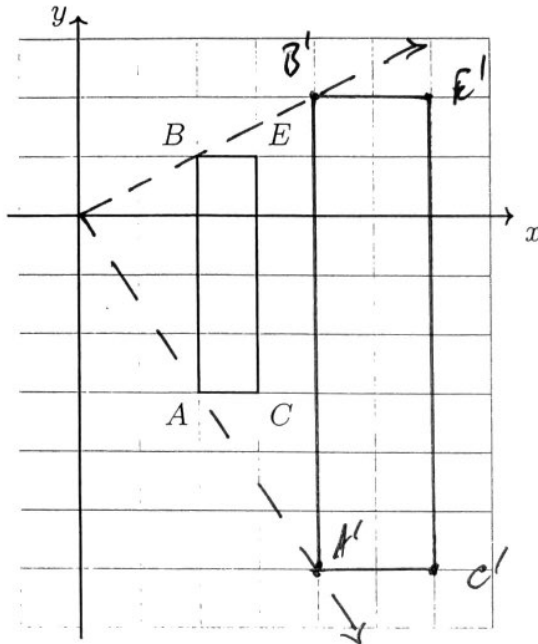


9.8 Classwork: Scaling area and volume

CCSS.HSG.SRT.B.5

1. Dilate rectangle $BECA \rightarrow B'E'C'A'$ by a factor of $k = 2$ centered at $(0, 0)$.



Find the area of the preimage and image.
(show the length times width calculation)

By what factor did the area scale?

$$K^2 = 4$$

2. Given $\triangle CAT \sim \triangle NAP$. $CA = 14$, $CT = 13.3$, $NA = 28$, $TP = 21$, $m\angle T = 80^\circ$, $m\angle NAP = 70^\circ$. Mark the given values on the diagram, find the scale factor, and solve the triangles (all angles and lengths).

$$\overline{CA} \rightarrow \overline{NA}$$

$$K = \frac{28}{14} = 2$$

$$\overline{CT} \rightarrow \overline{NP}$$

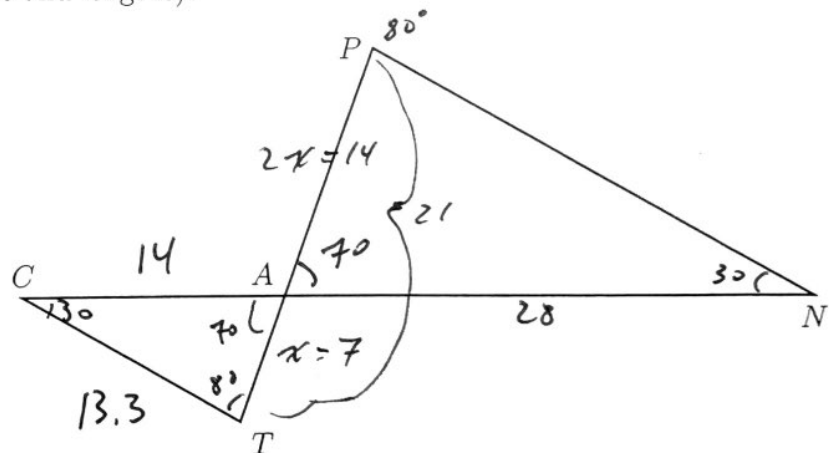
$$NP = 2(13.3) = 26.6$$

$$\overline{AT} \rightarrow \overline{AP}$$

$$x \rightarrow 2x$$

$$x + 2x = 21$$

$$x = 7$$



3. After a dilation with center $(0,0)$, the image of \overline{ST} is $\overline{S'T'}$. If $ST = 8.2$ and $S'T' = 28.7$, find the scale factor of this dilation.

$$k = \frac{28.7}{8.2} = 3.5$$

4. Regents problem: In triangle ABC , points D and E are on sides of \overline{AB} and \overline{BC} , respectively, such that $\overline{DE} \parallel \overline{AC}$, and $BD : DA = 3 : 2$.

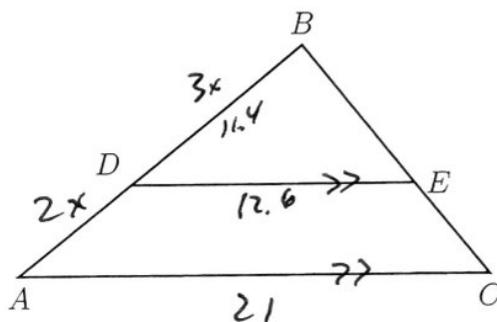
If $DB = 11.4$ and $DE = 12.6$, what is the length of \overline{AC} , to the nearest tenth?

$$\overline{BD} \rightarrow \overline{AB}$$

$$3x \rightarrow 5x$$

$$k = \frac{5}{3}$$

$$AC = \frac{5}{3}(12.6) = 21$$



5. In right triangle ABC shown below, point D is on \overline{AB} and point E is on \overline{BC} such that $\overline{AC} \parallel \overline{DE}$. Given $AB = 13.2$, $BC = 12$, and $EC = 7$.

- (a) Find the length of \overline{BE} .

$$BE = 12 - 7 = 5$$

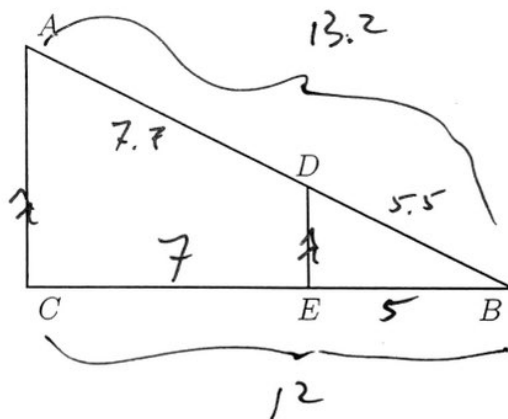
- (b) Find the scale factor, k , dilating $\triangle DBE \rightarrow \triangle ABC$, centered at B .

$$5 \rightarrow 12$$

$$k = \frac{12}{5}$$

- (c) Find BD .

$$BD = \frac{13.2}{(12/5)} = 5.5$$



- (d) Find as many other lengths and angle measures as you can.

$$AD = 13.2 - 5.5 = 7.7$$