Answer Key to Evens

pg. 174 (3.1)

24. corresponding $\angle$s, transversal - V

pg. 183 (3.2)

4. 101°, Alternate Interior Angles Theorem

6. 79°, Consecutive Interior Angles Theorem

8. $x = 125$, because it is a linear pair with the angle measured 55°, so together they must add to 180.

$$x + 55 = 180$$
$$x = 125.$$

$y = 125$, because x & y are alternate interior angles inside $\parallel$ lines, so they must be congruent. If $x = 125$ then $y = 125$.

pg 193 (3.3)

28. slope of $\overleftrightarrow{AB} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4-5}{4-1} = \frac{-1}{3}$

slope of $\overleftrightarrow{CD} = \frac{5-(-10)}{-6-9} = \frac{5}{-15} = \frac{-1}{3}$

Same slope means they are $\parallel$.

50. Slope = rate of change = $\frac{\text{change in students } (\Delta y)}{\text{change in time } (\Delta x)}$

Jefferson slope: $\frac{1425-1125}{2006-2000} = \frac{300}{6} = \frac{50}{1}$ = Fairview slope because they grew at the same rate.

So, if they increase 50 students per year, then after 5 years, they will increase by 250 (50 students x 5 years). (2001-2006)

Since they started with 1275, 1275+250 = 1,525 students.

Pg. 203 (3.4)

36. x-intercept is $-\frac{1}{2} \rightarrow (-\frac{1}{2}, 0)$

y-intercept is $4 \rightarrow (0,4)$

slope: $\frac{4-0}{0-(-\frac{1}{2})} = \frac{4}{\frac{1}{2}} = 8$

$y = 8x+b$

$4 = 8(0)+b$ ← used pt (0,4)

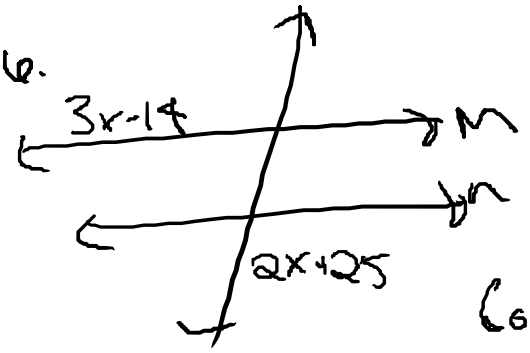
$4 = b$

$y = 8x+4$

pg. 211 (3.5)

8. r ∥ s, corresponding ∠s Converse. since d is the transversal intersecting lines r & s.

16.



Angles $(3x-14)^\circ$ & $(2x+25)$ are alternate exterior so based on the Alternate Exterors Converse, they are congruent.

$3x-14=2x+25$

$x=39$

pg. 221

16. Finding line ℓ:

$m=\frac{-11-(-1)}{-3-11}=\frac{-10}{-14}=\frac{5}{7} \rightarrow y=\frac{5}{7}x+b$

Using pt $(11,-1)$, $-1=\frac{5}{7}(11)+b$

$-1=\frac{55}{7}$

$-\frac{62}{7}=b$ line ℓ: $\boxed{y=\frac{5}{7}x-\frac{62}{7}}$

Find $\perp$ line to line ℓ & contains $P(-1,1)$.

$y=-\frac{7}{5}x+b$

$1=-\frac{7}{5}(-1)+b \rightarrow 1=\frac{7}{5}+b \rightarrow b=-\frac{2}{5}$

$\boxed{y=\frac{7}{5}x-\frac{2}{5}}$

Using those two lines, find the pt of intersection. with system of equations. I'm using the substitution method.

$y = \frac{5}{7}x - \frac{62}{7}$ & $-y = \frac{7}{5}x - \frac{2}{5}$

$-\frac{7}{5}x - \frac{2}{5} = \frac{5}{7}x - \frac{62}{7}$

$\left(\frac{35}{74}\right)\left(-\frac{74}{35}\right)x = \left(-\frac{296}{35}\right)\left(-\frac{35}{74}\right)$

$x = 4$

$y = -\frac{7}{5}(4) - \frac{2}{5}$ pt of intersection: $(4, -6)$

$y = -6$

Find distance between Point & intersection.

$(-1, 1)$ $(4, -6)$

$d = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

$= \sqrt{(4 - (-1))^2 + (-6 - 1)^2}$

$= \sqrt{(5^2) + (-7)^2}$ $= \sqrt{25 + 49} = \sqrt{74} = 8.6$ units