

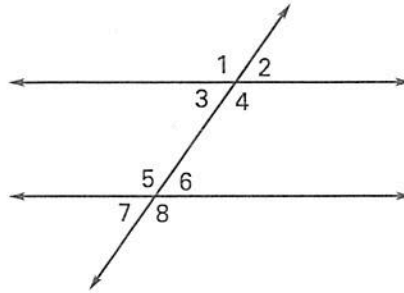
Name Key

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CHAPTER 3 Chapter Test
For use after Chapter 3

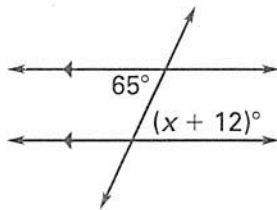
Identify the pairs of angles as corresponding, alternate interior, alternate exterior, consecutive interior, or vertical angles. (1 point each)

- $\angle 3$ and $\angle 6$ alt. int. \angle 's
- $\angle 2$ and $\angle 7$ alt. ext. \angle 's
- $\angle 4$ and $\angle 8$ corresponding \angle 's
- $\angle 5$ and $\angle 8$ vertical \angle 's
- $\angle 3$ and $\angle 5$ same side \angle 's
- $\angle 1$ and $\angle 8$ alt ext \angle 's



Find the value of x . State the Postulate or Theorem used to solve the problem. (3 points each)

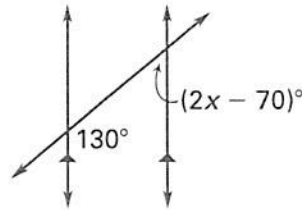
7.



$$65 = x + 12$$

$$x = 53$$

8.



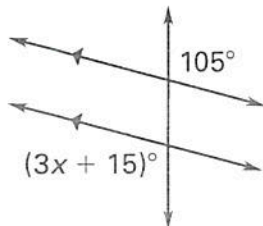
$$130 + 2x - 70 = 180$$

$$2x + 60 = 180$$

$$2x = 120$$

$$x = 60$$

9.

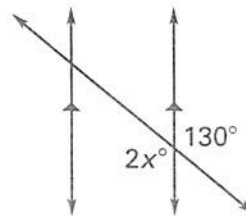


$$3x + 15 = 105$$

$$3x = 90$$

$$x = 30$$

10.



$$2x = 130$$

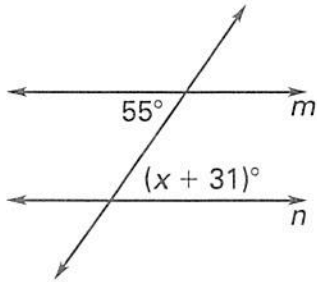
$$x = 65$$

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continued

Find the value of x that makes $m \parallel n$. State the Postulate(s) or Theorem(s) used to solve. (3 points each)

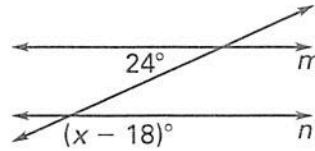
11.



$$\begin{array}{r} 55 = x + 31 \\ -31 \quad -31 \\ \hline 24 = x \end{array}$$

by CONVERSE of alt. int. angles thm

12.

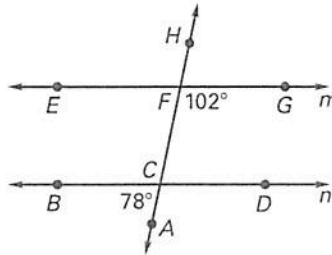


$$\begin{array}{r} x - 18 + 24 = 180 \\ x + 6 = 180 \\ \hline x = 174 \end{array}$$

by CONVERSE of Same Side int. \angle 's thm.

13. Complete the proof. (9 points)

GIVEN: $m\angle BCA = 78^\circ$
 $m\angle CFG = 102^\circ$
PROVE: $m \parallel n$



Statements	Reasons
$\angle FCD \cong \angle BCA$	<u>Vertical \angle's \cong thm</u>
<u>$m\angle FCD = m\angle BCA$</u>	Definition of Congruent Angles
$m\angle BCA = 78^\circ$	<u>given</u>
$m\angle FCD = 78^\circ$	<u>substitution</u>
<u>$m\angle CFG = 102^\circ$</u>	Given
$78^\circ + 102^\circ = 180^\circ$	<u>Addition</u>
$m\angle FCD + m\angle CFG = 180^\circ$	<u>substitution</u>
<u>$\angle FCD$ & $\angle CFG$ are supp.</u>	Definition of Supplementary
$m \parallel n$	<u>CONVERSE of SSIA thm</u>

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Tell whether the lines through the given points are parallel, perpendicular, or neither.
(2 points each)

14. Line 1: (1, 2), (2, 0)
Line 2: (0, -1), (-2, -2)

$$\text{Line 1: } \frac{0-2}{2-1} = \frac{-2}{1} = -2$$

$$\text{Line 2: } \frac{-2+(-1)}{-2-0} = \frac{-3}{-2} = \frac{3}{2}$$

Perpendicular

15. Line 1: (-2, 1), (1, -1)
Line 2: (1, 3), (4, 1)

$$\text{Line 1: } \frac{-1-1}{1+2} = \frac{-2}{3}$$

$$\text{Line 2: } \frac{1-3}{4-1} = \frac{-2}{3} \quad \text{Parallel}$$

16. Line 1: (0, 1), (1, 4)
Line 2: (3, 2), (6, 3)

$$\text{Line 1: } \frac{4-1}{1-0} = \frac{3}{1} = 3$$

$$\text{Line 2: } \frac{3-2}{6-3} = \frac{1}{3} \quad \text{Neither}$$

17. Line 1: (-1, 1), (1, 3)
Line 2: (2, -1), (4, 1)

$$\text{Line 1: } \frac{3-1}{1+1} = \frac{2}{2} = 1$$

$$\text{Line 2: } \frac{1+1}{4-2} = \frac{2}{2} = 1 \quad \text{Parallel}$$

Write an equation of the line that passes through the point P and is *parallel* to the line with the given equation. (4 points each)

18. P(-1, 3), $y = 4x - 2$

$$3 = 4(-1) + b$$

$$3 = -4 + b$$

$$7 = b$$

$$\boxed{y = 4x + 7}$$

19. P(2, 4), $y = -3x$

$$4 = -3(2) + b$$

$$4 = -6 + b$$

$$10 = b$$

$$\boxed{y = -3x + 10}$$

Write an equation of the line that passes through point P and is *perpendicular* to the line with the given equation. (4 points each)

20. P(0, 2), $y = \frac{1}{2}x + 1$

$$2 = -2(0) + b$$

$$2 = 0 + b$$

$$2 = b$$

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

21. P(4, 3), $y = -x$

$$3 = 1(4) + b$$

$$3 = 4 + b$$

$$-1 = b$$

$$\boxed{y = x - 1}$$

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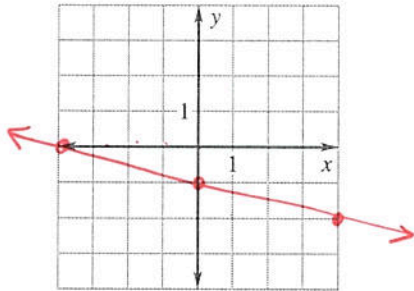
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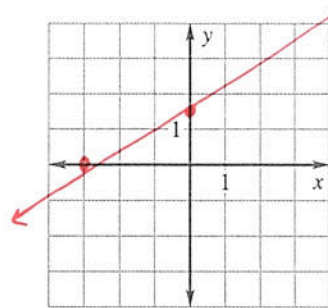
continued

Graph the equation. (2 points each)

22. $y = -\frac{1}{4}x - 1$



23. $-4x + 8y = 12$



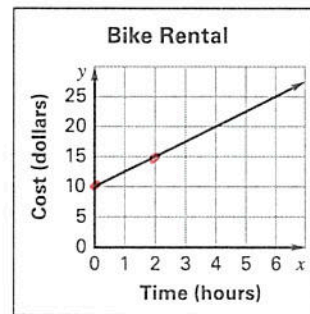
$-4x = 12$
 $x = -3$

$8y = 12$
 $y = \frac{12}{8} = \frac{3}{2} = 1.5$

24. The graph models the total cost of renting a bike. Write an equation of the line. Explain the meaning of the slope and the y- intercept of the line. (4 points)

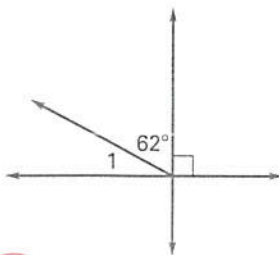
$y = \frac{5}{2}x + 10$

The cost to rent a bike starts at \$10 + cost \$5 every two hours



$(0, 10)$
 $(2, 15)$
 $\frac{15-10}{2-0} = \frac{5}{2}$

25. Multiple Choice (1 point)
What is $m\angle 1$ in the figure below?



90
 -62
 28

- (A) 28° (B) 62°
 (C) 90° (D) 152°
 (E) 180°

26. Multiple Choice (1 point)
What is one way to describe the vertical bars of a football goalpost?

- (A) perpendicular
 (B) intersecting
 (C) skew
 (D) parallel

