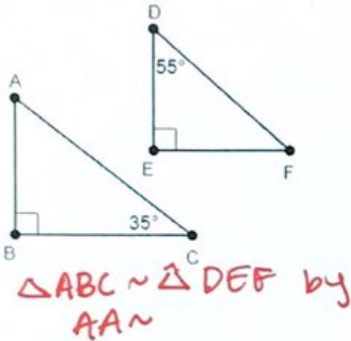


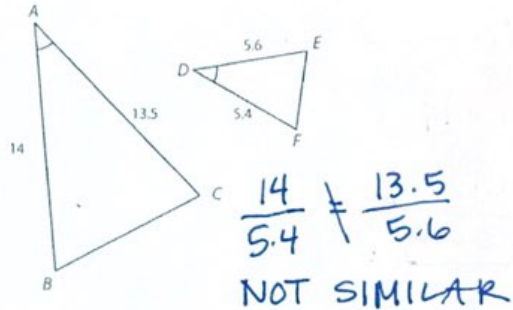
**Proving Triangles are Similar and Triangle Proportionality Theorems**

**Triangle Similarity:** Determine if the following triangles are similar. If so, write a similarity statement and justify your solution.

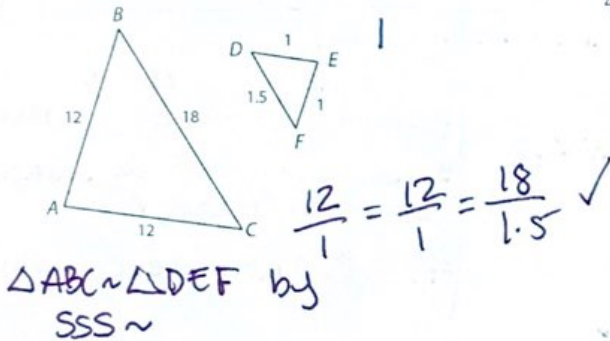
1.



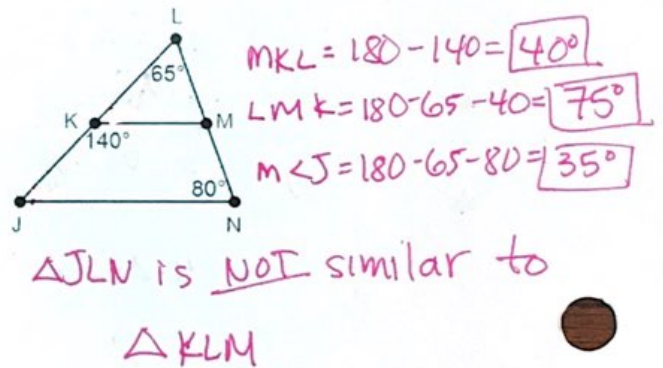
2.



3.

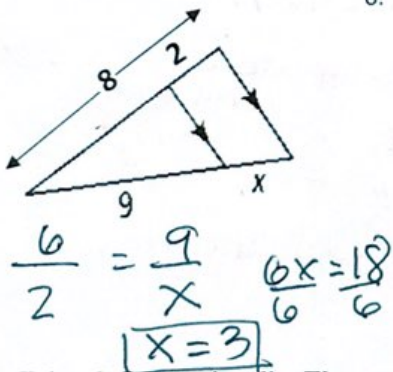


4.

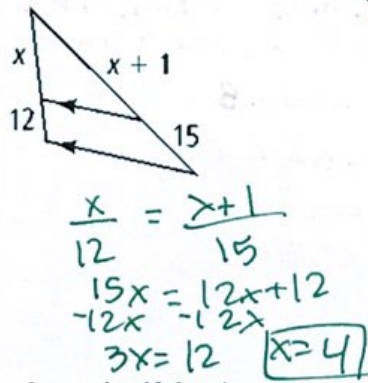


**Triangle Proportionality:** Solve for x. Show your work.

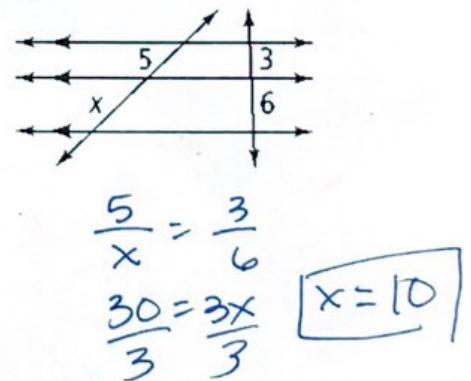
5.



6.

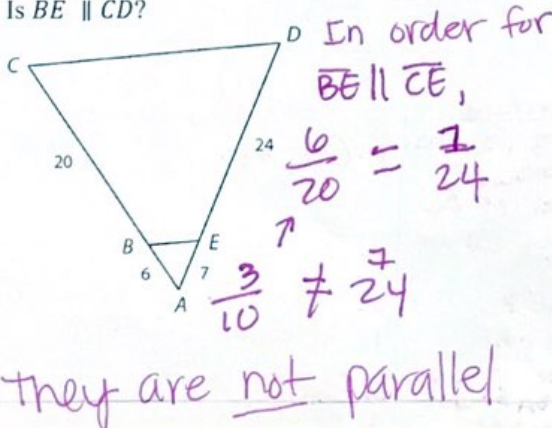


7.

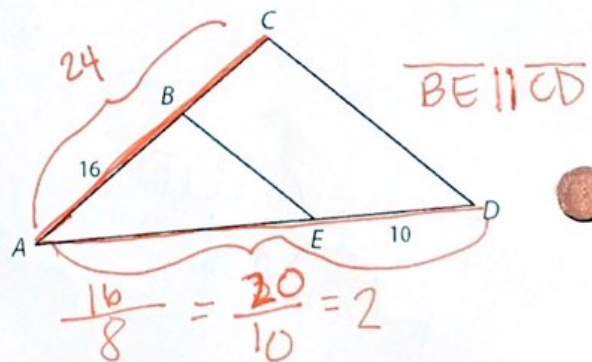


Use the Triangle Proportionality Theorem to determine if the given segments are parallel. Explain your reasoning:

8. Is  $\overline{BE} \parallel \overline{CD}$ ?

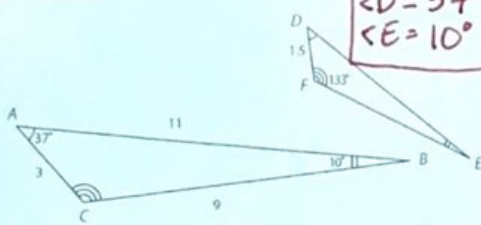


9. If  $AC = 24$  units and  $AD = 30$  units, is  $\overline{BE} \parallel \overline{CD}$ ?



Find all the angle measures and side lengths for each triangle of the given similar pairs:

10.  $\triangle ABC \sim \triangle DEF$



$$\frac{3}{1.5} = \frac{11}{DE} \quad \frac{3}{1.5} = \frac{9}{FE}$$

$$\frac{3(\overline{DE})}{3} = \frac{16.5}{3} \quad \frac{3(\overline{FE})}{3} = \frac{13.5}{3}$$

$$\boxed{DE = 5.5} \quad \boxed{FE = 4.5}$$

11.  $\triangle JKL \sim \triangle MNP$

$$\frac{13.4}{6.7} = \frac{\overline{NP}}{4.9}$$

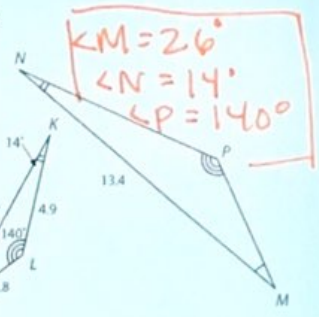
$$\frac{65.66}{6.7} = \frac{6.7(\overline{NP})}{6.7}$$

$$\boxed{\overline{NP} = 9.8}$$

$$\frac{13.4}{6.7} = \frac{\overline{PM}}{2.8}$$

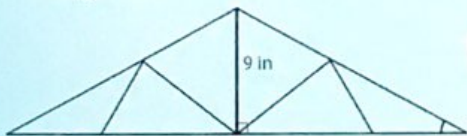
$$\frac{37.52}{6.7} = \frac{6.7(\overline{PM})}{6.7}$$

$$\boxed{\overline{PM} = 5.6}$$



**Application Problems:**

12. The support beams of truss bridges are triangles. James made a model of a truss bridge with a scale of 1 inch = 4 feet. If the height of the tallest triangle on the model is 9 inches, what is the height of the tallest triangle on the actual bridge?



1 in = 4 ft

$$\frac{1}{4} = \frac{9}{x}$$

$$\boxed{x = 36 \text{ ft}}$$

A statue that is 25 feet tall casts a shadow that is 16 feet long. A cement post next to the statue is 4 feet tall. Draw a diagram. Find the length of the cement post's shadow.



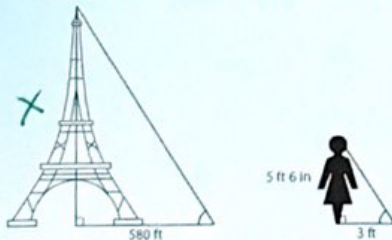
$$\frac{25}{4} = \frac{16}{x}$$

$$\frac{25x}{25} = \frac{64}{25}$$

$$\boxed{x = 2.56}$$

The shadow of the post is 2.56 ft long

14. Sheila is standing near the Eiffel Tower in Paris, France. The shadow of the monument is 580 feet long, and Sheila's shadow is 3 feet long. If Sheila is 5 feet 6 inches tall, how tall is the monument?



$$\frac{x}{580} = \frac{5.5}{3}$$

$$\frac{3x}{3} = \frac{3190}{3}$$

$$\boxed{x = 1063.\bar{3} \text{ ft}}$$

5 ft 6 in = 5.5 ft

15. To measure  $\overline{AC}$ , the distance across a crater, an archeologist stands at point A and locates points B, C, D, and E. If  $\triangle ABC \sim \triangle DBE$  what is the distance across the lake?

$$\frac{4.5 + 4.05}{4.5} = \frac{x}{3}$$

$$3 \cdot 8.55 = 4.5x$$

$$\frac{25.65}{4.5} = \frac{4.5x}{4.5}$$

$$\boxed{x = 5.7 \text{ m}}$$

2 similar  $\Delta$ 's  
SSS ~

