6.5

4) $\triangle ABC$: $AB = 10$, $BC = 16$, $CA = 20$
$\triangle DEF$: $DE = 25$, $EF = 40$, $FD = 50$

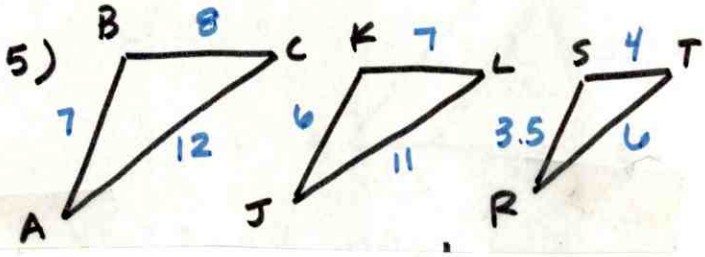
$\triangle ABC \sim \triangle DEF$

$\frac{AB}{DE} = \frac{BC}{EF} = \frac{AC}{DF}$

$\frac{10}{25} = \frac{16}{40} = \frac{20}{50}$ → scale factor is 2:5

$\frac{2}{5} = \frac{2}{5} = \frac{2}{5}$ ✓

5)



$\triangle JKL \sim \triangle ABC$

$\frac{JK}{AB} = \frac{KL}{BC} = \frac{JL}{AC}$

$\frac{6}{7} = \frac{7}{8} = \frac{11}{12}$

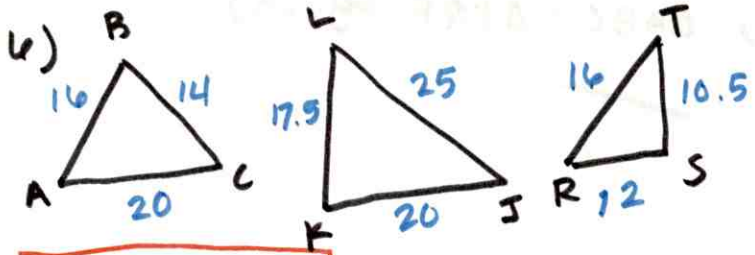
$\triangle RST \sim \triangle ABC$

$\frac{RS}{AB} = \frac{ST}{BC} = \frac{RT}{AC}$

$\frac{3.5}{7} = \frac{4}{8} = \frac{6}{12}$

$\frac{1}{2} = \frac{1}{2} = \frac{1}{2}$ ✓

6)



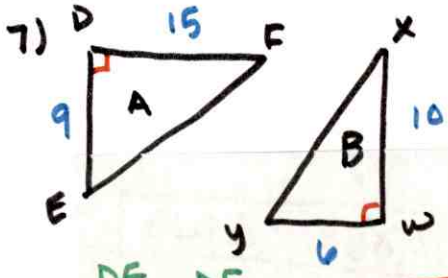
$\triangle JKL \sim \triangle ABC$

$\frac{JK}{AB} = \frac{KL}{BC} = \frac{JL}{AC}$

$\frac{20}{16} = \frac{17.5}{14} = \frac{25}{20}$

$\frac{5}{4} = \frac{5}{4} = \frac{5}{4}$ ✓

7)



$\angle D \cong \angle W$

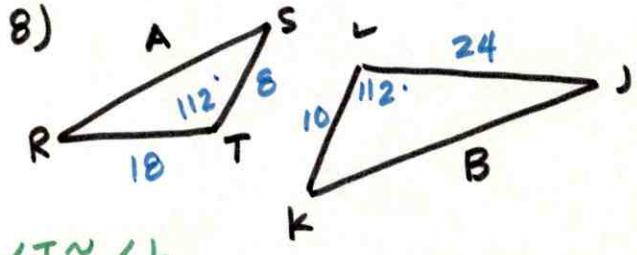
$\frac{DE}{yw} = \frac{DF}{XW}$

$\frac{9}{6} = \frac{15}{10}$

$\frac{3}{2} = \frac{3}{2}$ ✓

$\triangle DEF \sim \triangle WYX$
scale factor of B:A is 2:3 or 2/3
SAS

8)



$\angle T \cong \angle L$

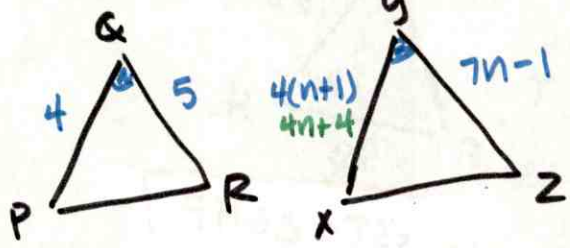
$\frac{RT}{LJ} = \frac{ST}{LK}$

$\frac{18}{24} = \frac{8}{10}$

$\frac{3}{4} = \frac{4}{5}$ X

NOT SIMILAR

9) $\triangle PQR \sim \triangle XYZ$, when $PQ = 4$, $QR = 5$, $XY = 4(n+1)$, $YZ = 7n-1$ and $\angle Q \cong \angle Y$. include sketch



$\frac{PQ}{XY} = \frac{QR}{YZ}$

$\frac{4}{4(n+1)} = \frac{5}{7n-1}$

$4n+4$

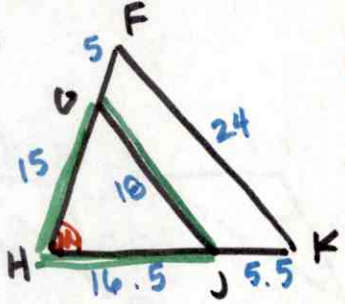
$4(7n-1) = 5(4n+4)$

$28n - 4 = 20n + 20$

$8n = 24$

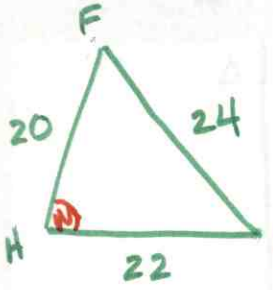
$n = 3$

10)



$\triangle GHJ \sim \triangle FHK$

SSS

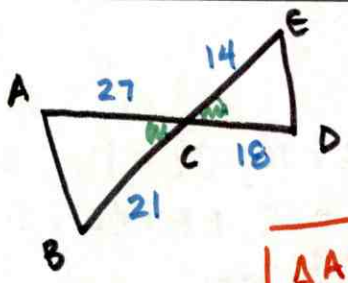


$\frac{GH}{FH} = \frac{HJ}{HK} = \frac{GJ}{FK}$

$\frac{15}{20} = \frac{16.5}{22} = \frac{18}{24}$

$\frac{3}{4} = \frac{3}{4} = \frac{3}{4}$ ✓

11)



$\triangle ACB \sim \triangle DCE$

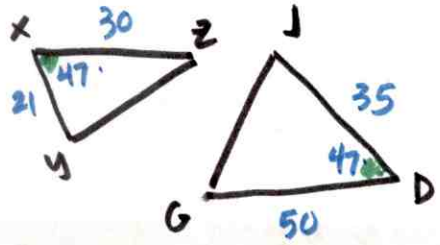
SAS

$\frac{AC}{DC} = \frac{BC}{EC}$

$\frac{27}{18} = \frac{21}{14}$

$\frac{3}{2} = \frac{3}{2}$ ✓

12)



$\frac{XY}{JD} = \frac{XZ}{GD}$

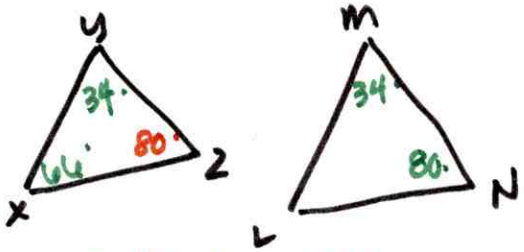
$\frac{21}{35} = \frac{30}{50}$

$\frac{3}{5} = \frac{3}{5}$ ✓

$\triangle XYZ \sim \triangle DJG$

SAS

15) In $\triangle XYZ$, $m\angle X = 66°$ and $m\angle Y = 34°$.
In $\triangle LMN$, $m\angle M = 34°$ and $m\angle N = 80°$.



$\angle Y \cong \angle M$

$\angle Z \cong \angle N$

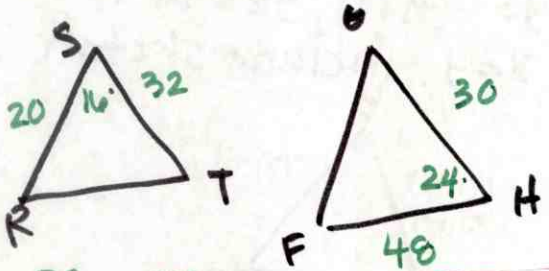
$\triangle YXZ \sim \triangle MLN$ by AA

$\angle X = 180 - (66 + 34)$

$\angle X = 180 - 100$

$\angle X = 80°$

16) In $\triangle RST$, $RS = 20$, $ST = 32$ and $m\angle S = 16°$. In $\triangle FGH$, $GH = 30$, $HF = 48$ and $m\angle H = 24°$.



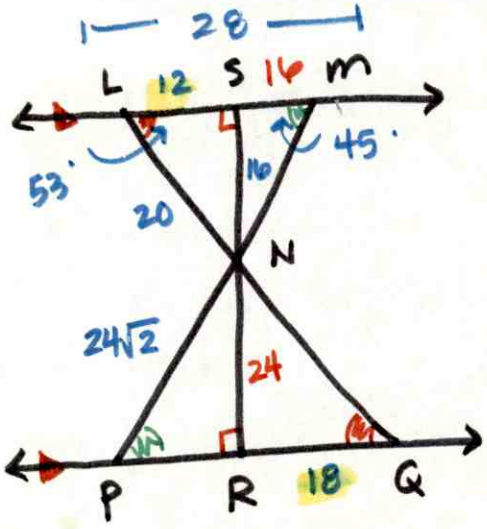
$\frac{RS}{GH} = \frac{ST}{FH}$

$\frac{20}{30} = \frac{32}{48}$

$\frac{2}{3} = \frac{2}{3}$ ✓

NO, b/c

$\angle S \neq \angle H$



LM // PQ CCI

18) $m\angle NQP = \underline{53^\circ}$

A I w/ the $\angle L$

19) $m\angle QPN = \underline{45^\circ}$

A I w/ the $\angle M$

20) $m\angle PNQ = \underline{82}$

$180-(53+45)$

21) $RN = \underline{24}$

$\frac{LS}{RQ} = \frac{NS}{RN}$

$\frac{2}{3}\frac{12}{18} = \frac{16}{x}$ $\quad 2x = 48$ $\quad x = 24$

22) $PQ = \underline{42}$

$\frac{LM}{PQ} = \frac{NS}{NR}$

$\frac{28}{x} = \frac{16}{24}\frac{2}{3}$ $\quad 2x = 84$ $\quad x = 42$

23) $NM = \underline{16\sqrt{2}}$

$\frac{LS}{RQ} = \frac{NM}{NP}$

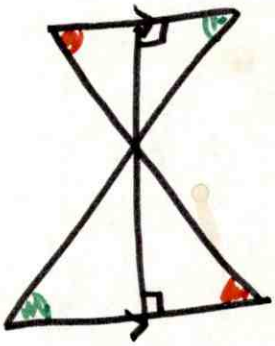
$\frac{2}{3}\frac{12}{18} = \frac{x}{24\sqrt{2}}$

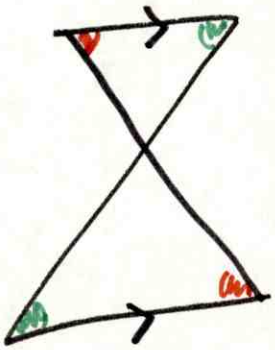
$3x = 2(24\sqrt{2})$

$3x = 48\sqrt{2}$

$x = \frac{48\sqrt{2}}{3}$

$x = 16\sqrt{2}$





$\sqrt{2 \cdot 3}$

$4\sqrt{2} \cdot \sqrt{3} = \sqrt{6}$

$4\sqrt{6}$