Name: KEY Date: Block:

ADVANCED GEOMETRY CHAPTER 3 REVIEW

BE SURE TO:

*Read the directions carefully and answer what the question is asking

*If you get stuck, look back to the section in your notes the problem comes from. This is probably a hint that you should spend more time studying this section.

3.5-3.6 Slope and Linear Equations

Find the missing variable. $m = \frac{y_2 - y_1}{x_2 - x_1}$

1) $(x, -4), (7, 6)$ when the slope is 5/2

$\frac{6+4}{7-x} = \frac{5}{2}$ → $2(10) = 5(7-x)$

$\frac{10}{7-x} = \frac{5}{2}$ → $20 = 35 - 5x$

$-15 = -5x$

$3 = x$

2) $(-22, -4), (-12, y)$ when the slope is 3/5

$\frac{y+4}{-12+22} = \frac{3}{5}$ → $5(y+4) = 3(10)$

$\frac{y+4}{10} = \frac{3}{5}$ → $5y + 20 = 30$

$5y = 10$

$y = 2$

Write the equation of the line in slope-intersect form passing through the given points:

3) $(-2, -3) and\ (-4, 3)$

$m = \frac{3+3}{-4+2} = \frac{6}{-2} = -3$

$y = mx + b$

$3 = -3(-4) + b$

$3 = 12 + b$

$-9 = b$

$y = -3x - 9$

4) $(-5, -5) and\ (-3, -1)$

$m = \frac{-1+5}{-3+5} = \frac{4}{2} = 2$

$y = mx + b$

$-5 = 2(-5) + b$

$-5 = -10 + b$

$5 = b$

$y = 2x + 5$

5) $(5, -7) and\ (5, 2)$

$m = \frac{2+7}{5-5} = \frac{9}{0} =$ undefined

$x = 5$

Write the equation of the line based on the information provided below:

6) $parallel\ to\ y = -\frac{7}{3}x + 3;\ through\ (-3, -1)$

$y = mx + b$

$-1 = -\frac{7}{3}(-3) + b$

$-1 = 7 + b$

$-8 = b$

$y = -\frac{7}{3}x - 8$

7) $perp.\ to\ y = \frac{1}{2}x + 2;\ through\ (-3, -7)$

$m = -2$

$y = mx + b$

$-7 = -2(-3) + b$

$-7 = 6 + b$

$-13 = b$

$y = -2x - 13$

Write the equation of the perpendicular bisector of segment AB:

8) $A(-2, -3),\ B(-4, 3)$

Slope of AB = $\frac{3+3}{-4+2} = \frac{6}{-2} = -3$

midpoint $\left(\frac{-2+-4}{2}, \frac{-3+3}{2}\right) \rightarrow (-3, 0)$

$y = mx + b$

$0 = \frac{1}{3}(-3) + b$

$0 = -1 + b$

$1 = b$

$y = \frac{1}{3}x + 1$

9) $A(5, 3),\ B(-7, 7)$

slope of AB = $\frac{7-3}{-7-5} = \frac{4}{-12} = -\frac{1}{3}$

midpoint $\left(\frac{5+(-7)}{2}, \frac{3+7}{2}\right) \rightarrow (-1, 5)$

$y = mx + b$

$5 = 3(-1) + b$

$5 = -3 + b$

$8 = b$

$y = 3x + 8$

Write the equation of a line that is 1) parallel, 2) coinciding, and 3) intersecting with the line provided.

10) $y = -\frac{7}{3}x + 3$

Parallel: $y = -\frac{7}{3}x + 1$ (same slope)

coinciding: $y = -\frac{7}{3}x + 3$ (same slope, same y-int.)

Intersecting: $y = 2x + 1$ (different slope)

11) $2x + 3y = 12$

$y = -\frac{2}{3}x + 4$

parallel: $y = -\frac{2}{3}x + 1$

coinciding: $y = -\frac{2}{3}x + 4$

intersecting: $y = 2x + 1$

3.6 Continued Key

Write the equation of the line that best models the table.

12)

X	Y
1	-3
3	1
5	5
7	9

$(x_1, y_1)(x_2, y_2)$ $(1, -3)(3, 1)$

$\frac{1+3}{3-1}$ $\frac{4}{2}$ $2 = m$

$y = mx + b$

$1 = 2(3) + b$

$1 = 6 + b$

$-6 \quad -6$

$-5 = b$

$y = 2x - 5$

13) Pick 2 points.

x	y
3	0.45
5	0.75
7	1.05
10	1.50

$(x_1, y_1)(x_2, y_2)$ $(7, .45)(5, .75)$

$\frac{.75 - .45}{5 - 7}$ $\frac{.3}{2}$

$y = .15x$

$y = .15x + b$ $b = 0$

$.45 = .15(3) + b$

$.45 = .45 + b$

14) Circle the table that represents the function $y = 4x + 3$?

x	y
0	3
1	4
2	8
3	12

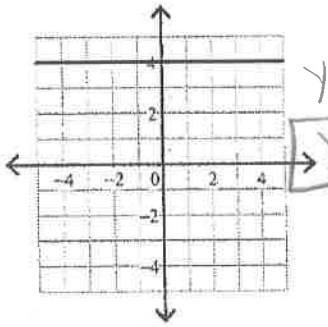
x	y
4	11
5	12
6	13
7	14

x	y
0	3
2	11
4	19
6	27

x	y
1	7
2	11
3	17
4	21

Write the equation of each line.

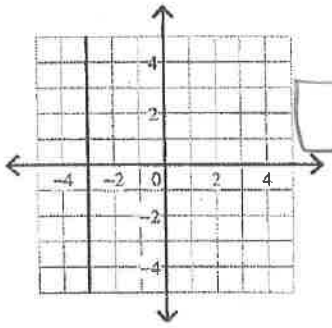
15.



$y = mx + b$

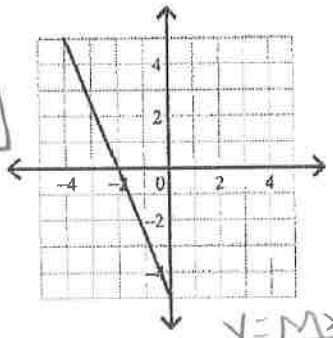
$y = 4$

16.



$x = -3$

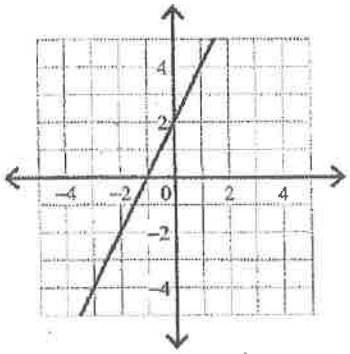
17.



$y = mx + b$

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

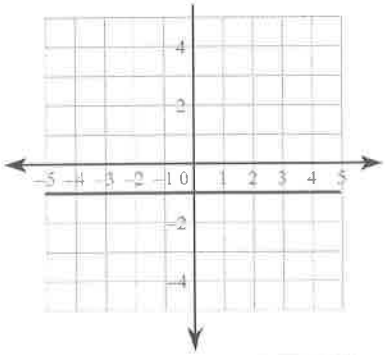
18.



$y = mx + b$

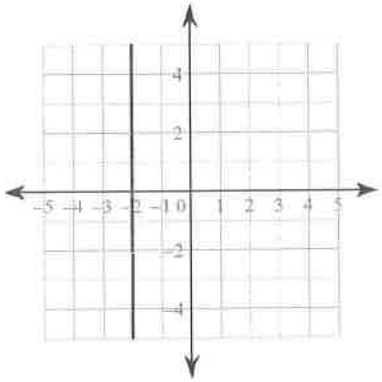
$y = 2x + 2$

19.



$y = -1$

20.

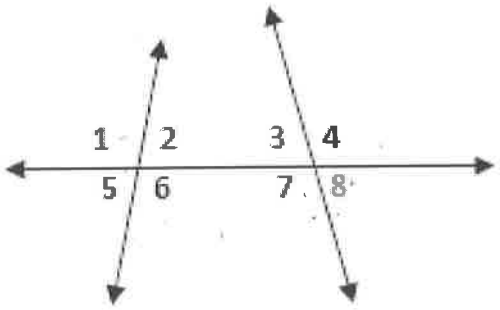


$x = -2$

3.2 - 3.3 - Parallel Lines and Angle Pairs.

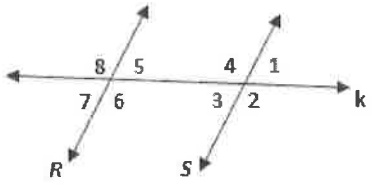
Match the correct angle pair with the given set of angles.

A. Alternate Interior
B. Same Side Interior
C. Alternate Exterior
D. Corresponding
E. Vertical
F. Linear Pair
G. No Relationship



21. $\angle 1, \angle 8$ C
22. $\angle 3, \angle 6$ a
23. $\angle 3, \angle 7$ f
24. $\angle 1, \angle 6$ e
25. $\angle 5, \angle 8$ g
26. $\angle 2, \angle 4$ d
27. $\angle 6, \angle 7$ b

Fill in the Blanks.



by (what theorem?)

28. If R is parallel to S, then the corresponding angles are Congruent by Corr. ∠'s Postulate.
29. If R is parallel to S, then alternate interior angles are congruent by Alt Int ∠'s Thm.
30. If R is parallel to S, then same side interior angles are Supplementary by Same Side Int ∠'s Thm
31. If R is parallel to S, then the alternate exterior angles are congruent by Alt. Ext ∠'s Thm.

32. If $\angle 2 and \angle 6$ are Congruent, then R is Parallel to S by Converse of Corr ∠'s Post.
33. If $\angle 3 and \angle 6$ are Supplementary, then R is Parallel to S by Converse of Same Side Int ∠'s Thm
34. If $\angle 1 and \angle 7$ are Congruent, then R is Parallel to S by Converse of Alt Ext ∠'s Thm.
35. If $\angle 3 and \angle 5$ are Congruent, then R is Parallel to S by converse of alt int ∠'s Thm

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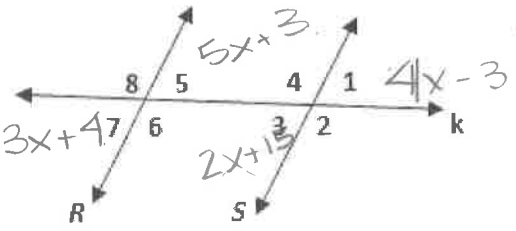
36. Given $\angle 1 = 4x - 3$ and $\angle 7 = 3x + 4$, find the value of x that makes R and S parallel lines.

$4x - 3 = 3x + 4$
$+3 \quad +3$
$4x = 3x + 7$
$-3x \quad -3x$
$x = 7$



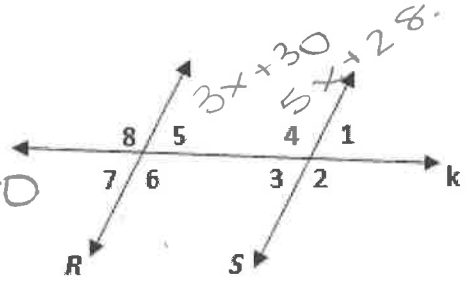
37. If R and S are parallel lines and $\angle 3 = 2x + 15$ and $\angle 5 = 5x + 3$, find the measure of $\angle 2$.

$2(4) + 15$
$8 + 15$
$m\angle 3 = 23$

$m\angle 2 = 180 - 23$
$m\angle 2 = 157°$

$2x + 15 = 5x + 3$
$-3 \quad -3$
$2x + 12 = 5x$
$-2x \quad -2x$
$\frac{12}{3} = \frac{3x}{3}$
$4 = x$

38. If R and S are parallel lines and $\angle 5 = 3x + 30$ and $\angle 4 = 5x + 22$, find the measure of $\angle 2$.



$3x + 30 + 5x + 22 = 180$

$8x + 52 = 180$

$-52 \quad -52$

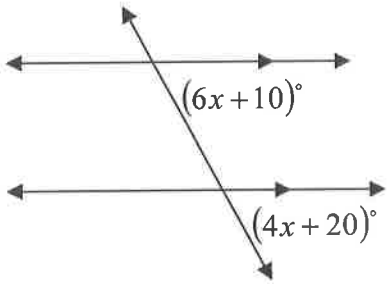
$\frac{8x}{8} = \frac{128}{8}$ $x = 16$

$m\angle 4 = 5(16) + 22 = 102°$

$m\angle 2 = m\angle 4 = 102°$

Find the value of all missing variables.

39.



$6x + 10 = 4x + 20$

$-4x \quad -4x$

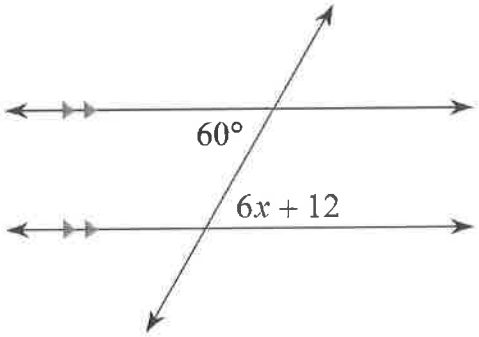
$2x + 10 = 20$

$-10 \quad -10$

$\frac{2x}{2} = \frac{10}{2}$

$x = 5$

40.



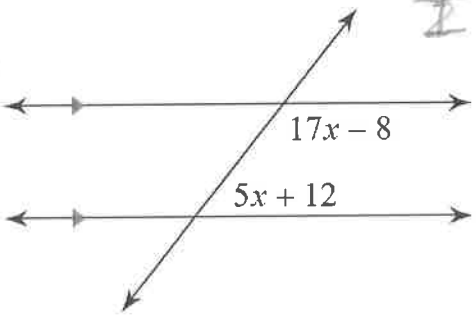
$60 = 6x + 12$

-12

$\frac{48}{6} = \frac{6x}{6}$

$8 = x$

41.



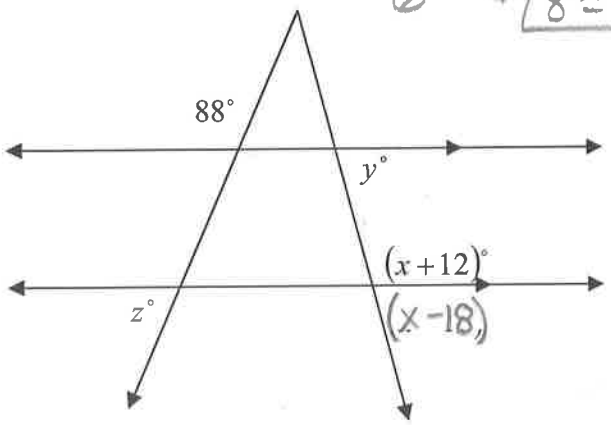
$17x - 8 + 5x + 12 = 180$

$22x + 4 = 180$

$\frac{22x}{22} = \frac{176}{22}$

$x = 8$

42.



$(x + 12) + (x - 18) = 180$

$2x - 6 = 180$

$+6 \quad +6$

$\frac{2x}{2} = \frac{186}{2}$

$x = 93°$

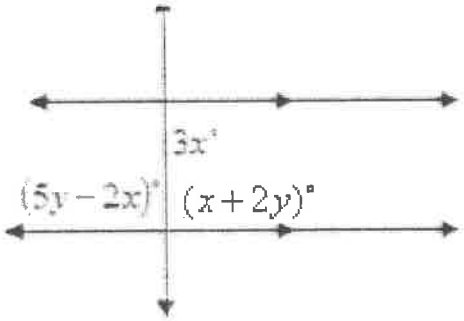
$y = x - 18$

$y = 93 - 18$

$y = 75°$

$z = 180 - 88$

$z = 92°$



$5y - 2x = 3x$
$-3x \quad -3x$
$5y - 5x = 0$

↓ ReArrange

$3x + x + 2y = 180$
$4x + 2y = 180$

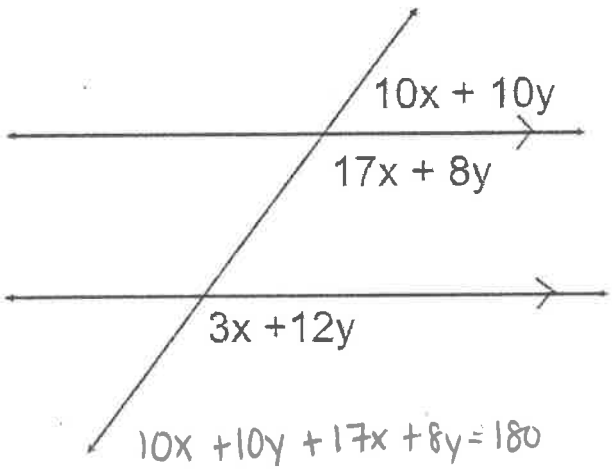
$-2(-5x + 5y = 0) \rightarrow 10x - 10y = 0$
$5(4x + 2y = 180) \rightarrow 20x + 10y = 900$

$\frac{30x}{30} = \frac{900}{30}$

$\boxed{x = 30}$

$4(30) + 2y = 180$
$120 + 2y = 180$
$-120 \qquad -120$
$\frac{2y}{2} = \frac{60}{2}$

$\boxed{y = 30}$



$17x + 8y = 3x + 12y$
$-3x \qquad -3x$
$14x + 8y = 12y$
$-12y \quad -12y$
$14x - 4y = 0$

$10x + 10y + 17x + 8y = 180$
$27x + 18y = 180$

$9(14x - 4y = 0) \rightarrow 126x - 36y = 0$
$2(27x + 18y = 180) \rightarrow 54x + 36y = 360$

$\frac{180x}{180} = \frac{360}{180}$

$\boxed{x = 2}$

$14(2) - 4y = 0$
$28 - 4y = 0$
$-4y = -28$

$\boxed{y = 7}$