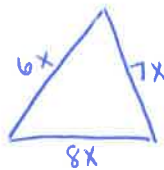


Did you hear about...

A the	B very	C sad	D guy	E who	F tried	G to	H KISS
I his	J girl	K friend	L in	M the	N fog	O and	P mist ?

Answer each question below. Find your answers on the attached answer key and notice the word next to it. Write this word in the box containing the letter of that question. Keep working and you will hear about a mistake.

- A) A triangle with a perimeter of 63 feet has side lengths in the extended ratio of 6 : 7 : 8. Find the length of the longest side.



$$6x + 7x + 8x = 63$$

$$21x = 63$$

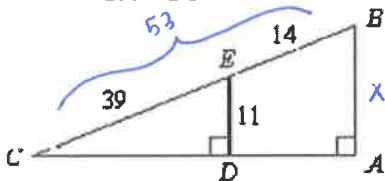
$$x = 3$$

Lengths = $6(3) = 18$ ft

$7(3) = 21$ ft

$8(3) = 24$ ft ← longest side

- B) Given that $\frac{ED}{BA} = \frac{EC}{BC}$, find AB to the nearest tenth. The figure is not drawn to scale.



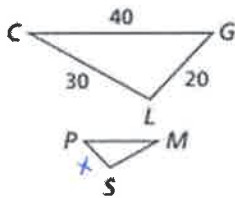
$$\frac{11}{x} = \frac{39}{53}$$

$$583 = 39x$$

$$x = 14.9$$

$AB = 14.9$

- C) $\triangle CGL \sim \triangle MPS$. The similarity ratio of $\triangle CGL$ to $\triangle MPS$ is 5 : 2. What is the length of \overline{PS} ?

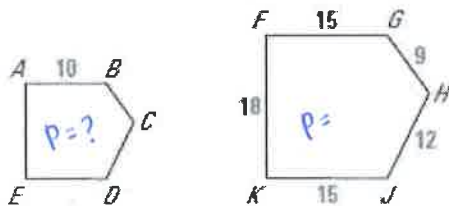


$$\frac{\triangle CGL}{\triangle MPS} = \frac{5}{2} = \frac{GL}{PS} \Rightarrow \frac{5}{2} = \frac{20}{x} \Rightarrow 5x = 40$$

$$x = 8$$

$PS = 8$

- D) In the diagram, $ABCDE : FGHIJK$. Find the perimeter of ABCDE.



$$\frac{ABCDE}{FGHIJK} = \frac{10}{15} = \frac{x}{69}$$

$$690 = 15x$$

$$x = 46$$

The perimeter of ABCDE is 46 units

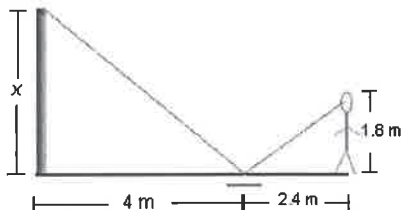
- E) The town of Goodland, Kansas, claims that it has one of the world's largest easels. It holds an enlargement of a van Gogh painting that is 24 ft wide. The original painting is 58 cm wide and 73 cm tall. If the reproduction is similar to the original, what is the height of the reproduction to the nearest foot?

$$\frac{\text{width}}{\text{height}} : \frac{58\text{cm}}{73\text{cm}} = \frac{24\text{ft}}{x} \Rightarrow 58x = 1752$$

$$x = 30.2$$

The height is about 30 ft

- F) A statue of Scottish hero William Wallace is located in Druid Hill Park. A student looks into a mirror and sees the top of the statue reflected there. Use the information below to determine the unknown height of the statue.

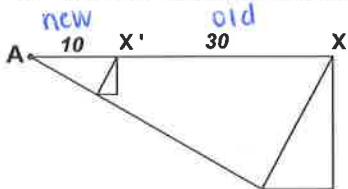


$$\frac{x}{1.8} = \frac{4}{2.4} \Rightarrow 2.4x = 7.2$$

$$x = 3$$

The statue is 3 m tall

- G) Find the scale factor of the dilation.

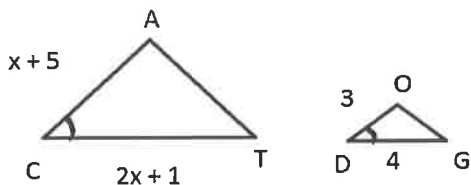


$$\frac{\text{new}}{\text{old}} : \frac{x'}{x} = \frac{10}{30} = \frac{1}{3} \text{ or } \boxed{1:3}$$

- H) Under a dilation with the origin as the center of dilation, triangle $A(0, 0)$, $B(0, 4)$, $C(6, 0)$ becomes triangle $A'(0, 0)$, $B'(0, 10)$, $C'(15, 0)$. What is the scale factor for this dilation?

$$\frac{\text{new}}{\text{old}} : \frac{B'(0, 10)}{B(0, 4)} \Rightarrow \frac{10}{4} = \frac{5}{2} \text{ or } \boxed{5:2}$$

- I) Find the value of x that makes $\triangle CAT \sim \triangle DOG$.



$$\frac{\triangle CAT}{\triangle DOG} : \frac{CA}{DO} = \frac{CT}{DG} \Rightarrow \frac{x+5}{3} = \frac{2x+1}{4}$$

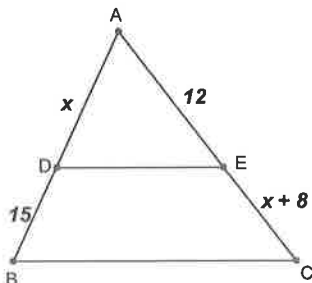
$$3(2x+1) = 4(x+5)$$

$$6x+3 = 4x+20$$

$$2x+3 = 20$$

$$2x = 17 \Rightarrow \boxed{x = 17/2}$$

- J) Given $\overline{DE} \parallel \overline{BC}$. Find EC .



$$\frac{x}{15} = \frac{12}{x+8}$$

$$180 = x(x+8)$$

$$180 = x^2 + 8x$$

$$0 = x^2 + 8x - 180$$

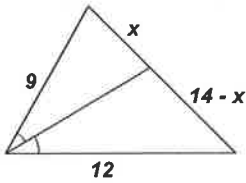
$$0 = (x+18)(x-10)$$

$$x \neq 18, \boxed{x = 10}$$

$$EC = 10 + 8$$

$$\boxed{EC = 18}$$

K) Find the value of x.



$$\frac{x}{14-x} = \frac{9}{12} \Rightarrow 12x = 9(14-x)$$

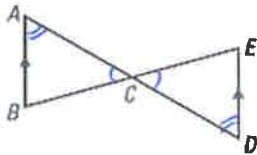
$$12x = 126 - 9x$$

$$21x = 126$$

$$x = 6$$

L) What similarity theorem can be used to prove that the two triangles are similar?

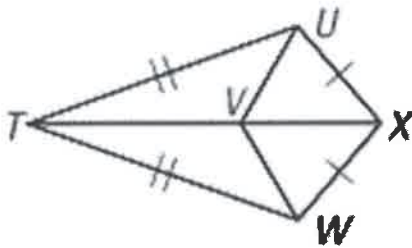
$\triangle ABC, \triangle DEC$



$\angle ACB \cong \angle DCE$ (VAT)
 $\angle A \cong \angle D$ OR $\angle E \cong \angle B$ (Alt. int. Angles)

$\triangle ACB \sim \triangle DCE$ by AA

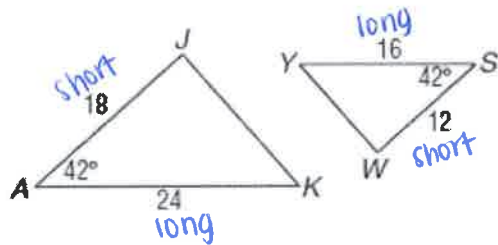
M) What similarity theorem can be used to prove $\triangle TUX \sim \triangle TWX$.



$\overline{TU} \cong \overline{TW}$ (side)
 $\overline{UX} \cong \overline{WX}$ (side)
 $\overline{TX} \cong \overline{TX}$ (side by reflexive)

$\triangle TUX \sim \triangle TWX$ by SSS

N) Is $\triangle JAK \sim \triangle WSY$? If yes, what similarity theorem can be used? If no, write "Not similar".



$$\frac{\triangle JAK}{\triangle WSY} : \frac{18}{12}, \frac{24}{16}$$

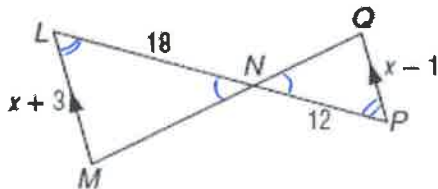
$$\downarrow \quad \downarrow$$

$$\frac{3}{2} \quad \frac{3}{2}$$

since both pairs of corresponding sides are proportional and the included angles are congruent,

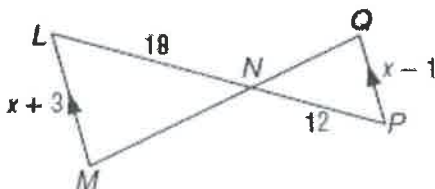
$\triangle JAK \sim \triangle WSY$ by SAS

O) Identify the similar triangles in the diagram below.



$\triangle LMN \sim \triangle OPN$

P) Find the value of x in the diagram below.



$$\frac{\triangle LMN}{\triangle OPN} : \frac{LM}{PN} = \frac{LN}{OP} \Rightarrow \frac{x+3}{12} = \frac{18}{x-1}$$

$$18(x-1) = 12(x+3)$$

$$18x - 18 = 12x + 36$$

$$6x = 54$$

$$x = 9$$

Answer Key

Answers to A – H

$\frac{1}{4}$	TO
18.2	HAS
2:5	HUG
3	TRIED
8	SAD
24	THE
21	BIG
30	WHO
5:2	KISS
14.9	VERY
46	GUY
1:3	GIRL

Answers to I - P

$\triangle LMN \sim \triangle QPN$	BUT
$\triangle LMN \sim \triangle PQN$	AND
AA~	IN
$\frac{1}{2}$	A
$\frac{1}{3}$	LOST
SAS~	FOG
6	FRIEND
SSS~	THE
$\frac{17}{2}$	HIS
18	GIRL
9	MIST
Not similar	TODAY