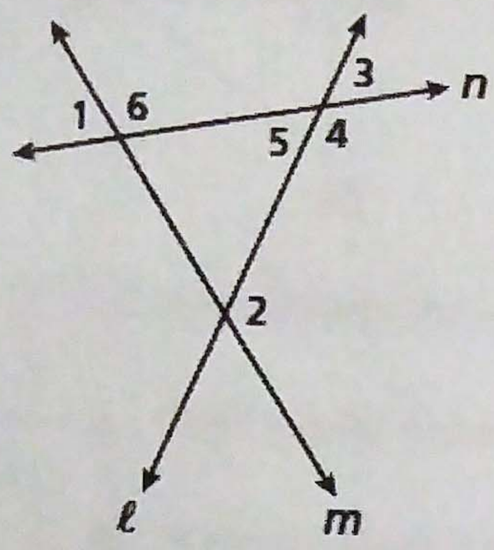
Chapter 3 Test Review *NUMBERS IN RED ARE APPROXIMATELY HOW YOUR TEST WILL BE GRADED **Name:** Key **Per:** _____

1. Lines that do not intersect and are in different planes are called SKEW (+2).

2. Identify the transversal and classify each angle pair:



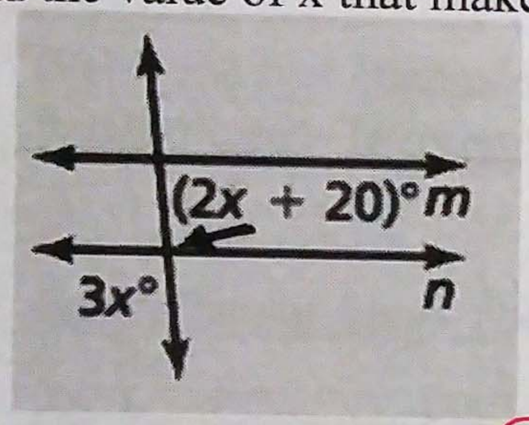
a. ∠5 and ∠2 are ALTERNATE INTERIOR (+1) angles
The transversal is line ℓ (+1)

b. ∠2 and ∠4 are CONSECUTIVE INTERIOR (+1) angles
The transversal is line ℓ (+1)

c. ∠6 and ∠3 are CORRESPONDING (+1) angles
The transversal is line n (+1)

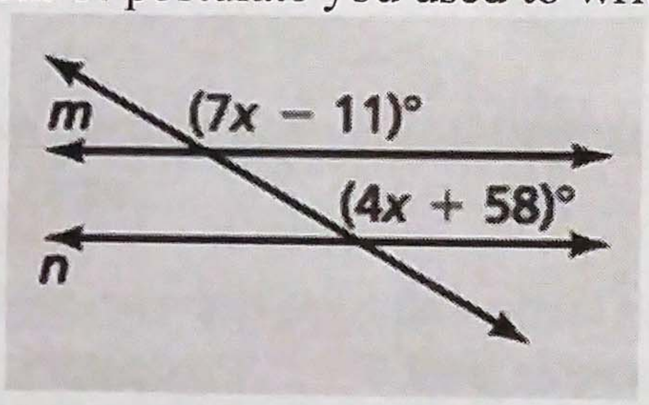
3. Find the value of x that makes $m \parallel n$. State the theorem or postulate you used to write your first equation.

a.



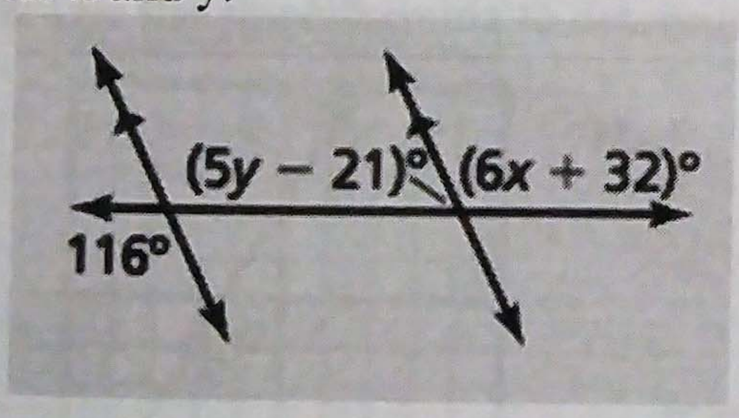
VERTICAL ANGLES (+1)
$2x+20=3x$ (+1)
$\boxed{20=x}$ (+1)

b.



CORRESPONDING ANGLES (+1)
$7x-11=4x+58$ } (+1)
$3x=69$
$\boxed{x=23}$ (+1)

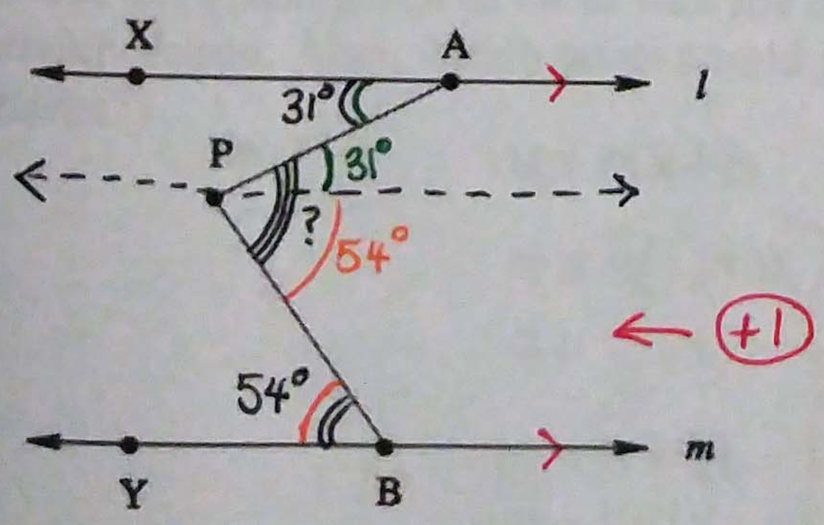
4. Find the values of x and y. State the theorem or postulate you used to set up the two equations needed to solve for x and y.



ALTERNATE EXTERIOR ANGLES (+1)
$6x+32=116$ } (+1)
$6x=84$
$\boxed{x=14}$ (+1)

LINEAR PAIR (+1)
$5y-21+6x+32=180$
$5y+6(14)+11=180$
$5y+84+11=180$
$5y+95=180$
$5y=85$ } (+1)
$\boxed{y=17}$ (+1)

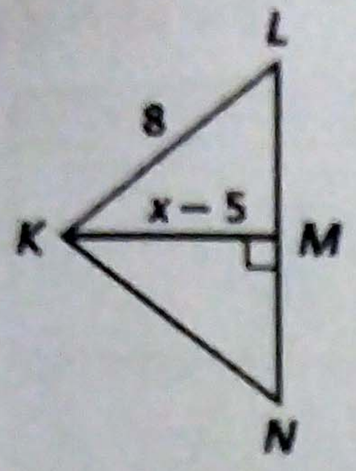
5. Find $m\angle APB$ if $m\angle PAX = 31°$, $m\angle PBY = 54°$, and $l \parallel m$. (HINT: DRAW ANOTHER LINE PARALLEL TO l AND m)



$31+54=\boxed{85°}$ (+1)

← (+1)

tame the shortest segment from K to $\overline{LN}$, then write and solve the inequality to find x.



SHORTEST SEGMENT: $\overline{KM}$ (+1)

$KM < LK$
$x - 5 < 8$ } (+1)
$\boxed{x < 13}$ (+1)

7. Fill in the blank for each statement:

a. Horizontal lines have (circle one: (zero) / undefined) slope. (+2)

b. Vertical lines have (circle one: zero / (undefined)) slope. (+2)

c. Finish the first statements of the theorem:

Parallel Lines Theorem: In a coordinate plane, two distinct non-vertical lines are parallel if and only if they have the SAME (+2) slope.

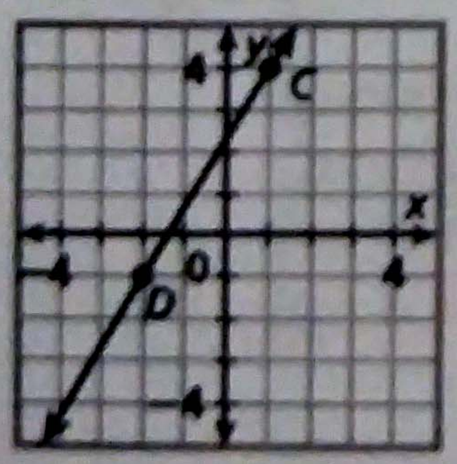
Perpendicular Lines Theorem: In a coordinate plane, two distinct non-vertical lines are perpendicular if and only if the PRODUCT (+2) of their slopes is −1 (+2)

OR Perpendicular Lines Theorem: In a coordinate plane, two distinct non-vertical lines are perpendicular if and only if their SLOPES (+2) are NEGATIVE (+2) RECIPROCALS (+2)

d. The slope-intercept form for the equation of a line is $y = mx + b$ (+2)

e. The point-slope form for the equation a line is $y - y_1 = m(x - x_1)$ (+2)

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



$m = \frac{y_2 - y_1}{x_2 - x_1}$ (+1) C (1, 4) D (−2, −1)
$x_1\ y_1$ $x_2\ y_2$

$= \frac{-1-4}{-2-1}$
$= \frac{-5}{-3}$ } (+1)
$\boxed{= \frac{5}{3}}$ (+1)

9. Use the graph given in #8 to find the equation (in slope-intercept form) of $\overleftrightarrow{CD}$. (HINT: Use the slope you already found. Also, which point would you use for (x, y) to help find the equation? point C? point D? Does it matter?)

$m = \frac{5}{3}$

$y = mx + b$
$4 = \frac{5}{3}(1) + b$
$4 = \frac{5}{3} + b$
$12 = 5 + 3b$
$7 = 3b$
$\frac{3}{7} = b$ } (+1) (+1)

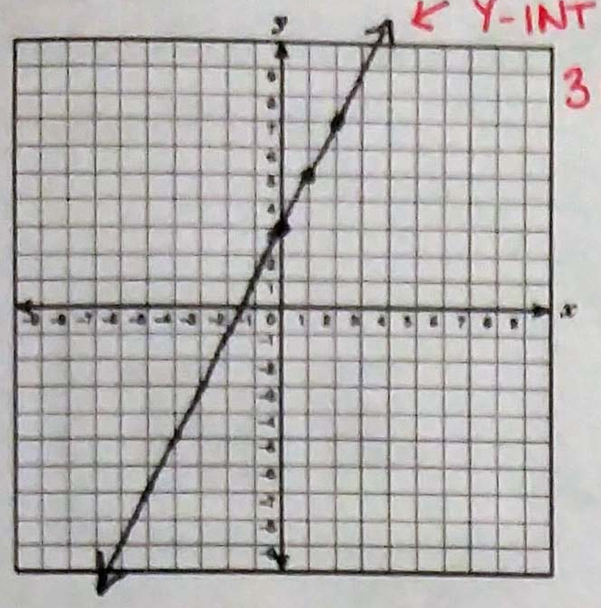
$y = mx + b$
$\boxed{y = \frac{5}{3}x + \frac{3}{7}}$ (+1)

DOESN'T MATTER WHETHER YOU USE POINT C OR POINT D. (+1)

. Graph the lines below:

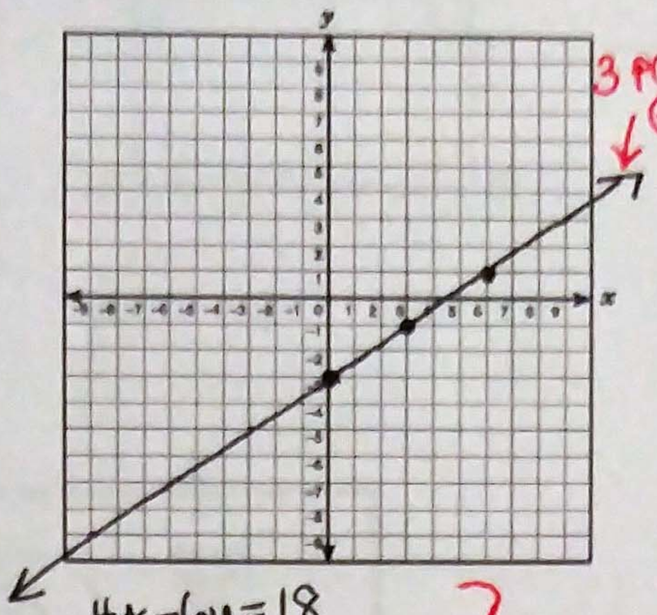
a. $y = 2x + 3$

SLOPE (+1)
Y-INT (+1)
3 POINTS (+1)



b. $4x - 6y = 18$

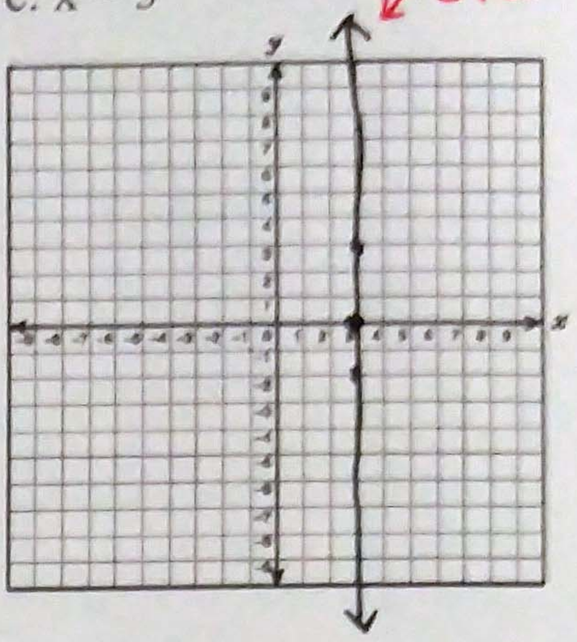
3 POINTS (+1)



$4x - 6y = 18$
$-6y = -4x + 18$ } (+1)
$y = \frac{2}{3}x - 3$

c. $x = 3$

X-INT. (+1)
VERTICAL? (+1)
3 POINTS (+1)



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

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

$x_1\ y_1 \quad x_2\ y_2 \qquad x_1\ y_1 \quad x_2\ y_2$

$m_{JK} = \frac{-2-3}{-4-4} = \frac{-5}{-8} = \frac{5}{8}$ } (+1)

$m_{LM} = \frac{1-6}{-3-5} = \frac{-5}{-8} = \frac{5}{8}$ } (+1)

SAME (+1)

$\overleftrightarrow{JK} \parallel \overleftrightarrow{LM}$ → PARALLEL

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.

x y

$m = 4$

$y = mx + b$
$2 = (4)(3) + b$
$2 = 12 + b$ } (+1)
$-10 = b$ (+1)

$y = mx + b$
$y = 4x - 10$ (+1)

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.

x y

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

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

$\perp m = \frac{2}{5}$ (+1)

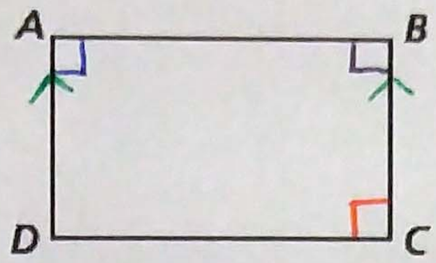
$y = mx + b$
$-1 = \left(\frac{2}{5}\right)(9) + b$
$-1 = \frac{18}{5} + b$
$-5 = 18 + 5b$
$-23 = 5b$ } (+1)
$-\frac{23}{5} = b$ (+1)

$y = mx + b$
$y = \frac{2}{5}x - \frac{23}{5}$ (+1)

Fill in the flow chart proof:

Given: $\overline{AD} \parallel \overline{BC}, \overline{AD} \perp \overline{AB}, \overline{DC} \perp \overline{BC}$

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



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

Reason: given

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

Reason: given

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

Reason: PERPENDICULAR TRANSVERSAL THEOREM (+2)

$\overline{DC} \perp \overline{BC}$ (+2)

Reason: given

(OR ⊥ TRANSV. THM)

$\overline{AB} \parallel \overline{CD}$ (+2)

Reason: LINES PERPENDICULAR TO A TRANSVERSAL THM (+2)
(OR, LINES ⊥ TO TRANSV. THM)