Solve each inequality. Then graph it on a number line. $\{x \mid x < 5\}$

1. $x - 9 < -4$

2. $6p \geq 5p - 3$ $\{p \mid p \geq -3\}$

3. **MULTIPLE CHOICE** Drew currently has 31 comic books in his collection. His friend Connor has 58 comic books. How many more comic books does Drew need to add to his collection in order to have a larger collection than Connor? **C**

A no more than 21

B 27

C at least 28

D more than 30

Solve each inequality. Graph the solution on a number line. **4–10. See Ch. 5 Answer Appendix for graphs.**

4. $\frac{1}{5}h > 3$ $\{h \mid h > 15\}$

5. $7w \leq -42$ $\{w \mid w \leq -6\}$

6. $-\frac{2}{3}t \geq 24$ $\{t \mid t \leq -36\}$

7. $-9m < -36$ $\{m \mid m > 4\}$

8. $3c - 7 < 11$ $\{c \mid c < 6\}$

9. $\frac{g}{4} + 3 \leq -9$ $\{g \mid g \leq -48\}$

10. $-2(x - 4) > 5x - 13$ $\{x \mid x < 3\}$

11. **ZOO** The 8th grade science class is going to the zoo. The class can spend up to $300 on admission.

Zoo Admission	
Visitor	**Cost**
student	$8
adult	$10

a. Write an inequality for this situation. $8s + 10a \leq 300$

b. If there are 32 students in the class and 1 adult will attend for every 8 students, can the entire class go to the zoo? **yes**

Solve each compound inequality. Then graph the solution set. **12–13. See margin.**

12. $y - 8 < -3$ or $y + 5 > 19$

13. $-11 \leq 2h - 5 \leq 13$

14. $3z - 2 > -5$ and $7z + 4 < -17$ **∅**

Define a variable, write an inequality, and solve the problem. Check your solution.

15. The difference of a number and 4 is no more than 8. **15–16. See Ch. 5 Answer Appendix.**

16. Nine times a number decreased by four is at least twenty-three.

17. **MULTIPLE CHOICE** Write a compound inequality for the graph shown below. **G**

F $-2 \leq x < 3$ H $x < -2$ or $x \geq 3$

G $x \leq -2$ or $x \geq 3$ J $-2 < x \leq 3$

Solve each inequality. Then graph the solution set.

18. $|p - 5| < 3$

19. $|2f + 7| \geq 21$

20. $|-4m + 3| \leq 15$

21. $\left|\frac{x-3}{4}\right| > 5$

18–21. See Ch. 5 Answer Appendix.

22. **RETAIL** A sporting goods store is offering a $15 coupon on any pair of shoes.

a. The most and least expensive pairs of shoes are $149.95 and $24.95. What is the range of costs for customers with coupons? $9.95 \leq p \leq 134.95$

b. When buying a pair of $109.95 shoes, you can use a coupon or a 15% discount. Which option is best? **15% discount**

**Graph each inequality.**

23. $y < 4x - 1$

24. $2x + 3y \geq 12$

23–24. See Ch. 5 Answer Appendix.

25. Graph $y > -2x + 5$. Then determine which of the ordered pairs in $\{(-2, 0), (-1, 5), (2, 3), (7, 3)\}$ are in the solution set. **See Ch. 5 Answer Appendix.**
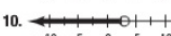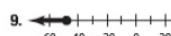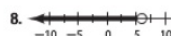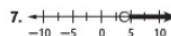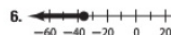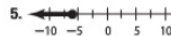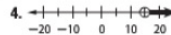
26. $6x + 4y \leq 96$; see Ch. 5 Answer Appendix for graph.

28. **PRESCHOOL** Mrs. Jones is buying new books and puzzles for her preschool classroom. Each book costs $6, and each puzzle costs $4. Write and graph an inequality to determine how many books and puzzles she can buy for $96.
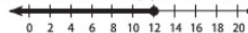
12. $\{y \mid y < 5 \text{ or } y > 14\}$
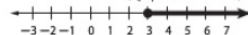
13. $\{h \mid -3 \leq h \leq 9\}$

Practice Test

4.

5.

6.

7.

8.

9.

10.
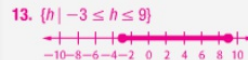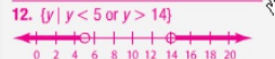
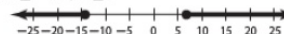15. Let $x =$ the number; $\{x \mid x - 4 \leq 8; x \leq 12\}$.

16. Let $x =$ the number; $\{x \mid 9x - 4 \geq 23; x \geq 3\}$

18. $2 < p < 8$

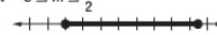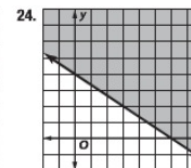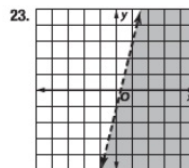19. $f \leq -14$ or $f \geq 7$

20. $-3 \leq m \leq \frac{9}{2}$

21. $x < -17$ or $x > 23$

23.

24.

25. $(2, 3), (7, 3)$

26.