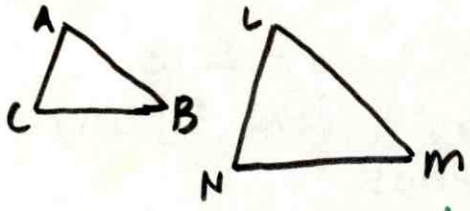
6.3

1) Two polygons are similar if their corresponding angles are congruent and corresponding side lengths are proportional.

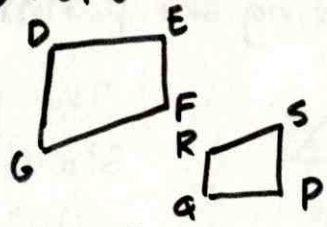
3) $\triangle ABC \sim \triangle LMN$



$\angle A \cong \angle L$
$\angle B \cong \angle M$
$\angle C \cong \angle N$

$\frac{AB}{LM} = \frac{BC}{MN} = \frac{AC}{LN}$

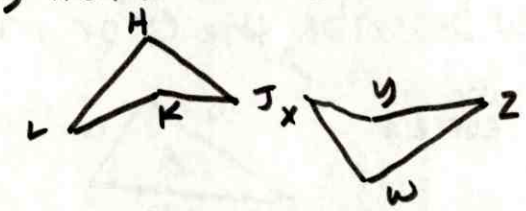
4) $DEFG \sim PQRS$



$\angle D \cong \angle P$
$\angle E \cong \angle Q$
$\angle F \cong \angle R$
$\angle G \cong \angle S$

$\frac{DE}{PQ} = \frac{EF}{QR} = \frac{FG}{RS} = \frac{DG}{PS}$

5) $HJKL \sim WXYZ$



$\angle H \cong \angle W$
$\angle J \cong \angle X$
$\angle K \cong \angle Y$
$\angle L \cong \angle Z$

$\frac{HJ}{WX} = \frac{JK}{XY} = \frac{KL}{YZ} = \frac{HL}{WZ}$

6) Triangles ABC and DEF are similar. which statement is not correct?

$\triangle ABC \sim \triangle DEF$

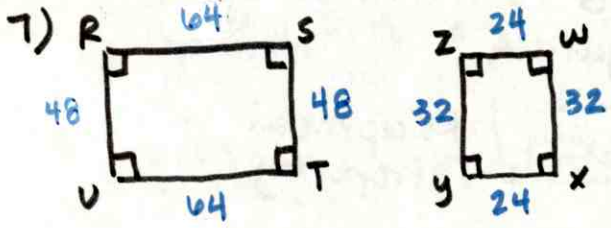
a) $\frac{BC}{EF} = \frac{AC}{DF}$

b) $\frac{AB}{DE} = \frac{CA}{FD}$

c) $\frac{CA}{FD} = \frac{BC}{EF}$

d) $\frac{AB}{EF} = \frac{BC}{DE} \rightarrow \frac{AB}{DE} = \frac{BC}{EF}$

7)



$\frac{RS}{WX} = \frac{ST}{XY} \rightarrow \frac{64}{32} = \frac{48}{24}$ ✓

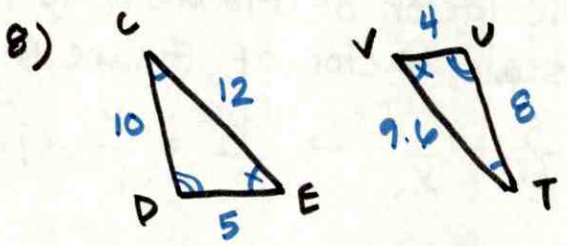
✓ all $\angle$s are $\cong$

$\frac{2}{1} = \frac{2}{1}$ ✓

scale factor 2:1

RSTU ~ WXYZ

8)



$\angle C \cong \angle T$
$\angle D \cong \angle U$
$\angle E \cong \angle V$

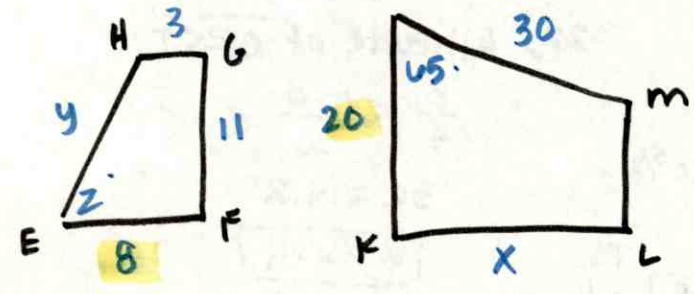
$\frac{CD}{TU} = \frac{DE}{UV} = \frac{CE}{TV} \rightarrow \frac{10}{8} = \frac{5}{4} = \frac{12}{9.6}$

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

scale factor 5:4

$\triangle CDE \sim \triangle TUV$ ✓

JKLM ~ EFGH



9) scale factor JKLM to EFGH

$\frac{JK}{EF} = \frac{20}{8} \rightarrow \frac{5}{2}$

10) $\frac{5}{2} = \frac{x}{11}$ $\quad 2x = 55$ $\quad x = 55/2$

$\frac{5}{2} = \frac{30}{y}$ $\quad 5y = 60$ $\quad y = 12$

$\angle E \cong \angle J$ $\quad z = 65°$

$x = 85$

11) $P(JKLM) =$

$\frac{5}{2} = \frac{x}{34}$ $\quad 2x = 170$ $\quad x = 79$

$P(EFGH) =$

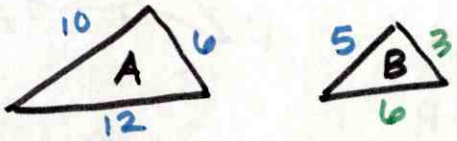
$3 + 11 + 8 + 12$

$= 34$

12) Two similar FOR SALE signs have a scale factor 5:3. The larger sign's perimeter is 60 inches. Find the small sign's perimeter

$\frac{5}{3} = \frac{60}{x}$ $5x = 180$ $\boxed{x = 36}$

13) Describe and correct the error in finding the perimeter of ΔB.



Perimeter of B = 56

The perimeter of ΔB should be $\frac{1}{2}$ the $P(\Delta A)$ not 2 times.

$P(\Delta B) = 28/2$ $\boxed{= 14}$

14) Two isosceles triangles
sometimes

15) Two equilateral triangles
Always

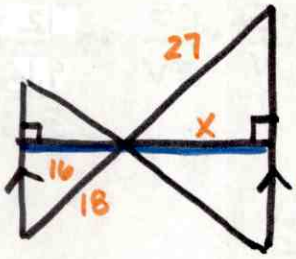
16) A right triangle and an isosceles triangle
sometimes

17) A scalene triangle and an isosceles triangle
Never

18) The scale factor of Figure A to Figure B is 1:x. what is the scale factor of Figure B to Figure A?

$\frac{A}{B} = \frac{1}{x} \rightarrow \frac{B}{A} = \frac{x}{1}$ $\boxed{B:A = x:1}$ Reciprocal Property

19)

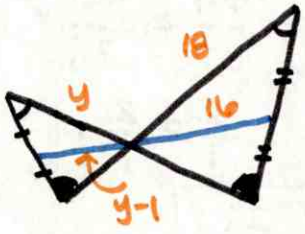


special segment
- Altitude

$\frac{2}{3}\ \frac{18}{27} = \frac{16}{x}$

$2x = 48$ $\boxed{x = 24}$

20)



special Segment
- median

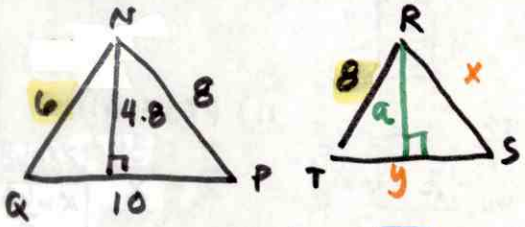
$\frac{y}{18} = \frac{y-1}{16}$

$16y = 18(y-1)$

$16y = 18y - 18$

$-2y = -18$ $\boxed{y = 9}$

$\Delta NPQ \sim \Delta RST$, side lengths of NPQ = 6, 8, 10 and the altitude is 4.8. shortest side of ΔRST is 8.



$\frac{NQ}{RT} = \frac{6}{8} \rightarrow \boxed{\frac{3}{4}}$

21) $\frac{3}{4} = \frac{8}{x}$

$3x = 32$

RS $\boxed{x = 32/3}$ $10\ 2/3$

$\frac{3}{4} = \frac{10}{y}$

$3y = 40$ $\boxed{y = \frac{40}{3}}$ TS $13\ 1/3$

22) Altitude of ΔRST

$\frac{3}{4} = \frac{4.8}{a}$

$3a = 19.2$

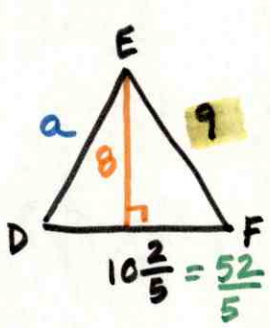
$\boxed{a = 6.4}$

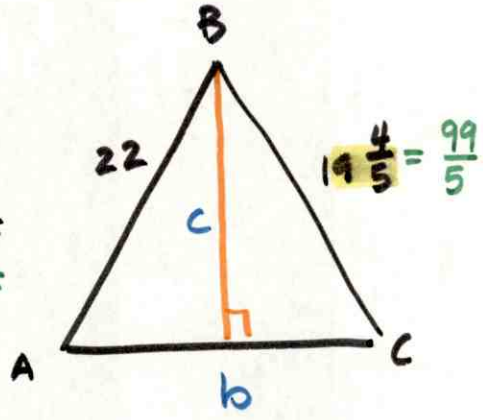
$\triangle ABC \sim \triangle DEF$

23) Scale factor of $\triangle ABC$ to $\triangle DEF$

$$\frac{BC}{EF} = \frac{\frac{99}{5}}{9} = \frac{99}{5} \cdot \frac{1}{9}$$

$$= \frac{99}{45} \rightarrow \boxed{\frac{11}{5}} \quad 2.2$$





24) unknown side lengths

$$\frac{11}{5} = \frac{22}{a} \qquad \frac{11}{5} = \frac{b}{\frac{52}{5}}$$

$a = 10$

$\boxed{ED = 10}$

$$\frac{11}{5} = \frac{5b}{52}$$

$$25b = 572$$

$$\boxed{b = \frac{572}{25}} \quad 22.88 \text{ or } 22\frac{22}{25}$$

25) Altitude of $\triangle ABC$

$$\frac{11}{5} = \frac{c}{8}$$

$$5c = 88$$

$$\boxed{c = \frac{88}{5}} \quad 17\frac{3}{5} \text{ or } 17.6$$

26) $A(\triangle DEF)$

$$\frac{\frac{52}{5}(8)}{2}$$

$$= \frac{208}{5}$$

$$41.6$$

$A(\triangle ABC)$ $\qquad A(A) = \frac{bh}{2}$

$$\frac{\frac{572}{25}\left(\frac{88}{5}\right)}{2}$$

$$= \frac{25168}{125}$$

$$201.344$$

$$\frac{201.344}{41.6} = \frac{4.84}{1}$$ → Ratio of Areas

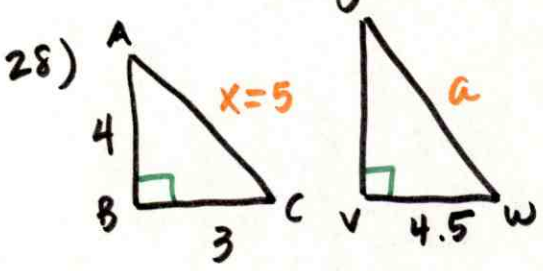
Ratio of sides: 2.2 $\qquad$ Ratio of Areas: 4.84

$(2.2)^2 = 4.84$

27) $\triangle PQR \sim \triangle XYZ$, angle measures are in the extended ratio $x : x+30 : 3x$

$\triangle XYZ$ angles will be in the same ratio because corresponding angles in similar figures are $\cong$

28)



$x^2 = 3^2 + 4^2$

$x^2 = 9 + 16$ $\qquad x^2 = 25$ $\qquad x = 5$

$$\frac{3}{4.5} = \frac{5}{a}$$

$$3a = 22.5$$

$$a = 7.5$$

D 7.5