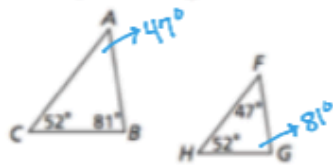


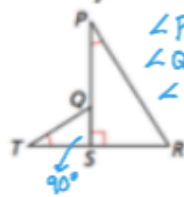
Math 2: Triangle Similarity

Explain why the triangles are similar and write a similarity statement.

1. $\triangle ABC \sim \triangle FGH$
by AA~



2. $\angle P \cong \angle T$ (Given)
 $\angle QST = 90^\circ$ (sup. \angle 's)
 $\angle PSR \cong \angle QST$
 $\triangle PSR \sim \triangle QST$
by AA~



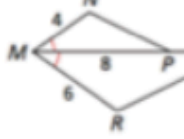
Verify that the triangles are similar.

Check ratios
 $\frac{DE}{JK} = \frac{EF}{KL} = \frac{DF}{JL}$
 $\frac{8}{16} = \frac{10}{20} = \frac{6}{12}$
 $= \frac{1}{2}$

3. $\triangle DEF$ and $\triangle JKL$ yes by SSS~



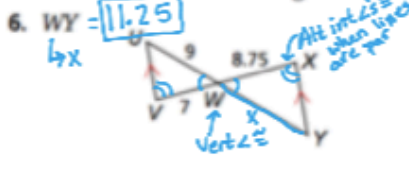
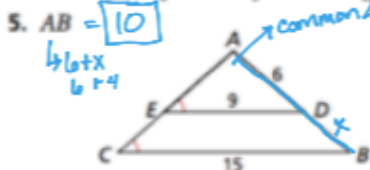
4. $\triangle MNP$ and $\triangle MRQ$
yes by SAS~



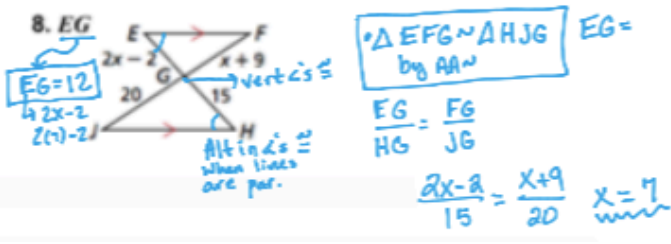
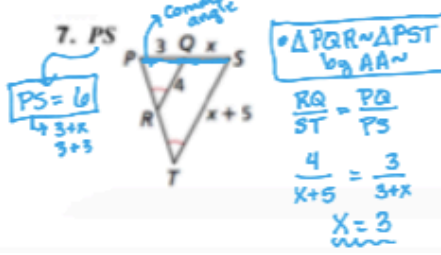
Check ratios
 $\frac{MN}{MR} = \frac{NP}{RQ} = \frac{MP}{MQ}$
 $\frac{4}{4} = \frac{6}{6} = \frac{8}{8}$
 $= 1$
 $\angle NMP \cong \angle RMQ$ (Given)
included \angle

Multi-Step Explain why the triangles are similar and then find each length.

$\triangle AED \sim \triangle ACB$
by AA~
 $\frac{AD}{AB} = \frac{ED}{CB}$
 $\frac{6}{6+x} = \frac{9}{15}$
 $x = 4$

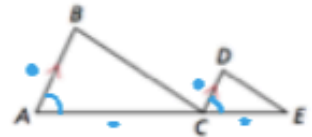


$\triangle UVW \sim \triangle YXW$
by AA~
 $\frac{UV}{YX} = \frac{VW}{XW}$
 $\frac{9}{7} = \frac{8.75}{x}$
 $x = 11.25$



9. Given: $\overline{AB} \parallel \overline{CD}$, $AB = 2CD$, $AC = 2CE$
Prove: $\triangle ABC \sim \triangle CDE$

2 sides are prop with included \angle



Proof:

Statements	Reasons
1. $\overline{AB} \parallel \overline{CD}$	1. Given
2. $\angle BAC \cong \angle DCE$	2. corr. \angle 's theorem
3. $AB = 2CD$, $AC = 2CE$	3. Given
4. $\frac{AB}{CD} = 2$, $\frac{AC}{CE} = 2$	4. Div. prop. of =
5. $\frac{AB}{CD} = \frac{AC}{CE}$	5. Trans. Prop of =
6. $\triangle ABC \sim \triangle CDE$	6. SAS~

$\frac{AB}{CD} = \frac{2CD}{CD}$

10. Given: $CD = 3AC$, $CE = 3BC$
Prove: $\triangle ABC \sim \triangle DEC$

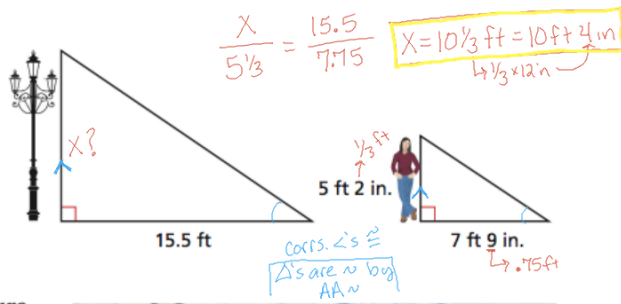
2 sides are prop with an inc. \angle



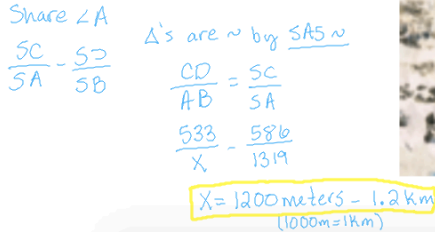
Proof:

Statements	Reasons
1. $CD = 3AC$, $CE = 3BC$	1. Given
2. $3 = \frac{CD}{AC}$, $3 = \frac{CE}{BC}$	2. Div. Prop. of =
3. $\frac{CD}{AC} = \frac{CE}{BC}$	3. Trans. prop. of =
4. $\angle ACB \cong \angle DCE$	4. Def. of Vertical \angle 's
5. $\triangle ABC \sim \triangle DEC$	5. SAS~

11. **Measurement** Jenny is 5 ft 2 in. tall. To find the height of a light pole, she measured her shadow and the pole's shadow. What is the height of the pole?

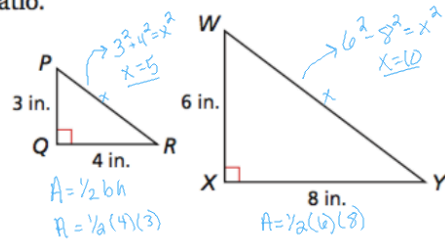


12. **Surveying** In order to measure the distance AB across the meteorite crater, a surveyor at S locates points $A, B, C,$ and D as shown. What is AB to the nearest meter? nearest kilometer?



13. Given that $\triangle PQR \sim \triangle WXY$, find each ratio.

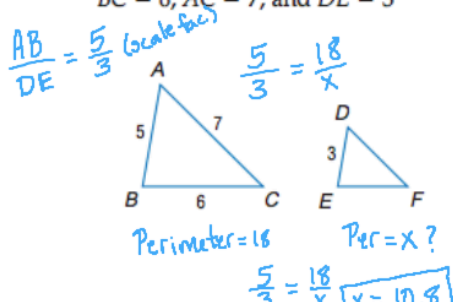
- $\frac{\text{perimeter of } \triangle PQR}{\text{perimeter of } \triangle WXY} = \frac{12}{24} = \frac{1}{2}$
- $\frac{\text{area of } \triangle PQR}{\text{area of } \triangle WXY} = \frac{6}{24} = \frac{1}{4} = \left(\frac{1}{2}\right)^2$
- How does the result in part a compare with the result in part b?



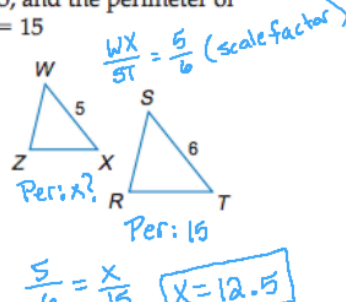
Ratio of area is the ratio of the perimeter squared

Find the perimeter of the given triangle.

14. $\triangle DEF$, if $\triangle ABC \sim \triangle DEF$, $AB = 5$, $BC = 6$, $AC = 7$, and $DE = 3$



15. $\triangle WZX$, if $\triangle WZX \sim \triangle SRT$, $ST = 6$, $WX = 5$, and the perimeter of $\triangle SRT = 15$



16. **MULTI-STEP PROBLEM** Use the following information about similar triangles $\triangle ABC$ and $\triangle DEF$.

The scale factor of $\triangle ABC$ to $\triangle DEF$ is 15:2.

The area of $\triangle ABC$ is $25x$.

The area of $\triangle DEF$ is $x - 5$.

The perimeter of $\triangle ABC$ is $8 + y$.

The perimeter of $\triangle DEF$ is $3y - 19$.

- Use the scale factor to find the ratio of the area of $\triangle ABC$ to the area of $\triangle DEF$.

Handwritten notes for part a:
 $\frac{25x}{x-5}$
 $\left(\frac{15}{2}\right)^2 = \frac{25x}{x-5}$
 $X = 9$

- Write and solve a proportion to find the value of x .

- Use the scale factor to find the ratio of the perimeter of $\triangle ABC$ to the perimeter of $\triangle DEF$.

- Write and solve a proportion to find the value of y .

Handwritten notes for part d:
 $\frac{8+y}{3y-19} = \frac{15}{2}$ $y = \frac{151}{43} \approx 3.5$

- Writing** Explain how you could find the value of z if $AB = 22.5$ and the length of the corresponding side \overline{DE} is $13z - 10$.

Handwritten notes for part e:
 $AB + DE$ are corr. sides $\frac{15}{2} = \frac{22.5}{13z-10}$ $Z = 1$