



GRADE 8 · GEOMETRY · PRACTICE

SIMILARITY AND DILATIONS

Today's goal: I can understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations and dilations and given two similar two-dimensional figures, describe a sequence that exhibits the similarity.



Pick your peppers!

Everyone does Mild & Medium. Then climb as high as you can.



Mild

Tan the Turtle



Medium

Digit the Fox



Spicy

Blaze the Dragon



Extra Spicy

Pi the Owl



REMEMBER

Similar = rigid motions and dilations. The test is equal ratios of corresponding sides. Differences do not test similarity: enlarging multiplies, so a long side gains more than a short one. Area scales by the square of the scale factor.



MILD

Tan the Turtle: Slow and steady. Warm up!

- 1 Write the definition of similar in terms of transformations.

Answer



MEDIUM

Digit the Fox: Stretch your brain.

- 2 Are 3, 4, 5 and 9, 12, 15 similar? Show the ratios.

Answer

- 3 Are 6, 8, 10 and 9, 12, 15 similar? Show the ratios.

Answer

- 4 Are 2, 3, 4 and 4, 5, 6 similar? Show the ratios and the differences.

Answer



OOPS ALERT

Careful on #2! The slip Mr DJ sees most: Compared differences (6, 8, 10), which are unequal here — and the figures ARE similar, so the difference test fails in this direction too.



SPICY

Blaze the Dragon: Bring the heat!

- 5 Explain why a genuine enlargement gives UNEQUAL differences between corresponding sides.

Answer

6 A rectangle 3 by 5 and a rectangle 5 by 3. Similar? Congruent?

Answer

7 Two similar triangles have areas 4 and 36. What is the ratio of their sides?

Answer

8 Is every square similar to every other square? Is every rectangle similar to every other rectangle?

Answer



EXTRA SPICY

Pi the Owl: Big-brain challenge.

9 Why are congruent figures also similar?

Answer



How did this sheet feel?

☐ Easy for me ☐ Just right ☐ Made me think

Stuck? Watch Mr DJ explain it

Step-by-step video lessons on YouTube: youtube.com/@MathWithMrDJ

Brain break: daily puzzles

Three new math puzzles every day, free:
puzzles.mathwithmrdj.com