

Name: \_\_\_\_\_

KEY

Date: \_\_\_\_\_

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## 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.

$$\frac{y_2 - y_1}{x_2 - x_1}$$

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

$$\begin{array}{ccc} x_1 & y_1 & x_2 & y_2 \\ \frac{6 + 4}{7 - x} & = & \frac{5}{2} \end{array}$$

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

$$\begin{array}{r} 5(7 - x) = 20 \\ 35 - 5x = 20 \\ -35 \quad -35 \\ \hline -5x = -15 \\ \frac{-5x}{-5} = \frac{-15}{-5} \\ \boxed{x = 3} \end{array}$$

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

$$\begin{array}{r} \frac{y + 4}{-12 + 22} = \frac{3}{5} \\ \frac{y + 4}{10} = \frac{3}{5} \end{array}$$

$$\begin{array}{r} 5(y + 4) = 30 \\ 5y + 20 = 30 \\ -20 \quad -20 \\ \hline 5y = 10 \\ \frac{5y}{5} = \frac{10}{5} \\ \boxed{y = 2} \end{array}$$

Write the equation of the line in slope-intercept form passing through the given points.

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

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

$$y = mx + b \\ 3 = -3(-4) + b$$

$$\begin{array}{r} 3 = 12 + b \\ -12 \quad -12 \\ \hline -9 = b \end{array}$$

$$\boxed{y = -3x - 9}$$

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

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

$$\begin{array}{r} y = mx + b \\ -5 = 2(-5) + b \\ -5 = -10 + b \\ +10 \quad +10 \\ \hline 5 = b \end{array}$$

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

5) What is the equation of the line with slope 8 through the point  $(-4, -5)$ .

$$m = 8$$

$$\begin{array}{r} y = mx + b \\ -5 = 8(-4) + b \\ -5 = -32 + b \\ +32 \quad +32 \\ \hline 27 = b \end{array}$$

$$\boxed{y = 8x + 27}$$

Write the equation of the line through the given point and parallel to the given line:

→ same slope

6)  $y = -\frac{7}{3}x + 3; (-9, 5)$ 

$$\begin{array}{r} y = mx + b \\ 5 = -\frac{7}{3}(-9) + b \\ 5 = 21 + b \\ -21 \quad -21 \\ \hline -16 = b \end{array}$$

$$\boxed{y = -\frac{7}{3}x - 16}$$

7)  $y = 3x + 1; (5, 4)$ 

$$\begin{array}{r} y = mx + b \\ 4 = 3(5) + b \\ 4 = 15 + b \\ -15 \quad -15 \\ \hline -11 = b \end{array}$$

$$\boxed{y = 3x - 11}$$

Write the equation of the line through the given point and perpendicular to the given line:

→ opposite reciprocal

8)  $y = \frac{1}{2}x + 2; (-3, -7)$ 

$$\begin{array}{r} \perp m = -2 \\ y = mx + b \\ -7 = -2(-3) + b \\ -7 = 6 + b \\ -6 \quad -6 \\ \hline -13 = b \end{array}$$

$$\boxed{y = -2x - 13}$$

9)  $y = -\frac{3}{4}x - 3; (5, 3)$ 

$$\begin{array}{r} m = \frac{4}{3} \\ y = mx + b \\ 3 = \frac{4}{3}(5) + b \\ 3 = \frac{20}{3} + b \\ \frac{9}{3} = \frac{20}{3} + b \end{array}$$

$$\begin{array}{r} \frac{9}{3} = \frac{20}{3} + b \\ \frac{-20}{3} \quad \frac{-20}{3} \\ \hline \frac{-11}{3} = b \end{array}$$

$$\boxed{y = \frac{4}{3}x - \frac{11}{3}}$$

3.6 Continued

Key

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

Pick 2 points.

12)

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

X	Y
1	-3
3	1
5	5
7	9

$$\frac{1+3}{3-1} = \frac{4}{2} \quad \boxed{2=M}$$

$y = mx + b$

$1 = 2(3) + b$

$-1 = 6 + b$   
 $-5 = b$

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

13)

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

x	Y
3	0.45
5	0.75
7	1.05
10	1.50

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

$\boxed{y = .15x}$

$y = .15x + b$   $\boxed{b=0}$

$45 = .15(3) + b$

$45 = .45 + b$

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

x	y
0	3
1	4
2	8
3	12

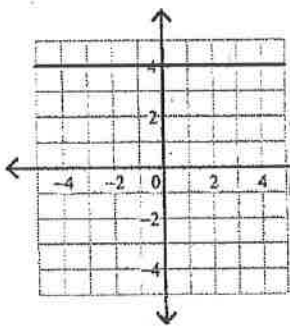
x	y
4	11
5	12
6	13
7	14

x	y
0	3
2	11
4	19
6	27

x	y
1	7
2	11
3	17
4	21

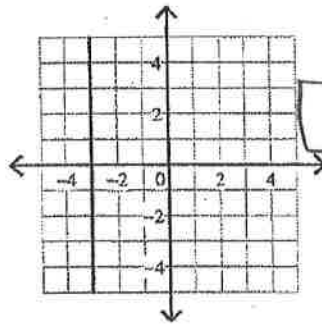
Write the equation of each line.

15.



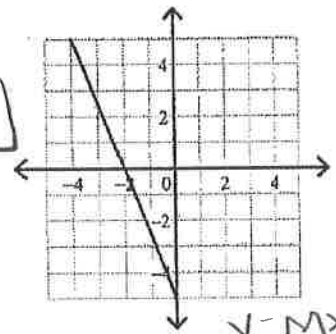
$y = mx + b$   
 $\boxed{y = 4}$

16.



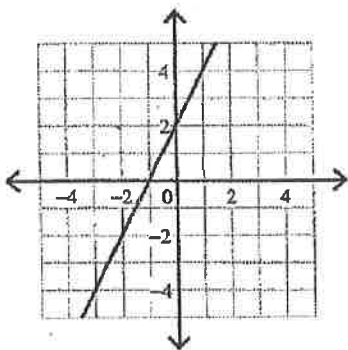
$\boxed{x = -3}$

17.



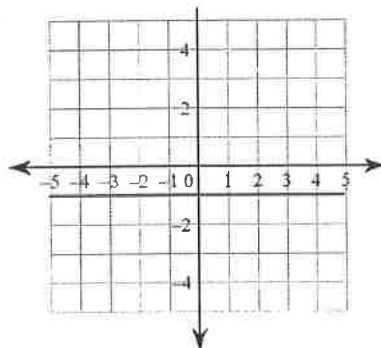
$y = mx + b$   
 $\boxed{y = \frac{5}{2}x - 5}$

18.



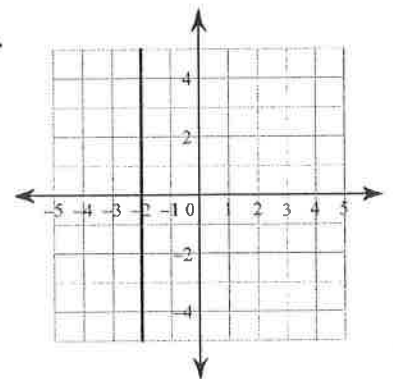
$y = mx + b$   
 $\boxed{y = 2x + 2}$

19.



$\boxed{y = -1}$

20.

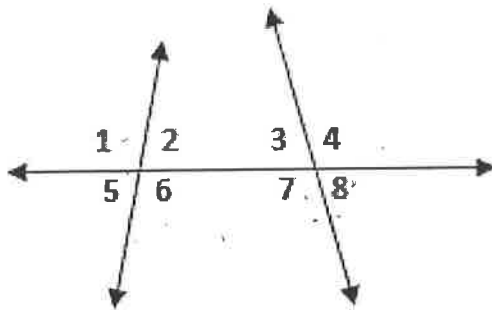


$\boxed{x = -2}$

3.2 - 3.3 - Parallel Lines and Angle Pairs.

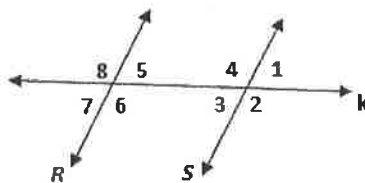
Match the correct angle pair with the given set of angles.

- 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.



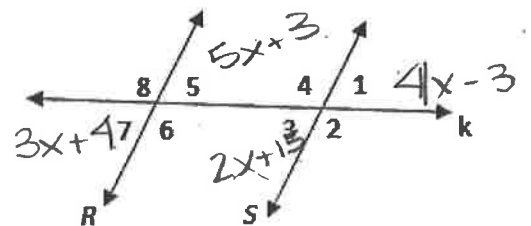
by (what theorem?)

- 28. If R is parallel to S, then the corresponding angles are Congruent by Corr. L's Postulate.
- 29. If R is parallel to S, then alternate interior angles are Congruent by Alt Int L's Thm.
- 30. If R is parallel to S, then same side interior angles are Supplementary by Same Side Int L's Thm.
- 31. If R is parallel to S, then the alternate exterior angles are Congruent by Alt. Ext L's Thm.
- 32. If  $\angle 2$  and  $\angle 6$  are Congruent, then R is Parallel to S by Converse of Corr L's Post.
- 33. If  $\angle 3$  and  $\angle 6$  are Supplementary, then R is Parallel to S by Converse of Same Side Int L's Thm.
- 34. If  $\angle 1$  and  $\angle 7$  are Congruent, then R is Parallel to S by Converse of Alt Ext L's Thm.
- 35. If  $\angle 3$  and  $\angle 5$  are Congruent, then R is Parallel to S by Converse of Alt Int L's Thm.

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

$$\begin{aligned}
 4x - 3 &= 3x + 4 \\
 +3 & \quad +3 \\
 4x &= 3x + 7 \\
 -3x & \quad -3x \\
 x &= 7
 \end{aligned}$$

**X=7**



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

$$\begin{aligned}
 2(4) + 15 &= 5(7) + 3 \\
 8 + 15 &= 35 + 3 \\
 m\angle 3 &= 23
 \end{aligned}$$

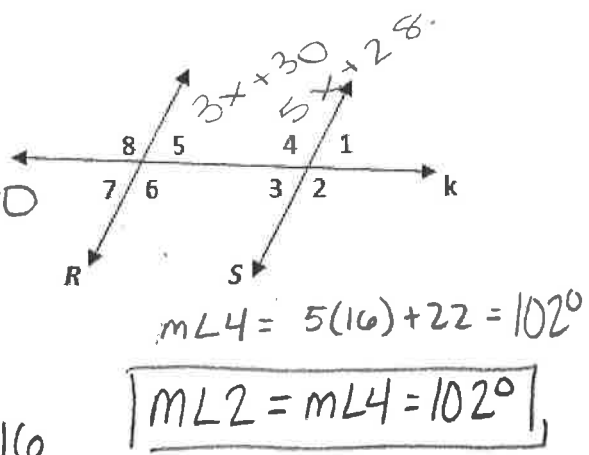
180

$$\begin{aligned}
 m\angle 2 &= 180 - 23 \\
 m\angle 2 &= 157^\circ
 \end{aligned}$$

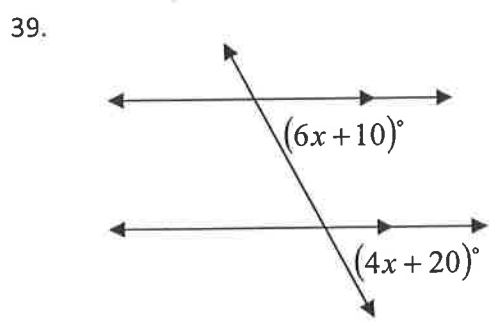
$$\begin{aligned}
 2x + 15 &= 5x + 3 \\
 -3 & \quad -3 \\
 2x + 12 &= 5x \\
 -2x & \quad -2x \\
 12 &= 3x \\
 \frac{12}{3} &= \frac{3x}{3} \\
 4 &= x
 \end{aligned}$$

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

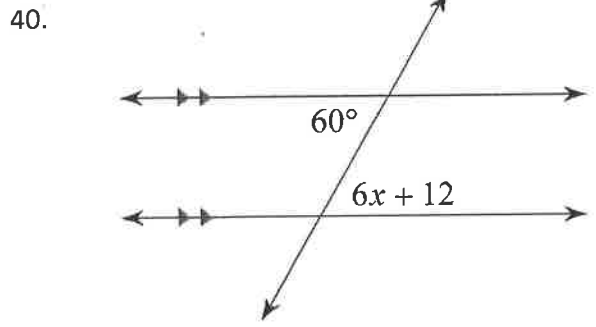
$$\begin{aligned}
 3x + 30 + 5x + 22 &= 180 \\
 8x + 52 &= 180 \\
 -52 & \quad -52 \\
 \hline
 8x &= 128 \\
 \frac{8x}{8} & \quad \frac{128}{8} \quad x = 16
 \end{aligned}$$



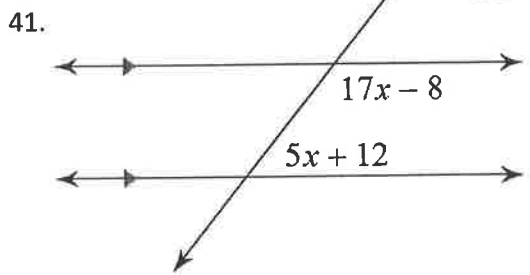
Find the value of all missing variables.



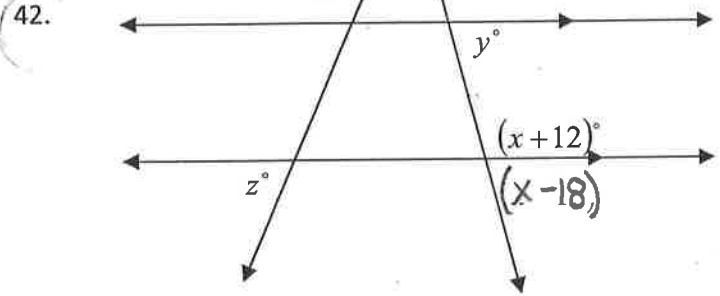
$$\begin{aligned}
 6x + 10 &= 4x + 20 \\
 -4x & \quad -4x \\
 \hline
 2x + 10 &= 20 \\
 -10 & \quad -10 \\
 \hline
 2x &= 10 \\
 \frac{2x}{2} & \quad \frac{10}{2} \quad x = 5
 \end{aligned}$$



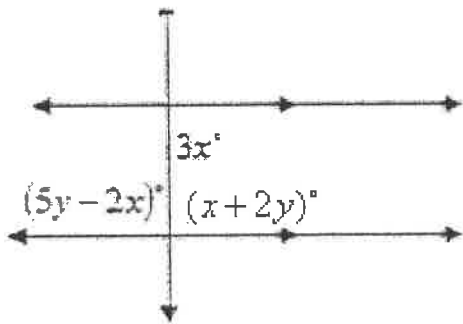
$$\begin{aligned}
 60 &= 6x + 12 \\
 -12 & \quad -12 \\
 \hline
 48 &= 6x \\
 \frac{48}{6} & \quad \frac{6x}{6} \quad 8 = x
 \end{aligned}$$



$$\begin{aligned}
 17x - 8 + 5x + 12 &= 180 \\
 22x + 4 &= 180 \\
 \frac{22x}{22} & \quad \frac{176}{22} \\
 x &= 8
 \end{aligned}$$



$$\begin{aligned}
 (x+12) + (x-18) &= 180 & y &= x - 18 \\
 2x - 6 &= 180 & y &= 93 - 18 \\
 +6 & \quad +6 & \boxed{y} &= \boxed{75} \\
 \hline
 2x &= 186 \\
 \frac{2x}{2} & \quad \frac{186}{2} \\
 \boxed{x} &= \boxed{93} \\
 z &= 180 - 88 \\
 \boxed{z} &= \boxed{92}
 \end{aligned}$$



$$\begin{array}{r} 5y - 2x = 3x \\ -3x \quad -3x \\ \hline \end{array}$$

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

$$4x + 2y = 180$$

$$5y - 5x = 0$$

↓ Rearrange

$$-2(-5x + 5y = 0) \rightarrow 10x - 10y = 0$$

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

$$\begin{array}{r} 30x = 900 \\ \hline 30 \quad 30 \end{array}$$

$$\boxed{x = 30}$$

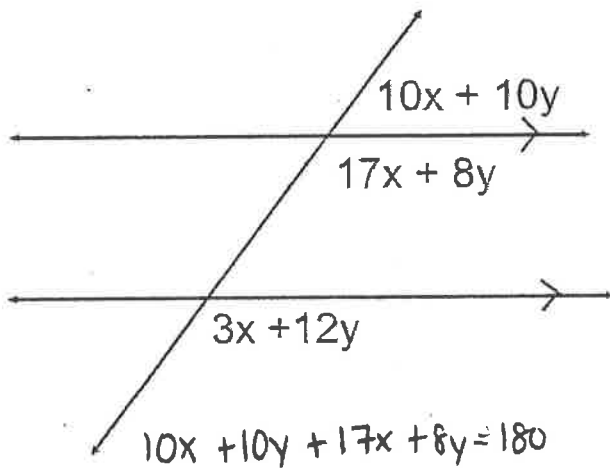
$$4(30) + 2y = 180$$

$$120 + 2y = 180$$

$$\begin{array}{r} 120 + 2y = 180 \\ -120 \quad -120 \\ \hline \end{array}$$

$$\frac{2y = 60}{2}$$

$$\boxed{y = 30}$$



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

$$27x + 18y = 180$$

$$\begin{array}{r} 17x + 8y = 3x + 12y \\ -3x \quad -3x \\ \hline \end{array}$$

$$\begin{array}{r} 14x + 8y = 12y \\ -12y \quad -12y \\ \hline \end{array}$$

$$14x - 4y = 0$$

$$9(14x - 4y = 0) \rightarrow 126x - 36y = 0$$

$$2(27x + 18y = 180) \rightarrow 54x + 36y = 360$$

$$\begin{array}{r} 180x = 360 \\ \hline 180 \quad 180 \end{array}$$

$$\boxed{x = 2}$$

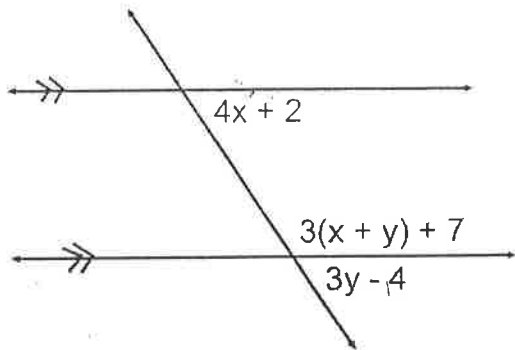
$$14(2) - 4y = 0$$

$$28 - 4y = 0$$

$$-4y = -28$$

$$\boxed{y = 7}$$

5.



$$4x + 2 + 3x + 3y + 7 = 180$$

$$\begin{aligned} 4x + 2 &= 3y - 4 \\ -3y - 2 &-3y - 2 \end{aligned}$$

$$\begin{aligned} 7x + 3y + 9 &= 180 \rightarrow 7x + 3y = 171 \\ 4x - 3y &= -6 \end{aligned}$$

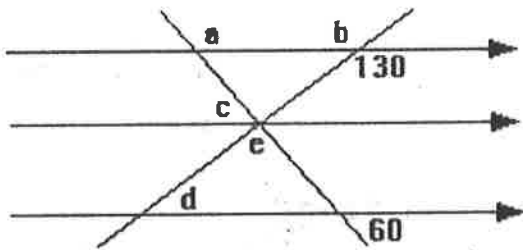
$$\begin{aligned} 7(15) + 3y &= 171 \\ 105 + 3y &= 171 \\ \frac{3y}{3} &= \frac{66}{3} \end{aligned}$$

$$\begin{array}{r} 11x = 165 \\ \hline 11 \quad 11 \\ \hline \end{array}$$

$$\boxed{y = 22 \quad x = 15}$$

Find the measure of the missing angles in the diagrams.

7.

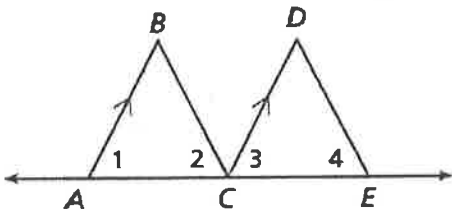


$$\begin{aligned} a &= 120^\circ \\ b &= 130^\circ \\ c &= 60^\circ \\ d &= 50^\circ \\ e &= 70^\circ \end{aligned}$$

9. Complete the following two-column proof.

Given:  $\overline{AB} \parallel \overline{CD}$ ,  $\angle 1 \cong \angle 2$ ,  $\angle 3 \cong \angle 4$

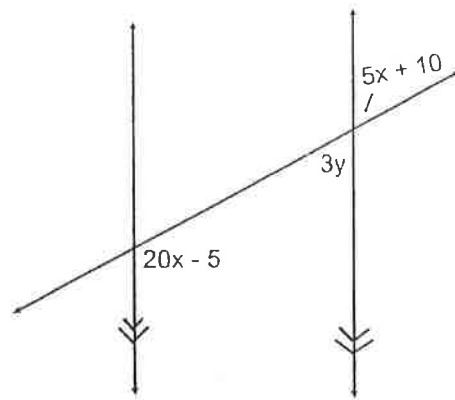
Prove:  $\overline{BC} \parallel \overline{DE}$



S  
 $\overline{AB} \parallel \overline{CD}$   
 $\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$   
 $\angle 1 \cong \angle 3$   
 $\angle 2 \cong \angle 3$   
 $\angle 2 \cong \angle 4$   
 $\overline{BC} \parallel \overline{DE}$

R  
 Given  
 Given  
 Corr. L's Postulate  
 substitution  
 substitution  
 Converse of Corr. L's Post.

6.



$$20x - 5 + 3y = 180$$

$$\begin{aligned} 3y &= 5x + 10 \\ -5x &-5x \end{aligned}$$

$$\begin{aligned} 20x + 3y &= 185 \\ -(-5x + 3y &= 10) \end{aligned}$$

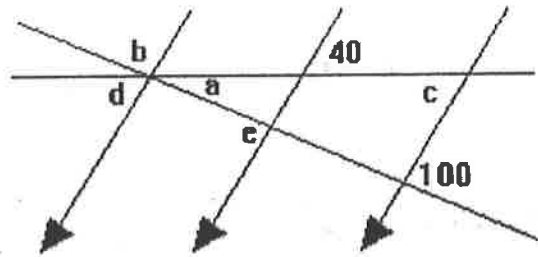
$$\begin{aligned} 3y &= 5(7) + 10 \\ \frac{3y}{3} &= \frac{45}{3} \end{aligned}$$

$$\frac{25x}{25} = \frac{175}{25}$$

$$\boxed{x = 7}$$

$$\boxed{y = 15}$$

8.



$$\begin{aligned} a &= 60^\circ \\ b &= 80^\circ \\ c &= 40^\circ \\ d &= 40^\circ \\ e &= 100^\circ \end{aligned}$$

Make sure you review parallel, perpendicular, skew, and know how to use your angle pair theorems as well.