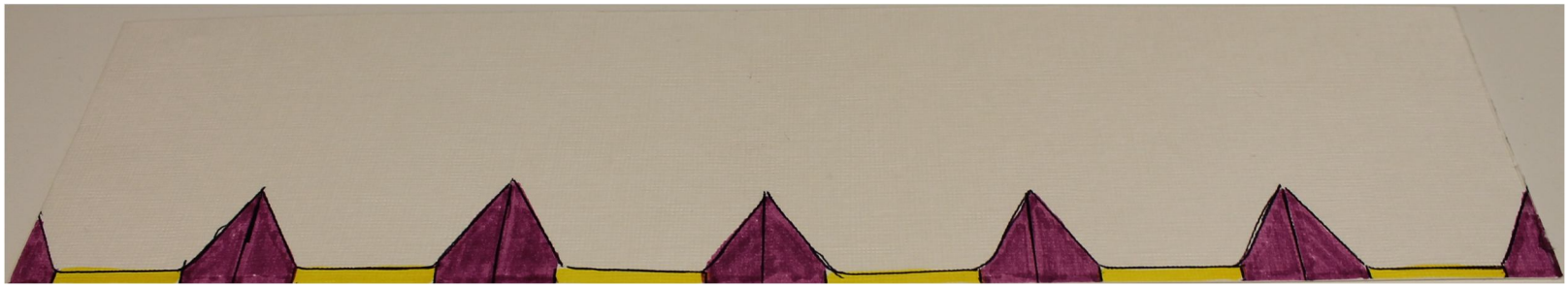
Key Questions to Ask:

- *Did your homemade ruler work? Why or why not?*
- *What are units of measure? Where do they come from?*

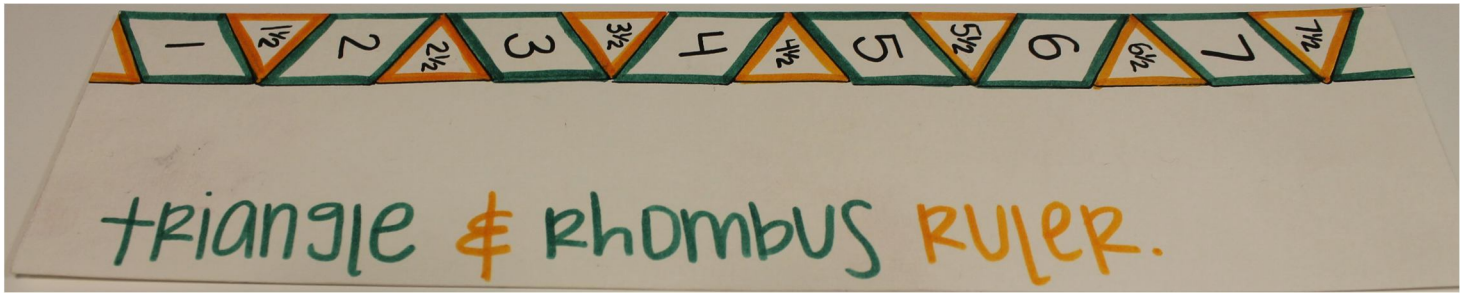
Making Rulers : Examples of student-made rulers that reveal mis-conceptions



This student represented discrete quantities, not a continuous scale to measure the attribute of length.



This student did not use a consistent unit, nor did the student label units.



This student had difficulty labeling the units to create a uniform scale
(the lengths of side of the triangle and rhombus shape are equal but the labels don't show this).
Also the numbers do not indicate full units of measure.