Section 8.1/8.2
p. 329: 18-21, 23, 24

p. 336: 9-18

#18 Is $\frac{x-5}{4} = \frac{c}{3}$ equivalent to $\frac{x-1}{4} = \frac{c+3}{3}$

$3(x-5) = 4c$
$3x-15 = 4c$
$3x-4c = 15$

$3(x-1) = 4(c+3)$
$3x-3 = 4c+12$
$3x-4c = 15$

YES

p

#19 Find the ratio of x to y : $\frac{x(a+b)}{y(a+b)} = \frac{y(c+d)}{y(a+b)}$

$$\frac{x}{y} = \frac{c+d}{a+b}$$

#20 If $ex-fy = gx+hy$, find the ratio of x to y

$ex-gx = hy+fy$

$\frac{x(e-g)}{y(e-g)} = \frac{y(h+f)}{y(e-g)}$

$$\frac{x}{y} = \frac{h+f}{e-g}$$

#21 Reduce to lowest terms : $\frac{x^2-7x+12}{x^2-16} = \frac{(x-3)(x-4)}{(x-4)(x+4)} = \frac{x-3}{x+4}$

#23 Show that no polygon exists in which the ratio of the number of diagonals to the sum of the measures of the polygons angles is 1 to 18

$$\frac{\frac{n(n-3)}{2}}{180(n-2)} = \frac{1}{18}$$

$$(18)\frac{n(n-3)}{2} = 180(n-2)$$

$$9n(n-3) = 180n - 360$$

$$9n^2 - 27n = 180n - 360$$

$$9n^2 - 207n + 360 = 0$$

$$9(n^2 - 23n + 40) = 0$$

Not factorable ∴ "no integer" solution

#24 If $\frac{a}{b} = \frac{c}{d}$ show that $\frac{a-b}{b} = \frac{c-d}{d}$

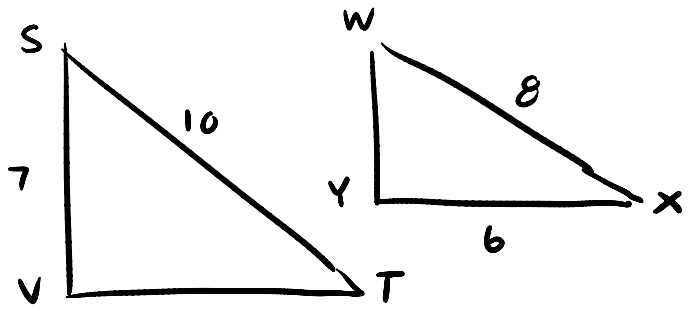
$$\frac{a}{b} - 1 = \frac{c}{d} - 1$$

$$\frac{a}{b} - \frac{b}{b} = \frac{c}{d} - \frac{d}{d}$$

$$\boxed{\frac{a-b}{b} = \frac{c-d}{d}}$$

#9 Given: $\Delta SVT \sim \Delta WYX$

Find: WY and VT.

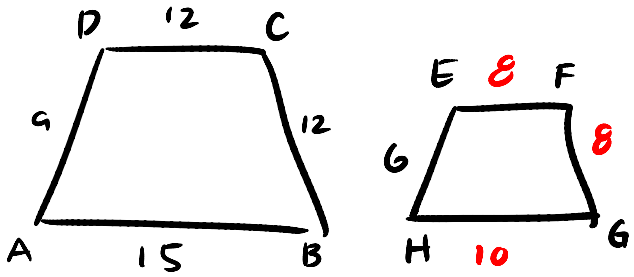


$\frac{10}{8} = \frac{7}{WY}$ $\quad$ $\frac{10}{8} = \frac{VT}{6}$

$10WY = 56$ $\quad$ $8VT = 60$

$\boxed{WY = 5.6}$ $\quad$ $\boxed{VT = 7.5}$

#10 Given: ABCD ~ HGFE



Find: a. The ratio of lengths of corresponding sides

$\frac{9}{6} = \boxed{\frac{3}{2}}$

b. EF $\quad \frac{3}{2} = \frac{12}{EF}$

$3EF = 24$

$\boxed{EF = 8}$

c. Perimeter of EFGH $\quad \frac{3}{2} = \frac{15}{HG}$

$3HG = 30$

$HG = 10$

$P = 6 + 8 + 8 + 10$

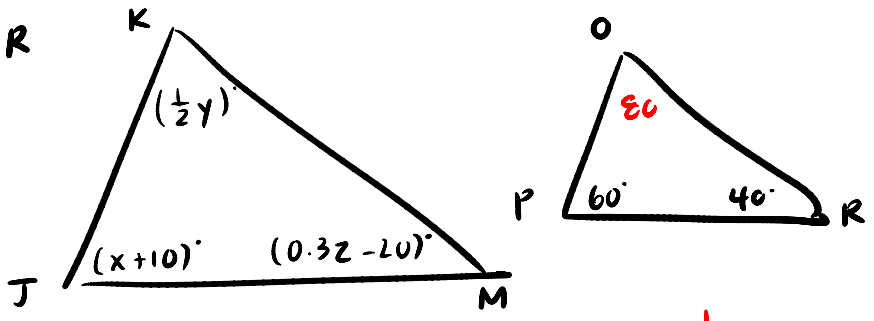
$= \boxed{32}$

d. The ratio of the perimeters $\quad \frac{P_{ABCD}}{P_{HGFE}} = \frac{48}{32} = \boxed{\frac{3}{2}}$

**Note: The ratio of the perimeter of the sides

#11 Given : $\Delta KJM \sim \Delta OPR$

Find : $\frac{x+y+z}{2}$



$\frac{50+160+200}{2} = \frac{410}{2}$

$= 205$

$x+10=60$

$x=50$

$0.3z-20=40$

$0.3z=60$

$z=200$

$\frac{1}{2}y=80$

$y=160$

#12 Find the 4th proportional of 1, 2, and 3 to the 4th proportional of 4.5, and 6

$\frac{1}{2}=\frac{3}{x}$

$x=6$

$\frac{4}{5}=\frac{6}{x}$

$4x=30$

$x=7.5$

$\frac{6}{7.5}=\boxed{\frac{4}{5}}$

#13 If $\frac{8}{2x-3y} = \frac{7}{6x-4y}$

$8(6x-4y)=7(2x-3y)$

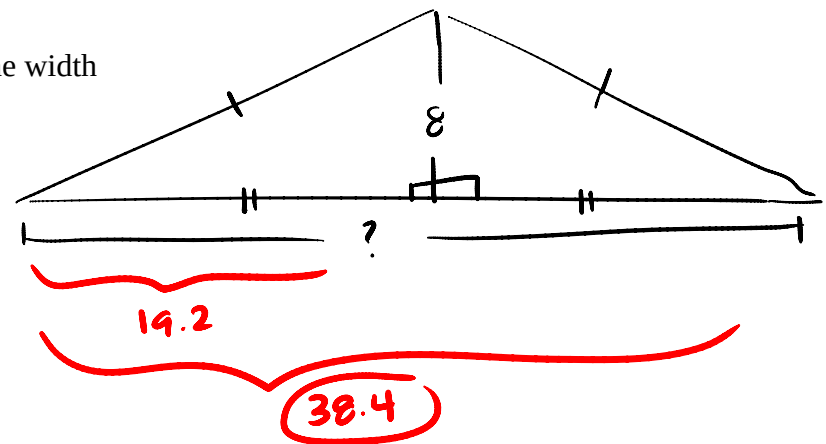
$48x-32y=14x-21y$

$34x=11y$

$\frac{34x}{34y}=\frac{11y}{34y}$

$\boxed{\frac{x}{y}=\frac{11}{34}}$

#14 The roof of a house has a slope of $\frac{5}{12}$. What is the width Of the house if the height of the roof is 8ft?



$\frac{\text{rise}}{\text{run}} = \frac{5}{12}=\frac{8}{x}$

$5x=96$

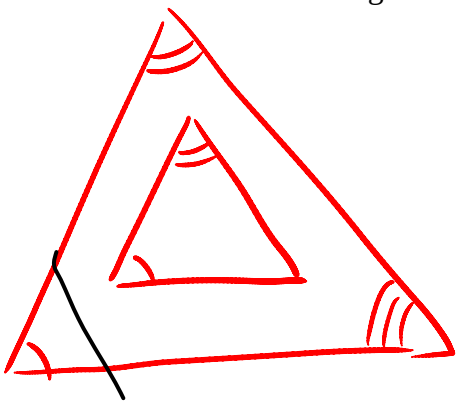
$x=19.2$

#15 Hammond R. looked at the plans for the new house he was building. The plans were drawn down to a scale Of $\frac{1}{4}$ in = 1 ft. . He measured the size of a room on the plans and found it to be 2.75 in. by 3.5 in. About how large is the room?

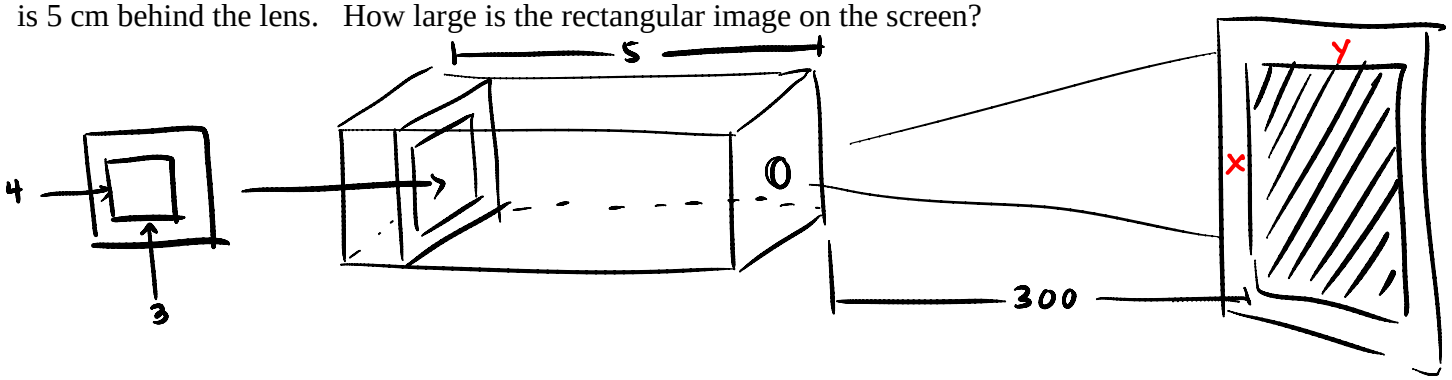
2.75 x 4 = 11
3.5 x 4 = 14

11ft by 14ft

#16 Draw a triangle. Using some point P in the interior of the triangle as the point of dilation, draw a triangle twice the size of the original triangle



#17 The projector shown uses a slide in which the rectangular transparency measures 3 cm by 4 cm. The slide is 5 cm behind the lens. How large is the rectangular image on the screen?



$\frac{5}{300} = \frac{4}{x}$

$\frac{5}{300} = \frac{3}{y}$

#18 Given: $\Delta ABC \sim \Delta DEF$

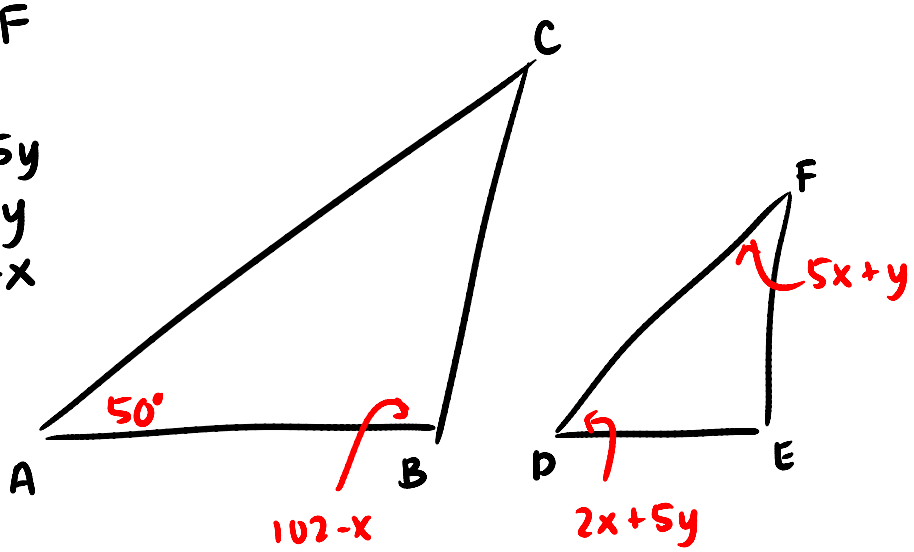
$m\angle A = 50$

$m\angle D = 2x+5y$

$m\angle F = 5x+y$

$m\angle B = 102-x$

Find: $m\angle F$



$\angle A \cong \angle D$

$\angle C \cong \angle F$

$\angle B \cong \angle E$

$\angle E = 180 - \angle D - \angle F$

$= 180 - (2x+5y) - (5x+y)$

$= 180 - 2x - 5y - 5x - y$

$= 180 - 7x - 6y$

Since $\angle B \cong \angle E$

$102 - x = 180 - 7x - 6y$

$\boxed{6x + 6y = 78}$

Since $\angle D \cong \angle A$

$\boxed{2x + 5y = 50}$

$-3(2x+5y = 50) \Rightarrow -6x - 15y = -150$

$6x + 6y = 78 \Rightarrow 6x + 6y = 78$

$-9y = -72$

$\boxed{y = 8}$

$\boxed{x = 5}$