

Optional Summer Assignment

Course Title: Intensified Algebra 2/Trigonometry

Teacher name: Mrs. Leslie Harris, Mrs. Lianne Jaramillo & Mr. Jason Perry

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Purpose of Assignment:

It is designed to allow you to review the material that you have already covered in your Algebra 1 and Geometry courses. Since the Intensified Algebra 2/Trig curriculum is extensive, completing this assignment will allow you to get a jump start on the course.

Estimated time to complete Assignment: 4-6 hours

Due date and method of assessment for Assignment:

During the second week of school you will turn in this assignment and you will have a quiz on this material. The quiz is on previously learned material, so the assignment is strongly recommended in order to be able to check your understanding of the material.

Instructions for Assignment:

The study guide sections and notes are designed for you to review the old material from Algebra 1 and Geometry. The answers have been included in these sections so you can check your work. These sections will not be collected. **The practice sections are the sections that you will be turning in on the day of your quiz on this material.** The assigned problems are written at the top of each page. All work must be done neatly on your **own paper**. Make sure each page of your work is labeled with the corresponding section number. You must show your work where applicable. Answers to problems must be circled to facilitate grading. Most importantly, the work should be neat!

You must have your own graphing calculator (TI-83 or TI-84) for this course. If you do not currently own one, please purchase one before the start of the school year.

We look forward to seeing you in September!

-Mrs. Harris, Mrs. Jaramillo, and Mr. Perry

1-1 Study Guide and Intervention

Expressions and Formulas

Order of Operations

Order of Operations	<ol style="list-style-type: none"> 1. Simplify the expressions inside grouping symbols. 2. Evaluate all powers. 3. Do all multiplications and divisions from left to right. 4. Do all additions and subtractions from left to right.
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Example 1

Evaluate $[18 - (6 + 4)] \div 2$.

$$\begin{aligned}
 [18 - (6 + 4)] \div 2 &= [18 - 10] \div 2 \\
 &= 8 \div 2 \\
 &= 4
 \end{aligned}$$

Example 2

Evaluate $3x^2 + x(y - 5)$ if $x = 3$ and $y = 0.5$.

Replace each variable with the given value.

$$\begin{aligned}
 3x^2 + x(y - 5) &= 3 \cdot (3)^2 + 3(0.5 - 5) \\
 &= 3 \cdot (9) + 3(-4.5) \\
 &= 27 - 13.5 \\
 &= 13.5
 \end{aligned}$$

Lesson 1-1

Exercises

Find the value of each expression.

1. $14 + (6 \div 2)$

2. $11 - (3 + 2)^2$

3. $2 + (4 - 2)^3 - 6$

4. $9(3^2 + 6)$

5. $(5 + 2^3)^2 - 5^2$

6. $5^2 + \frac{1}{4} + 18 \div 2$

7. $\frac{16 + 2^3 \div 4}{1 - 2^2}$

8. $(7 - 3^2)^2 + 6^2$

9. $20 \div 2^2 + 6$

10. $12 + 6 \div 3 - 2(4)$

11. $14 \div (8 - 20 \div 2)$

12. $6(7) + 4 \div 4 - 5$

13. $8(4^2 \div 8 - 32)$

14. $\frac{6 + 4 \div 2}{4 \div 6 - 1}$

15. $\frac{6 + 9 \div 3 + 15}{8 - 2}$

Evaluate each expression if $a = 8.2$, $b = -3$, $c = 4$, and $d = -\frac{1}{2}$.

16. $\frac{ab}{d}$

17. $5(6c - 8b + 10d)$

18. $\frac{c^2 - 1}{b - d}$

19. $ac - bd$

20. $(b - c)^2 + 4a$

21. $\frac{a}{d} + 6b - 5c$

22. $3\left(\frac{c}{d}\right) - b$

23. $cd + \frac{b}{d}$

24. $d(a + c)$

25. $a + b \div c$

26. $b - c + 4 \div d$

27. $\frac{a}{b + c} - d$

1-1

Study Guide and Intervention

Expressions and Formulas

Order of Operations

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Example 1Evaluate $[18 - (6 + 4)] \div 2$.

$$\begin{aligned}
 [18 - (6 + 4)] \div 2 &= [18 - 10] \div 2 \\
 &= 8 \div 2 \\
 &= 4
 \end{aligned}$$

Example 2Evaluate $3x^2 + x(y - 5)$ if $x = 3$ and $y = 0.5$.

Replace each variable with the given value.

$$\begin{aligned}
 3x^2 + x(y - 5) &= 3 \cdot (3)^2 + 3(0.5 - 5) \\
 &= 3 \cdot (9) + 3(-4.5) \\
 &= 27 - 13.5 \\
 &= 13.5
 \end{aligned}$$

Exercises

Find the value of each expression.

1. $14 + (6 \div 2)$ 17

2. $11 - (3 + 2)^2$ -14

3. $2 + (4 - 2)^3 - 6$ 4

4. $9(3^2 + 6)$ 135

5. $(5 + 2^3)^2 - 5^2$ 144

6. $5^2 + \frac{1}{4} + 18 \div 2$ 34.25

7. $\frac{16 + 2^3 \div 4}{1 - 2^2}$ -6

8. $(7 - 3^2)^2 + 6^2$ 40

9. $20 \div 2^2 + 6$ 11

10. $12 + 6 \div 3 - 2(4)$ 6

11. $14 \div (8 - 20 \div 2)$ -7

12. $6(7) + 4 \div 4 - 5$ 38

13. $8(4^2 \div 8 - 32)$ -240

14. $\frac{6 + 4 \div 2}{4 \div 6 - 1}$ -24

15. $\frac{6 + 9 \div 3 + 15}{8 - 2}$ 4

Evaluate each expression if $a = 8.2$, $b = -3$, $c = 4$, and $d = -\frac{1}{2}$.

16. $\frac{ab}{d}$ 49.2

17. $5(6c - 8b + 10d)$ 215

18. $\frac{c^2 - 1}{b - d}$ -6

19. $ac - bd$ 31.3

20. $(b - c)^2 + 4a$ 81.8

21. $\frac{a}{d} + 6b - 5c$ -54.4

22. $3\left(\frac{c}{d}\right) - b$ -21

23. $cd + \frac{b}{d}$ 4

24. $d(a + c)$ -6.1

25. $a + b \div c$ 7.45

26. $b - c + 4 \div d$ -15

27. $\frac{a}{b + c} - d$ 8.7

1-3

Study Guide and Intervention

Solving Equations

Verbal Expressions to Algebraic Expressions The chart suggests some ways to help you translate word expressions into algebraic expressions. Any letter can be used to represent a number that is not known.

Word Expression	Operation
and, plus, sum, increased by, more than	addition
minus, difference, decreased by, less than	subtraction
times, product, of (as in $\frac{1}{2}$ of a number)	multiplication
divided by, quotient	division

Example 1 Write an algebraic expression to represent 18 less than the quotient of a number and 3.

$$\frac{n}{3} - 18$$

Example 2 Write a verbal sentence to represent $6(n - 2) = 14$.

Six times the difference of a number and two is equal to 14.

Exercises

Write an algebraic expression to represent each verbal expression.

- the sum of six times a number and 25
- four times the sum of a number and 3
- 7 less than fifteen times a number
- the difference of nine times a number and the quotient of 6 and the same number
- the sum of 100 and four times a number
- the product of 3 and the sum of 11 and a number
- four times the square of a number increased by five times the same number
- 23 more than the product of 7 and a number

Write a verbal sentence to represent each equation.

9. $3n - 35 = 79$

10. $2(n^3 + 3n^2) = 4n$

11. $\frac{5n}{n+3} = n - 8$

Study Guide and Intervention

Solving Equations

Verbal Expressions to Algebraic Expressions The chart suggests some ways to help you translate word expressions into algebraic expressions. Any letter can be used to represent a number that is not known.

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Example 1 Write an algebraic expression to represent 18 less than the quotient of a number and 3.
 $\frac{n}{3} - 18$

Example 2 Write a verbal sentence to represent $6(n - 2) = 14$.
 Six times the difference of a number and two is equal to 14.

Exercises

Write an algebraic expression to represent each verbal expression.

- the sum of six times a number and 25 $6n + 25$
- four times the sum of a number and 3 $4(n + 3)$
- 7 less than fifteen times a number $15n - 7$
- the difference of nine times a number and the quotient of 6 and the same number $9n - \frac{6}{n}$
- the sum of 100 and four times a number $100 + 4n$
- the product of 3 and the sum of 11 and a number $3(11 + n)$
- four times the square of a number increased by five times the same number $4n^2 + 5n$
- 23 more than the product of 7 and a number $7n + 23$

Write a verbal sentence to represent each equation.

- $3n - 35 = 79$ The difference of three times a number and 35 is equal to 79.
- $2(n^3 + 3n^2) = 4n$ Twice the sum of the cube of a number and three times the square of a number is equal to four times the number.
- $\frac{5n}{n + 3} = n - 8$ The quotient of five times a number and the

1-4 Study Guide and Intervention

Solving Absolute Value Equations

Absolute Value Expressions The absolute value of a number is the number of units it is from 0 on a number line. The symbol $|x|$ is used to represent the absolute value of a number x .

Absolute Value	<ul style="list-style-type: none"> • Words For any real number a, if a is positive or zero, the absolute value of a is a. If a is negative, the absolute value of a is the opposite of a. • Symbols For any real number a, $a = a$, if $a \geq 0$, and $a = -a$, if $a < 0$.
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Example 1 Evaluate $|-4| - |-2x|$ if $x = 6$.

$$\begin{aligned} |-4| - |-2x| &= |-4| - |-2 \cdot 6| \\ &= |-4| - |-12| \\ &= 4 - 12 \\ &= -8 \end{aligned}$$

Example 2 Evaluate $|2x - 3y|$ if $x = -4$ and $y = 3$.

$$\begin{aligned} |2x - 3y| &= |2(-4) - 3(3)| \\ &= |-8 - 9| \\ &= |-17| \\ &= 17 \end{aligned}$$

Exercises

Evaluate each expression if $w = -4$, $x = 2$, $y = \frac{1}{2}$, and $z = -6$.

1. $|2x - 8|$

2. $|6 + z| - |-7|$

3. $5 + |w + z|$

4. $|x + 5| - |2w|$

5. $|x| - |y| - |z|$

6. $|7 - x| + |3z|$

7. $|w - 4x|$

8. $|wz| - |xy|$

9. $|z| - 3|5yz|$

10. $5|w| + 2|z - 2y|$

11. $|z| - 4|2z + y|$

12. $10 - |xw|$

13. $|6y + z| + |yz|$

14. $3|wx| + \frac{1}{4}|4x + 8y|$

15. $7|yz| - 30$

16. $14 - 2|w - xy|$

17. $|2x - y| + 5y$

18. $|xyz| + |wxz|$

19. $z|z| + x|x|$

20. $12 - |10x - 10y|$

21. $\frac{1}{2}|5z + 8w|$

22. $|yz - 4w| - w$

23. $\frac{3}{4}|wz| + \frac{1}{2}|8y|$

24. $xz - |xz|$

1-4

Study Guide and Intervention

Solving Absolute Value Equations

Absolute Value Expressions The absolute value of a number is the number of units it is from 0 on a number line. The symbol $|x|$ is used to represent the absolute value of a number x .

Absolute Value	• Words	For any real number a , if a is positive or zero, the absolute value of a is a . If a is negative, the absolute value of a is the opposite of a .
	• Symbols	For any real number a , $ a = a$, if $a \geq 0$, and $ a = -a$, if $a < 0$.

Example 1 Evaluate $|-4| - |-2x|$
if $x = 6$.

$$\begin{aligned} |-4| - |-2x| &= |-4| - |-2 \cdot 6| \\ &= |-4| - |-12| \\ &= 4 - 12 \\ &= -8 \end{aligned}$$

Example 2 Evaluate $|2x - 3y|$
if $x = -4$ and $y = 3$.

$$\begin{aligned} |2x - 3y| &= |2(-4) - 3(3)| \\ &= |-8 - 9| \\ &= |-17| \\ &= 17 \end{aligned}$$

Exercises

Evaluate each expression if $w = -4$, $x = 2$, $y = \frac{1}{2}$, and $z = -6$.

1. $|2x - 8|$ 4

2. $|6 + z| - |-7|$ -7

3. $5 + |w + z|$ 15

4. $|x + 5| - |2w|$ -1

5. $|x| - |y| - |z|$ $-4\frac{1}{2}$

6. $|7 - x| + |3x|$ 11

7. $|w - 4x|$ 12

8. $|wz| - |xy|$ 23

9. $|z| - 3|5yz|$ -39

10. $5|w| + 2|z - 2y|$ 34

11. $|z| - 4|2z + y|$ -40

12. $10 - |xw|$ 2

13. $|6y + z| + |yz|$ 6

14. $3|wx| + \frac{1}{4}|4x + 8y|$ 27

15. $7|yz| - 30$ -9

16. $14 - 2|w - xy|$ 4

17. $|2x - y| + 5y$ 6

18. $|xyz| + |wxz|$ 54

19. $z|z| + x|x|$ -32

20. $12 - |10x - 10y|$ -3

21. $\frac{1}{2}|5z + 8w|$ 31

22. $|yz - 4w| - w$ 17

23. $\frac{3}{4}|wz| + \frac{1}{2}|8y|$ 20

24. $xz - |xz|$ -24

1-5 Study Guide and Intervention

Solving Inequalities

Solve Inequalities. The following properties can be used to solve inequalities.

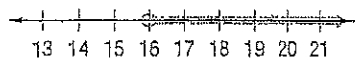
Addition and Subtraction Properties for Inequalities	Multiplication and Division Properties for Inequalities
For any real numbers a , b , and c : 1. If $a < b$, then $a + c < b + c$ and $a - c < b - c$. 2. If $a > b$, then $a + c > b + c$ and $a - c > b - c$.	For any real numbers a , b , and c , with $c \neq 0$: 1. If c is positive and $a < b$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$. 2. If c is positive and $a > b$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$. 3. If c is negative and $a < b$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$. 4. If c is negative and $a > b$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$.

These properties are also true for \leq and \geq .

Example 1 Solve $2x + 4 > 36$. Then graph the solution set on a number line.

$$\begin{aligned} 2x + 4 - 4 &> 36 - 4 \\ 2x &> 32 \\ x &> 16 \end{aligned}$$

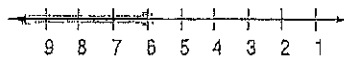
The solution set is $\{x | x > 16\}$.



Example 2 Solve $17 - 3w \geq 35$. Then graph the solution set on a number line.

$$\begin{aligned} 17 - 3w &\geq 35 \\ 17 - 3w - 17 &\geq 35 - 17 \\ -3w &\geq 18 \\ w &\leq -6 \end{aligned}$$

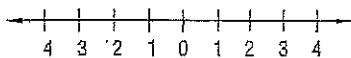
The solution set is $(-\infty, -6]$.



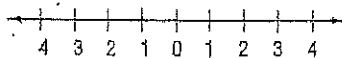
Exercises

Solve each inequality. Describe the solution set using set-builder or interval notation. Then graph the solution set on a number line.

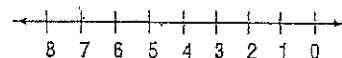
1. $7(7a - 9) \leq 84$



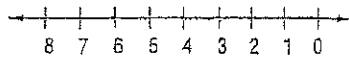
2. $3(9z + 4) > 35z - 4$



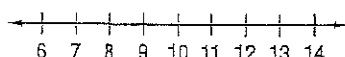
3. $5(12 - 3n) < 165$



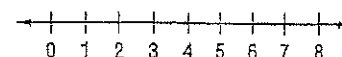
4. $18 - 4k < 2(k + 21)$



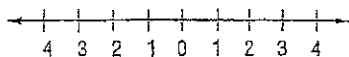
5. $4(b - 7) + 6 < 22$



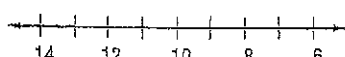
6. $2 + 3(m + 5) \geq 4(m + 3)$



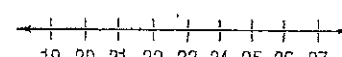
7. $4x - 2 > -7(4x - 2)$



8. $\frac{1}{3}(2y - 3) > y + 2$



9. $2.5d + 15 \leq 75$



1-5 Study Guide and Intervention

Solving Inequalities

Solve Inequalities The following properties can be used to solve inequalities.

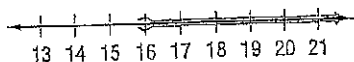
Addition and Subtraction Properties for Inequalities	Multiplication and Division Properties for Inequalities
For any real numbers a , b , and c : 1. If $a < b$, then $a + c < b + c$ and $a - c < b - c$. 2. If $a > b$, then $a + c > b + c$ and $a - c > b - c$.	For any real numbers a , b , and c , with $c \neq 0$: 1. If c is positive and $a < b$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$. 2. If c is positive and $a > b$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$. 3. If c is negative and $a < b$, then $ac > bc$ and $\frac{a}{c} > \frac{b}{c}$. 4. If c is negative and $a > b$, then $ac < bc$ and $\frac{a}{c} < \frac{b}{c}$.

These properties are also true for \leq and \geq .

Example 1 Solve $2x + 4 > 36$. Then graph the solution set on a number line.

$$\begin{aligned} 2x + 4 - 4 &> 36 - 4 \\ 2x &> 32 \\ x &> 16 \end{aligned}$$

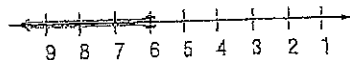
The solution set is $\{x \mid x > 16\}$.



Example 2 Solve $17 - 3w \geq 35$. Then graph the solution set on a number line.

$$\begin{aligned} 17 - 3w &\geq 35 \\ 17 - 3w - 17 &\geq 35 - 17 \\ -3w &\geq 18 \\ w &\leq -6 \end{aligned}$$

The solution set is $(-\infty, -6]$.

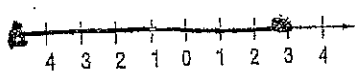


Exercises

Solve each inequality. Describe the solution set using set-builder or interval notation. Then graph the solution set on a number line.

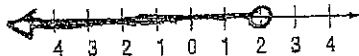
1. $7(7a - 9) \leq 84$

$\{a \mid a \leq 3\}$ or $(-\infty, 3]$



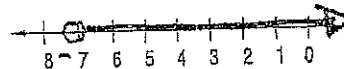
2. $3(9z + 4) > 35z - 4$

$\{z \mid z < 2\}$ or $(-\infty, 2)$



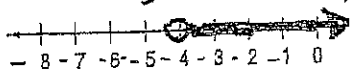
3. $5(12 - 3n) < 165$

$\{n \mid n > -7\}$ or $(-7, +\infty)$



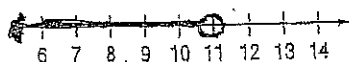
4. $18 - 4k < 2(k + 21)$

$\{k \mid k > -4\}$ or $(-4, +\infty)$



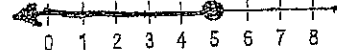
5. $4(b - 7) + 6 < 22$

$\{b \mid b < 11\}$ or $(-\infty, 11)$



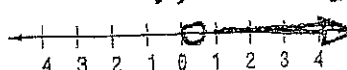
6. $2 + 3(m + 5) \geq 4(m + 3)$

$\{m \mid m \leq 5\}$ or $(-\infty, 5]$



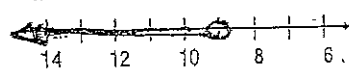
7. $4x - 2 > -7(4x - 2)$

$\{x \mid x > \frac{1}{2}\}$ or $(\frac{1}{2}, +\infty)$



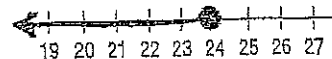
8. $\frac{1}{3}(2y - 3) > y + 2$

$\{y \mid y < -9\}$ or $(-\infty, -9)$



9. $2.5d + 15 \leq 75$

$\{d \mid d \leq 24\}$ or $(-\infty, 24]$

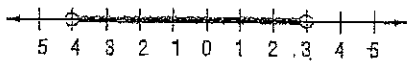
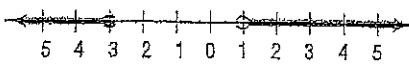


1-6 Study Guide and Intervention

Solving Compound and Absolute Value Inequalities

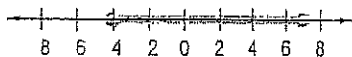
Lesson 1-6

Compound Inequalities A compound inequality consists of two inequalities joined by the word *and* or the word *or*. To solve a compound inequality, you must solve each part separately.

And Compound Inequalities	Example: $x > -4$ and $x < 3$ 	The graph is the intersection of solution sets of two inequalities.
Or Compound Inequalities	Example: $x \leq -3$ or $x > 1$ 	The graph is the union of solution sets of two inequalities.

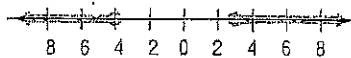
Example 1 Solve $-3 \leq 2x + 5 \leq 19$.
Graph the solution set on a number line.

$$\begin{aligned} -3 &\leq 2x + 5 & \text{and} & & 2x + 5 &\leq 19 \\ -8 &\leq 2x & & & 2x &\leq 14 \\ -4 &\leq x & & & x &\leq 7 \\ -4 &\leq x &\leq 7 & & & \end{aligned}$$



Example 2 Solve $3y - 2 \geq 7$ or $2y - 1 \leq -9$. Graph the solution set on a number line.

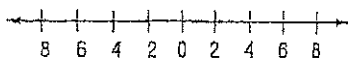
$$\begin{aligned} 3y - 2 &\geq 7 & \text{or} & & 2y - 1 &\leq -9 \\ 3y &\geq 9 & \text{or} & & 2y &\leq -9 \\ y &\geq 3 & \text{or} & & y &\leq -4 \end{aligned}$$



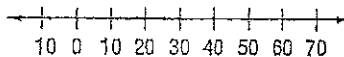
Exercises

Solve each inequality. Graph the solution set on a number line.

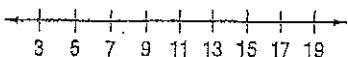
1. $-10 < 3x + 2 \leq 14$



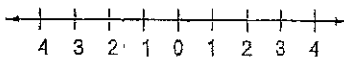
2. $3a + 8 < 28$ or $\frac{1}{4}a - 6 > 7$



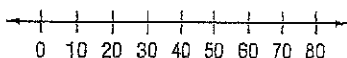
3. $18 < 4x - 10 < 50$



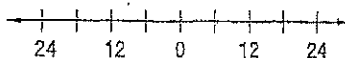
4. $5k + 2 < -13$ or $8k - 1 > 19$



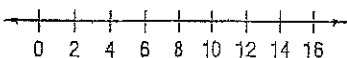
5. $100 \leq 5y - 45 \leq 225$



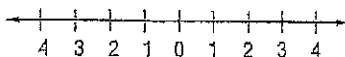
6. $\frac{2}{3}b - 2 > 10$ or $\frac{3}{4}b + 5 < -4$



7. $22 < 6w - 2 < 82$



8. $4d - 1 > -9$ or $2d + 5 < 11$



1-6

Study Guide and Intervention

Solving Compound and Absolute Value Inequalities

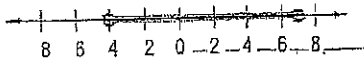
Compound Inequalities A compound inequality consists of two inequalities joined by the word *and* or the word *or*. To solve a compound inequality, you must solve each part separately.

And Compound Inequalities	Example: $x > -4$ and $x < 3$ 	The graph is the intersection of solution sets of two inequalities.
Or Compound Inequalities	Example: $x \leq -3$ or $x > 1$ 	The graph is the union of solution sets of two inequalities.

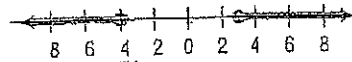
Example 1Solve $-3 \leq 2x + 5 \leq 19$.

Graph the solution set on a number line.

$$\begin{aligned} -3 &\leq 2x + 5 & \text{and} & & 2x + 5 &\leq 19 \\ -8 &\leq 2x & & & 2x &\leq 14 \\ -4 &\leq x & & & x &\leq 7 \\ -4 &\leq x \leq 7 \end{aligned}$$

**Example 2**Solve $3y - 2 \geq 7$ or $2y - 1 \leq -9$. Graph the solution set on a number line.

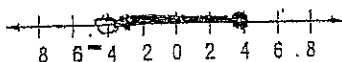
$$\begin{aligned} 3y - 2 &\geq 7 & \text{or} & & 2y - 1 &\leq -9 \\ 3y &\geq 9 & \text{or} & & 2y &\leq -8 \\ y &\geq 3 & \text{or} & & y &\leq -4 \end{aligned}$$

**Exercises**

Solve each inequality. Graph the solution set on a number line.

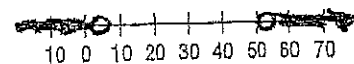
1. $-10 < 3x + 2 \leq 14$

$\{x \mid -4 < x \leq 4\}$



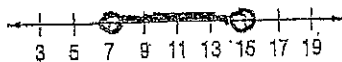
2. $3a + 8 < 28$ or $\frac{1}{4}a - 6 > 7$

$\{a \mid a < 5 \text{ or } a > 52\}$



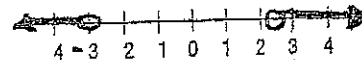
3. $18 < 4x - 10 < 50$

$\{x \mid 7 < x < 15\}$



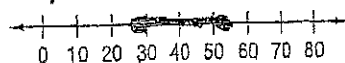
4. $5k + 2 < -13$ or $8k - 1 > 19$

$\{k \mid k < -3 \text{ or } k > 2.5\}$



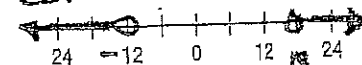
5. $100 \leq 5y - 45 \leq 225$

$\{y \mid 29 \leq y \leq 54\}$



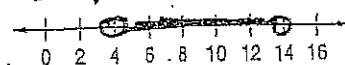
6. $\frac{2}{3}b - 2 > 10$ or $\frac{8}{4}b + 5 < -4$

$\{b \mid b < -12 \text{ or } b > 18\}$



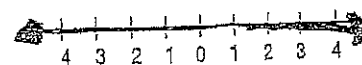
7. $22 < 6w - 2 < 82$

$\{w \mid 4 < w < 14\}$



8. $4d - 1 > -9$ or $2d + 5 < 11$

$\{\text{all real numbers}\}$



Algebra 2 Intensified: 2.1 Notes - Relations and Functions

Vocabulary:

Relation – a set of ordered pairs.

$$\text{Ex) } \{(0,1), (-1,2), (3,5)\}$$

Domain – the x-coordinates. (i.e. the input)

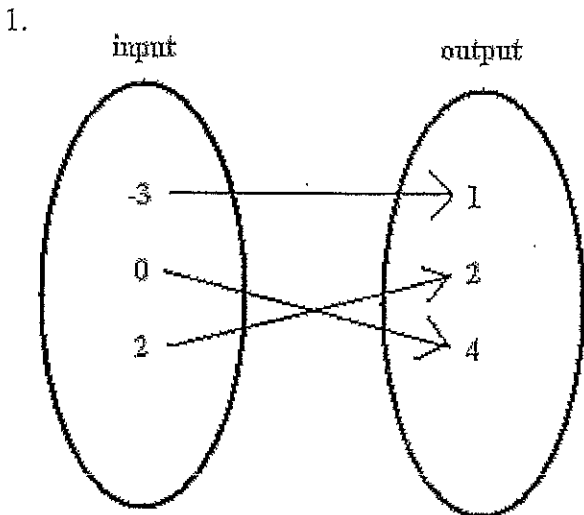
From the above example, the domain is $\{-1, 0, 3\}$.

Range – the y-coordinates. (i.e. the output)

From the above example, the range is $\{1, 2, 5\}$.

Function – a special type of relation in which each element of the domain is paired with exactly one element of the range. In other words, “x” cannot repeat but y can.

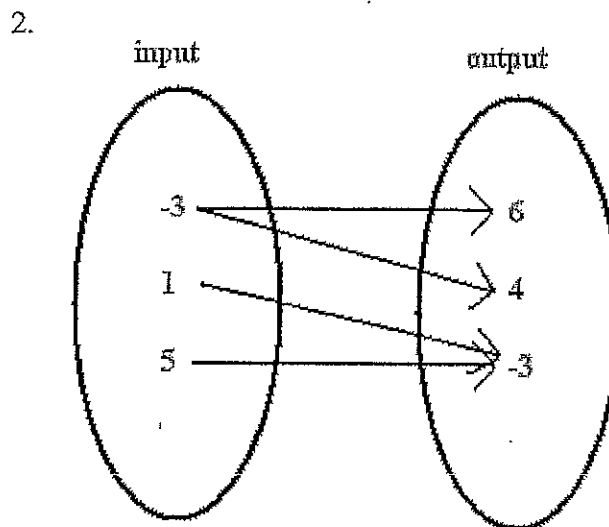
Examples) From the following mappings, determine whether each is a function. Then, list the domain and range.



This is a function because there is exactly one output for each input.

The input is the domain. The domain of this function is $\{-3, 0, 2\}$.

The output is the range. The range of this function is $\{1, 2, 4\}$.



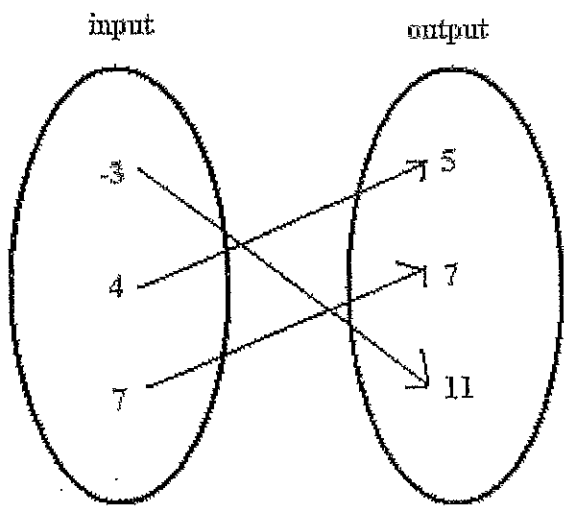
This is not a function.

The input is the domain. The domain of this relation is $\{-3, 1, 5\}$.

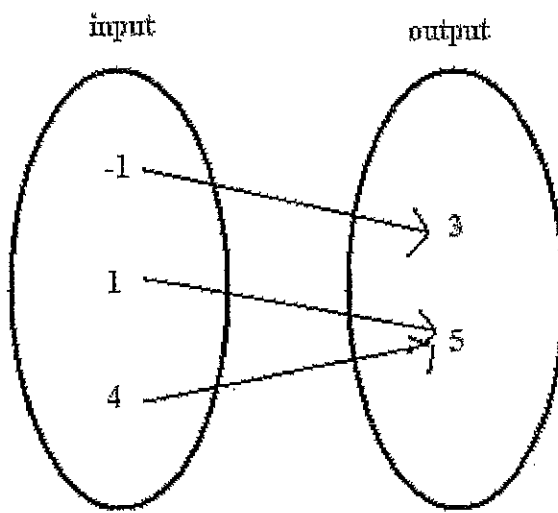
The output is the range. The range of this relation is $\{-3, 4, 6\}$

One-to-one function – A function where each element of the range is paired with exactly one element of the domain. In other words, both “ x ” and “ y ” cannot repeat.

Examples)

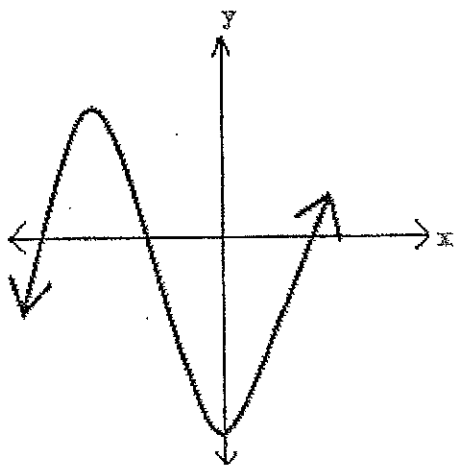


This mapping is a one-to-one function because for each x value, there is exactly one y value AND for each y value, there is exactly one x value.

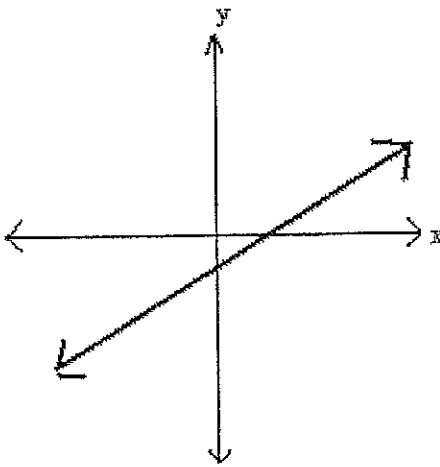


This mapping is a function but it's not a one-to-one function because both 1 and 4 map to 5 in the output.

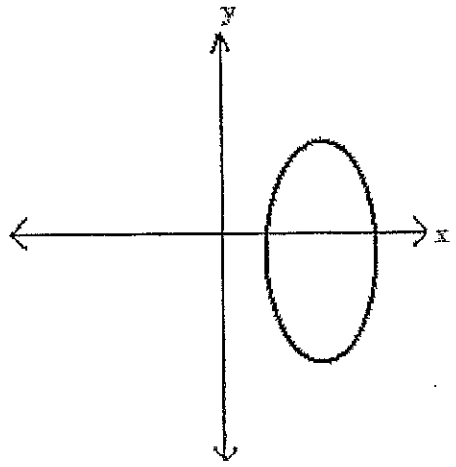
Vertical Line Test – This is a test to tell whether a relation is a function by looking at the graph. If any given vertical line that you draw through a graph touches the graph in more than one place, then the graph does not represent a function. Use the vertical line test to determine whether the following graphs represent functions.



This is a function but it's not one-to-one. The horizontal line test is a tool to determine whether a function is one-to-one.



This is a one-to-one function. It passes both the vertical line test and the horizontal line test.



This is not a function

More Vocabulary:

When an equation represents a function, the variable (usually x) whose values make up the domain is called the independent variable. The other variable (usually y) is called the dependent variable because its values depend on x .

Function Notation:

The equation $y = 2x + 1$ written in function notation is $f(x) = 2x + 1$.

$f(x)$, read as “ f of x ” stands for the words “ f as a function of x ”.

It does not represent multiplication...it's not f times x .

$f(x)$ is simply a replacement for the variable y .

Example) Given $f(x) = x^3 - 3$ and $g(x) = -x^2 + x + 2$, find the following.

a. $f(-2)$

This is telling you to substitute -2 into x in the $f(x)$ function. See below.

$$f(x) = x^3 - 3$$

$$\begin{aligned} f(-2) &= (-2)^3 - 3 \\ &= -8 - 3 \\ &= -11 \end{aligned}$$

-11 is the answer.

b. $g(-1)$

This is telling you to substitute -1 into x in the $g(x)$ function. See below.

$$g(x) = -x^2 + x + 2$$

$$\begin{aligned} g(-1) &= -(-1)^2 + (-1) + 2 \\ &= -1 - 1 + 2 \\ &= 0 \end{aligned}$$

0 is the answer.

c. $f(2t)$

This is telling you to substitute $2t$ into x in the $f(x)$ function. See below.

$$f(x) = x^3 - 3$$

$$\begin{aligned} f(2t) &= (2t)^3 - 3 \\ &= 8t^3 - 3 \end{aligned}$$

$8t^3 - 3$ is the answer.

Example) Given $h(x) = 2x^2 - x - 4$, find the following.

a. $h(-1)$

$$\begin{aligned}h(-1) &= 2(-1)^2 - (-1) - 4 \\ &= 2(1) + 1 - 4 \\ &= 2 + 1 - 4 \\ &= -1\end{aligned}$$

-1 is the answer.

b. $h(5)$

$$\begin{aligned}h(5) &= 2(5)^2 - (5) - 4 \\ &= 2(25) - 5 - 4 \\ &= 50 - 5 - 4 \\ &= 41\end{aligned}$$

41 is the answer.

c. $h(3y)$

$$\begin{aligned}h(3y) &= 2(3y)^2 - (3y) - 4 \\ &= 2(9y^2) - 3y - 4 \\ &= 18y^2 - 3y - 4\end{aligned}$$

$18y^2 - 3y - 4$ is the answer.

Algebra 2 Intensified: 2.2 Notes

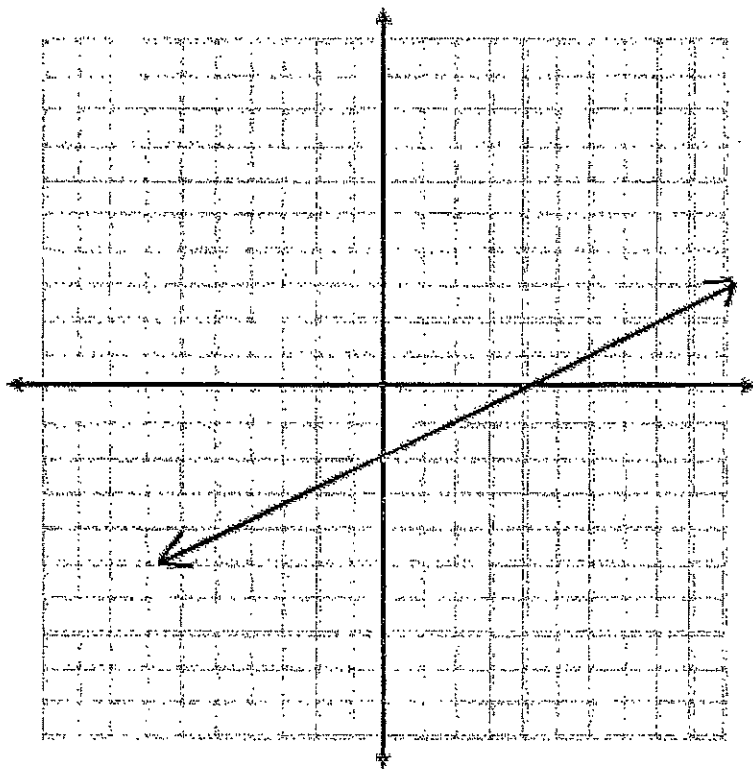
x- and y-intercepts of Linear Equations

Vocabulary:

x-intercept – where a graph crosses the x-axis.

y-intercept – where a graph crosses the y-axis.

Example 1) Identify the x-intercept and y-intercept of the graph below.



The x-intercept is 4.

The y-intercept is -2 .

They can also be written as coordinate points. See below.

The x-intercept can be written as $(4, 0)$.

The y-intercept can be written as $(0, -2)$.

Example 2) Find the x- and y-intercepts. Then, use them to graph the line.

$$3x - 4y + 12 = 0$$

First, put the equation in standard form ($Ax + By = C$)

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

To find the x-intercept, substitute 0 into y and solve.

To find the y-intercept, substitute 0 into x and solve.

x-intercept

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

$$3x - 4(0) = -12$$

$$3x = -12$$

$$x = -4$$

$(-4, 0)$

y-intercept

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

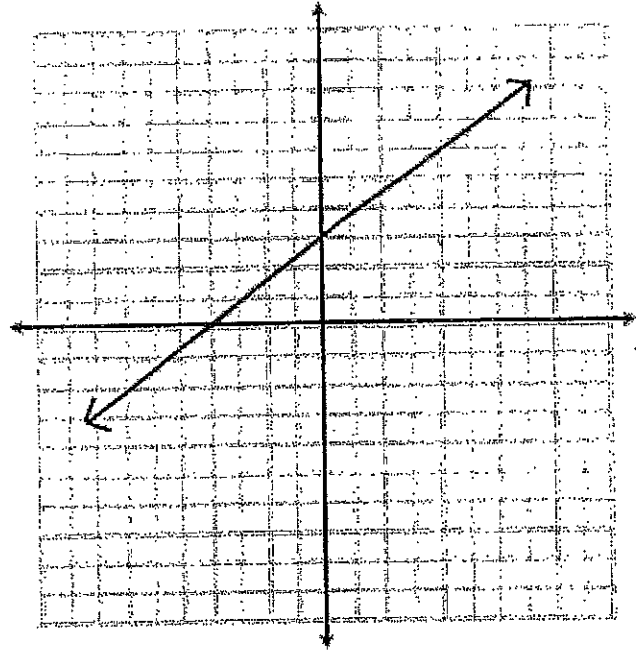
$$3(0) - 4y = -12$$

$$-4y = -12$$

$$y = 3$$

$(0, 3)$

Graph:



Example 3) Find the x- and y-intercepts. Then, use them to graph the line.

$$-2x + y = 4$$

x-intercept

$$-2x + y = 4$$

$$-2x + 0 = 4$$

$$-2x = 4$$

$$x = -2$$

$(-2, 0)$

y-intercept

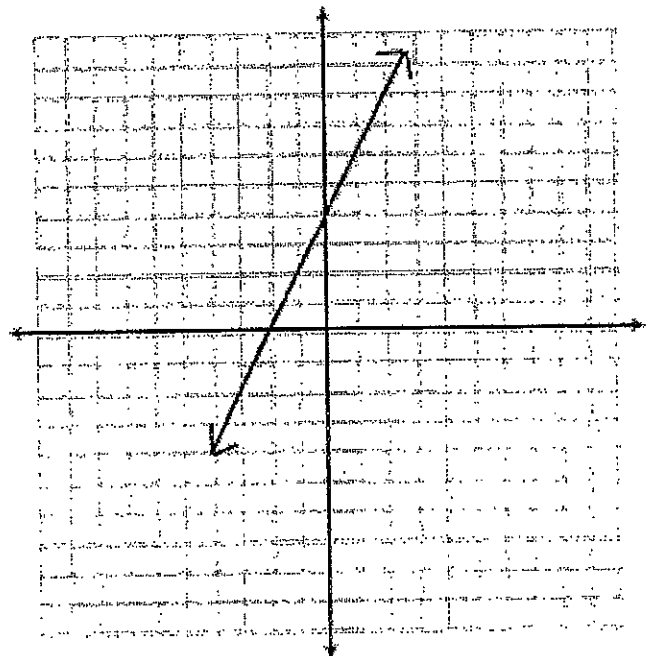
$$-2x + y = 4$$

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

$$y = 4$$

$(0, 4)$

Graph:



Algebra 2 Intensified: 2.3 and 2.4 Notes

Slope and Writing Linear Equations

Recall:

Slope-Intercept Form

$$y = mx + b$$

where m is the slope
and b is the y -intercept.

Point-Slope Form

$$y - y_1 = m(x - x_1)$$

where m is the slope
and (x_1, y_1) is the given point.

Note: In this lesson, we will use point-slope form.

Example 1) Write the equation of the line in slope-intercept form with a slope of -3 passing through $(1, 2)$.

$$y - y_1 = m(x - x_1)$$

Substitute

$$y - 2 = -3(x - 1)$$

Distribute

$$y - 2 = -3x + 3$$

$y = -3x + 5$ is the answer.

$$y = -3x + 5$$

Solve for y

Example 2) Write the equation of the line in slope-intercept form with a slope of $-\frac{3}{2}$ passing through $(-4, 1)$.

$$y - y_1 = m(x - x_1)$$

$$y - 1 = -\frac{3}{2}(x + 4)$$

$$y - 1 = -\frac{3}{2}x - 6$$

$y = -\frac{3}{2}x - 5$ is the answer.

$$y = -\frac{3}{2}x - 5$$

Example 3) Write the equation of the line in slope-intercept form passing through $(-1, 3)$ and $(3, -5)$.
Then graph it.

First, you need to find the slope by using the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$

Second, substitute the slope and one of the points (it doesn't matter which point you use) in the equation

$$y - y_1 = m(x - x_1)$$

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-5 - 3}{3 - (-1)} = \frac{-8}{4} = -2$$

$$m = -2$$

$$y - y_1 = m(x - x_1)$$

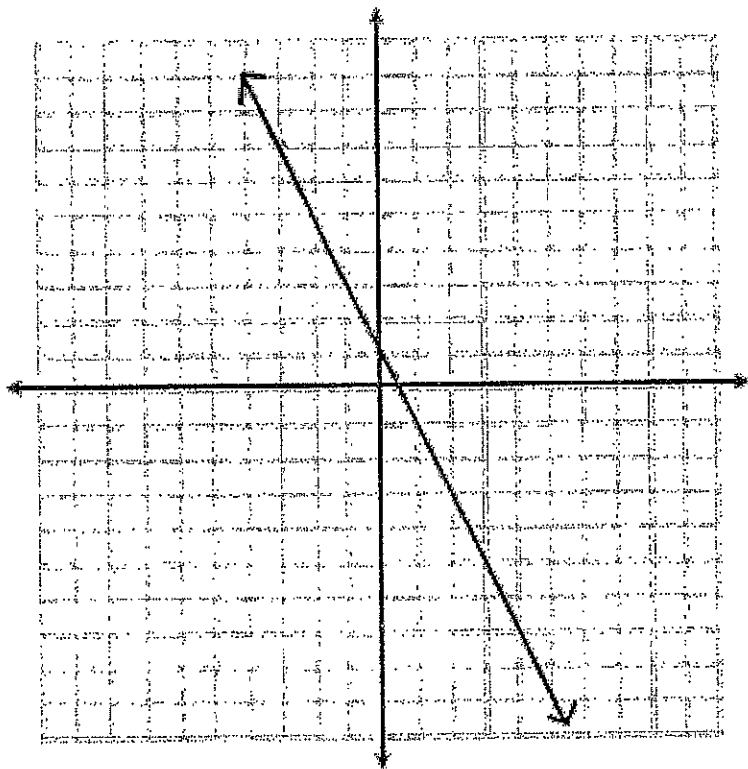
$$y - 3 = -2(x + 1)$$

$$y - 3 = -2x - 2$$

$$y = -2x + 1$$

$y = -2x + 1$ is the answer.

Graph:



Example 4) Write the equation of the line passing through $(2, -1)$ that is parallel to $2x + 3y = 6$.

Recall that parallel lines have the same slope. So, first you must solve $2x + 3y = 6$ for y to find the slope.

$$2x + 3y = 6$$

$$3y = -2x + 6$$

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

So the slope is $-\frac{2}{3}$.

Now use $m = -\frac{2}{3}$ and $(2, -1)$ in $y - y_1 = m(x - x_1)$

$$y - y_1 = m(x - x_1)$$

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

$$y + 1 = -\frac{2}{3}x + \frac{4}{3}$$

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

$$y = -\frac{2}{3}x + \frac{1}{3} \text{ is the answer.}$$

Example 5) Write the equation of the line with the following criteria:

The line is perpendicular to $3x - 2y = 24$

$3x - 2y = 24$ intersects the line at its x-intercept.

Recall that perpendicular slopes are opposite reciprocals, for example, $\frac{5}{2}$ and $-\frac{2}{5}$

So, first you must solve $3x - 2y = 24$ for y to find the slope.

$$3x - 2y = 24$$

$$-2y = -3x + 24$$

$$y = \frac{3}{2}x - 12$$

So the slope is $\frac{3}{2}$. The perpendicular slope is $-\frac{2}{3}$

Now, you must find the x-intercept of $3x - 2y = 24$ to find out which point the line passes through.

$$3x - 2y = 24$$

$$3x - 2(0) = 24$$

$$3x = 24$$

$$x = 8$$

$(8, 0)$ is the x-intercept so now use $m = -\frac{2}{3}$ and $(8, 0)$ in the equation $y - y_1 = m(x - x_1)$

$$y - y_1 = m(x - x_1)$$

$$y - 0 = -\frac{2}{3}(x - 8)$$

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

Example 6) Write and graph the equation of the line passing through $(3, -2)$ and perpendicular to $y = 1$.

For the line $y = 1$, the slope is 0. Therefore, the perpendicular slope is undefined and the line passes through

$(3, -2)$. So the line is $x = 3$

1-1 Practice

Expressions and Formulas

Find the value of each expression.

1. $3(4 - 7) - 11$

2. $4(12 - 4^2)$

3. $1 + 2 - 3(4) \div 2$

4. $12 - [20 - 2(6^2 \div 3 \times 2^2)]$

5. $20 \div (5 - 3) + 5^2(3)$

6. $(-2)^3 - (3)(8) + (5)(10)$

7. $18 - (5 - [34 - (17 - 11)])$

8. $[4(5 - 3) - 2(4 - 8)] \div 16$

9. $\frac{1}{2}[6 - 4^2]$

10. $\frac{1}{4}[-5 + 5(-3)]$

11. $\frac{-8(13 - 37)}{6}$

12. $\frac{(-8)^2}{5 - 9} - (-1)^2 + 4(-9)$

Evaluate each expression if $a = \frac{3}{4}$, $b = -8$, $c = -2$, $d = 3$, and $e = \frac{1}{3}$.

13. $ab^2 - d$

14. $(c + d)b$

15. $\frac{ab}{c} + d^2$

16. $\frac{d(b - c)}{ac}$

17. $(b - de)e^2$

18. $ac^3 - b^2de$

19. $-b[a + (c - d)^2]$

20. $\frac{ac^4}{d} - \frac{c}{e^2}$

21. $9bc - \frac{1}{e}$

22. $2ab^2 - (d^3 - c)$

23. TEMPERATURE The formula $F = \frac{9}{5}C + 32$ gives the temperature in degrees

Fahrenheit for a given temperature in degrees Celsius. What is the temperature in degrees Fahrenheit when the temperature is -40 degrees Celsius?

24. PHYSICS The formula $h = 120t - 16t^2$ gives the height h in feet of an object t seconds after it is shot upward from Earth's surface with an initial velocity of 120 feet per second. What will the height of the object be after 6 seconds?

25. AGRICULTURE Faith owns an organic apple orchard. From her experience the last few seasons, she has developed the formula $P = 20x - 0.01x^2 - 240$ to predict her profit P in dollars this season if her trees produce x bushels of apples. What is Faith's predicted profit this season if her orchard produces 300 bushels of apples?

1-2 Practice

Properties of Real Numbers

Name the sets of numbers to which each number belongs.

1. 6425

2. $\sqrt{7}$

3. 2π

4. 0

5. $\sqrt{\frac{25}{36}}$

6. $-\sqrt{16}$

7. -35

8. -31.8

Name the property illustrated by each equation.

9. $5x \cdot (4y + 3x) = 5x \cdot (3x + 4y)$

10. $7x + (9x + 8) = (7x + 9x) + 8$

11. $5(3x + y) = 5(3x + 1y)$

12. $7n + 2n = (7 + 2)n$

13. $3(2x)y = (3 \cdot 2)(xy)$

14. $3x \cdot 2y = 3 \cdot 2 \cdot x \cdot y$

15. $(6 + -6)y = 0y$

16. $\frac{1}{4} \cdot 4y = 1y$

17. $5(x + y) = 5x + 5y$

18. $4n + 0 = 4n$

Name the additive inverse and multiplicative inverse for each number.

19. 0.4

20. -1.6

21. $-\frac{11}{16}$

22. $5\frac{5}{6}$

Simplify each expression.

23. $5x - 3y - 2x + 3y$

24. $-11a - 13b + 7a - 3b$

25. $8x - 7y - (3 - 6y)$

26. $4c - 2c - (4c + 2c)$

27. $3(r - 10s) - 4(7s + 2r)$

28. $\frac{1}{5}(10a - 15) + \frac{1}{2}(8 + 4a)$

29. $2(4 - 2x + y) - 4(5 + x - y)$

30. $\frac{5}{6}\left(\frac{3}{5}x + 12y\right) - \frac{1}{4}(2x - 12y)$

31. TRAVEL Olivia drives her car at 60 miles per hour for t hours. Ian drives his car at 50 miles per hour for $(t + 2)$ hours. Write a simplified expression for the sum of the distances traveled by the two cars.

32. NUMBER THEORY Use the properties of real numbers to tell whether the following statement is true or false: If $a > b$, it follows that $a\left(\frac{1}{a}\right) > b\left(\frac{1}{b}\right)$. Explain your reasoning.

1-3 Practice

Solving Equations

Write an algebraic expression to represent each verbal expression.

1. 2 more than the quotient of a number and 5
2. the sum of two consecutive integers
3. 5 times the sum of a number and 1
4. 1 less than twice the square of a number

Write a verbal expression to represent each equation.

5. $5 - 2x = 4$
6. $3y = 4y^3$
7. $3c = 2(c - 1)$
8. $\frac{m}{5} = 3(2m + 1)$

Name the property illustrated by each statement.

9. If $t - 13 = 52$, then $52 = t - 13$.
10. If $8(2q + 1) = 4$, then $2(2q + 1) = 1$.
11. If $h + 12 = 22$, then $h = 10$.
12. If $4m = -15$, then $-12m = 45$.

Solve each equation. Check your solution.

13. $14 = 8 - 6r$
14. $9 + 4n = -59$
15. $\frac{3}{4} - \frac{1}{2}n = \frac{5}{8}$
16. $\frac{5}{6}s + \frac{3}{4} = \frac{11}{12}$
17. $-1.6r + 5 = -7.8$
18. $6x - 5 = 7 - 9x$
19. $5(6 - 4v) = v + 21$
20. $6y - 5 = -3(2y + 1)$

Solve each equation or formula for the specified variable.

21. $E = mc^2$, for m
22. $c = \frac{2d + 1}{3}$, for d
23. $h = vt - gt^2$, for v
24. $E = \frac{1}{2}Iw^2 + U$, for I

Define a variable, write an equation, and solve the problem.

25. **GEOMETRY** The length of a rectangle is twice the width. Find the width if the perimeter is 60 centimeters.
26. **GOLF** Luis and three friends went golfing. Two of the friends rented clubs for \$6 each. The total cost of the rented clubs and the green fees for each person was \$76. What was the cost of the green fees for each person?

1-4 Practice**Solving Absolute Value Equations**

Evaluate each expression if $a = -1$, $b = -8$, $c = 5$, and $d = -1.4$.

1. $|6a|$

2. $|2b + 4|$

3. $-|10d + a|$

4. $|17c| + |3b - 5|$

5. $-6|10a - 12|$

6. $|2b - 1| - |-8b + 5|$

7. $|5a - 7| + |3c - 4|$

8. $|1 - 7c| - |a|$

9. $-3|0.5c + 2| - |-0.5b|$

10. $|4d| + |5 - 2a|$

11. $|a - b| + |b - a|$

12. $|2 - 2d| - 3|b|$

Solve each equation. Check your solutions.

13. $|n - 4| = 13$

14. $|x - 13| = 2$

15. $|2y - 3| = 29$

16. $7|x + 3| = 42$

17. $|3u - 6| = 42$

18. $|5x - 4| = -6$

19. $-3|4x - 9| = 24$

20. $-6|5 - 2y| = -9$

21. $|8 + p| = 2p - 3$

22. $|4w - 1| = 5w + 37$

23. $4|2y - 7| + 5 = 9$

24. $-2|7 - 3y| - 6 = -14$

25. $2|4 - s| = -3s$

26. $5 - 3|2 + 2w| = -7$

27. $5|2r + 3| - 5 = 0$

28. $3 - 5|2d - 3| = 4$

29. **WEATHER** A thermometer comes with a guarantee that the stated temperature differs from the actual temperature by no more than 1.5 degrees Fahrenheit. Write and solve an equation to find the minimum and maximum actual temperatures when the thermometer states that the temperature is 87.4 degrees Fahrenheit.

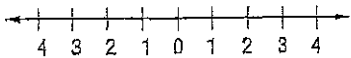
30. **OPINION POLLS** Public opinion polls reported in newspapers are usually given with a margin of error. For example, a poll with a margin of error of $\pm 5\%$ is considered accurate to within plus or minus 5% of the actual value. A poll with a stated margin of error of $\pm 3\%$ predicts that candidate Tonwe will receive 51% of an upcoming vote. Write and solve an equation describing the minimum and maximum percent of the vote that candidate Tonwe is expected to receive.

1-5 Practice

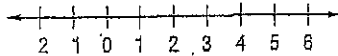
Solving Inequalities

Solve each inequality. Describe the solution set using set-builder or interval notation. Then, graph the solution set on a number line.

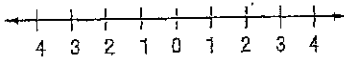
1. $8x - 6 \geq 10$



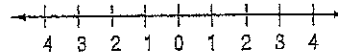
2. $23 - 4u < 11$



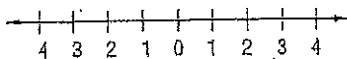
3. $-16 - 8r \geq 0$



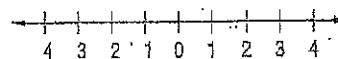
4. $14s < 9s + 5$



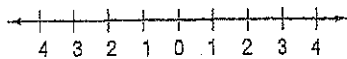
5. $9x - 11 > 6x - 9$



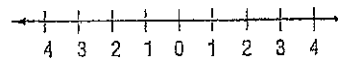
6. $-3(4w - 1) > 18$



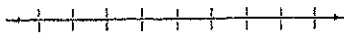
7. $1 - 8u \leq 3u - 10$



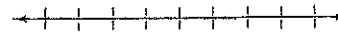
8. $17.5 < 19 - 2.5x$



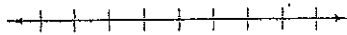
9. $9(2r - 5) - 3 < 7r - 4$



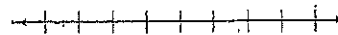
10. $1 + 5(x - 8) \leq 2 - (x + 5)$



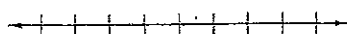
11. $\frac{4x - 3}{2} \geq -3.5$



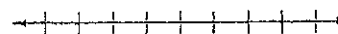
12. $q - 2(2 - q) \leq 0$



13. $-36 - 2(w + 77) > -4(2w + 52)$



14. $4n - 5(n - 3) > 3(n + 1) - 4$



Define a variable and write an inequality for each problem. Then solve.

15. Twenty less than a number is more than twice the same number.

16. Four times the sum of twice a number and -3 is less than 5.5 times that same number.

17. **HOTELS** The Lincoln's hotel room costs \$90 a night. An additional 10% tax is added. Hotel parking is \$12 per day. The Lincoln's expect to spend \$30 in tips during their stay. Solve the inequality $90x + 90(0.1)x + 12x + 30 \leq 600$ to find how many nights the Lincoln's can stay at the hotel without exceeding total hotel costs of \$600.

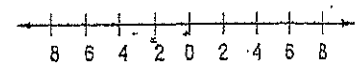
18. **BANKING** Jan's account balance is \$3800. Of this, \$750 is for rent. Jan wants to keep a balance of at least \$500. Write and solve an inequality describing how much she can withdraw and still meet these conditions.

1-6 Practice

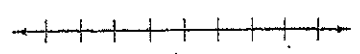
Solving Compound and Absolute Value Inequalities

Write an absolute value inequality for each of the following. Then graph the solution set on a number line.

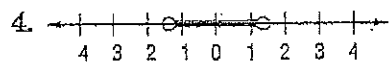
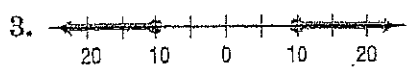
1. all numbers greater than 4 or less than -4



2. all numbers between -1.5 and 1.5, including -1.5 and 1.5

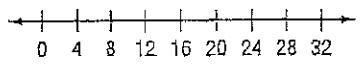


Write an absolute value inequality for each graph.

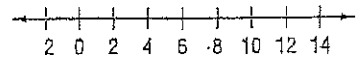


Solve each inequality. Graph the solution set on a number line.

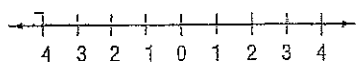
5. $-8 \leq 3y - 20 < 52$



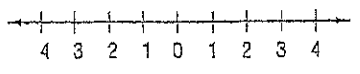
6. $3(5x - 2) < 24$ or $6x - 4 > 4 + 5x$



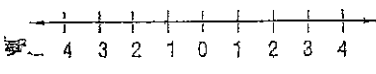
7. $2x - 3 > 15$ or $3 - 7x < 17$



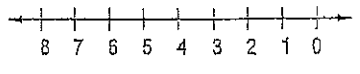
8. $15 - 5x \leq 0$ and $5x + 6 \geq -14$



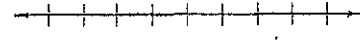
9. $|2w| \geq 5$



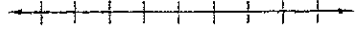
10. $|y + 5| < 2$



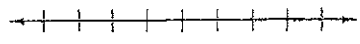
11. $|x - 8| \geq 3$



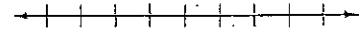
12. $|2z - 2| \leq 3$



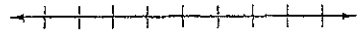
13. $|2x + 2| - 7 \leq -5$



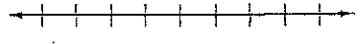
14. $|x| > x - 1$



15. $|3b + 5| \leq -2$

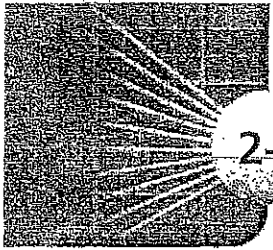


16. $|3n - 2| - 2 < 1$



17. **RAINFALL** In 90% of the last 30 years, the rainfall at Shell Beach has varied no more than 6.5 inches from its mean value of 24 inches. Write and solve an absolute value inequality to describe the rainfall in the other 10% of the last 30 years.

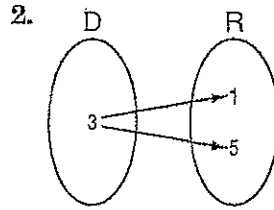
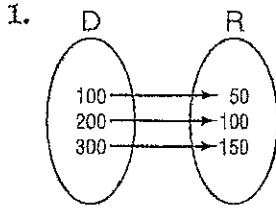
18. **MANUFACTURING** A company's guidelines call for each can of soup produced not to vary from its stated volume of 14.5 fluid ounces by more than 0.08 ounces. Write and solve an absolute value inequality to describe acceptable can volumes.



2-1 Skills Practice

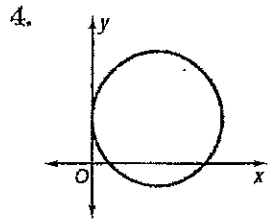
Relations and Functions

Determine whether each relation is a function. Write *yes* or *no*.



3.

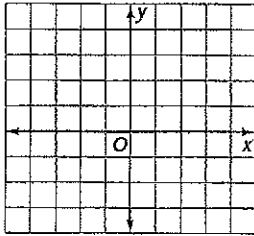
x	y
1	2
2	4
3	6



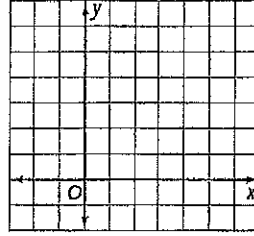
Lesson 2-1

Graph each relation or equation and find the domain and range. Then determine whether the relation or equation is a function.

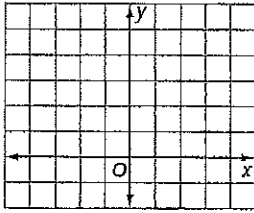
5. $\{(2, -3), (2, 4), (2, -1)\}$



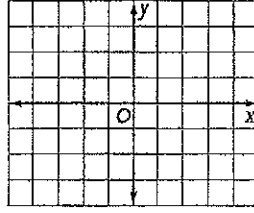
6. $\{(2, 6), (6, 2)\}$



7. $\{(-3, 4), (-2, 4), (-1, -1), (3, -1)\}$



8. $x = -2$



Find each value if $f(x) = 2x - 1$ and $g(x) = 2 - x^2$.

- 9. $f(0)$
- 10. $f(12)$
- 11. $g(4)$
- 12. $f(-2)$
- 13. $g(-1)$
- 14. $f(d)$

2-2 Skills Practice

Linear Equations

State whether each equation or function is linear. Write *yes* or *no*. If *no*, explain your reasoning.

1. $y = 3x$

2. $y = -2 + 5x$

3. $2x + y = 10$

4. $f(x) = 4x^2$

5. $-\frac{3}{x} + y = 15$

6. $\frac{1}{3}x = y + 8$

7. $g(x) = 8$

8. $h(x) = \sqrt{x} + 3$

Write each equation in standard form. Identify *A*, *B*, and *C*.

9. $y = x$

10. $y = 5x + 1$

11. $2x = 4 - 7y$

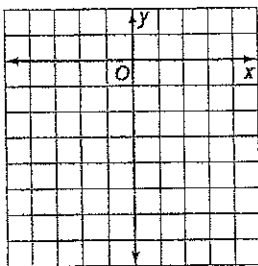
12. $3x = -2y - 2$

13. $5y - 9 = 0$

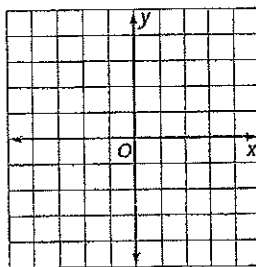
14. $-6y + 14 = 8x$

Find the *x*-intercept and the *y*-intercept of the graph of each equation. Then graph the equation.

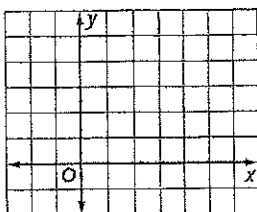
15. $y = 3x - 6$



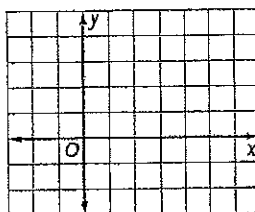
16. $y = -2x$



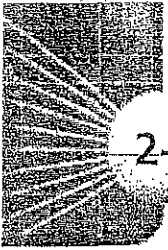
17. $x + y = 5$



18. $2x + 5y = 10$



Lesson 2-2



2-3 Practice

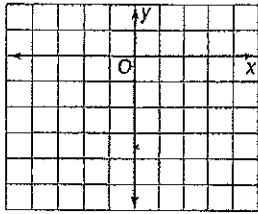
Slope

Find the slope of the line that passes through each pair of points.

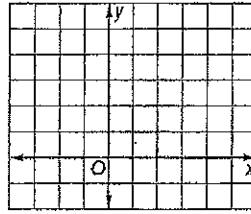
1. $(3, -8), (-5, 2)$ 2. $(-10, -3), (7, 2)$ 3. $(-7, -6), (3, -6)$
 4. $(8, 2), (8, -1)$ 5. $(4, 3), (7, -2)$ 6. $(-6, -3), (-8, 4)$

Graph the line passing through the given point with the given slope.

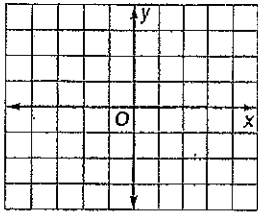
7. $(0, -3), m = 3$



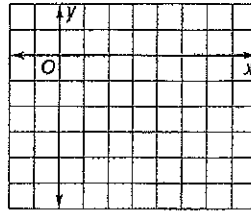
8. $(2, 1), m = -\frac{3}{4}$



9. $(0, 2), m = 0$

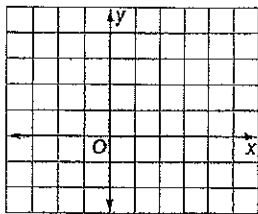


10. $(2, -3), m = \frac{4}{5}$

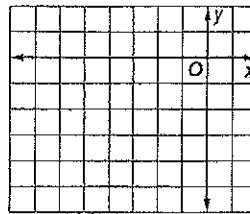


Graph the line that satisfies each set of conditions.

11. passes through $(3, 0)$, perpendicular to a line whose slope is $\frac{3}{2}$



12. passes through $(-3, -1)$, parallel to a line whose slope is -1



DEPRECIATION For Exercises 13–15, use the following information.

A machine that originally cost \$15,600 has a value of \$7500 at the end of 3 years. The same machine has a value of \$2800 at the end of 8 years.

13. Find the average rate of change in value (depreciation) of the machine between its purchase and the end of 3 years.
 14. Find the average rate of change in value of the machine between the end of 3 years and the end of 8 years.
 15. Interpret the sign of your answers.

2-4 Practice

Writing Linear Equations

State the slope and y-intercept of the graph of each equation.

1. $y = 8x + 12$

2. $y = 0.25x - 1$

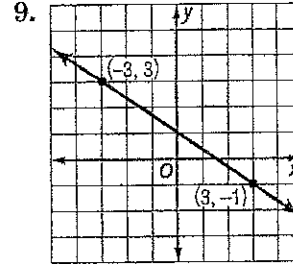
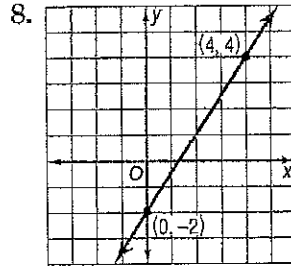
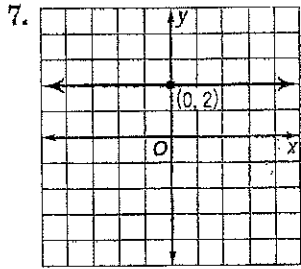
3. $y = -\frac{3}{5}x$

4. $3y = 7$

5. $3x = -15 + 5y$

6. $2x - 3y = 10$

Write an equation in slope-intercept form for each graph.



Write an equation in slope-intercept form for the line that satisfies each set of conditions.

10. slope -5 , passes through $(-3, -8)$

11. slope $\frac{4}{5}$, passes through $(10, -3)$

12. slope 0 , passes through $(0, -10)$

13. slope $-\frac{2}{3}$, passes through $(6, -8)$

14. passes through $(3, 11)$ and $(-6, 5)$

15. passes through $(7, -2)$ and $(3, -1)$

16. x-intercept 3 , y-intercept 2

17. x-intercept -5 , y-intercept 7

18. passes through $(-8, -7)$, perpendicular to the graph of $y = 4x - 3$

19. **RESERVOIRS** The surface of Grand Lake is at an elevation of 648 feet. During the current drought, the water level is dropping at a rate of 3 inches per day. If this trend continues, write an equation that gives the elevation in feet of the surface of Grand Lake after x days.

20. **BUSINESS** Tony Marconi's company manufactures CD-ROM drives. The company will make \$150,000 profit if it manufactures 100,000 drives, and \$1,750,000 profit if it manufactures 500,000 drives. The relationship between the number of drives manufactured and the profit is linear. Write an equation that gives the profit P when n drives are manufactured.