

Chapter 7

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Chapter
7**Equations and Inequalities**

Dear Family,

Have you ever had to plan a large party—perhaps a family reunion, a wedding, or a community fundraiser? Planning for a large event can be quite a challenge. Recruiting your student to help with the planning provides a great opportunity for your student to use math skills.

For example, you could ask your student to figure out the following.

- How much food is needed? Should you plan on just one portion per person, or multiple portions? Have your student write a rule (or equation) to determine the number of portions of food you need. Your student can write a rule even if you don't know how many people will be attending when you first start planning.
- Is the number of invitations needed equal to the number of people being invited? Have your student write a rule for the number of invitations you need and another rule for the cost of the postage.
- Each table can probably seat 8 or 10 people. You'll want to figure out how many tables you will need. Have your student write a math rule to determine this amount.
- How many tablecloths and table decorations will you need? If there will be serving tables, don't forget about decorating those as well.

Event planners often say that about two-thirds to three-quarter of invitees can be counted on to attend. Work with your student on a strategy to guess how many people you think will actually attend. Then have your student use the rules they wrote to estimate the number of portions, invitations, tables, and decorations that will be needed for the event.

Is your event a fundraiser? If so, figure out how much you will charge per person. Figure out how much you will spend on the whole event. Have your student write a rule to determine if you will make money for your cause.

You and your student can take satisfaction from your good planning—enjoy the event!

Capítulo**7****Ecuaciones y desigualdades**

Estimada Familia:

¿Alguna vez han tenido que planear una gran fiesta—quizás una reunión familiar, un matrimonio, o un evento de recaudación de fondos para la comunidad? Planear un evento grande puede ser un gran desafío. Incluir a su estudiante para ayudar con la planificación ofrece a su estudiante una buena oportunidad de usar sus habilidades matemáticas.

Por ejemplo, puede pedir a su estudiante que averigüe lo siguiente:

- ¿Cuánta comida se necesita? ¿Debe planear solamente una porción por persona o múltiples porciones? Haga que su estudiante escriba una regla (o ecuación) para determinar el número de porciones de comida que necesita. Su estudiante puede escribir una regla aun si no se sabe cuántas personas asistirán cuando se empezó con la planificación.
- ¿El número de invitaciones requeridas es igual al número de personas invitadas? Haga que su estudiante escriba una regla para el número de invitaciones que necesita y otra regla para el costo del envío por correo.
- Probablemente cada mesa sea para 8 ó 10 personas. Querrá saber cuántas mesas necesita. Haga que su estudiante escriba una regla matemática para determinar esta cantidad.
- ¿Cuántos manteles y decoraciones de mesa necesitará? Si van a haber mesas para servirse, no olvide decorarlas también.

Los planificadores de eventos a menudo dicen que se puede calcular que alrededor de dos tercios a tres cuartos de los invitados asistirán. Trabaje con su estudiante en una estrategia para adivinar cuántas personas se cree que realmente asistirán. Luego haga que su estudiante use las reglas que escribieron para calcular el número porciones, invitaciones, mesas y decoraciones que se necesitarán para el evento.

¿Se trata de un evento de recaudación de fondos? De ser así, averigüe cuánto puede cobrar por persona. Averigüe cuánto gastará en todo el evento. Haga que su estudiante escriba una regla para determinar si va a obtener ganancias para su causa.

Usted y su estudiante pueden beneficiarse de su buena planificación—disfruten el evento!

Activity
7.1**Start Thinking!**
For use before Activity 7.1

Describe an instance in your life when you have used an expression. What does the expression equal?

Activity
7.1**Warm Up**
For use before Activity 7.1

Solve the problem.

1. A car travels at an average rate of 30 miles per hour for 2 hours. How far has the car traveled?
2. A picture frame is shaped like a rectangle with a length of 10 inches and a width of 8 inches. What is the area of the picture frame?
3. You are walking 1 mile home from school. When you are halfway home, you realize that you forgot a book in your locker and have to go back and get it. Once you finally get home, how far have you walked?

Lesson
7.1**Start Thinking!**

For use before Lesson 7.1

List some advantages and disadvantages of rewriting a word problem in your own words.

Lesson
7.1**Warm Up**

For use before Lesson 7.1

Rewrite the problem using fewer words. Leave out information that you do not need to solve the problem.

1. You are walking at a steady pace of 15 minutes per mile on a treadmill at the gym. While on the treadmill, you watch one 30-minute-long news program. How far did you walk during the news program?

2. In one game, $\frac{2}{3}$ of a pitcher's pitches are strikes. The other $\frac{1}{3}$ of the pitches are balls.

If the pitcher throws 99 pitches in the game, how many of the pitches are strikes?

7.1 Practice A

Rewrite the problem using fewer words. Leave out information that you do not need to solve the problem. Then solve the problem.

- The handwritten rough draft of your book report is 4 pages long. Typing at a steady rate of 20 words per minute, it takes you 48 minutes to enter the report onto a computer. In typed form, the report is about 3 pages long. How many words long is your report?
- You and a friend are riding your bikes home from a park. You ride at a steady rate. The park is 6 miles from your home. About halfway home, the wind starts blowing at about 5 miles per hour from your left. You keep riding at the same rate. You arrive home after one-half hour of riding. What was your riding rate?

Write the word sentence as an equation.

- 4 is the quotient of 16 and a number n .
- The sum of a number k and 5 is 11.
- The difference of a number x and 2 is 7.
- 7 times a number a is 42.
- 6 is one-third of a number s .
- A number t added to 13 equals 17.
- 5 less than a number b is 16.
- 30 is 6 multiplied by a number y .
- A number z divided by 7 equals 4.
- 5 more than a number m equals 8.

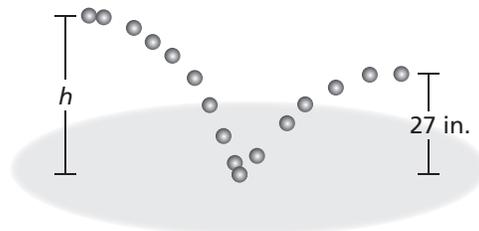
- Describe the error in writing the sentence as an equation.

✗

24 is 8 multiplied by a number x .

$$24x = 8$$

- A crew is picking up chairs in the gymnasium after an event. After clearing 217 chairs from the gym floor, 36 chairs still remain. Write an equation you can use to find the number of chairs placed on the gym floor for the event.
- You and three of your cousins shuck six dozen ears of corn for a picnic. Write an equation you can use to find the number of ears n for each person if each of you shucks the same number of ears.
- You drop the rubber ball from height h . It bounces back to 60% of its original height. Write an equation you can use to find the height h .
- You earn 4070 points in level 1 of a video game and 2710 points in level 2. After level 3, your point total is 8180. Write an equation you can use to find the number of points p you scored in level 3.



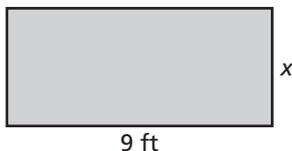
7.1 Practice B

Write the word sentence as an equation.

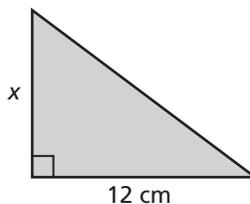
- 17 is 41 less than n .
- 168 divided by a number x equals 14.
- The product of 17 and a number s is 153.
- A number b increased by 37 is 112.
- 23 is the quotient of a number t and 61.
- 114 is 37 more than a number g .
- 46 less than a is 33.
- One-fifth of a number d is 22.

Write an equation that can be used to find the value of x .

9. Area of rectangle: 36 ft



10. Area of triangle: 108 cm^2



- You want to put 520 quarters in coin wrappers. You need one wrapper for every \$10 in quarters. Write an equation you can use to find how many wrappers w you need.
- You use a metal detector at the beach. You find 2 quarters, 12 dimes, and 23 pennies. Write an equation you can use to find how many more pennies p you need to find in order to have a total of \$2.00.
- In one minute, you climb halfway up a rock wall. In another minute, you are 24 feet above the ground after covering half of the remaining height. Write an equation you can use to find the total height h of the rock wall.
- A golf driving range has small buckets of golf balls for \$6 each and medium buckets of golf balls for \$8 each. One day, golfers use 27 small buckets and some medium buckets for a total cost of \$626. Write an equation you can use to find the number m of medium buckets used.



- A silkworm winds its cocoon out of one long silk fiber. To make silk thread, 3 to 10 of these silk fibers are unwound from their cocoons and combined into a single thread with a typical length of 300 yards.
 - Explain why you cannot write an equation to find the exact total length of the silk fibers used in a 300-yard silk thread.
 - Choose a reasonable number of silk fibers in a thread. Write an equation to find the total length of the silk fibers used in 300 yards of the thread.

7.1 Enrichment and Extension**Writing Other Types of Equations**

Write the word sentence as an equation.

1. A number n squared plus 7 is 23.
2. Ten decreased by a number p squared is 9.
3. A number x minus another number y is equal to 8.
4. A number x squared plus another number y squared equals 4.

Maria and Sam have been asked to write the following word sentence as an equation:

A number x plus 2 squared equals 9.

Their answers are shown.

Maria: $x + 2^2 = 9$

Sam: $(x + 2)^2 = 9$

5. Who has the correct answer?
6. Explain the error in the other solution.
7. How could you word the sentence for the other equation so there is no confusion?
8. Use your answer to Exercise 7 to write a word sentence for the equation $(3 - x)^2 = 4$.

7.1 Puzzle Time

Why Did The Sea Monster Eat Six Ships That Were Carrying Potatoes?

A	B	C	D	E	F
G	H	I	J		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

$\frac{x}{3} = 12$ <p>JUST</p>
$550 + x = 1250$ <p>SHIP</p>
$x + 5 = 14$ <p>IT</p>
$x - 13 = 15$ <p>ONE</p>
$24 = 4 + x$ <p>CAN</p>

Write the word sentence as an equation.

- A. The sum of a number x and 5 equals 14.
- B. A number x decreased by 6 is 5.
- C. 7 times a number x is 42.
- D. A number x divided by 8 equals 11.
- E. 24 equals 4 more than a number x .
- F. 9 is one-third of a number x .
- G. 12 is the quotient of a number x and 3.
- H. 13 less than a number x equals 15.
- I. You throw a football 20 yards. Your friend throws the same football x yards. The football was thrown a total distance of 50 yards. Write an equation you can use to find the distance x that your friend threw the football.
- J. Students raised \$550 by having a car wash. They need \$1250. Write an equation you can use to find the amount x that the students still need to raise.

$\frac{x}{8} = 11$ <p>ONE</p>
$20 + x = 50$ <p>POTATO</p>
$7x = 42$ <p>NO</p>
$9 = \frac{1}{3}x$ <p>EAT</p>
$x - 6 = 5$ <p>SEEMS</p>

Activity
7.2**Start Thinking!**

For use before Activity 7.2

If you are trying to weigh a pet, it is often easier to stand on a scale holding the pet to find your combined weight.

How is the situation related to solving an equation?

Hint: Use the weight of the pet as the variable in the equation.

Activity
7.2**Warm Up**

For use before Activity 7.2

Evaluate the expression.

1. $3 + x$ when $x = 2$

2. $a + 16$ when $a = 4$

3. $10 + z$ when $z = 5$

4. $17 - c$ when $c = 9$

5. $8 - w$ when $w = 8$

6. $s - 20$ when $s = 34$

Two operations are **inverse operations** if one operation “undoes” the other.

Of the four operations (addition, subtraction, multiplication, division), which are inverse operations? Why?

This idea can be applied to real-life situations.

What are the inverses of the following actions?

1. Unbutton
2. Ascend
3. Deposit
4. Turn off

Describe another pair of real-life inverse actions.

Use a scale to model and solve the equation.

1. $n + 9 = 12$
2. $r + 4 = 8$
3. $p + 1 = 4$
4. $t - 2 = 4$
5. $d - 5 = 2$
6. $x - 3 = 1$

7.2 Practice A

Tell whether the given value is a solution of the equation.

1. $x + 16 = 20$; $x = 4$

2. $p - 4 = 28$; $p = 32$

3. $4w = 44$; $w = 10$

4. $\frac{y}{6} = 6$; $y = 24$

Solve the equation. Check your solution.

5. $x - 5 = 9$

6. $y - 12 = 0$

7. $q + 8 = 25$

8. $f - 22 = 14$

9. $8 + s = 10$

10. $r - 3.2 = 1.7$

11. $8.9 = v + 7.3$

12. $\frac{1}{3} + n = \frac{2}{3}$

13. $\frac{2}{3} = \frac{1}{4} + g$

Describe and correct the error in solving the equation.

14.

\times	$13 + m = 56$
	$\quad + 13 \qquad \quad + 13$
	$\qquad \qquad m = 69$

15.

\times	$27 = n - 15$
	$\quad - 15 \qquad \quad + 15$
	$\qquad \qquad 12 = n$

Write the word sentence as an equation. Then solve the equation.

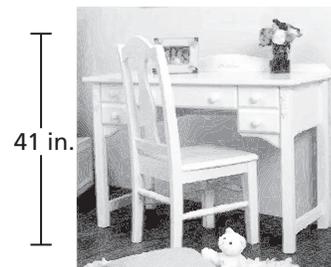
16. 20 equals 8 more than a number y .

17. The sum of a number x and 12 equals 15.

18. 4 less than a number g equals 9.

19. A number w decreased by 10 is 3.

20. The height of a desk is 11 inches shorter than the height of a chair. Write and solve an equation to find the height of the desk.



21. The Florida Panther has an average height of 30 inches. It is 20 inches taller than the Northern Mockingbird. Write and solve an equation to find the average height of the Northern Mockingbird.

22. The advertised price of a cell phone is \$149 after a \$50 mail-in rebate. Write and solve an equation to find the price of the cell phone before the rebate is applied.

7.2

Practice B

Tell whether the given value is a solution of the equation.

1. $2.5w = 12.5$; $w = 5$

2. $\frac{y}{8} = 7$; $y = 64$

3. $39 = 3.9t$; $t = 10$

4. $\frac{1}{4} = \frac{1}{8}m$; $m = 2$

Write the word sentence as an equation. Then solve the equation.

5. A number a decreased by 13.4 is 2.6.

6. 27 less than a number h equals 3.5.

7. 46 equals 2.5 more than a number z .

8. The sum of a number b and 4.7 equals 10.9.

Solve the equation. Check your solution.

9. $x - 72 = 136$

10. $251 = 148 + j$

11. $\frac{4}{5} + a = 1$

12. $n - 10 = 13 + 5$

13. $v + 17 - 11 = 65$

14. $47 - 15 + c = 79$

15. $7 + 57 = 3 + y$

16. $30 + 12 = e - 42$

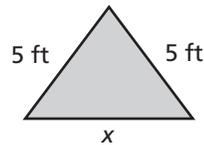
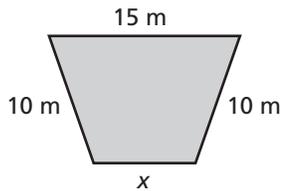
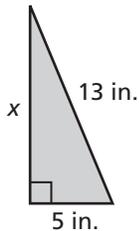
17. $21 - 16 + \ell = 14 - 4$

Write and solve an addition equation to find x .

18. Perimeter = 30 in.

19. Perimeter = 43 m

20. Perimeter = 16 ft



21. You are grocery shopping. You have \$12.

a. Write and solve three equations to find the cost m of the milk, the cost c of the cereal, and the cost e of the eggs.

b. How much money do you have left if you purchase one of each item?

Grocery Items

Bread: \$2.19

Milk: \$1.56 more than bread

Cereal: \$3.20 more than eggs

Eggs: \$2.36 less than milk

22. A jacket is on sale for \$10 off. You have a coupon worth \$5.80 that brings the cost of the jacket down to \$33.19. Write and solve an equation to find the original cost c of the jacket.

7.2 Enrichment and Extension**Writing and Solving Different Types of Equations**

Tell whether the given value is a solution of the equation.

- $x^2 - 5 = 20$; $x = 5$
- $x^2 + 11 = 45$; $x = 6$
- $1 - x^2 = 0$; $x = 1$
- $110 - x^2 = 19$; $x = 9$
- $2x + x = 10$; $x = 4$
- $5x - 3x = 6$; $x = 2$
- $(x + 5)^2 = 144$; $x = 7$
- $(x - 2)^2 + 1 = 2$; $x = 3$
- Write two different addition equations that have 10 as the solution.
- Write two different subtraction equations that have 7 as the solution.
- Your softball team has 8, 10, 9, and 3 hits during four games. Write and solve an equation to find how many hits the team needs in the fifth game to have a total of 40 hits.
- Write and solve an equation to find how many miles you must hike on Friday to hike a total of 12 miles for the five days.

Day	Monday	Tuesday	Wednesday	Thursday	Friday
Miles Hiked	2.5	$1\frac{3}{4}$	$3\frac{1}{4}$	2	?



7.2 Puzzle Time

What Do Kitty Cats Like To Eat For Breakfast?

Write the letter of each answer in the box containing the exercise number.

Solve the equation. Check your solution.

1. $p - 8 = 4$
2. $k - 2 = 12$
3. $9 = h - 15$
4. $y + 4 = 7$
5. $z + 5 = 21$
6. $63 = r + 31$
7. $x - 25 = 16$
8. $26 = m + 18$
9. $\frac{2}{3} = a - \frac{2}{3}$
10. $f + \frac{1}{4} = \frac{7}{8}$
11. $2.3 = q - 3.6$
12. $j + 4.4 = 16.2$

Answers

K. 16

I. $\frac{5}{8}$

E. 24

S. 14

R. 5.9

C. 41

I. 32

P. 12

S. 8

M. 3

E. 11.8

I. $1\frac{1}{3}$

4	10	7	12		5	11	9	2	1	6	3	8
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Activity
7.3**Start Thinking!**

For use before Activity 7.3

Write a problem that can be modeled with the equation $x + 4 = 12$. Be sure to provide all the necessary information.

Activity
7.3**Warm Up**

For use before Activity 7.3

Solve the equation. Check your solution.

1. $x + 7 = 10$

2. $y + 13 = 21$

3. $z + 3 = 27$

4. $a - 12 = 16$

5. $b - 9 = 4$

6. $15 = c - 1$

**Lesson
7.3****Start Thinking!**

For use before Lesson 7.3

Explain how to use the distance formula ($d = rt$) to find your average rate getting to school in the morning. Be sure to include units in your explanation.

**Lesson
7.3****Warm Up**

For use before Lesson 7.3

Solve the equation. Check your solution.

1. $5x = 205$

2. $16 = 8w$

3. $77 = 7b$

4. $7 = v \div 6$

5. $30 = p \div 2$

6. $k \div 4 = 26$

7.3 Practice A

Solve the equation. Check your solution.

1. $\frac{x}{2} = 9$

2. $4 = \frac{t}{4}$

3. $\frac{3w}{20} = 12$

4. $5s \div 7 = 30$

5. $5a = 15$

6. $8 \cdot d = 40$

7. $60 = 20m$

8. $7g = 14$

9. $9y = 72$

10. $3 \cdot n = 63$

11. $4 = \frac{v}{11}$

12. $\frac{c}{7} = 5$

13. $\frac{5b}{2} = 27.5$

14. $2h \div 15 = 20$

15. $24k = 60$

16. $210 = 7r$

Describe and correct the error in solving the equation.

17.

✗	$\frac{x}{9} = 3$
	$9 \cdot \frac{x}{9} = 3$
	$x = 3$

18.

✗	$4 \cdot z = 32$
	$\frac{4 \cdot z}{4} = 4 \cdot 32$
	$z = 128$

19. A teacher tells 36 students to form 4 equal groups. Write and solve a multiplication equation to find how many students s there should be in each group.
20. You have been saving \$12 each week for many weeks. One day, you decide to count your savings and find that you have \$384. Write and solve a multiplication equation to find how many weeks w you have been saving.
21. A 14-inch pepperoni pizza is sliced into 8 equal pieces. One slice contains 352 calories. Write and solve a division equation to find how many calories c there are in the whole pizza.
22. In a cheerleading competition, each team receives scores in eight categories. One team has a mean score of 7.25 in the eight categories. Write and solve an equation to find the team's total score s .
23. Write and solve an equation to find the width w of the rectangle. Explain how you know what units to use with the answer.

Area = 576 cm^2



36 cm

7.3

Practice B

Solve the equation. Check your solution.

1. $6a = 78$

2. $7 = \frac{s}{20}$

3. $96 = 24p$

4. $5g \div 18 = 30$

5. $\frac{4v}{27} = 16$

6. $13 \cdot x = 84.5$

7. $\frac{3c}{8.1} = 22.8$

8. $12.4b = 117.8$

Solve for x . Check your answer.

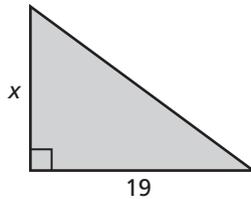
9. Rectangle

Area = 84 square units



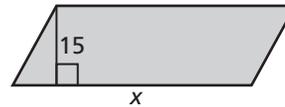
10. Triangle

Area = 133 square units



11. Parallelogram

Area = 75 square units

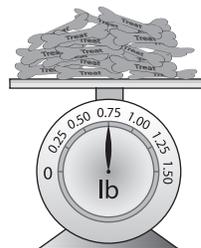


12. You want to know the side length of the square swimming pool. Explain how you can use the perimeter. Then find the side length to the nearest yard.

Perimeter = 100 yards



13. Your family has a car with a 15-gallon gas tank. Find the price of one gallon of gas in your area. Then write and solve a division equation to find the price p to fill the car's gas tank when it is empty.
14. Using a special discount, you download 15 songs for \$10.68. The regular price of each song is \$0.89. What is the percent of the discount?
15. In a cranberry punch recipe, four cups of cranberry juice and one quart of pineapple juice make up half of the punch. How many cups of punch does the recipe make?
16. You buy dog biscuits at the bulk rate price of \$2.25 per pound. The scale shows the weight of 25 biscuits. Find the cost of 40 biscuits. Explain how you found your answer.



7.3 Enrichment and Extension

Writing Repeating Decimals as Fractions

Example: Write $0.\overline{21}$ as a fraction.

Step 1: Let $x = 0.\overline{21}$ or $0.212121\dots$

Step 2: Because the decimal has 2 repeating digits, multiply each side of $x = 0.212121\dots$ by 10^2 , or 100.

$$x = 0.212121\dots \quad \text{Write equation.}$$

$$100x = 21.212121\dots \quad \text{Multiply each side by 100.}$$

Step 3: Subtract x from $100x$.

$$100x = 21.212121\dots \quad \text{Write equation.}$$

$$\begin{array}{r} 100x = 21.212121\dots \\ - x = 0.212121\dots \\ \hline 99x = 21 \end{array} \quad \text{Subtract } x.$$

$$99x = 21 \quad \text{Simplify.}$$

Step 4: Solve for x .

$$99x = 21 \quad \text{Write equation.}$$

$$\frac{99x}{99} = \frac{21}{99} \quad \text{Divide each side by 99.}$$

$$x = \frac{21}{99}, \text{ or } \frac{7}{33} \quad \text{Simplify.}$$

So, $0.\overline{21}$ is equivalent to $\frac{7}{33}$.

Write the decimal as a fraction or mixed number.

1. $0.\overline{7}$

2. $0.\overline{6}$

3. $0.\overline{36}$

4. $0.\overline{51}$

5. $0.\overline{43}$

6. $0.\overline{09}$

7. $4.\overline{89}$

8. $0.\overline{735}$

9. $0.\overline{029}$

10. How can you use the method shown above to write the decimal $0.\overline{23}$ as a fraction? Explain.

7.3 Puzzle Time

What Did The Dirt Say When It Began To Rain?

A	B	C	D	E	F
G	H	I	J	K	L
M	N	O	P		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

7 NAME
56 WILL
54 IF
9 MUD
10 MY
13 WILL
2 CALLED
40 HEAVY

Solve the equation. Check your solution.

A. $\frac{a}{9} = 6$

B. $7 = \frac{z}{6}$

C. $y \div 4 = 10$

D. $25 = \frac{k}{5}$

E. $2s = 16$

F. $8 \cdot t = 96$

G. $50 = 5x$

H. $56 = 8k$

I. $4b = 52$

J. $39 = 6 \cdot c$

K. $14 = n \div 5$

L. $10 = v \div 6$

M. $x \div 16 = 3.5$

N. $\frac{w}{25} = 4.4$

O. $11.5 \cdot d = 23$

P. $4.5v = 40.5$

12 UP
6.5 CHANGE
125 RAIN
110 BE
42 THIS
8 KEEPS
60 I
70 AND

**Activity
7.4****Start Thinking!**

For use before Activity 7.4

Write a problem that can be modeled with the equation $7x = 42$. Be sure to provide all the necessary information.

**Activity
7.4****Warm Up**

For use before Activity 7.4

Solve the equation. Check your solution.

1. $x + 9 = 14$

2. $21 = y + 14$

3. $z - 3 = 36$

4. $6a = 48$

5. $14b = 42$

6. $32 \div c = 4$

Lesson
7.4

Start Thinking!

For use before Lesson 7.4

The equation $y = 0.25x$ shows how the number of texts sent is related to the total amount spent on text messaging.

Describe which variable is independent and which variable is dependent.

Lesson
7.4

Warm Up

For use before Lesson 7.4

Write a formula for the given measure. Tell what each variable represents. Identify which variable depends on which in the formula.

1. The perimeter of a parallelogram with a length of 6 centimeters
2. The area of a rectangle with a length of 9 inches
3. The area of a triangle with base length of 12 meters

7.4**Practice A**

Write a formula for the given measure. Tell what each variable represents. Identify which variable depends on which in the formula.

1. The perimeter of a rectangle with a length of 4 meters
2. The area of a triangle with base length of 10 feet

Tell whether the ordered pair is a solution of the equation.

3. $y = x$; (2, 3)
4. $y = 8x$; (0, 0)
5. $y = 3x - 2$; (1, 1)
6. $y = 4x + 1$; (1, 5)

Identify the independent and dependent variables.

7. The equation $P = 2\ell + 20$ gives the perimeter P (in inches) of a rectangular box with a length of ℓ feet.
8. The equation $k = 88p$ gives the total number of keys k for p pianos.
9. You are hosting a party. You are providing 3 food items. Each guest brings 2 food items.
 - a. Write an equation in two variables that represents the total number of food items.
 - b. Identify the independent and dependent variables.
10. Your choir has 300 tickets to sell. You are responsible for distributing 10 tickets to each choir member to sell.
 - a. Write an equation in two variables that represents the remaining number of tickets to distribute.
 - b. Identify the independent and dependent variables.

Fill in the blank so that the ordered pair is a solution of the equation.

11. $y = 7x - 5$; (2,)
12. $y = 15 - 3x$; (, 6)
13. Write an equation in two variables that has (1, 3) as a solution.
14. Write another equation in two variables that also has (1, 3) as a solution.

7.4

Practice B

Write a formula for the given measure. Tell what each variable represents. Identify which variable depends on which in the formula.

1. The perimeter of a parallelogram with a side of length 8 feet
2. The area of a parallelogram with a height of 2 centimeters
3. Describe and correct the error in finding a solution of the equation in two variables.

\times $y = 5x - 4; (2, 6)$
 $2 = 5(2) - 4$
 $2 = 6$
 $(2, 6)$ is not a solution.

Complete the table by describing possible independent or dependent variables.

4.

Independent Variable	Dependent Variable
The number of lawns you mow	

5.

Independent Variable	Dependent Variable
	The number of shopping bags

6. Your video membership costs \$14 per month for 10 video rentals. Each additional video rental is \$2.
 - a. Write an equation in two variables that represents the monthly cost of your video rentals.
 - b. Identify the independent and dependent variables.

Fill in the blank so that the ordered pair is a solution of the equation.

7. $y = 6x + 5; (0, \square)$ 8. $y = 11 - 4x; (\square, 3)$

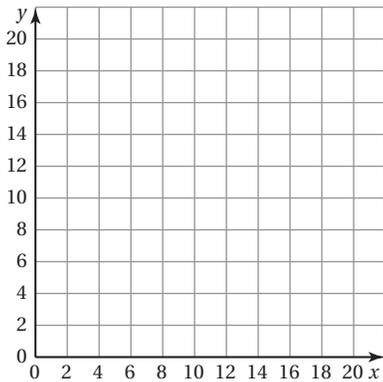
9. You answer 12 emails in 15 minutes. How many emails can you answer in 2 hours?

7.4 Enrichment and Extension**Testing Points**

Tell which ordered pairs are solutions of the equation. Then plot the solutions on the coordinate plane and connect them with a line.

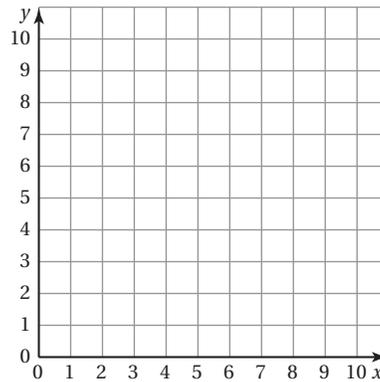
1. $3x - 7 = y$

$A(9, 20), B(5, 0), C(3, 2)$



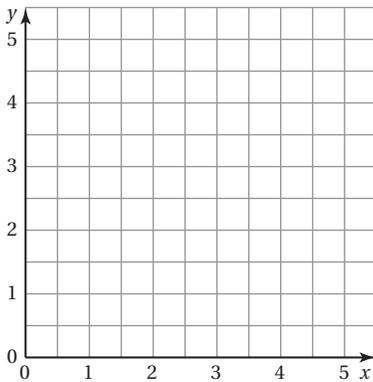
2. $x - 5 = y$

$A(8, 2), B(7, 2), C(10, 5)$



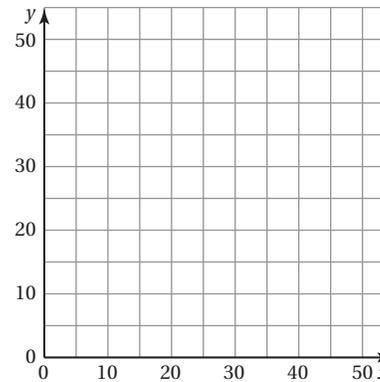
3. $x = 4 - 2y$

$A(0, 2), B(2, 1), C(4, 0)$



4. $y = 2x - 10$

$A(7, 3), B(25, 40), C(10, 10)$





Puzzle Time

Which Are The Strongest Shellfish On The Beach?

Write the letter of each answer in the box containing the exercise number.

Tell whether the ordered pair is a solution of the equation.

1. $y = 6x; (0, 3)$

R. Yes

S. No

2. $y = 4x; (1, 4)$

U. Yes

V. No

3. $y = 3x - 7; (4, 5)$

E. Yes

F. No

4. $y = x + 8; (2, 12)$

R. Yes

S. No

5. $y = 9x - 9; (1, 0)$

L. Yes

M. No

Identify the independent and dependent variables.

6. The equation $A = 32\ell$ gives the area A in square feet of a rectangular concession stand with a length of ℓ feet.

S. Independent: ℓ ; Dependent: A

T. Independent: A ; Dependent: ℓ

7. The equation $C = 15p + 100$ gives the total cost C in dollars of the annual banquet with p people in attendance.

L. Independent: C ; Dependent: p

M. Independent: p ; Dependent: C

7	2	6	4	3	5	1
---	---	---	---	---	---	---

Activity
7.5**Start Thinking!**

For use before Activity 7.5

$1 < 2$ and $2 > 1$ are inequalities.

Think about the word *inequality*.

What does *equality* mean?

What does the prefix *in-* mean?

What are some other words in the English language that use the prefix *in-* in the same way?

Lesson
7.5**Warm Up**

For use before Activity 7.5

Complete the statement with $<$, $>$, or $=$.

1. -5 ? -2

2. 4 ? -6

3. 7 ? 9

4. -8 ? -12

5. -1 ? -1

6. -15 ? 15

Lesson
7.5

Start Thinking!

For use before Lesson 7.5

The speed limit in a school zone is 15 miles per hour.

How are speed limits related to inequalities?

Lesson
7.5

Warm Up

For use before Lesson 7.5

Match the inequality with its graph.

1. $x > -1$ 2. $x < 1$ 3. $x > 1$ 4. $x \leq -1$



7.5 Practice A

Write the word sentence as an inequality.

- 2 is more than a number v .
- A number h is at most 15.
- A number p is less than $\frac{1}{2}$.
- 12 is fewer than a number n .
- $\frac{3}{5}$ is no less than a number a .
- A number b is no more than 17.
- 6 plus a number x is at least 12.
- A number k minus 7 is greater than 10.

Tell whether the given value is a solution of the inequality.

- $y \leq 11$; $y = 8$
- $q + 1 \geq 7$; $q = 3$
- $4 < u - 9$; $u = 13$
- $5m < 72$; $m = 15$
- $\frac{7}{8} \leq 2c$; $c = 3$
- $10 \geq g + 3$; $g = 7$

Graph the inequality on a number line.

- $k > 1$
- $w \leq 5$
- $r < 0$
- $t \geq \frac{1}{3}$
- $s > 6$
- $z \leq -\frac{3}{2}$
- $2.5 < n$
- $-\frac{2}{3} < x$
- $3 \geq a$

- A lifeboat can carry up to 24 people. Write an inequality to represent this situation.
- A USB flash drive costs \$16. You have \$50.
 - Write an inequality to represent the number of USB flash drives you can buy.
 - Can you buy 4 USB flash drives? Explain.
- A produce box can hold no more than 25 pounds of potatoes.
 - Write and graph an inequality to represent this situation.
 - Is 9.8 a solution of the inequality?
 - Name a number that is *not* a solution of the inequality and explain your answer.

7.5 Practice B

Write the word sentence as an inequality.

1. A number b times 3.5 is no less than 21.
2. The quotient of a number y and 9 is greater than 4.
3. The difference between a number h and $\frac{1}{4}$ is at most 0.
4. The sum of a number w and 2.56 is at least 10.24.
5. The product of 6 and number c is less than 12.

Tell whether the given value is a solution of the inequality.

6. $\frac{x}{6} \leq 1$; $x = 5$
7. $1.4v > 16$; $v = 11$
8. $t + 9.8 \geq 21.01$; $t = 11.1$
9. $2\frac{1}{2} < \frac{m}{30}$; $m = 90$
10. $\frac{1}{2} > 3p$; $p = \frac{1}{6}$
11. $2.16 \geq 3z - 0.5$; $z = 0.6$

Write an inequality and a word sentence that represent the graph.



Graph the inequality on a number line.

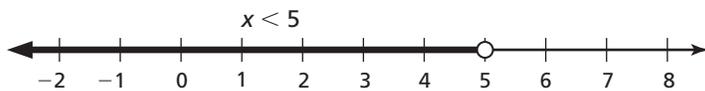
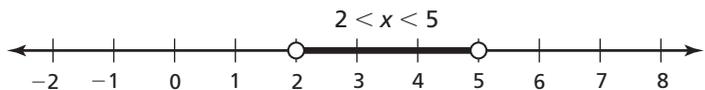
14. $6.5 > a$
15. $u \leq -8$
16. $y > 0$
17. $-18 \geq s$
18. $w < -56.8$
19. $n > \frac{7}{5}$
20. A highway passes under a road. The clearance height is 7.75 feet. Write and graph an inequality that represents the height of a vehicle that can travel on the highway.
21. You must be at least 48 inches tall to go on the Scrambler at an amusement park. You must be at most 48 inches tall to go on the Busy Boats at the park.
 - a. Write an inequality that represents the height you must be for each of the rides.
 - b. You are allowed to ride both rides. What is your height?
22. Describe the numbers that are solutions of both of the following inequalities:

$$n \leq 8 \text{ and } n > 2.$$

7.5 Enrichment and Extension

Compound Inequalities

A *compound inequality* is a mathematical sentence that uses more than one inequality symbol. It is the result of combining two inequalities. For example, the two inequalities $x > 2$ and $x < 5$ can be combined to form the compound inequality $2 < x < 5$. It is read as “ x is greater than 2 and x is less than 5.”

Graph $x > 2$.Graph $x < 5$.

Graph the common solutions.

Identify each integer that is a solution of the compound inequality.

1. $0 < x < 6$

2. $3 \leq x \leq 8$

3. $4 \leq x < 11$

4. $-2 < x \leq 2$

Match each inequality with its graph.

5. $1 \leq x < 7$



6. $1 < x < 7$



7. $1 \leq x \leq 7$



8. $1 < x \leq 7$



Graph the compound inequality on a number line.

9. $0 \leq x < 3$

10. $2 < x < 9$

11. $5 \leq x \leq 11$

12. $-1 < x \leq 6$

13. $-5 < x < -3$

14. $10 \leq x < 70$

15. A compound inequality can be made up of two inequalities using the word “and” (as shown above) or the word “or.” Graph the compound inequality $x < 0$ or $x > 2$. Can this be written as a single inequality? Explain.

7.5 Puzzle Time

What Kind Of Cheese Comes With A House?

Write the letter of each answer in the box containing the exercise number.

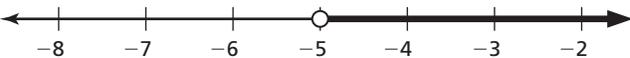
Write the word sentence as an inequality.

- A number x is more than 15.
- A number b is less than 23.
- A number y is at most 8.
- Three plus a number a is greater than or equal to 19.

Tell whether the given value is a solution of the inequality.

- $\frac{a}{4} > 5$; $a = 28$
- $z + 4.5 \leq 13$; $z = 9.5$

Write an inequality that represents the graph.

- 
- 
- 

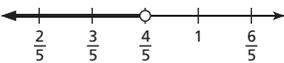
Match each inequality with its graph.

- $x < \frac{4}{5}$
- $a \geq -3$
- $p \leq 2.6$
- $y > -\frac{2}{3}$

Answers

E. $x > -5$ **C.** $y \leq 8$

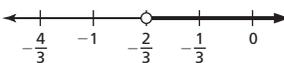
T. $x \geq -3$

H. 

E. $x > 15$ **A.** no

G. 

E. $3 + a \geq 19$

S. 

O. $b < 23$

C. $x \leq 7$

T. 

E. yes

8	2	12	9	6	11	5		3	10	1	7	13	4
---	---	----	---	---	----	---	--	---	----	---	---	----	---

Activity
7.6**Start Thinking!**
For use before Activity 7.6

Describe a real-life situation that can be represented by the inequality $x < 20$.

Activity
7.6**Warm Up**
For use before Activity 7.6

Graph the inequality on a number line.

1. $a < 2$

2. $b > 1$

3. $c \leq 0$

4. $d \geq 2.5$

5. $f > -2$

6. $g \leq -5$

A classroom should have no more than 22 students.

A math classroom meets this requirement. After two students transferred into the class, it still meets the requirement.

Write an inequality that represents this situation. Solve it to find the possible numbers of students in the class before the two students transferred.

Solve the inequality. Graph the solution.

1. $x + 2 < 6$

2. $2 + h > 11$

3. $y - 3 \leq 2$

4. $p - 15 \geq 0$

5. $k + 3 \leq 14$

6. $b - 3 > 3$

7.6 Practice A

Solve the inequality. Graph the solution.

1. $n - 9 \geq 2$

2. $v + 10 \leq 14$

3. $p + \frac{1}{4} < \frac{5}{4}$

4. $x - 3 > 8$

5. $20 < k + 15$

6. $\frac{4}{5} \leq m - \frac{1}{5}$

7. $12 \geq h - 8$

8. $4.4 > 2.4 + b$

9. $w - 36 \leq 64$

10. $a + 16 \geq 25$

11. $r + \frac{2}{3} > \frac{8}{3}$

12. $y - 19 < 51$

Write the word sentence as an inequality. Then solve the inequality.

13. 6 more than a number is at most 10.

14. Four less than a number is more than 3.

15. 0.6 is no less than 2.4 subtracted from a number.

16. The sum of a number and 14 is at least 18.

Describe and correct the error in solving the inequality.

17.
$$\begin{array}{r} \times \\ 3 > g - 4 \\ +4 \quad +4 \\ \hline 7 < g \end{array}$$

18.
$$\begin{array}{r} \times \\ x + 5 \geq 11 \\ -5 \quad +5 \\ \hline x \geq 16 \end{array}$$

19. You can spend at most \$10 at the mall. You want to buy a book that costs \$6.75 and a cold drink. Write and solve an inequality to represent the amount of money you can spend on your cold drink.

20. An order from an online bookstore takes at least four weeks to arrive. You ordered some books online nine days ago. Write and solve an inequality to represent the possible number of days it will take for your books to arrive.

21. The school auditorium can hold at most 480 people. There were 185 advance tickets sold for the school play. Write and solve an inequality to represent the number of people who can attend the play if all the people who bought advance tickets attend the play.

7.6 Practice B**Solve the inequality. Graph the solution.**

1. $x + 12 \geq 15$

2. $c - 8 < 4$

3. $q - 9.8 > 1.2$

4. $t + 54 \leq 85.6$

5. $9\frac{1}{4} < z - 4\frac{1}{8}$

6. $\frac{6}{5} \geq g + \frac{3}{5}$

7. $5.76 \leq k + 5.76$

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

9. $u + \frac{1}{3} \leq \frac{1}{2}$

10. $y - 58 < 74$

11. $d + \frac{5}{8} \leq 1$

12. $h - 3.1 > 1.3$

Write the word sentence as an inequality. Then solve the inequality.

13. The difference between a number and 4.5 is greater than 8.

14. The total of $\frac{3}{4}$ and a number is no more than 2.

15. 9.1 less than a number is less than 4.6.

16. A number minus $\frac{7}{12}$ is at least $3\frac{1}{2}$.17. $5\frac{1}{4}$ is greater than a number plus $2\frac{1}{10}$.**Solve the inequality. Graph the solution.**

18. $a - \frac{1}{3} - \frac{1}{6} < \frac{1}{2}$

19. $n + 1.25 - 0.75 > 6$

20. $12.4 + 6.07 \leq v - 8.13$

21. You are cooking a turkey. The turkey must reach a temperature of at least 165 degrees to be fully cooked. The temperature is 135 degrees. Write and solve an inequality to represent the number of degrees the temperature must increase for the turkey to be done.

22. The memory card on a cell phone can store up to 50 phone numbers. There are 21 phone numbers stored on the cell phone. Write and solve an inequality to represent the number of additional phone numbers you can store on the cell phone.

23. The possible values of x are given by $x + 2.1 \leq 6.5$. What is the greatest possible value of $\frac{x}{4}$?

7.6

Enrichment and Extension

Solving Compound Inequalities Using Addition or Subtraction

Example: Solve $3 < x + 1 < 6$. Graph the solution.

$$3 < x + 1 < 6 \quad \text{Write inequality.}$$

$$\underline{-1} \quad \underline{-1} \quad \underline{-1} \quad \text{Subtract 1 from each part of the inequality.}$$

$$2 < x < 5 \quad \text{Simplify.}$$



Example: Solve $x + 2 \geq 7$ or $x - 1 \leq 1$. Graph the solution.

Solve each inequality separately.

$$x + 2 \geq 7 \quad \text{Write inequality.}$$

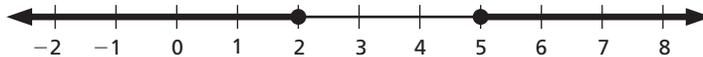
$$x - 1 \leq 1 \quad \text{Write inequality.}$$

$$\underline{-2} \quad \underline{-2} \quad \text{Subtract 2 from each side.}$$

$$\underline{+1} \quad \underline{+1} \quad \text{Add 1 to each side.}$$

$$x \geq 5 \quad \text{Simplify.}$$

$$x \leq 2 \quad \text{Simplify.}$$



Solve the inequality. Graph the solution.

1. $1 < x - 2 < 4$

2. $3 \leq x + 3 \leq 7$

3. $2 < x - 5 \leq 6$

4. $8 \leq x + 4 < 12$

5. $x > 6$ or $x + 10 < 14$

6. $x + 1 \leq 4$ or $x - 3 \geq 2$

7. $x - 5 \geq 2$ or $x + 8 < 8$

8. $x + 7 < 10$ or $9 + x \geq 13$

9. What do you notice about the solution of the compound inequality $x + 3 > 3$ or $x + 3 \leq 3$?

7.6 Puzzle Time

A Man Went To the Rocket Station And Asked For A Ticket To The Moon...

A	B	C	D	E	F
G	H	I	J	K	L

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

$x < 11$ I'M
$x \leq 22.4$ FULL
$x \leq 17$ ATTENDANT
$x > \frac{1}{6}$ NOW
$x < 110$ THE
$x \geq 9$ SAID

Solve the inequality. Graph the solution.

- A. $x - 5 < 6$
- B. $7 + x > 9$
- C. $5 \geq x - 7$
- D. $12 \leq x + 3$
- E. $20 > 14 + x$
- F. $39 + x \leq 56$
- G. $x - 23 < 87$
- H. $x - 19 \geq 19$
- I. $8.4 < x + 4.2$
- J. $14.9 \geq x - 7.5$
- K. $\frac{7}{8} \leq \frac{1}{4} + x$
- L. $\frac{1}{2} + x > \frac{2}{3}$

$x \geq \frac{5}{8}$ RIGHT
$x \leq 12$ SIR
$x < 6$ THE
$x \geq 38$ MOON
$x > 2$ SORRY
$x > 4.2$ IS

Activity
7.7**Start Thinking!**

For use before Activity 7.7

How are the inequalities $5x < 20$ and $5x > 20$ related to the equation $5x = 20$?

Describe how to solve the equation $5x = 20$.

Activity
7.7**Warm Up**

For use before Activity 7.7

Solve the inequality.

1. $x + 9 < 11$

2. $10 < y - 14$

3. $14 \geq 1 + r$

4. $21 \leq c + 8$

5. $7 + s < 12$

6. $x - 4 \leq 1$

Lesson
7.7**Start Thinking!**

For use before Lesson 7.7

On some cell phone plans, text messages cost \$0.20 per message.

Write a word problem involving the cost of text messages that can be solved with an inequality using division.

Exchange problems with a classmate and solve your classmate's problem.

Lesson
7.7**Warm Up**

For use before Lesson 7.7

Solve the inequality. Graph the solution.

1. $\frac{x}{4} > 2$

2. $\frac{t}{2} \geq 1$

3. $\frac{n}{3} \leq 3$

4. $6f < 18$

5. $15b > 90$

6. $12y \leq 0$

7.7 Practice A

Solve the inequality. Graph the solution.

1. $\frac{b}{3} > 6$
2. $2w < 16$
3. $7p \leq 70$
4. $n \div 3 \geq 12$
5. $200 < 10x$
6. $55 > 11a$
7. $21 \geq \frac{g}{4}$
8. $17 \leq \frac{k}{9}$
9. $h \div 4 \leq 0$
10. $5v \geq 125$
11. $8t > 24$
12. $\frac{2}{5}m < 14$
13. $13y \geq 104$
14. $\frac{3r}{4} \leq 45$
15. $\frac{c}{6} < 13$
16. $4s > 28$

Write the word sentence as an inequality. Then solve the inequality.

17. A number q divided by 14 is no less than 4.
18. The product of 21 and a number u is at most 126.
19. The quotient of a number z and 7 is at least 12.
20. A number a divided by 22 is greater than 5.
21. A number g multiplied by 13 is no more than 117.

Describe and correct the error in solving the inequality.

22.
$$\begin{array}{l} \times \\ 5x < 10 \\ \frac{5x}{5} < \frac{10}{5} \\ x < 1 \end{array}$$

23.
$$\begin{array}{l} \times \\ 2n \geq 28 \\ 2n - 2 \geq 28 - 2 \\ n \geq 26 \end{array}$$

24. A wheelbarrow can carry up to 300 pounds of weight. A bag of soil weighs 20 pounds. Write and solve an inequality to represent the number of bags of soil the wheelbarrow can carry.
25. A table is 3 feet wide. The length of the table can be adjusted as needed. You need at least 24 square feet of space on the table. Write and solve an inequality to represent the minimum length the table should have.
26. A step on a stairway is at least 8 inches high. Write and solve an inequality to represent the minimum number of steps between floors that are 10 feet apart.

7.7 Practice B**Solve the inequality. Graph the solution.**

1. $\frac{3}{4}m \leq 6$

2. $6.4v \geq 32$

3. $8b > 2$

4. $\frac{2}{5}x < 3$

5. $42h \geq 105$

6. $\frac{u}{9} \leq 14$

7. $\frac{r}{4} < 3.1$

8. $9.15a > 21.96$

9. $7.2p > 64.8$

10. $\frac{k}{2} < \frac{7}{20}$

11. $\frac{y}{15} \leq 2.7$

12. $5.4g \geq 2.7$

13. $\frac{6}{5}n < 9$

14. $1.05c > 8.4$

15. $6.76s \geq 16.9$

16. $\frac{w}{45} \leq 0.08$

Write the word sentence as an inequality. Then solve the inequality.17. 10 times a number q is at least 2.01.18. The quotient of a number z and 18 is at most $\frac{2}{3}$.19. A number d divided by 8 is no more than 3.43.20. The product of 5 and a number t is greater than 12.21. The quotient of a number b and 3 is less than $\frac{1}{12}$.**Graph the numbers that are solutions to both inequalities.**

22. $y - 2 > 5$ and $6y \leq 60$

23. $p + 6 \geq 11$ and $3p < 18$

24. $3m \geq 12$ and $\frac{m}{2} > 3$

25. $x - 10 < 0$ and $\frac{x}{4} \leq 1$

26. Three friends decide to share the cost to rent an apartment equally. The apartments that they are considering cost at least \$1200 per month. Write and solve an inequality to represent each person's share of the rental cost.

27. A printer can print up to 80 pages a minute. Write and solve an inequality to represent the number of minutes required to print a report of 380 pages.

28. A highway has at least one rest stop every 25 miles. Write and solve an inequality to represent the number of rest stops in the first 200 miles of the highway.

7.7 Enrichment and Extension

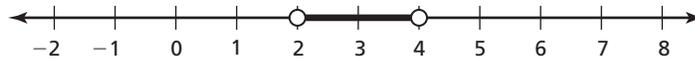
Solving Compound Inequalities Using Multiplication or Division

Example: Solve $4 < 2x < 8$. Graph the solution.

$$4 < 2x < 8 \quad \text{Write inequality.}$$

$$\frac{4}{2} < \frac{2x}{2} < \frac{8}{2} \quad \text{Divide each part of the inequality by 2.}$$

$$2 < x < 4 \quad \text{Simplify.}$$



Example: Solve $\frac{x}{3} \geq 2$ or $4x \leq 12$. Graph the solution.

Solve each inequality separately.

$$\frac{x}{3} \geq 2 \quad \text{Write inequality.}$$

$$\frac{x}{3} \cdot 3 \geq 2 \cdot 3 \quad \text{Multiply each side by 3.}$$

$$x \geq 6 \quad \text{Simplify.}$$

$$4x \leq 12 \quad \text{Write inequality.}$$

$$\frac{4x}{4} \leq \frac{12}{4} \quad \text{Multiply each side by 4.}$$

$$x \leq 3 \quad \text{Simplify.}$$



Solve the inequality. Graph the solution.

1. $1 < \frac{x}{2} < 3$

2. $9 \leq 3x \leq 15$

3. $3 \leq \frac{x}{4} < 6$

4. $30 < 5x \leq 40$

5. $2x > 10$ or $x - 3 < 1$

6. $\frac{x}{3} \leq 1$ or $7x \geq 42$

7. $\frac{x}{2} > 5$ or $10x \leq 40$

8. $x + 9 < 11$ or $\frac{x}{12} \geq \frac{1}{4}$

9. How are the graphs of the solutions for Exercises 1–4 different from the graphs of the solutions for Exercises 5–8? Explain.

7.7 Puzzle Time

How Many Paws Does A Bear Have?

Write the letter of each answer in the box containing the exercise number.

Solve the inequality. Graph the solution.

1. $\frac{x}{9} < 5$

2. $x \div 7 > 3$

3. $\frac{x}{4} \geq 16$

4. $11x < 99$

5. $6 \bullet x \geq 30$

6. $8x \leq 64$

7. $\frac{1}{5}x > 14$

8. $\frac{3}{4}x < 24$

9. $\frac{7}{9}x \geq 63$

10. $\frac{1}{2}x \leq 55$

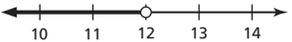
11. $\frac{5}{6}x > 25$

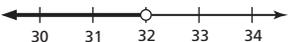
12. $8x < 96$

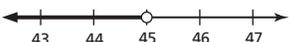
Answers

M. $x \leq 8$ 

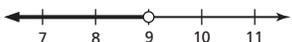
N. $x \geq 64$ 

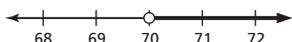
A. $x < 12$ 

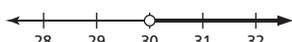
W. $x < 32$ 

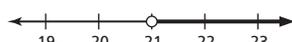
A. $x < 45$ 

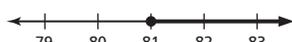
O. $x \leq 110$ 

W. $x < 9$ 

D. $x > 70$ 

N. $x > 30$ 

P. $x > 21$ 

A. $x \geq 81$ 

E. $x \geq 5$ 

10	3	5		2	12	8		9	11	7		6	1	4
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Chapter 7

Technology Connection

For use after Section 7.3

Using a Reciprocal to Solve Equations

When the variable in an equation is being multiplied by a fraction, using the reciprocal can be a fast way to solve the equation. Most calculators today include a reciprocal key that looks like $\boxed{1/x}$.

EXAMPLE Find the reciprocal of -4 .

SOLUTION

To find the reciprocal of -4 , enter the following keystrokes on your calculator: $4 \boxed{+/-} \boxed{1/x}$.

ANSWER -0.25

EXAMPLE Use a calculator and a reciprocal to solve the equations.

a. $\frac{2}{3}x = 8$

b. $-\frac{3}{4}x = -4 + 7$

SOLUTION

a. Multiply both sides of the equation by the reciprocal of $\frac{2}{3}$ to solve for x .

Press $8 \boxed{\times} \boxed{(} \boxed{2} \boxed{/} \boxed{3} \boxed{)} \boxed{1/x}$ to find an answer of 12.

b. Multiply both sides of the equation by the reciprocal of $-\frac{3}{4}$ to solve for x .

Press $\boxed{(} \boxed{4} \boxed{+/-} \boxed{+} \boxed{7} \boxed{)} \boxed{\times} \boxed{(} \boxed{3} \boxed{+/-} \boxed{/} \boxed{4} \boxed{)} \boxed{1/x}$ for an answer of -4 .

Solve the following equations using a calculator and a reciprocal.

1. $3x = 21$

2. $-5t = -20$

3. $-\frac{3}{4}y = 15$

4. $6n = -47 + 11$

5. $\frac{1}{2}r = 30 - 9$

6. $-\frac{3}{2}x = -81 + 54$