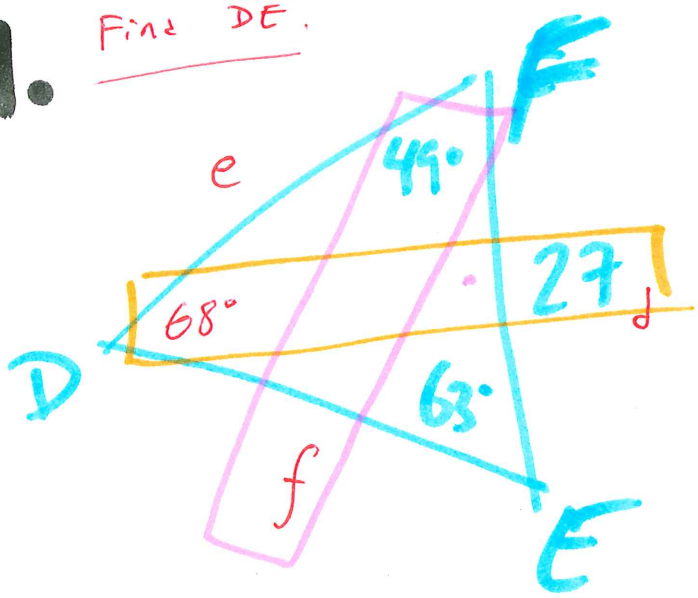
1. Find $\overline{DE}$.



$180° - 49° - 63° = 68°$

Complete pair known! ASA... Law of Sines

$$\frac{\sin 68}{27} = \frac{\sin 49}{f}$$

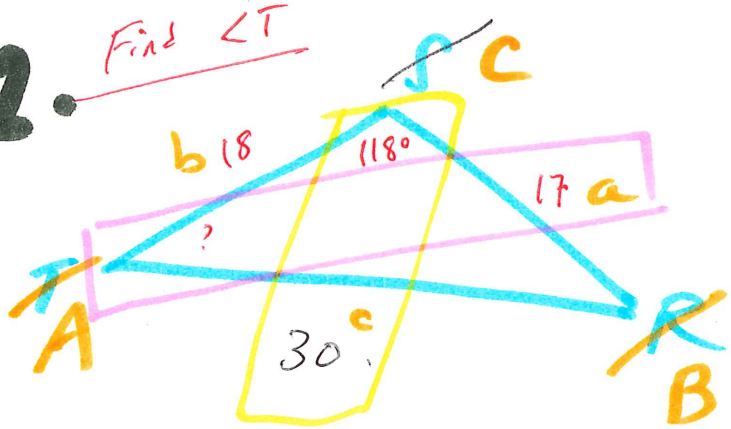
$$f \cdot \sin 68 = 27 \cdot \sin 49$$

$$f = \frac{27 \cdot \sin 49}{\sin 68}$$

$$f \approx 21.977\ldots$$

$$\boxed{f \approx 22}$$

2. Find $\angle T$



SAS... must be Law of Cosines

Call Angle given as G

$$c^2 = b^2 + a^2 - 2ab \cdot \cos G$$

$$c^2 = 18^2 + 17^2 - 2(17)(18) \cdot \cos(118°)$$

$$c^2 = 900.316\ldots$$

$$c = \sqrt{900.316} \approx 30$$

Now I can use Law of Sines to find $\angle T$!

$$\frac{\sin 118°}{30} = \frac{\sin T}{17}$$

$$17 \cdot \sin 118° = 30 \cdot \sin T$$

$$\frac{17 \sin 118}{30} = \sin T$$

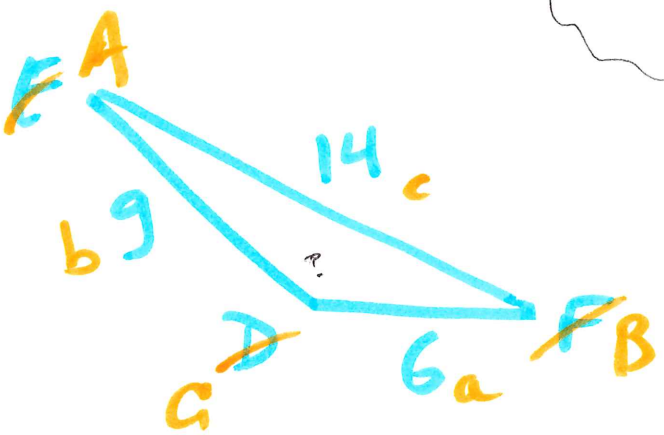
$$0.500 = \sin T$$

INVERSE!

$$T = \sin^{-1}(0.500)$$

$$\boxed{T = 30°}$$

3. Find $\angle D$



SSS must be Law of Cosines. Call angle I'm looking for "G"

$c^2 = b^2 + a^2 - 2ab \cdot \cos G$

$14^2 = 9^2 + 6^2 - 2(9)(6) \cdot \cos G$

$196 = 117 - 108 \cos G$

$-117 \quad -117$

$79 = -108 \cos G$

$-108 \quad -108$

$-0.731 = \cos G$

INVERSE!

$G = \cos^{-1}(-0.731)$

$G = 137°$

0 Don't Combine all terms here

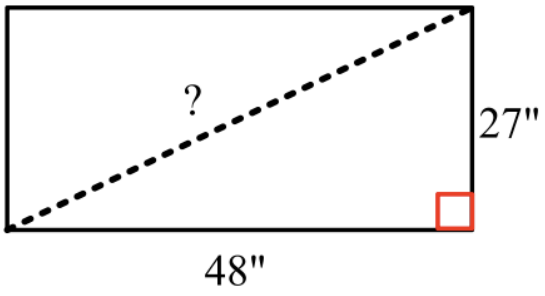
4

SRT-B4c

4. Modern televisions are designed to have a 16:9 width to height ratio for a cinematic widescreen aspect. Find the diagonal length, to the nearest tenth of an inch, of a TV that is 27" in height.

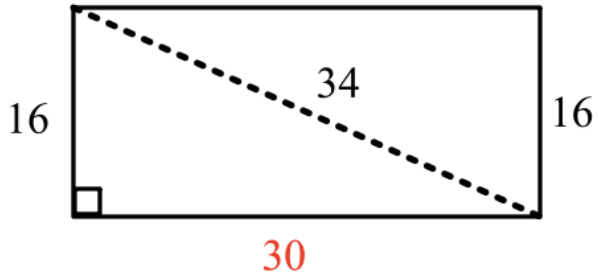
standard ratio	this particular tv
16 width	?? width
9 height	27" height

What's the scale factor? $9k=27 \rightarrow k = 3$. So multiply 16 by 3 to get width: 48"



$$48^2 + 27^2 = c^2$$
$$3033 = c^2$$
$$\sqrt{3033} = c$$
$$55.1" \approx c$$

5. Find the perimeter of a rectangle with a diagonal length of 34 and one side of 16.



Perimeter requires all 4 sides... only have 2 (both 16's). Hmm...

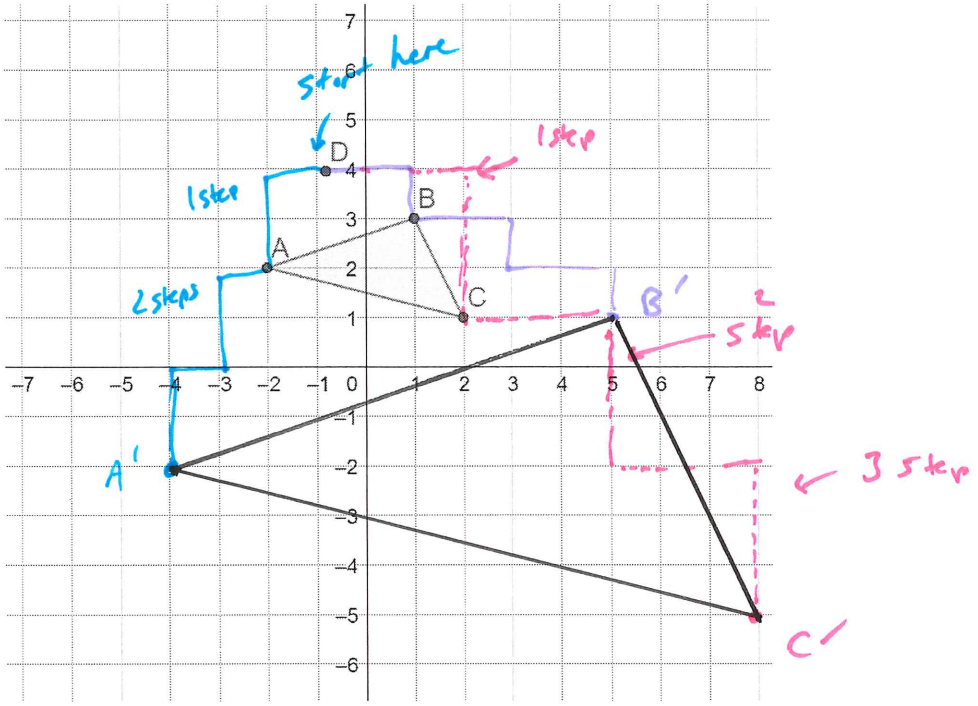
$$16^2 + b^2 = 34^2$$
$$256 + b^2 = 1156$$
$$b^2 = 900$$
$$b = \sqrt{900}$$
$$b = 30$$

The other sides must be 30!
So P = 16 + 16 + 30 + 30
P = 92

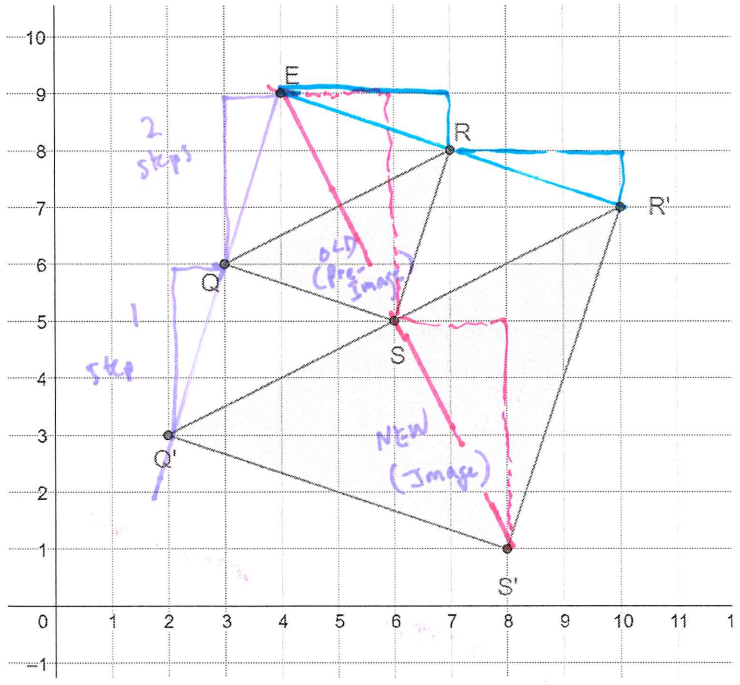
SRT-A1b

3 steps from D

6. Dilate ΔABC about point D with scale factor 3 to create $\Delta A'B'C'$



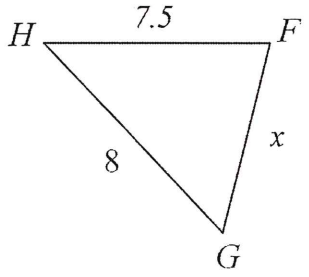
7. Find the scale factor of the dilation shown here about point E.

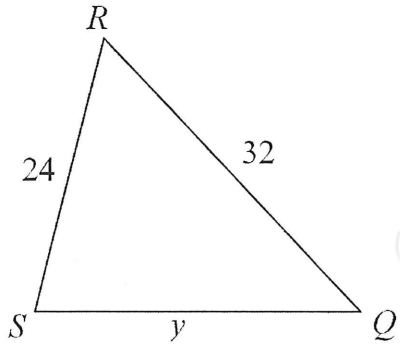


Scale factor: 2

distance from each old point to E multiplier by 2 to give the new pt to E.

e.g. $\frac{Q'E}{QE} = 2$



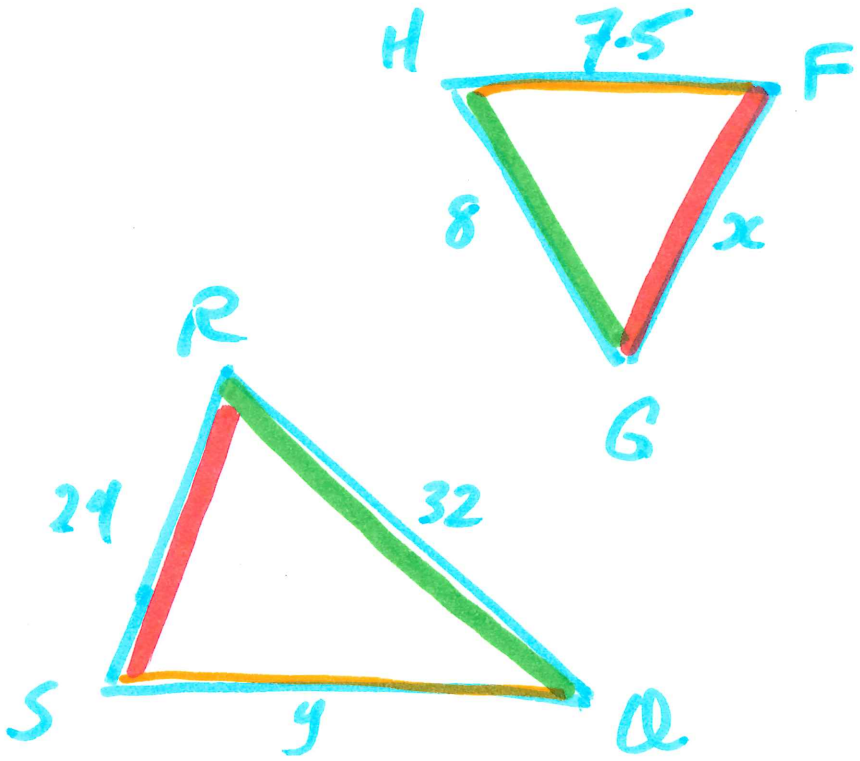


SRT-A2a

8. Given $\Delta SRQ \sim \Delta FGH$. Find the values of x and y in the figure.

See next Page.

8. $\triangle SRQ \sim \triangle FGH$. x ; y ?



Big △ / Small △

$$\frac{24}{x} = \frac{32}{8} = \frac{y}{7.5}$$

x? ↓ → y?

$$\frac{24}{x} = \frac{32}{8}$$

$$24 \cdot 8 = 32x$$

$$\frac{192}{32} = \frac{32x}{32}$$

$$\boxed{6 = x}$$

$$\frac{32}{8} = \frac{y}{7.5}$$

$$8y = (7.5)(32)$$

$$\frac{8y}{8} = \frac{240}{8}$$

$$\boxed{y = 30}$$