



Problem 1 – One Midsegment

1. Measure the lengths, slope, and angles of the triangle using tools from the Measurement menu. Add additional lines if necessary.

Length of _____ = _____

Measure of \angle _____ = _____

Length of _____ = _____

Measure of \angle _____ = _____

Length of _____ = _____

Slope of _____ = _____

Length of _____ = _____

Slope of _____ = _____

2. What conjectures can you make about the midsegment DE and its relationship to $\triangle ABC$? Be sure to drag the vertices of $\triangle ABC$ around the screen to confirm your conjectures.

3. Calculate the ratio of the lengths of \overline{BC} to \overline{DE} . Record your answers below.

$BC =$ _____

$BC =$ _____

$DE =$ _____

$DE =$ _____

Ratio = _____

Ratio = _____

4. Complete the conjectures:

The length of the midsegment is _____.

The slope of the midsegment is _____.

5. What is the relationship between $\triangle ADE$ and $\triangle ABC$? Can you prove it?



Midsegments of Triangles

Problem 2 – Three Midsegments

6. Calculate the perimeter and area using the tools in the Measurement menu.

Perimeter of $\triangle DEF$ = _____ Area of $\triangle DEF$ = _____

Perimeter of $\triangle ABC$ = _____ Area of $\triangle ABC$ = _____

7. Find the ratios of perimeters and areas. What happens to these ratios as a vertex of $\triangle ABC$ is dragged?

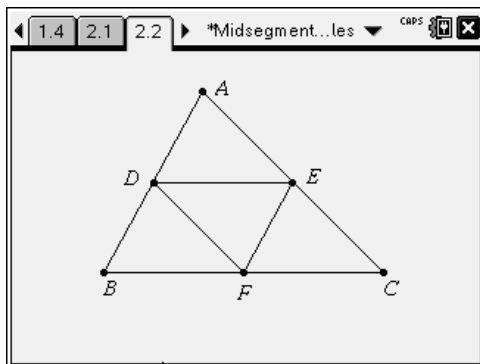
Ratio of Perimeters = _____ Ratio of Areas = _____

8. What is the relationship between $\triangle DEF$ and $\triangle ABC$? Can you prove it?

9. What is the relationship between $\triangle DEF$ and $\triangle ADE$? Can you prove it?

Apply The Math

Use this diagram for each exercise.
 D , E , and F are all midpoints.



1. If $DE = 6.2$ inches, and $AB = 11.4$ inches, find the lengths of \overline{BC} and \overline{EF} .

2. If the perimeter of $\triangle ABC$ is 32 cm, find the perimeter of $\triangle DEF$.

3. If the area of $\triangle DEF$ is 8.6 cm^2 , find the areas of $\triangle ABC$, $\triangle ADE$ and $\triangle BDF$.

4. If $m\angle AED = 27^\circ$ and $m\angle A = 64^\circ$, find as many other angle measures as possible.