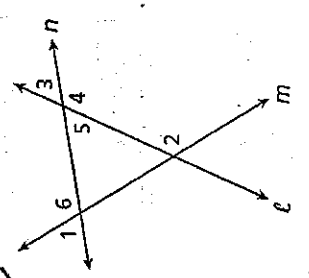


Group Review

1. Lines that do not intersect and are in different planes are skew.

2. Identify the transversal and classify each angle pair:

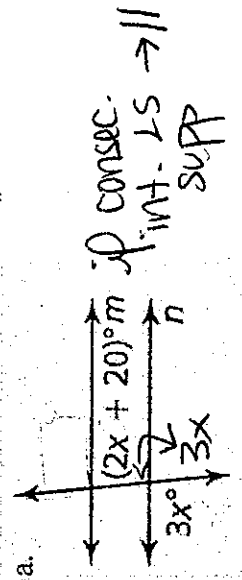


a. $\angle 5$ and $\angle 2$ are alternate interior angles
The transversal is: l

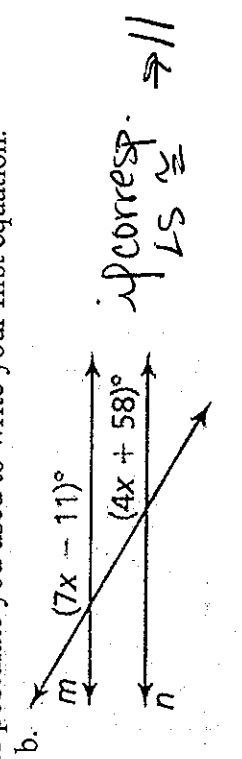
b. $\angle 2$ and $\angle 4$ are consecutive interior angles
The transversal is: l

c. $\angle 6$ and $\angle 3$ are corresponding angles
The transversal is: n

3. Find the value of x that makes $m \parallel n$. State the theorem or postulate you used to write your first equation.

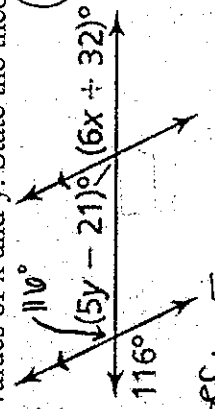


$3x + 2x + 20 = 180$
 $5x = 160$
 $x = 32$



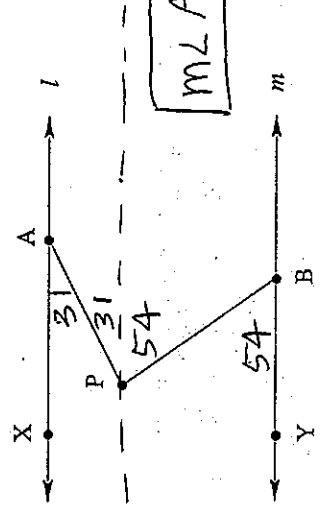
$7x - 11 = 4x + 58$
 $3x = 69$
 $x = 23$

4. Find the values of x and y. State the theorem or postulate you used to set up the two equations needed to solve for x and y.



$116 = 6x + 32$ if $\parallel \rightarrow$ alt. ext. $\angle s \approx$
 $84 = 6x$
 $14 = x$

5. Find $m\angle APB$ if $m\angle PAX = 31^\circ$, $m\angle PBX = 54^\circ$, and $l \parallel m$. (refer to your challenge problems for this one!)



$m\angle APB = 85^\circ$

Fill in the blank for each statement

a. Horizontal lines have (choose one: zero / undefined) zero slope.

b. Vertical lines have (choose one: zero / undefined) undefined slope.

c. Finish the first statements of each theorem:

Parallel Lines Theorem: In a coordinate plane, two distinct non-vertical lines are parallel if and only if they have the same slope.

d. Finish the first statements of each theorem:

Perpendicular Lines Theorem: In a coordinate plane, two distinct non-vertical lines are perpendicular if and only if the product of their slopes is -1.

e. The slope-intercept form for the equation of a line is $y = mx + b$

f. The point-slope form for the equation a line is $y - y_1 = m(x - x_1)$

if a transv. (a) is $\perp$ to 2 lines (m+n) then 2 lines are $\parallel$

if a transv. (n) is $\perp$ to 2 lines (a+b) then 2 lines are $\parallel$

6. Determine which lines, if any, must be parallel.

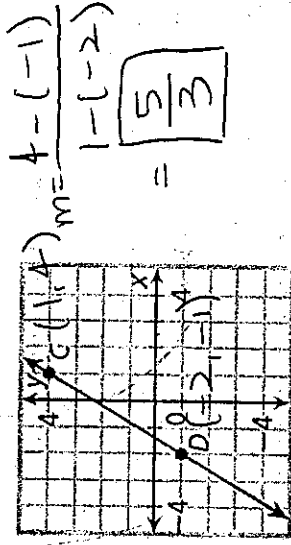
$a \parallel b, m \parallel n, l \parallel m$

trans. prop. $\parallel$

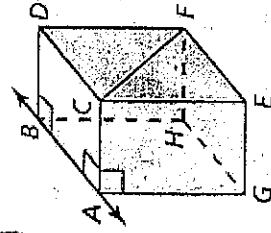
if a transv. (b) is $\perp$ to 2 lines (l+n) then 2 lines are $\parallel$

(all n and $l \parallel m$)

8. Use the slope formula to determine the slope of the given line.



10. Use the diagram below. Think of each segment as part of a line.



- Name a line that appears to be perpendicular to $\overline{AB}$: $\overleftrightarrow{AC}$
- Name a line that appears to be parallel to $\overline{AB}$: $\overleftrightarrow{CD}$
- Name a line that appears to be skew to $\overline{AB}$: $\overleftrightarrow{CE}$
- Name a plane that appears to be parallel to plane ABC: plane GHF

11. Use slopes to determine if the lines are parallel, perpendicular, or neither.

$\overline{JK}$ and $\overline{LM}$ if J(4, 3), K(-4, -2), L(5, 6), and M(-3, 1)

$$\text{slope of } \overline{JK} = \frac{-2-3}{-4-4} = \frac{-5}{-8} = \frac{5}{8}$$

$$\text{slope of } \overline{LM} = \frac{1-6}{-3-5} = \frac{-5}{-8} = \frac{5}{8}$$

12. Write the equation of the line parallel to $y = 4x - 3$ that goes through the point (3, 2). Write your answer in slope-intercept form.

$$y - 2 = 4(x - 3) \rightarrow y = 4x - 10$$

$\overline{JK} \parallel \overline{LM}$ because their slopes are the same

13. Write the equation of the line perpendicular to $5x + 2y = 1$ that goes through the point (9, -1). Write your answer in slope-intercept form.

$$2y = -5x + 1$$

$$y = -\frac{5}{2}x + \frac{1}{2}$$

$$\perp \text{ slope: } (-\frac{5}{2})(m) = -1$$

$$-5m = -2$$

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

$$y - (-1) = m(x - 9)$$

$$y - (-1) = \frac{2}{5}(x - 9)$$

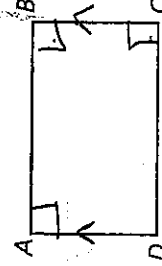
$$y + 1 = \frac{2}{5}x - \frac{18}{5}$$

$$y = \frac{2}{5}x - \frac{18}{5} - \frac{5}{5}$$

$$y = \frac{2}{5}x - \frac{23}{5}$$

14. Fill in the flow chart proof. Given: $\overline{AD} \parallel \overline{BC}$, $\overline{AD} \perp \overline{AB}$, $\overline{DC} \perp \overline{BC}$

Prove: $\overline{AB} \parallel \overline{CD}$



$\overline{AD} \parallel \overline{BC}$

given

$\overline{AD} \perp \overline{AB}$

given

$\overline{AB} \perp \overline{BC}$

if a transversal is $\perp$ to one of 2 $\parallel$ lines $\rightarrow$ other $\perp$ to other $\parallel$ line

$\overline{DC} \perp \overline{BC}$

given

$\overline{AB} \parallel \overline{CD}$

if 2 lines are $\perp$ to the same line they are $\parallel$