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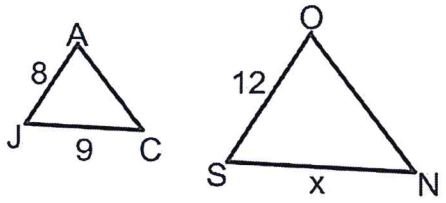
Date _____
Geometry

Finding Missing Sides of Similar Triangles

1. In the diagram, ΔJAC is similar to ΔSON. Find the measure of *SN*.

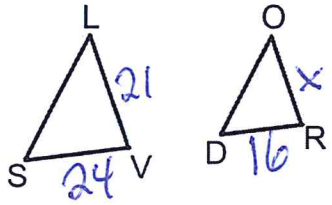


$\frac{8}{12} = \frac{9}{x}$

$\frac{8x}{8} = \frac{108}{8}$

$x = 13.5$

2. In the diagram, ΔSLV is similar to ΔDOR. If *SV=24*, *DR=16*, *LV=21,* find *OR*.

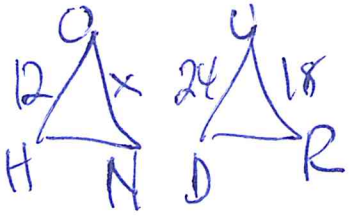


$\frac{21}{x} = \frac{24}{16}$

$\frac{24x}{24} = \frac{336}{24}$

$x = 14$

3. Triangle *HON* is similar to triangle *DUR*. If *HO=12, DU=24, UR=18*, find *ON*.

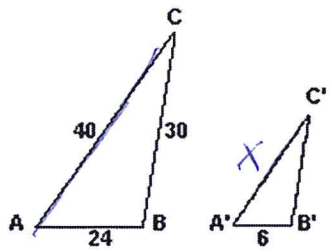


$\frac{12}{24} = \frac{x}{18}$

$\frac{24x}{24} = \frac{216}{24}$

$x = 9$

4. In the diagram, ΔABC is similar to $\Delta A'B'C'$, $AB = 24$, $BC = 30$, and $CA = 40$. If the shortest side of $\Delta A'B'C'$ is 6, find the length of the longest side of $\Delta A'B'C'$.

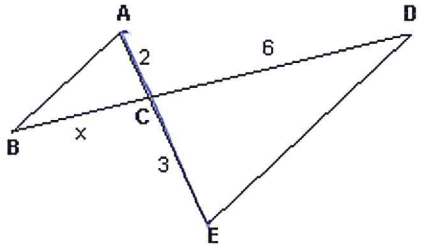


$\frac{40}{x} = \frac{24}{6}$

$\frac{24x}{24} = \frac{240}{24}$

$x = 10$

5. In the diagram below, $\overline{AB} \parallel \overline{DE}$. If $AC = 2$, $CD = 6$, and $CE = 3$, what is BC?



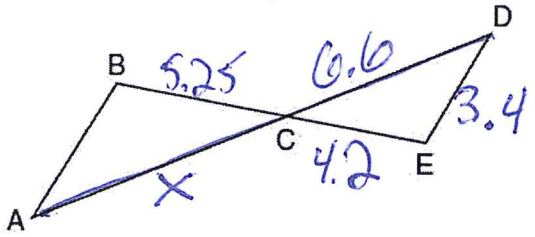
$\frac{2}{3} = \frac{x}{6}$

$\frac{3x}{3} = \frac{12}{3}$

$x = 4$

6. In the diagram below, $\overline{AD}$ intersects $\overline{BE}$ at C, and $\overline{AB} \parallel \overline{DE}$.

If $CD = 6.6$ cm, $DE = 3.4$ cm, $CE = 4.2$ cm, and $BC = 5.25$ cm, what is the length of $\overline{AC}$, to the *nearest hundredth of a centimeter*?

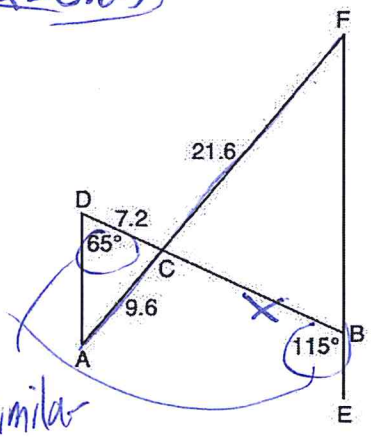


$\frac{x}{6.6} = \frac{5.25}{4.2}$

$\frac{4.2x}{4.2} = \frac{34.65}{4.2}$

$x = 8.25$

7. In the diagram below, $\overline{AF}$, and $\overline{DB}$ intersect at C, and $\overline{AD}$ and $\overline{FBE}$ are drawn such that $m\angle D = 65°$, $m\angle CBE = 115°$, $DC = 7.2$, $AC = 9.6$, and $FC = 21.6$. What is the length of $\overline{CB}$?



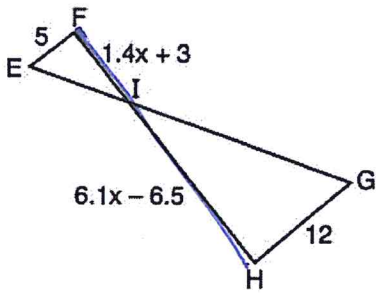
$\frac{9.6}{21.6} = \frac{7.2}{x}$

this just makes the triangles similar

$\frac{9.6x}{9.6} = \frac{155.52}{9.6}$

$x = 16.2$

8. In the diagram below, $\overline{EF} \parallel \overline{HG}$, $EF = 5$, $HG = 12$, $FI = 1.4x + 3$, and $HI = 6.1x - 6.5$. What is the length of $\overline{HI}$?



*use equation solver if needed

$\frac{5}{12} = \frac{1.4x+3}{6.1x-6.5}$

$5(6.1x - 6.5) = 12(1.4x + 3)$

$30.5x - 32.5 = 16.8x + 36$

$-16.8x \quad -16.8x$

$13.7x - 32.5 = 36$

$+32.5 \quad +32.5$

$\frac{13.7x}{13.7} = \frac{68.5}{13.7}$

$x = 5$