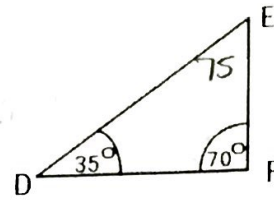
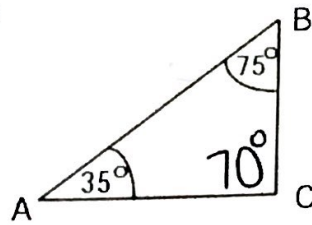


1. State whether or not the following triangles are similar and support your answer.

The triangles are similar AA~



2. (i) Determine if the triangles below are similar, and explain how you know.
 (ii) Find the lengths of the missing sides.

a) AA~
 $\frac{3}{5} = \frac{a}{15}$
 $45 = 5a$
 $a = 9$

b) AA~
 $\frac{15}{20} = \frac{b}{12}$
 $180 = 20b$
 $b = 9$

c) AA~
 $\frac{4}{5} = \frac{d}{15}$
 $60 = 5d$
 $d = 12$

3. Assuming the two triangles are similar, find the tower's height from the given measurements below.

$\frac{1}{.2} = \frac{x}{8}$
 $8 = .2x$
 $x = 40$
 40m

4. Looking at the triangles in the figure below:

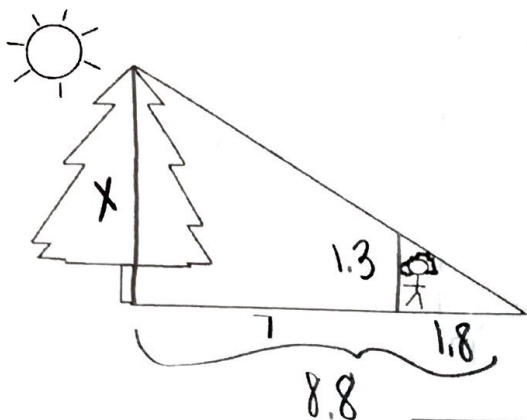
Are the two triangles similar? Yes AA~

What is the length of QT? $\frac{3}{9} = \frac{4}{x}$ $3x = 36$ $x = 12$

If PT is 15 cm, what is the length of RT? $\frac{x}{4} = \frac{15}{12}$

$12x = 60$
 $x = 5$
 40

5. Tonya is 1.3 meters tall. She stands 7 meters in front of a tree and casts a shadow 1.8 meters long. How tall is the tree?



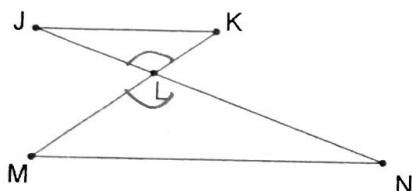
$$\frac{1.8}{8.8} = \frac{1.3}{x} \quad 1.8x = 11.44$$

$$\approx 6.35 \text{ m}$$

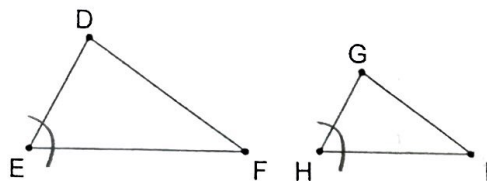
$$\frac{1.3}{x} = \frac{1.8}{8.8} \quad 1.8x = 11.44$$

$$\approx 6.35 \text{ m}$$

6. Given: $\frac{JL}{NL} = \frac{KL}{ML}$
 Prove: $\angle J \cong \angle N$



Statements	Reasons
$\frac{JL}{NL} = \frac{KL}{ML}$	Given
$\angle JLK \cong \angle NLM$	vert \angle 's \cong
$\triangle JLK \sim \triangle NLM$	SAS \sim
$\angle J \cong \angle N$	Def of $\sim \triangle$'s



Use for #7-8

7. Given: $\frac{DE}{GH} = \frac{DF}{GI} = \frac{EF}{HI}$

- Prove: $\angle E \cong \angle H$

Statements	Reasons
	Given
$\triangle DEF \sim \triangle HGI$	SSS \sim
	Def of $\sim \triangle$'s

8. Given: $\frac{DE}{GH} = \frac{EF}{HI}$
 $\angle E \cong \angle H$

- Prove: $\frac{DF}{HI} = \frac{DG}{GI}$

Statements	Reasons
	Given
$\triangle DEF \sim \triangle HGI$	SAS \sim
	Def of $\sim \triangle$'s

1. In triangle ABC, $m\angle A = x^\circ$, $m\angle B = (x + 10)^\circ$, and $m\angle C = (3x + 20)^\circ$. Find the $m\angle A$.



$$5x + 30 = 180 \quad 5x = 150 \quad x = 30$$

$\angle A = 30$

2. In triangle DEF, $m\angle E = (x + 10)^\circ$, $m\angle D = (3x + 30)^\circ$, and $m\angle F = (5x + 50)^\circ$. Find the $m\angle F$.

$$9x + 90 = 180 \quad 9x = 90 \quad x = 10$$

$m\angle F = 100$

3. The measure of each base angle of an isosceles triangle is 20° . Find the measure of the vertex angle.

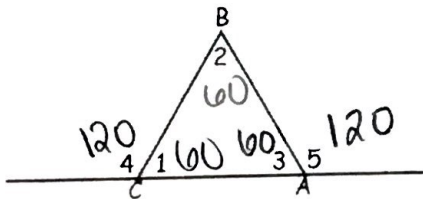


$= 140^\circ$

4. Two angles of a triangle are equal in measure and the third angle is 110° . Find the number of degrees in each of the two equal angles.

$$x + x + 110 = 180 \quad 2x = 70 \quad x = 35^\circ$$

5. Triangle ABC is an equilateral triangle. Fill in the measures of all the numbered angles.

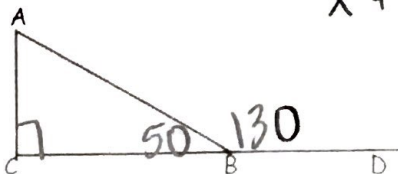


$\angle 1: 60^\circ$
 $\angle 4: 120^\circ$

$\angle 2: 60^\circ$
 $\angle 5: 120^\circ$

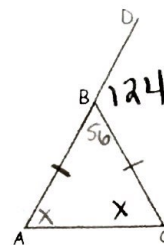
$\angle 3: 60^\circ$

6. Find the measure of $\angle A$, if $\angle C$ is a right angle and $m\angle ABD = 130^\circ$:



$$x + 90 + 50 = 180 \quad x = 40$$

7. In $\triangle ABC$, $\overline{AB} \cong \overline{CB}$ and $m\angle CBD = 124^\circ$. Find the $m\angle A$.

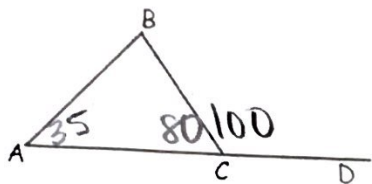


$$180 - 56 = 2x$$

$$124 = 2x$$

$$x = 62$$

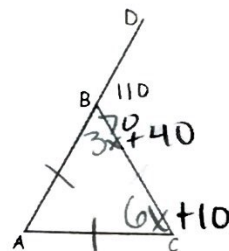
8. In $\triangle ABC$, $m\angle BCD = 100^\circ$ and $m\angle BAC = 35^\circ$. Find the $m\angle B$.



$$m\angle B = 65^\circ$$

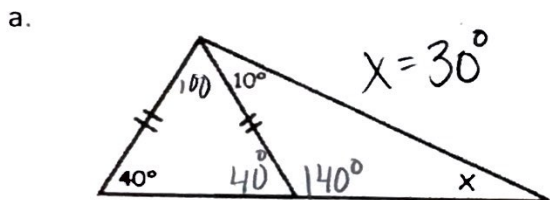
9. In Isosceles $\triangle ABC$, $\overline{AB} \cong \overline{AC}$, $m\angle C = (6x + 10)^\circ$ and $m\angle ABC = (3x + 40)^\circ$. Find the measure of the exterior angle $\angle DBC$.

$$\begin{aligned} 3x + 40 &= 6x + 10 \\ -3x \quad -10 \quad -3x \quad -10 \\ \hline 30 &= 3x \quad X = 10 \end{aligned}$$

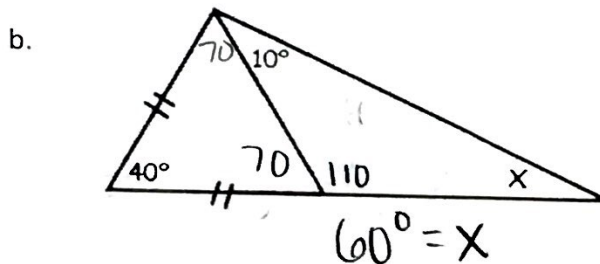


$$m\angle DBC = 110^\circ$$

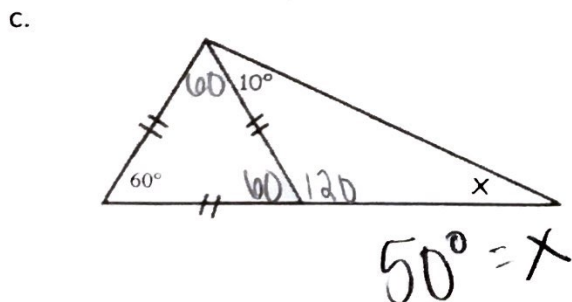
10. Find the value of x :



$$x = 30^\circ$$



$$60^\circ = x$$



$$50^\circ = x$$