

Pg 58 **Solve each inequality and graph the solution.**

5. $x - 3 > 7$

$x > 10$



6. $-2x \leq 10$

$x \geq -5$



7. $-3x + 2 \geq 11$

$x \leq -3$



8. $\frac{1}{5}x + 10 < 24$

$x < 70$



Pg 59

identify the domain and range. If the relation is not a function, explain why not. Use complete sentences in your answer.

4. Relation: $\{(2, 5), (3, 7), (-1, -1), (5, 11)\}$

The relation is a function. The domain is $\{2, 3, -1, 5\}$. The range is $\{5, 7, -1, 11\}$.

5. Relation: $\{(1, 1), (2, 1), (3, 2), (3, 3)\}$

The relation is not a function. The input 3 has two outputs, 2 and 3.

Identify the input and output for each scenario and decide whether or not it represents a function. Use complete sentences to explain your answer.

6. Each student in your class identifies his or her birthday.

Sample Answer: The inputs are the students' names and the outputs are the corresponding birthdates. This scenario does represent a function because each student can have only one birthday.

7. Each student in your class identifies his or her phone number.

Sample Answer: The inputs are the students' names and the outputs are the corresponding phone numbers. This scenario does not represent a function because a student can have more than one phone number.

8. At a family reunion, each person writes down his or her home address to create a family directory.

Sample Answer: The inputs are the family members' names and the outputs are the home addresses. This scenario represents a function because each family member has only one home address.

Pg 61 Evaluate each function at the specified value. Show your work.

3. $f(x) = 3 + x$ at $x = -5$

$$\begin{aligned} f(-5) &= 3 + (-5) \\ &= -2 \end{aligned}$$

4. $f(x) = 2x - 15$ at $x = 7$

$$\begin{aligned} f(7) &= 2(7) - 15 \\ &= -1 \end{aligned}$$

5. $f(x) = -4 + 3x$ at $x = -1$

$$\begin{aligned} f(-1) &= -4 + 3(-1) \\ &= -7 \end{aligned}$$

You and your friends from Algebra class have volunteered to tutor fifth grade students at the neighborhood elementary school after school. You would like to provide a snack for the fifth graders during tutoring time. You know that you will have to spend \$6.50 on napkins and plates. You will be able to buy pretzels and juice at a rate of \$.40 per student.

6. Find the total cost of providing snacks if 10 fifth graders come to tutoring. Show your work and use a complete sentence in your answer.

$$6.50 + 0.40(10) = 10.50; \text{ It will cost } \$10.50 \text{ to provide snacks for 10 students.}$$

7. Find the total cost of providing snacks if 15 fifth graders come to tutoring. Show your work and use a complete sentence in your answer.

$$6.50 + 0.40(15) = 12.50; \text{ It will cost } \$12.50 \text{ to provide snacks for 15 students.}$$

8. Use function notation to write an equation representing the total cost of providing snacks for any number of students.

$$f(x) = 6.50 + 0.40x$$

Use the distributive property to simplify each algebraic expression.

Pg 63

1. $4(x + 3)$

$$\begin{aligned} 4(x + 3) &= 4x + 4(3) \\ &= 4x + 12 \end{aligned}$$

2. $8(3x - 4)$

$$\begin{aligned} 8(3x - 4) &= 8(3x) - 8(4) \\ &= 24x - 32 \end{aligned}$$

3. $10x - 15x$

$$\begin{aligned} 10x - 15x &= x(10 - 15) \\ &= -5x \end{aligned}$$

4. $5(9 - 2x)$

$$\begin{aligned} 5(9 - 2x) &= 5(9) - 5(2x) \\ &= 45 - 10x \end{aligned}$$

5. $\frac{36 - 24x}{6}$

$$\begin{aligned} \frac{36 - 24x}{6} &= \frac{36}{6} - \frac{24x}{6} \\ &= 6 - 4x \end{aligned}$$

6. $\frac{56 + 7x}{7}$

$$\begin{aligned} \frac{56 + 7x}{7} &= \frac{56}{7} + \frac{7x}{7} \\ &= 8 + x \end{aligned}$$

Use the distributive property in reverse to rewrite each algebraic expression.

7. $5x + 80$

$$\begin{aligned} 5x + 80 &= 5x + 5(16) \\ &= 5(x + 16) \end{aligned}$$

8. $7x - 28$

$$\begin{aligned} 7x - 28 &= 7x - 7(4) \\ &= 7(x - 4) \end{aligned}$$

9. $4x + 18$

$$\begin{aligned} 4x + 18 &= 2(2x) + 2(9) \\ &= 2(2x + 9) \end{aligned}$$

10. $28x - 49$

$$\begin{aligned} 28x - 49 &= 7(4x) - 7(7) \\ &= 7(4x - 7) \end{aligned}$$

11. $-5 - 15x$

$$\begin{aligned} -5 - 15x &= -5(1) - 5(3x) \\ &= -5(1 + 3x) \end{aligned}$$

12. $4x + 7$

cannot be factored

You and two of your friends have decided to start your own company assembling and selling computers. Suppose that you have already sold the first 20 computers that you assembled for \$1800 each. You will then sell each additional computer that you assemble for \$1800.

13. What will your company's total sales be if you sell 10 additional computers? What will your company's total sales be if you sell 50 additional computers? What will your company's total sales be if you sell 100 additional computers? What will your company's total sales be if you sell 200 additional computers?

$$\$54,000; \$126,000; \$216,000; \$396,000$$

Determine whether each decimal value is rational or irrational number. If it is a rational number, write it as a fraction.

- | | | |
|------------------------------------|---|--|
| 4. 0.5 rational; $\frac{1}{2}$ | 5. 0.5555... rational; $\frac{5}{9}$ | 6. 0.151155111555... irrational |
| 7. 0.1 rational; $\frac{1}{10}$ | 8. 0.152542384... irrational | 9. 0.151515... rational; $\frac{5}{33}$ |

Identify the property illustrated by each statement.

- | | |
|---|--|
| 10. $2 = 2$ Reflexive Property of Equality | 11. $3(7) = 7(3)$ Commutative Property of Multiplication |
| 12. $(4 + 7) + (-2) = 4 + (7 + (-2))$ Associative Property of Addition | 13. If $\frac{1}{5} = 0.2$ and $0.2 = 20\%$, then $\frac{1}{5} = 20\%$. Transitive Property of Equality |

14. Identify the property or reason that is used in each step.

- | | |
|---------------------------------|---|
| $3(5 + 1) - 4 = 5(2 - 8) + 44$ | <u>Given problem</u> |
| $15 + 3 - 4 = 5(2 - 8) + 44$ | <u>Distributive Property of Multiplication Over Addition</u> |
| $15 + 3 - 4 = 10 - 40 + 44$ | <u>Distributive Property of Multiplication Over Subtraction</u> |
| $(15 + 3) - 4 = (10 - 40) + 44$ | <u>Associative Property</u> |
| $18 - 4 = -30 + 44$ | <u>Add and subtract.</u> |
| $14 = 14$ | <u>Reflexive Property of Equality</u> |

- | | | |
|---|--|---|
| 1. $3x = 2x + 5$ $x = 5$ | 2. $3x + 2 = 2x + 4$ $x + 2 = 4$ $x = 2$ | 3. $-2x + 1 = 3(x + 2)$ $-2x + 1 = 3x + 6$ $1 = 5x + 6$ $-5 = 5x$ $-1 = x$ |
| 4. $5x - 1 = 7(x - 1)$ $5x - 1 = 7x - 7$ $-1 = 2x - 7$ $6 = 2x$ $3 = x$ | 5. $-x + 4 = -3x + 8$ $2x + 4 = 8$ $2x = 4$ $x = 2$ | 6. $2(10 + 3x) = 4(x - 4)$ $20 + 6x = 4x - 16$ $20 + 2x = -16$ $2x = -36$ $x = -18$ |

As a member of the local teen community group, you and your friends take on the responsibility to analyze the most economical option for flooring for the new center. After all the bids are collected, the two most promising bids are for vinyl flooring and carpeting. The vinyl flooring costs \$31,000 to install, along with a monthly cleaning and maintenance fee of \$175. The carpeting costs \$22,500 to install along with a monthly cleaning and maintenance fee of \$325.

- What is the cost of vinyl flooring for 1 month? What is the cost of vinyl flooring for 10 months? What is the cost of vinyl flooring for 50 months? What is the cost of vinyl flooring for 60 months?
 $\$31,175; \$32,750; \$39,750; \$41,500$
- Write an expression for the cost of vinyl flooring.
 $31,000 + 175m$, where m is the number of months
- What is the cost of carpeting for 1 month? What is the cost of carpeting for 10 months? What is the cost of carpeting for 50 months? What is the cost of carpeting for 60 months?
 $\$22,825; \$25,750; \$38,750; \$42,000$
- Write an expression for the cost of carpeting.
 $22,500 + 325m$, where m is the number of months

Evaluate each expression. Show all your work.

1. $|-13 + 5|$

$$\begin{aligned} |-13 + 5| &= |-8| \\ &= 8 \end{aligned}$$

2. $|6 - 10| \cdot (-2)$

$$\begin{aligned} |6 - 10| \cdot (-2) &= |-4| \cdot (-2) \\ &= 4 \cdot (-2) \\ &= -8 \end{aligned}$$

3. $|(-5)(2)|$

$$\begin{aligned} |(-5)(2)| &= |-10| \\ &= 10 \end{aligned}$$

4. $|-2| + |3|$

$$\begin{aligned} |-2| + |3| &= 2 + 3 \\ &= 5 \end{aligned}$$

5. $|-2 + 3|$

$$\begin{aligned} |-2 + 3| &= |1| \\ &= 1 \end{aligned}$$

6. $\left| \frac{-24}{4} \right|$

$$\begin{aligned} \left| \frac{-24}{4} \right| &= |-6| \\ &= 6 \end{aligned}$$