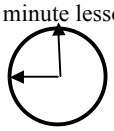
[45 minute lesson]

Session 3 Lesson Graph: Similarity Problems, Hannah Slovin, Class 1 (8th Grade)

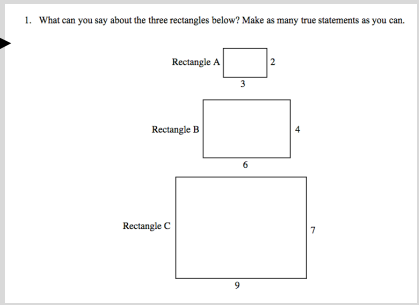


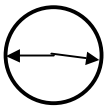
8 minutes

Warm-up *Students work on Similarity I #1 individually*

Teacher gives a warm-up task
Teacher passes out tracing paper and says, "Look for the obvious. Look for the more interesting."

Students work individually & teacher walks around the room.





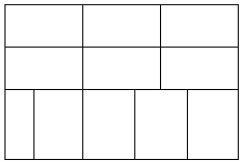
17 minutes

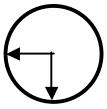
Whole Group *Students present their ideas & the teacher writes them on the Document Camera.*

Kiana: The width of the three squares is going by 3's.
Teacher rephrases using "rectangles," Points out 3, 6, 9.
Heidi: The opposite lines on each of the rectangles are parallel.
Pono: Area of A is 6 square units.
Meagan: Rectangle B is 4 times bigger than Rectangle A. You can fit 4 of A into B.
T asks Meagan to show this, noting some students thought the area was twice as big. Meagan uses tracing paper to fit A into B 4 times.
T: Why might somebody think the area is twice as big?
Nicollete: Because 4 is 2x2 and 6 is 3x2.
Meagan: The perimeter is twice as big.

Teacher asks Blaine to share what he wrote down.
Blaine: They all have the same proportions.
James: They're all to scale with each other. Like A is ¼ the size of B.
T: So you're checking the area.
Jenson: If you increase the rectangle by a percentage, it'd be the same figure. Just bigger or smaller
Jenson shows his idea on the Document Camera: If you dilate or make it bigger, it'd be the same rectangle. Jenson argues all 3 rectangles are similar. Some students agree, others disagree.

Olivia says you can fit a combination of As & Bs inside of C, if you rotate them. She shows her idea on the Document Camera. The teacher notes that in a dilation, shapes maintain their orientation. Olivia responds, "The shapes fit inside but it's not a dilation.
T asks for the area of C. *63.* So how many times does A fit into C? *10 ½ times*.
Ethan. C is not a dilation of B because the ratio of width to length is not the same. B is a dilation of A because if you multiply the length of A by 2, you get the length of B. And if you multiply the width of A by 2, you get the width of B. For B & C, the ratio of 4:7 is 1:1.75 and 6:9 is 1:1.33.
Student: If C were 6 instead of 7, it would work. 3,6,9 is a pattern. But 2,4,7 messes it up.



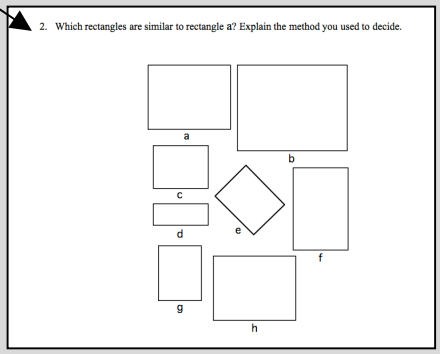


13 minutes

Small Groups *Students work on Similarity I # 2 in small groups*

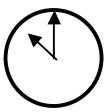
Teacher passes out problem #2 and tracing paper.

T: Who remembers anything about similar figures?
Randy: Same shape but not same size.
T: But A & C from Problem 1 are the same shape.
Randy: They're not similar because they don't continue the pattern.



Olivia says her group found a rectangle congruent to A, but they don't know if it's similar. T says this as an important question to ask the class.

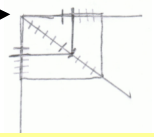
Randy talks to the T about finding similar rectangles using dilation.



7 minutes

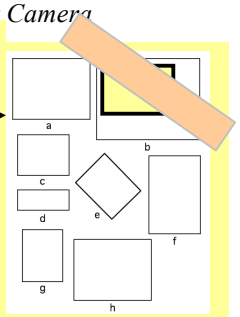
Whole Class *Students present their ideas & the teacher writes them on the Document Camera*

Payne says C is similar b/c it's a 60% dilation of A. Shows how he lined up the upper left corners, and found the 50% point by folding.



Randy shows how he compared A & B. He traced A, lined up the centers of dilation (upper left corners), and used a straight edge to see if the points were on the same line.
Teacher asks Randy to demonstrate for a rectangle that's not similar to A. Randy shows that for D, when you draw the dilation line, the points are "off."

T asks how Randy's method could be used on the triangle problem. Andrew says you can put the original triangle on top of the other ones and measure them. T notes many triangles are turned.



Clips 1 and 3

A student says H is the same as A. This leads to a conversation about whether congruent shapes are similar. The ratio is 1:1. Teacher concludes: "It's a special kind of similarity. It would be considered similar."

Teacher assigns homework: Complete the triangle problem and other problems.