

## Geometry - 6.5 - Parts of Similar Triangles

- The Proportional Perimeters Theorem (6.7) states that if two triangles are similar, then the Perimeters are proportional to the measures of corresponding sides.

**Ex 1** - If  $\triangle PEN \sim \triangle GUI$ , find the perimeter of  $\triangle GUI$ .

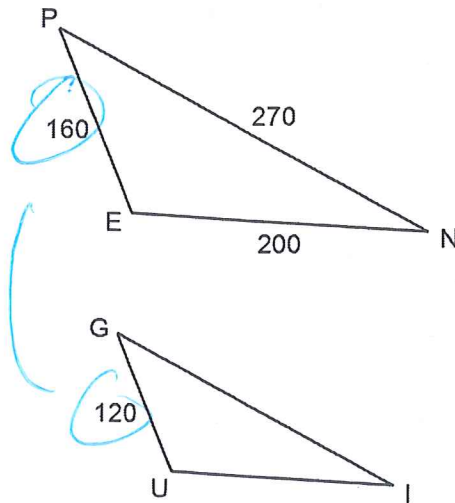
Let  $x = \text{Perimeter } \triangle GUI$

$$\frac{160}{120} = \frac{160 + 270 + 200}{x}$$

$$160x = 120 \cdot 630$$

$$\frac{160x}{160} = \frac{75,600}{160}$$

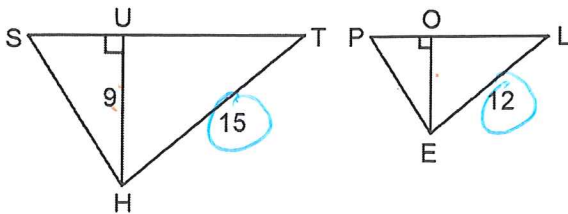
$$x = 472.5$$



- If two triangles are similar, then measures of the corresponding altitudes (Thm. 6.8), angle bisectors (Thm. 6.9), and medians (Thm. 6.10) are proportional to the measures of the corresponding sides.

**Ex 2** - Assume the triangles below are similar.

a) Find OE.

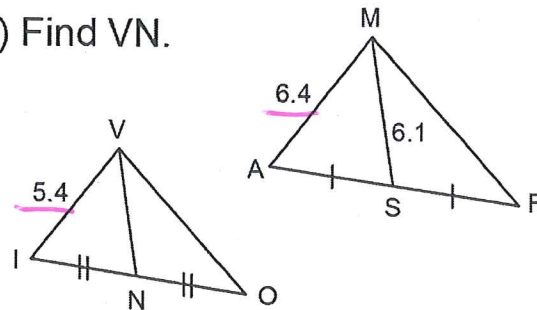


$$\frac{9}{15} = \frac{OE}{12}$$

$$\frac{15 \cdot OE}{15} = \frac{108}{15}$$

$$OE = 7.2$$

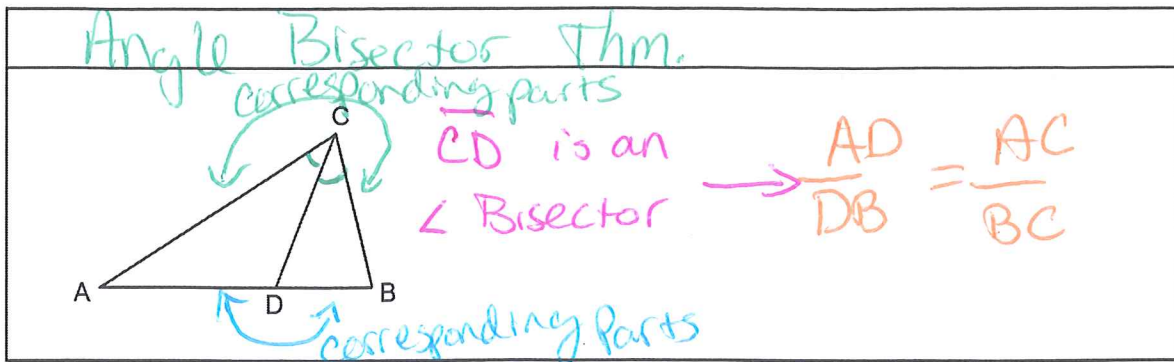
b) Find VN.



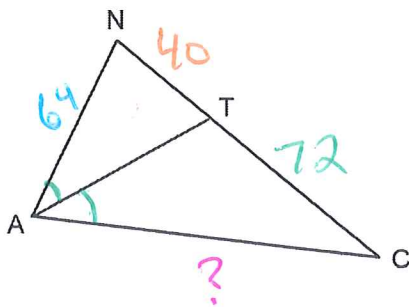
$$\frac{VN}{5.4} = \frac{6.1}{6.4}$$

$$\frac{6.4 \cdot VN}{6.4} = \frac{32.94}{6.4}$$

$$VN = 5.15$$



**Ex 3** - If  $\overline{AT}$  bisects  $\angle CAN$ ,  $AN = 64$  cm,  $NT = 40$  cm, and  $CT = 72$  cm, find  $AC$ .



$$\frac{40}{64} = \frac{72}{x}$$

$$\frac{40x}{40} = \frac{4,608}{40}$$

$$x = 115.2$$