

## Module 6c: Medians of Triangles

### **Math Practice(s):**

- Attend to precision.
- Look for & make sense of structure.

### **Learning Target(s):**

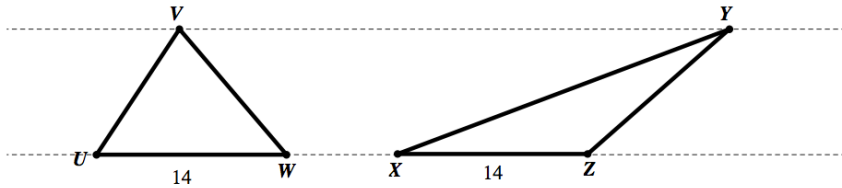
- Use medians in similar triangles to solve for missing values in triangles.

### **Homework:**

HW#8: 6c #1-2

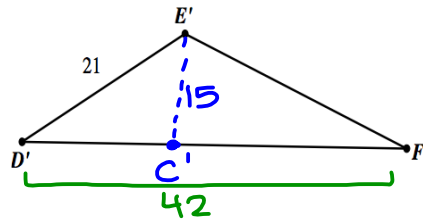
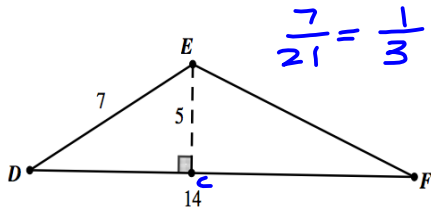
Warm-up

1. In the diagram below, lines VY and UZ are horizontal. Do the two triangles have the same area or different areas? Provide an explanation to justify your answer.



The area is the same, because they have the same base length & height, & those are the dimensions you use to find the area ( $A = \frac{1}{2}bh$ ).

2. The two triangles shown below are similar (the figures shown are not drawn to scale). Determine the area of both triangles.



$$\frac{EC}{E'C'} \Rightarrow \frac{5}{15} = \frac{1}{3}$$

$$\underline{E'C' = 15 \text{ units}}$$

$$\frac{14}{D'F'} = \frac{1}{3}$$

$$\underline{D'F' = 42 \text{ units}}$$

$\triangle DEF$

$$b = 14 \text{ units}$$

$$h = 5 \text{ units}$$

$$A = \frac{1}{2}(14)(5) = 35 \text{ units}^2$$

$\triangle D'E'F'$

$$b = 42 \text{ units}$$

$$h = 15 \text{ units}$$

$$A = \frac{1}{2}(42)(15) = 315 \text{ units}^2$$

seg

$$\frac{1}{3}$$

$$\frac{1}{4}$$

$$\frac{1}{5}$$

$$\frac{2}{3}$$

Area

$$\frac{1}{9}$$

$$\frac{1}{16}$$

$$\frac{1}{25}$$

$$\frac{4}{9}$$

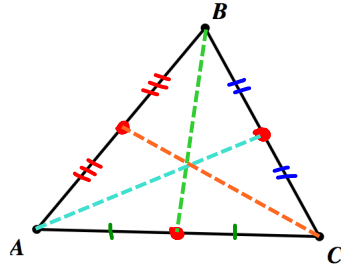
Volume

$$\frac{1}{27}$$

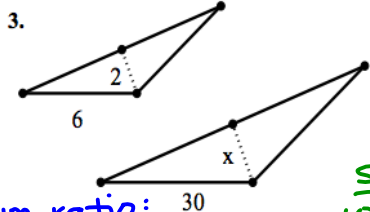
(erase to show)

**Median of a Triangle (#VOC):** the segment connecting a vertex with the midpoint of its opposite side.

- Since a triangle has 3 vertices, each triangle has exactly 3 medians, each of which lies inside the triangle.



Each figure shows the median as a dotted line. Solve for x:

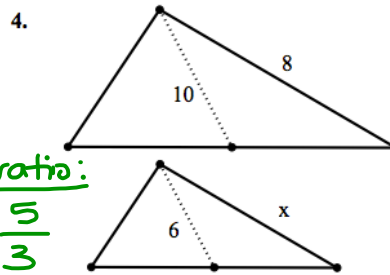


sim. ratio:

$$\frac{2}{30} = \frac{1}{5}$$

$$\frac{2}{x} = \frac{1}{5}$$

$$x = 10 \text{ units}$$



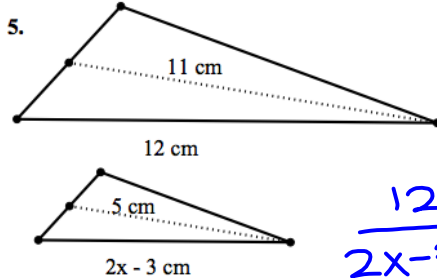
sim. ratio:

$$\frac{10}{6} = \frac{5}{3}$$

$$\frac{5}{3} = \frac{8}{x}$$

$$5x = 24$$

$$x = \frac{24}{5} \text{ units} = 4.8 \text{ units}$$



$$\frac{12}{2x-3} = \frac{11}{5}$$

sim ratio:

$$\frac{11}{5}$$

$$11(2x-3) = 60$$

$$22x - 33 = 60$$

$$22x = 93$$

$$x = \frac{93}{22} \approx 4.227$$