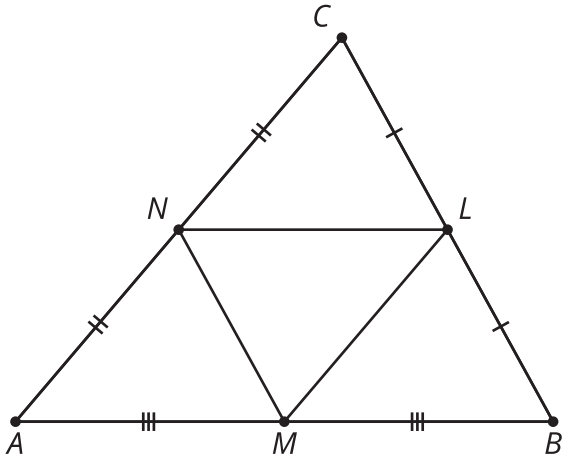
Unit 3 Lesson 5: Splitting Triangle Sides with Dilation, Part 1

1 Notice and Wonder: Midpoints (Warm up)

Student Task Statement

Here's a triangle ABC with midpoints L, M, and N.

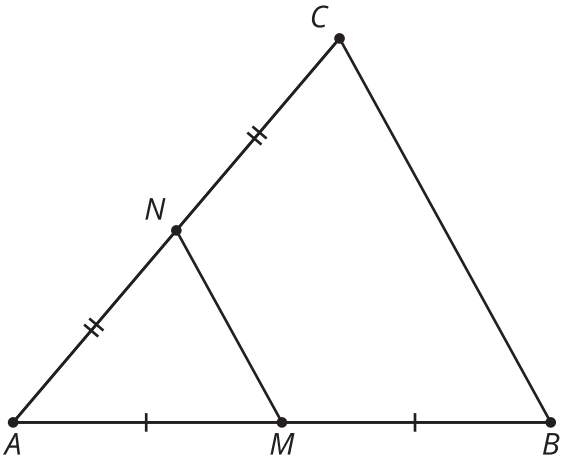


What do you notice? What do you wonder?

2 Dilation or Violation?

Student Task Statement

Here's a triangle ABC. Points M and N are the midpoints of 2 sides.

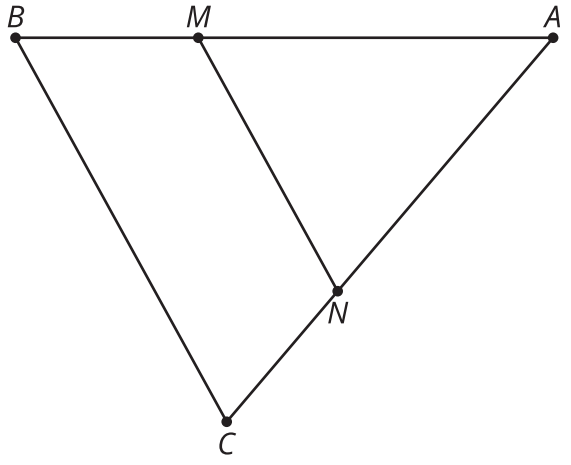


1. Convince yourself triangle ABC is a dilation of triangle AMN. What is the center of the dilation? What is the scale factor?
2. Convince your partner that triangle ABC is a dilation of triangle AMN, with the center and scale factor you found.
3. With your partner, check the definition of dilation on your reference chart and make sure both of you could convince a skeptic that ABC definitely fits the definition of dilation.
4. Convince your partner that segment BC is twice as long as segment MN.
5. Prove that $BC = 2MN$. Convince a skeptic.

3 A Little Bit Farther Now

Student Task Statement

Here's a triangle ABC. M is $\frac{2}{3}$ of the way from A to B. N is $\frac{2}{3}$ of the way from A to C.



What can you say about segment MN, compared to segment BC? Provide a reason for each of your conjectures.

Activity Synthesis

$\frac{1}{2} = \frac{1.2}{2.4}$ **so** $\overline{AC} \parallel \overline{GF}$