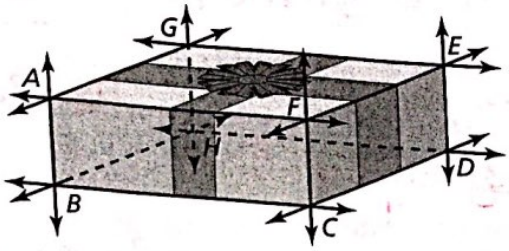
Name _____ Date _____

Chapter 3

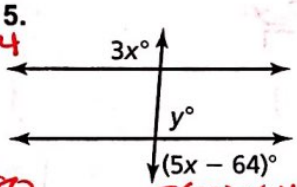
Identify an example on the box of the description.

1. a pair of skew lines
2. a pair of perpendicular lines
3. a pair of parallel lines
4. a pair of intersecting planes and where they intersect



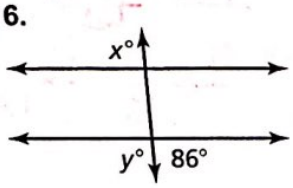
Find the values of *x* and *y*. State which theorem(s) you used.

5.

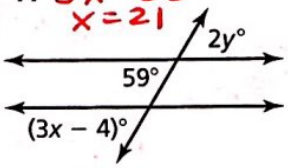


$x = 5x - 64$
$-x = -64$
$x = 32$
$96 + y = 180$
$y = 84$
$5(32) - 64$
96

6.



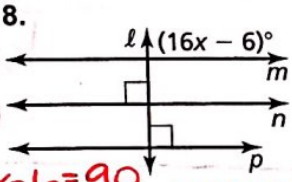
7.



$3x - 4 = 59$
$3x = 63$
$x = 21$
$59 = 2y$

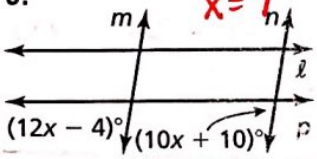
Find the value of *x* that makes *m* ∥ *n*.

8.



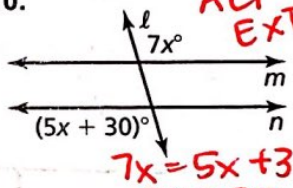
$16x - 6 = 90$
$16x = 96$ CORRES.

9.



$12x - 4 = 10x + 10$
$2x = 14$
$x = 7$
CORRESP.

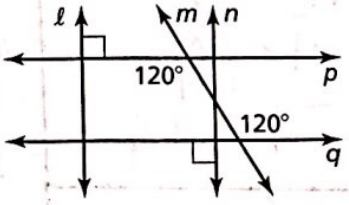
10.

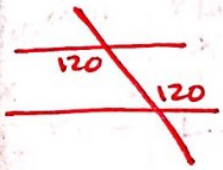


ALT EXT.
$7x = 5x + 30$
$2x = 30$
$x = 15$

Determine which lines, if any, must be parallel. Explain your reasoning.

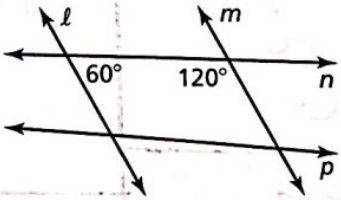
11.





ALT INT CONVERSE.

12.



$60 + 120 = 180$

Complete the sentence.

13. The slopes of perpendicular lines are _____.
14. Parallel lines have the _____ slope.
15. The shortest distance from any point to a line is a _____.

Answers

1. $\overleftrightarrow{GH}$ and $\overleftrightarrow{FE}$
2. $\overleftrightarrow{AB}$ and $\overleftrightarrow{BC}$
3. $\overleftrightarrow{AB}$ and $\overleftrightarrow{FC}$
4. GAB and HBC @ $\overleftrightarrow{HB}$
5. $x = 32$ ALT EXT
   $y = 84$ SUPP ∠s
6. $x = 86$ ALT EXT
   $y = 94$ SUPP ∠s
7. $x = 21$ CORRES.
   $y = 29.5$ VERT ∠s
8. $x = 6$
9. $x = 7$
10. $x = 15$
11. $p \parallel q$
    ALT INT CONVERSE
12. $\ell \parallel m$
    CONS. INT CONVERSE
13. OPPOSITE RECIPROCAL
14. SAME
15. ⊥ SEGMENT (90°)

Name _____ Date _____

Chapter 3

Write the equation of the line passing through the given point that is parallel to the given line. Same slope when in $y = mx + b$

16. $y = \frac{2}{3}x - 2$; $(-3, 4)$

17. $-2x + 7y = 14$; $(-7, -3)$

$\frac{7y}{7} = \frac{2x}{7} + \frac{14}{7}$ $y = \frac{2}{7}x + 2$

18. $3x - 4y = 16$; $(8, -5)$

$\frac{-4y}{-4} = \frac{-3x}{-4} + \frac{16}{-4}$ $y = \frac{3}{4}x - 4$

19. $4x + y = 7$; $(2, 4)$

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

Write the equation of the line passing through the given point that is perpendicular to the given line. opposite reciprocal

20. $y = \frac{2}{3}x - 2$; $(-2, 4)$

21. $-2x + 7y = 14$; $(-3, -7)$

$+2x \quad +2x$

$\frac{7y}{7} = \frac{14}{7} + \frac{2x}{7}$

22. $3x - 8y = 16$; $(-3, 1)$ $y = \frac{3}{8}x - 2$

$-3x \quad -3x$

$\frac{-8y}{-8} = \frac{-3x}{-8} + \frac{16}{-8}$

23. $4x + y = 7$; $(4, 2)$

$-4x \quad -4x$

$y = -4x + 7$

Determine which lines, if any, are *parallel* or *perpendicular*.

24. Line a: $y = 5x - 6$ $m = 5$

Line b: $x + 5y = 5$ $\frac{5y}{5} = \frac{-x}{5} + \frac{5}{5}$ $m = -\frac{1}{5}$

$-x \quad -x$

25. Line a: $-2x + y = 10$ $-2x$ $m = -2$

Line b: $-6x - 3y = 3$ $\frac{+6x}{-3}$ $y = -1 - 2x$ $m = -2$

$\frac{-3y}{-3} = \frac{3}{-3}$

Line c: $-2y = 8$ $\frac{-x}{-2}$ $m = \frac{1}{2}$

$\frac{-2y}{-2} = \frac{8}{-2}$

Answers

16. $y = \frac{2}{3}x + 6$
17. $y = \frac{2}{7}x - 1$
18. $y = \frac{3}{4}x - 11$
19. $y = -4x + 12$
20. $y = -\frac{3}{2}x + 1$
21. $y = -\frac{7}{2}x - \frac{35}{2}$
22. $y = -\frac{8}{3}x - 7$
23. $y = \frac{1}{4}x + 1$
24. perpend.
25. $a \parallel b$, $b \perp c$, $a \perp c$

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

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

$+4 \quad +4$

$y = \frac{2}{3}x + 6$

(17) $(-7, -3)$ $m = \frac{2}{7}$

$y + 3 = \frac{2}{7}(x + 7)$

$y + 3 = \frac{2}{7}x + 2$

$-3 \quad -3$

$y = \frac{2}{7}x - 1$

(18) $(8, -5)$ $m = \frac{3}{4}$

$y + 5 = \frac{3}{4}(x - 8)$

$y + 5 = \frac{3}{4}x - 6$

$-5 \quad -5$

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

(19) $(2, 4)$ $m = -4$

$y - 4 = -4(x - 2)$

$y - 4 = -4x + 8$

$+4 \quad +4$

$y = -4x + 12$

(20) $m = -\frac{3}{2}$ $(-2, 4)$

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

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

$+4 \quad +4$

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

(21) $m = -\frac{7}{2}$ $(-3, -7)$

$y + 7 = -\frac{7}{2}(x + 3)$

$y + 7 = -\frac{7}{2}x - \frac{21}{2}$

$-7 \quad -7$

$y = -\frac{7}{2}x - \frac{35}{2}$

(22) $3 = -\frac{8}{3}(-3, 1)$

$y - 1 = -\frac{8}{3}(x + 3)$

$y - 1 = -\frac{8}{3}x - 8$

$+1 \quad +1$

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

(23) $3 = \frac{1}{4}(4, 2)$

$y - 2 = \frac{1}{4}(x - 4)$

$y - 2 = \frac{1}{4}x - 1$

$+2 \quad +2$

$y = \frac{1}{4}x + 1$