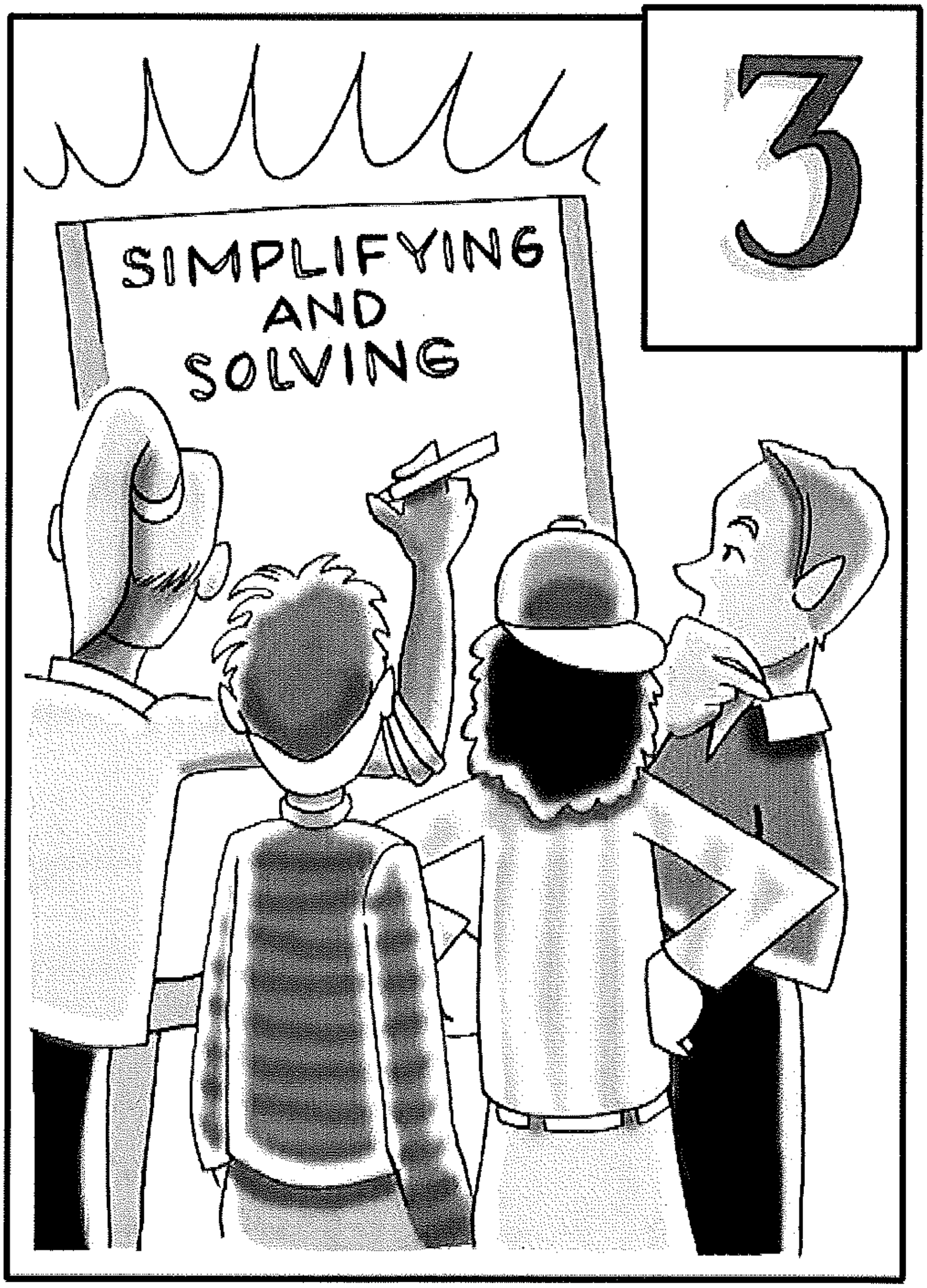

3
SIMPLIFYING
AND
SOLVING

Review & Preview

3-6. Use what you have learned about exponents to rewrite each of the expressions below.

a. $\frac{h^9}{h^{11}}$

b. $x^3 \cdot x^4$

c. $(3k^5)^2$

d. $n^7 \cdot n$

e. $\frac{16x^4y^3}{2x^4}$

f. $4xy^3 \cdot 7x^2y^3$

3-7. Gerardo is simplifying expressions with very large exponents. He arrives at each of the results below. For each result, decide if he is correct and justify your answer using the meaning of exponents.

a. $\frac{x^{150}}{x^{50}} \Rightarrow x^3$

b. $y^{20} \cdot y^{41} \Rightarrow y^{61}$

c. $(2m^2n^{15})^3 \Rightarrow 2m^6n^{45}$

3-8. Use what you know about slope and y-intercept to graph $y = -\frac{1}{2}x + 3$.

3-9. Write an expression to represent the given situation. Be sure to define your variable.

Sam currently has $150 in a savings account and is saving $10 per week.

3-10. Find $f(-3)$ for each function below.

a. $f(x) = -2x + 3$

b. $f(x) = -|1 - x|$

c. $f(x) = \sqrt[3]{9x} + 2$

d. $f(x) = \frac{1}{2}x + 2$

3-11. Simplify each expression.

a. $-\frac{1}{2} + \left(-\frac{1}{5}\right)$

b. $-\frac{2}{3} - 2$

c. $-1\frac{2}{3}(-2)$

d. $-2 \div \frac{2}{3}$

MATH NOTES

METHODS AND MEANINGS

Laws of Exponents

In the expression x^3, x is the **base** and 3 is the **exponent**.

$$x^3 = x \cdot x \cdot x$$

The patterns that you have been using during this section of the book are called the **laws of exponents**. Here are the basic rules with examples:

Law	Examples	
$x^m x^n = x^{m+n}$ for all x	$x^3 x^4 = x^{3+4} = x^7$	$2^5 \cdot 2^{-1} = 2^4$
$\frac{x^m}{x^n} = x^{m-n}$ for $x \neq 0$	$x^{10} \div x^4 = x^{10-4} = x^6$	$\frac{5^4}{5^7} = 5^{-3}$
$(x^m)^n = x^{mn}$ for all x	$(x^4)^3 = x^{4 \cdot 3} = x^{12}$	$(10^5)^6 = 10^{30}$
$x^0 = 1$ for $x \neq 0$	$\frac{y^2}{y^2} = y^0 = 1$	$9^0 = 1$
$x^{-1} = \frac{1}{x}$ for $x \neq 0$	$\frac{1}{x^2} = (\frac{1}{x})^2 = (x^{-1})^2 = x^{-2}$	$3^{-1} = \frac{1}{3}$

3-19. Which of the expressions below are equivalent to $16x^8$? Make sure you find *all* the correct answers!

a. $(16x^4)^2$　　　b. $8x^2 \cdot 2x^6$

c. $(2x^2)^4$　　　d. $(4x^4)^2$

e. $(2x^4)^4$　　　f. $(\frac{1}{16}x^{-8})^{-1}$

3-20. Rewrite each expression below without negative or zero exponents.

a. 4^{-1}　　b. 7^0　　c. 5^{-2}　　d. x^{-2}

3-21. With or without tiles, simplify, and solve each equation below for x. Record your work.

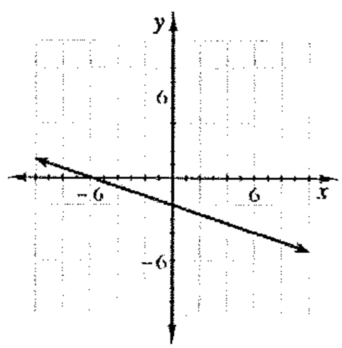
a. $3x-7=2$　　　b. $1+2x-x=x-5+x$

c. $3-2x=2x-5$　　　d. $3+2x-(x+1)=3x-6$

3-22. For the line graphed at right:

a. Determine the slope.

b. Find the equation of the line.



3-23. Write and solve an equation to represent the given situation. Be sure to define your variable.

Samantha currently has \$1500 in the bank and is spending \$35 per week. How many weeks will it take until her account is worth only \$915?

3-24. Determine the equation of the line containing the points given in the table below.

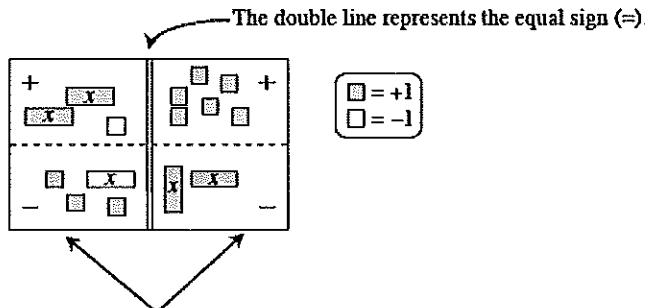
x	−2	−1	2	3
y	−7	−4	5	8

MATH NOTES

METHODS AND MEANINGS

Using Algebra Tiles to Solve Equations

Algebra tiles are a physical and visual representation of an equation. For example, the equation $2x+(-1)-(-x)-3=6-2x$ can be represented by the Equation Mat below.



For each side of the equation, there is an addition and a subtraction region.

An Equation Mat can be used to represent the process of solving an equation. The "legal" moves on an Equation Mat correspond with the mathematical properties used to algebraically solve an equation.

"Legal" Tile Move	Corresponding Algebra
Group tiles that are alike together.	Combine like terms.
Flip all tiles from subtraction region to addition region.	Change subtraction to "adding the opposite."
Flip everything on both sides.	Multiply (or divide) both sides by –1.
Remove zero pairs (pairs of tiles that are opposites) within a region of the mat.	A number plus its opposite equals zero.
Place or remove the same tiles on or from both sides.	Add or subtract the same value from both sides.
Arrange tiles into equal-sized groups.	Divide both sides by the same value.

Review & Preview

3-33. Copy and simplify the following expressions by combining like terms. Using or drawing sketches of algebra tiles may be helpful.

a. $2x+3x+3+4x^2+10+x$

b. $4x+4y^2+y^2+9+10+x+3x$

c. $2x^2+30+3x^2+4x^2+14+x$

d. $20+5xy+4y^2+10+y^2+xy$

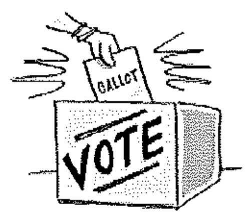
3-34. Solve each equation. Show the check to prove your answer is correct.

a. $3x+5-x=x-3$

b. $5x-(x+1)=5-2x$

3-35. Fisher thinks that any two lines must have a point of intersection. Is he correct? If so, explain how you know. If not, produce a **counterexample**. That is, find two lines that do not have a point of intersection and explain how you know.

3-36. Write and solve an equation for the following problem.



In the last election, candidate A received twice as many votes as candidate B. Candidate C received 15,000 fewer votes than candidate B. If a total of 109,000 votes were cast, how many votes did candidate A receive?

3-37. Evaluate the following expressions.

a. $10\frac{7}{9}+\left(-9\frac{2}{3}\right)$

b. $-10\frac{7}{10}-2\frac{3}{5}$

c. $\left(4\frac{1}{2}\right)\left(-3\frac{3}{10}\right)$

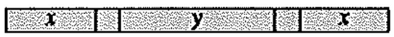
d. $-8\frac{3}{5}\div 1\frac{1}{5}$

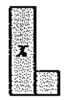
3-38. Find the equation of the line based on the table.

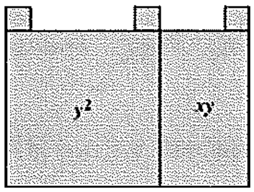
x	2	4	6	8
y	2	3	4	5

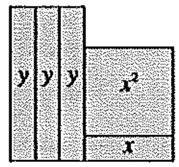
3-39. For each of the shapes formed by algebra tiles below:

- Sketch and label the shape on your paper and write an expression that represents the perimeter.
- Simplify your perimeter expression as much as possible.

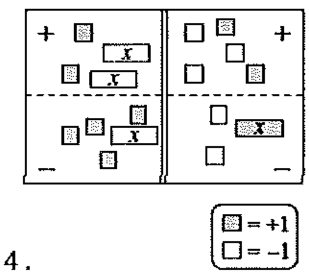
a. 

b. 

c. 

d. 

3-40. Translate the Equation Mat at right into an equation. Do not simplify your equation. Remember that the double line represents "equals."



3-41. Consider the rule $y=\frac{1}{2}x-4$.

a. Without graphing, find the x-intercept of $y=\frac{1}{2}x-4$.

b. Make a table and graph $y=\frac{1}{2}x-4$ on graph paper.

c. How could you find the x-intercept of $y=\frac{1}{2}x-4$ with your graph from part (b)? How would you find it with the table? Explain.

3-42. Evaluate each expression below for a when $a=\frac{2}{3}$, if possible.

a. $24a$ b. $3a$ c. $\frac{a}{0}$ d. $\frac{0}{a}$

3-43. **Multiple Choice:** What is the slope of the line that goes through the points (–7, 10) and (1, 4)?

a. $\frac{3}{4}$ b. $-\frac{3}{4}$ c. 1 d. –1

3-44. Simplify each expression below, if possible.

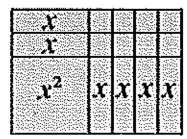
a. $5x(3x)$ b. $5x+3x$ c. $6x(x)$ d. $6x+x$

MATH NOTES

METHODS AND MEANINGS

Multiplying Algebraic Expressions with Tiles

The area of a rectangle can be written two different ways. It can be written as a *product* of its width and length or as a *sum* of its parts. For example, the area of the shaded rectangle at right can be written two ways:

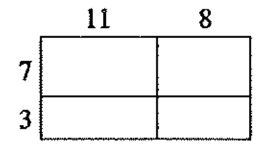


$$\underbrace{(x+4)}_{length}\underbrace{(x+2)}_{width} \quad = \quad \underbrace{x^2+6x+8}_{area}$$

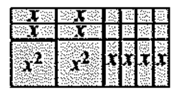
area as a product = area as a sum

Review & Preview

3-48. For the entire rectangle at right, find the area of each part and then find the area of the whole.



3-49. Write the area of the rectangle at right as a *product* and as a *sum*.



3-50. When solving $\frac{x}{6} = \frac{5}{2}$ for x, Nathan noticed that x is divided by 6.

a. What can he do to both sides of the equation to get x alone?

b. Solve for x. Then check your solution in the original equation.

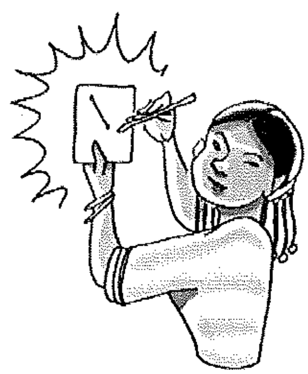
c. Use the same process to solve this equation for x: $\frac{x}{10} = \frac{2}{5}$.

3-51. Jamila wants to play a game called "Guess My Line." She gives you the following hints: "Two points on my line are (1, 1) and (2, 4)."

a. What is the slope of her line? A graph of the line may help.

b. What is the y-intercept of her line?

c. What is the equation of her line?



3-52. A calculator manufacturer offers two different models for students. The company has sold 10,000 scientific calculators so far and continues to sell 1500 per month. It has also sold 18,000 graphical models and continues to sell 1300 of this model each month. When will the sales of scientific calculators equal the sales of graphical calculators?

3-53. On graph paper, make an $x \rightarrow y$ table and graph $y = 2x^2 - x - 3$. Find its x- and y-intercepts.

MATH NOTES

METHODS AND MEANINGS

Vocabulary for Expressions

A mathematical **expression** is a combination of numbers, variables, and operation symbols. Addition and subtraction separate expressions into parts called **terms**. For example, $4x^2 - 3x + 6$ is an expression. It has three terms: $4x^2$, $3x$, and 6. The **coefficients** are 4 and 3. 6 is called a **constant term**.

A one-variable **polynomial** is an expression which only has terms of the form:

$$(\text{any real number})x^{(\text{whole number})}$$

For example, $4x^2 - 3x^1 + 6x^0$ is a polynomial, so the simplified form, $4x^2 - 3x + 6$ is a polynomial.

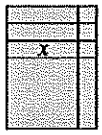
The function $f(x) = 7x^5 + 2.5x^3 - \frac{1}{2}x + 7$ is a polynomial function.

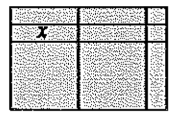
The following are not polynomials: $2^x - 3$, $\frac{1}{x^2-2}$, and $\sqrt{x-2}$.

A **binomial** is a polynomial with only two terms, for example, $x^3 - 0.5x$ and $2x + 5$.

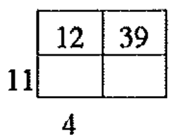
Review & Preview

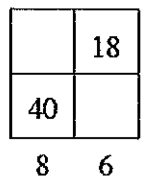
3-58. Examine the rectangles formed with tiles below. For each figure, write its area as a product of the width and length and as a sum of its parts.

a. 

b. 

3-59. Find the total area of each rectangle below. Each number inside the rectangle represents the area of that smaller rectangle, while each number along the side represents the length of that portion of the side.

a. 

b. 

3-60. Solve each equation below for x. Then check your solutions.

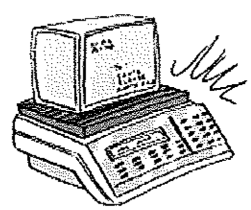
a. $\frac{x}{8}=\frac{3}{4}$

b. $\frac{2}{5}=\frac{x}{40}$

c. $\frac{1}{8}=\frac{x}{12}$

d. $\frac{x}{10}=\frac{12}{15}$

3-61. Mailboxes Plus sends packages overnight for \$5 plus \$0.25 per ounce. United Packages charges \$2 plus \$0.35 per ounce. Mr. Molinari noticed that his package would cost the same to mail using either service. How much does his package weigh?



3-62. What is the equation of the line that has a y-intercept of $(0,-3)$ and passes through the point $(-9,-9)$?

3-63. Evaluate each expression.

a. $-7\frac{5}{6}+\left(-7\frac{1}{4}\right)$ b. $-8\frac{1}{2}-\left(-3\frac{1}{4}\right)$ c. $\left(-2\frac{3}{7}\right)(-7)$ d. $-2\frac{1}{8}\div\frac{1}{5}$

METHODS AND MEANINGS

MATH NOTES

Properties of Real Numbers

The legal tiles moves have formal mathematical names, called the **properties of real numbers.**

The **Commutative Property** states that when *adding* or *multiplying* two or more number or terms, order is not important. That is:

$a+b=b+a$ For example, $2+7=7+2$

$a\cdot b=b\cdot a$ For example, $3\cdot 5=5\cdot 3$

However, *subtraction* and *division* are not commutative, as shown below.

$7-2\neq 2-7$ since $5\neq -5$

$50\div 10\neq 10\div 50$ since $5\neq 0.2$

The **Associative Property** states that when *adding* or *multiplying* three or more number or terms together, grouping is not important. That is:

$(a+b)+c=a+(b+c)$ For example, $(5+2)+6=5+(2+6)$

$(a\cdot b)\cdot c=a\cdot(b\cdot c)$ For example, $(5\cdot 2)\cdot 6=5\cdot(2\cdot 6)$

However, *subtraction* and *division* are not associative, as shown below.

$(5-2)-3\neq 5-(2-3)$ since $0\neq 6$ $(20\div 4)\div 2\neq 20\div(4\div 2)$ since $2.5\neq 10$

The **Identity Property of Addition** states that adding zero to any expression gives the same expression. That is:

$a+0=a$ For example, $6+0=6$

The **Identity Property of Multiplication** states that multiplying any expression by one gives the same expression. That is:

$1\cdot a=a$ For example, $1\cdot 6=6$

The **Additive Inverse Property** states that for every number a there is a number $-a$ such that $a+(-a)=0$. A common name used for the additive inverse is the **opposite**. That is, $-a$ is the opposite of a. For example, $3+(-3)=0$ and $-5+5=0$.

The **Multiplicative Inverse Property** states that for every nonzero number a there is a number $\frac{1}{a}$ such that $a\cdot\frac{1}{a}=1$. A common name used for the multiplicative inverse is the **reciprocal**. That is, $\frac{1}{a}$ is the reciprocal of a. For example, $6\cdot\frac{1}{6}=1$.

Review & Preview

3-70. Use a generic rectangle to multiply the following expressions. Write each solution both as a sum and as a product.

a. $(2x+5)(x+6)$

b. $(m-3)(3m+5)$

c. $(12x+1)(x^2-5)$

d. $(3-5y)(2+y)$

3-71. Find the rule for the pattern represented at right.

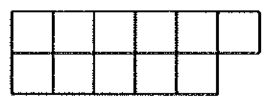
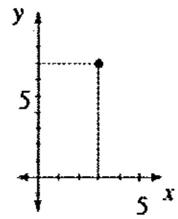
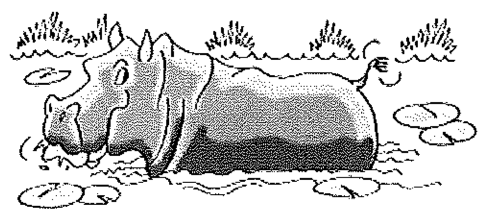


Figure 1



3-72. Harry the Hungry Hippo is munching on the lily pads in his pond. When he arrived at the pond, there were 20 lily pads, but he is eating 4 lily pads an hour. Heinrick the Hungrier Hippo found a better pond with 29 lily pads! He eats 7 lily pads every hour.



a. If Harry and Heinrick start eating at the same time, when will their ponds have the same number of lily pads remaining?

b. How many lily pads will be left in each pond at that time?

3-73. Graph each equation below on the same set of axes and label the point of intersection with its coordinates.

$$y=2x+3 \qquad y=x+1$$

3-74. Are the odd numbers a closed set under addition? Justify your conclusion.

3-75. Simplify each of the expressions below. Your final simplification should not contain negative exponents.

a. $(5x^3)(-3x^{-2})$

b. $(4p^2q)^3$

c. $\frac{3m^7}{m^{-1}}$

MATH NOTES

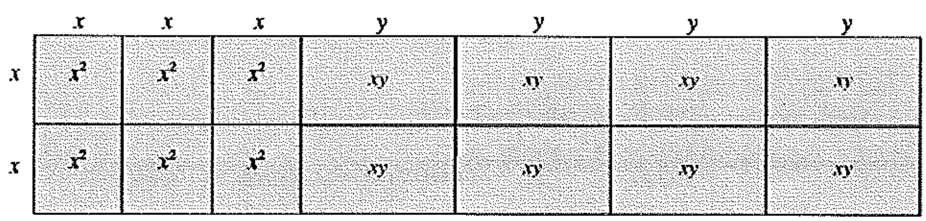
METHODS AND MEANINGS

The Distributive Property

The **Distributive Property** states that for any three terms a, b, and c:

$$a(b+c) = ab + ac$$

That is, when a multiplies a group of terms, such as $(b + c)$, then it multiplies *each* term of the group. For example, when multiplying $2x(3x+4y)$, the $2x$ multiplies both the $3x$ and the $4y$. This can be shown with **algebra tiles** or in a **generic rectangle** (see below).



$2x$	$2x \cdot 3x$	$2x \cdot 4y$
	$3x$	$4y$

$\dfrac{2x(3x+4y)}{2x(3x)+2x(4y)}$, simplifying results in

The 2x multiplies each term.

Review & Preview

3-81. Find each of the following products by drawing and labeling a generic rectangle or by using the Distributive Property.

a. $-4y(5x+8y)$ b. $9x(-4+10y)$ c. $(x^2-2)(x^2+3x+5)$

3-82. Is the set of even numbers closed under addition? That is, if you add two even numbers, do you *always* get an even number? Is the set of odd numbers closed under addition? Explain your answers.

3-83. Find the dimensions of the generic rectangle at right. Then write an equivalency statement (length · width = area) of the area as a product and as a sum.

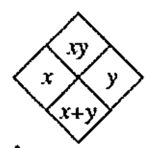
x^2	$-5x$
$3x$	-15

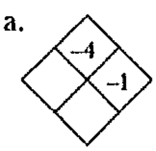
3-84. Solve for x. Use any method. Check your solutions by testing them in the original equation.

a. $|x-3|=5$ b. $5|x|=35$

c. $|x+1|=2$ d. $|x+3|=-2$

3-85. Copy and complete each of the Diamond Problems below. The pattern used in the Diamond Problems is shown at right.



a.


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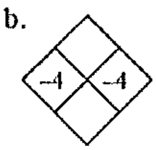

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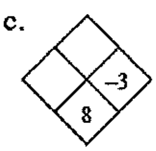
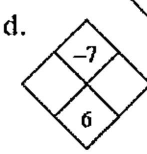


d.


3-86. If $f(x)=7+|x|$ and $g(x)=x^3-5$, then find:

a. $f(-5)$ b. $g(4)$ c. $f(0)$

d. $f(2)$ e. $g(-2)$ f. $g(0)$

MATH NOTES

METHODS AND MEANINGS

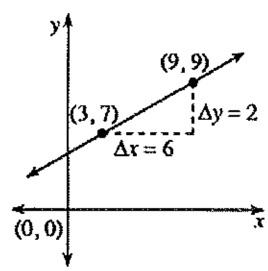
Linear Equations from Slope and/or Points

If you know the slope, m, and y-intercept, $(0, b)$, of a line, you can write the equation of the line as $y = mx + b$.

You can also find the equation of a line when you know the slope and one point on the line. To do so, rewrite $y = mx + b$ with the known slope and substitute the coordinates of the known point for x and y. Then solve for b and write the new equation.

For example, find the equation of the line with a slope of –4 that passes through the point (5, 30). Rewrite $y = mx + b$ as $y = -4x + b$. Substituting (5, 30) into the equation results in $30 = -4(5) + b$. Solve the equation to find $b = 50$. Since you now know the slope and y-intercept of the line, you can write the equation of the line as $y = -4x + 50$.

Similarly you can write the equation of the line when you know two points. First use the two points to find the slope. Then substitute the known slope and either of the known points into $y = mx + b$. Solve for b and write the new equation.



For example, find the equation of the line through (3, 7) and (9, 9). The slope is $\frac{\Delta y}{\Delta x} = \frac{2}{6} = \frac{1}{3}$. Substituting $m = \frac{1}{3}$ and $(x, y) = (3, 7)$ into $y = mx + b$ results in $7 = \frac{1}{3}(3) + b$. Then solve the equation to find $b = 6$. Since you now know the slope and y-intercept, you can write the equation of the line as $y = \frac{1}{3}x + 6$.

Review & Preview

3-93. Solve each equation. Be sure to find all possible answers and check your solutions.

a. $|x| = 7$

b. $|2x| = 32$

c. $|x + 7| = 10$

d. $|x| = 53.1$

3-94. Solve each equation below for the indicated variable.

a. $3x - 2y = 18$ for x

b. $3x - 2y = 18$ for y

c. $rt = d$ for r

d. $C = 2\pi r$ for r

3-95. Evaluate the following expressions.

a. $-3\frac{2}{9} + 8\frac{7}{9}$

b. $-7\frac{2}{7} - 4\frac{1}{5}$

c. $1\frac{5}{7} \cdot 3\frac{6}{7}$

d. $-8\frac{1}{7} \div -5\frac{5}{9}$

3-96. Find the equation of each line described below.

a. A line with slope of 0 that passes through the point (6, −11).

b. A line that passes through the points (12, 12) and (20, 6).

3-97. Graph the lines $y = -4x + 3$ and $y = x - 7$ on the same set of axes. Then find their point of intersection.

3-98. Simplify each expression using the laws of exponents.

a. $(x^2)(x^2y^3)$

b. $\frac{x^3y^4}{x^2y^3}$

c. $(2x^2)(-3x^4)$

d. $(2x)^3$

3-99. One way to solve absolute value equations is to think about "looking inside" the absolute value. The "inside" must be positive or negative, so you should solve the equation both ways. For example, you could record your steps as shown at right.

$|5 - 2x| = 19$

$5 - 2x = 19$	$5 - 2x = -19$
$-2x = 14$	$-2x = -24$
$x = -7$	$x = 12$

Solve each equation. Be sure to find all possible answers and check your solutions.

a. $|9 + 3x| = 39$

b. $|2x + 1| = 10$

c. $|-3x + 9| = 10$

d. $|3.2x - 4| = -5.7$

3-100. Find each of the following products by drawing and labeling a generic rectangle or by using the Distributive Property.

a. $5x(x-6)$

b. $-9y(6-3y)$

3-101. For each generic rectangle below, find the dimensions (length and width). Then write the area as a product of the dimensions and as a sum.

a.

$2x^2$	$10x$

b.

$2x^2$	$10x$
$3x$	15

3-102. Solve each of the following equations. Be sure to show your work carefully and check your answers.

a. $2(3x-4)=22$

b. $6(2x-5)=-(x+4)$

c. $2-(y+2)=3y$

d. $3+4(x+1)=159$

3-103. Multiply each of the following expressions. Show all of your work.

a. $(x+3)(4x+5)$

b. $(-2x^2-4x)(3x+4)$

c. $(3y-8)(-x+y)$

d. $(y-4)(3x+5y-2)$

3-104. Solve each of the following equations for the indicated variable. Show all of your steps.

a. $y=2x-5$ for x

b. $p=-3w+9$ for w

c. $2m-6=4n+4$ for m

d. $3x-y=-2y$ for y

MATH NOTES

METHODS AND MEANINGS

Using Generic Rectangles to Multiply

A generic rectangle can be used to find products because it helps to organize the different areas that make up the total rectangle. For example, to multiply $(2x+5)(x+3)$, a generic rectangle can be set up and completed as shown below. Notice that each product in the generic rectangle represents the area of that part of the rectangle.

	$2x$	$+5$
x		
$+3$		

$\longrightarrow$

	$2x$	$+5$
x	$2x^2$	$5x$
$+3$	$6x$	15

$$(2x+5)(x+3) = 2x^2 + 11x + 15$$

area as a product   area as a sum

Note that while a generic rectangle helps organize the problem, its size and scale are not important. Some students find it helpful to write the dimensions on the rectangle twice, that is, on both pairs of opposite sides.

Review & Preview

3-107. Solve each equation.

a. $3(x-2)=-6$

b. $2(x+1)+3=3(x-1)$

c. $(x+2)(x+3)=(x+1)(x+5)$

d. $|x-5|=8$

3-108. Find the equation of the line based on the table.

x	3	−2	5	12
y	4	−11	10	31

3-109. Find an equation of the line with slope $\frac{1}{5}$ passing through the point (10, 9).

3-110. This problem is a checkpoint for operations with rational numbers. It will be referred to as Checkpoint 3.

Compute each of the following problems with fractions.

a. $-\frac{2}{3}+\left(-\frac{1}{8}\right)$

b. $3\frac{1}{2}-\left(-1\frac{1}{3}\right)$

c. $\left(-4\frac{1}{5}\right)\left(-\frac{1}{3}\right)$

d. $\left(-\frac{2}{3}\right)\div\left(\frac{1}{4}\right)$

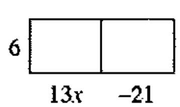
e. $1\frac{3}{4}+\left(-5\frac{1}{3}\right)$

f. $\left(-2\frac{2}{3}\right)\div\left(-1\frac{1}{6}\right)$

Check your answers by referring to the Checkpoint 3 materials located at the back of your book.

If you needed help solving these problems correctly, then you need more practice. Review the Checkpoint 3 materials and try the practice problems. Also consider getting help outside of class time. From this point on, you will be expected to do problems like these quickly and easily.

3-111. Copy and complete these generic rectangles on your paper. Then write the area of each rectangle as a product of the length and width and as a sum of the parts.

a.


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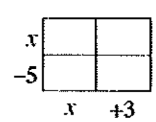
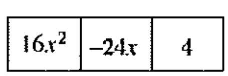
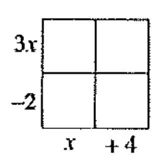


c.


d.


3-112. Simplify using only positive exponents.

a. $(3x^2y)(5x)$

b. $(x^2y^3)(x^{-2}y^{-2})$

c. $\frac{x^3}{x^{-2}}$

d. $(2x^{-1})^3$

CL 3-113. Two brothers, Martin and Horace, are in their backyard. Horace is taking down a brick wall on one side of the yard while Martin is building a brick wall on the other side. Martin lays 2 bricks every minute. Meanwhile, Horace takes down 3 bricks each minute from his wall. They both start working at the same time. It takes Horace 55 minutes to finish tearing down his wall.

a. How many bricks were originally in the wall that Horace started tearing down?

b. Represent this situation with equations, tables, and a graph.

c. When did the two walls have the same number of bricks?

CL 3-114. Rewrite each of these products as a sum.

a. $6x(2x+y-5)$

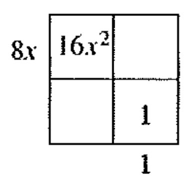
b. $(2x^2-11)(x^2+4)$

c. $(7x)(2xy)$

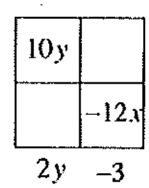
d. $(x-2)(3+y)$

CL 3-115. Find the missing areas and dimensions for each generic rectangle below. Then write each area as a sum and as a product.

a.



b.



CL 3-116. For each equation below, solve for x.

a. $(x-1)(x+7)=(x+1)(x-3)$

b. $2x-5(x+4)=-2(x+3)$

c. $|x+7|=11$

d. $|2x-3|=23$

CL 3-117. For each equation below, solve for y.

a. $6x-2y=4$

b. $6x+3y=4x-2y+8$

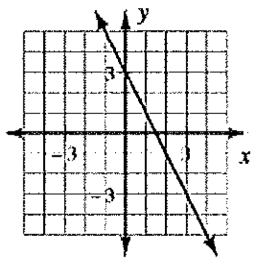
c. Find the slope and y-intercepts for the equations in parts (a) and (b).

CL 3-118. Simplify each expression.

a. $(5x^3)^2$ b. $\frac{14a^3b^2}{21a^4b}$ c. $2m^3n^2 \cdot 3mn^4$

CL 3-119. Determine the equation of each line from the given representation.

a.



b. A line with a slope $-\frac{2}{3}$ and passes through the point (–3, 4).

c.

x	–4	–3	–2	–1
y	–11	–9	–7	–5

CL 3-120. Evaluate the following expressions.

a. $-8\frac{2}{9}+7\frac{3}{5}$ b. $-4\frac{3}{8}-5\frac{3}{8}$

c. $10\frac{3}{4}\left(-8\frac{4}{9}\right)$ d. $-8\frac{3}{4}\div\left(-\frac{5}{7}\right)$

CL 3-121. Using your knowledge of exponents, rewrite each expression below so that there are no negative exponents or parentheses remaining.

a. $\frac{4x^{18}}{(2x^{22})^0}$ b. $(s^4tu^2)(s^7t^{-1})$

c. $(3w^{-2})^4$ d. m^{-3}

CL 3-122. Check your answers using the table at the end of the closure section. Which problems do you feel confident about? Which problems were hard? Use the table to make a list of topics you need help on and a list of topics you need to practice more.