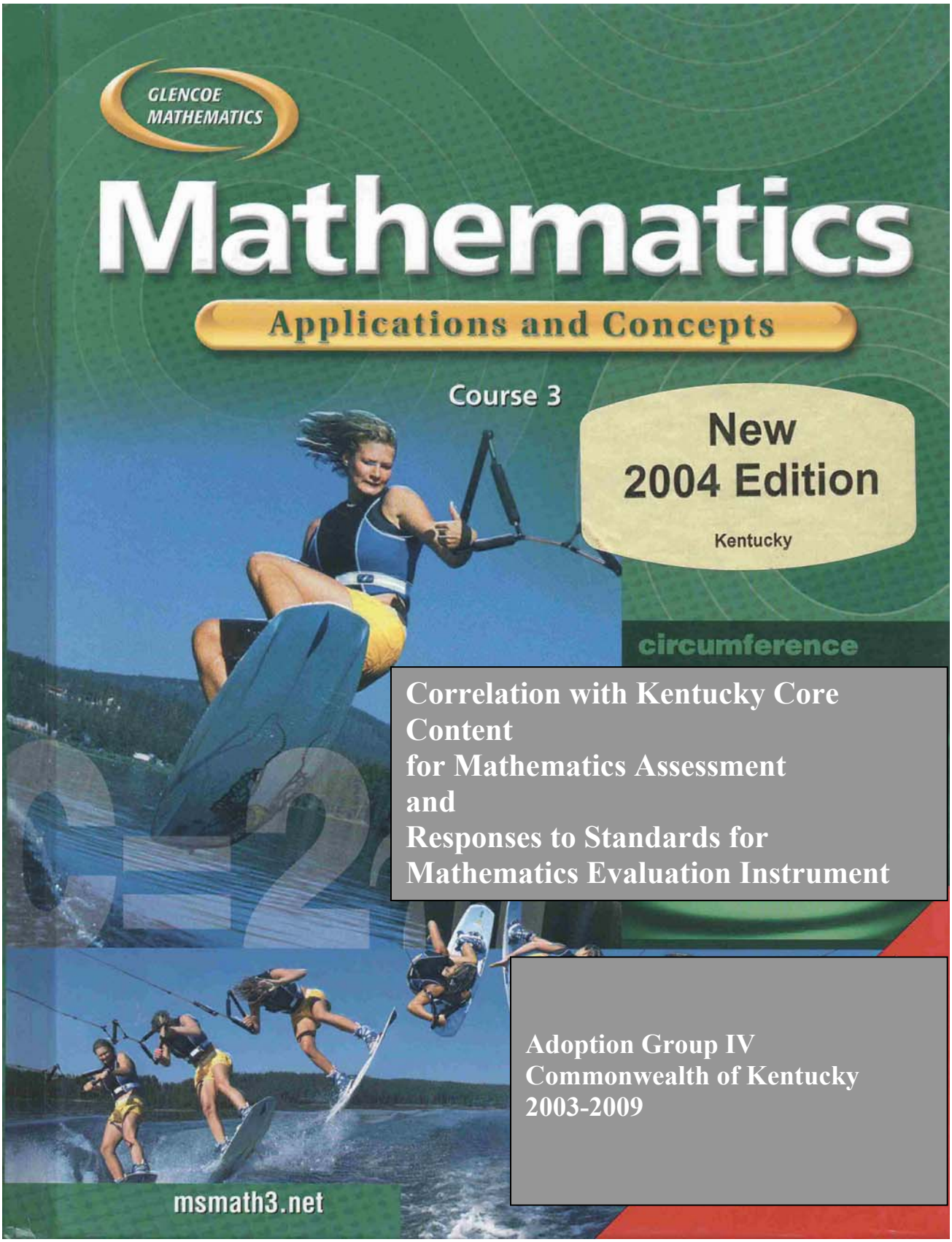
KENTUCKY



Correlation with Kentucky Core Content
for Mathematics Assessment
and
Responses to Standards for
Mathematics Evaluation Instrument

Adoption Group IV
Commonwealth of Kentucky
2003-2009

Number/Computation	
Concepts **Students will describe properties of, define, give examples of, and/or apply to both real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-1.1.1 Rational numbers (integers, fractions, decimals, percents)	**Sample Demonstrator: 17** SE: 17-21, 62-66, 67-70, 206-209, 210-214 *Study Skill* 16 TWE: A 66 DI 206, 211 F 17
MA-M-1.1.2 Irrational numbers (square roots and π only)	SE: 116-119, 120-122, 319-323 TWE: F 116, 120
MA-M-1.1.3 Meaning of proportion (equivalent ratios)	SE: 156-159, 170-173, 216-219 TWE: DI 171 F 170, 216
MA-M-1.1.4 Place value of whole numbers and decimals	See *Glencoe Mathematics: Applications and Concepts, Courses 1 and 2.*
MA-M-1.1.5 Positive whole number exponents	SE: 98-101, 104-107, 110 TWE: F 98 IE 99 NS 106
MA-M-1.1.6 Representation of numbers and operations in a variety of equivalent forms using models, diagrams, and symbols (e.g., number lines, 10 by 10 grids, rectangular arrays, number sentences)	**Sample Demonstrator: 17** SE: 17-21, 206-209, 210-214, 216, 220, 232-235 TWE: A 235 F 17, 206

See page 27 for a list of codes used for TWE pages.

Sample Demonstrator
Number/Computation: Concepts
MA-M-1.1.1 to MA-M-1.1.6

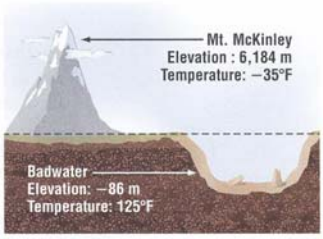
1-3 Integers and Absolute Value

What You'll Learn
Graph integers on a number line and find absolute value.

NEW Vocabulary
negative number
integer
coordinate
inequality
absolute value

WHEN **am I ever going to use this?**

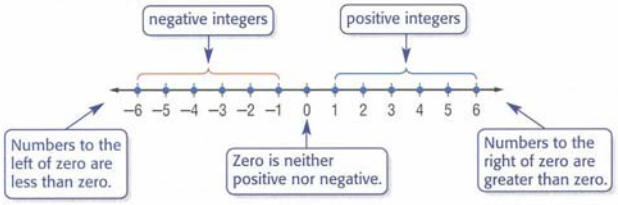
GEOGRAPHY Badwater, in Death Valley, California, is the lowest point in North America, while Mt. McKinley in Alaska, is the highest point. The graph shows their elevations and extreme temperatures.



1. What does an elevation of −86 meters represent?
2. What does a temperature of −35° represent?

With sea level as the starting point of 0, you can express 86 meters below sea level as 0 − 86, or −86. A **negative number** is a number less than zero.

Negative numbers like −86, positive numbers like +125, and zero are members of the set of **integers**. Integers can be represented as points on a number line.



This set of integers can be written as {. . . , −3, −2, −1, 0, 1, 2, 3, . . .}, where . . . means *continues indefinitely*.

EXAMPLES **Write Integers for Real-Life Situations**

Write an integer for each situation.

1. **a 15-yard loss** The integer is −15.
2. **3 inches above normal** The integer is +3.

Your Turn **Write an integer for each situation.**

a. a gain of $2 a share
b. 10 degrees below zero

Number/Computation	
Skills **Students will perform the following mathematical operations and/or procedures accurately and efficiently, and explain how they work in real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-1.2.1 Add, subtract, multiply, and divide rational numbers (fractions, decimals, percents, integers) to solve problems	SE: 23-27, 28-31, 34-37, 71-75, 76-80, 82-85, 88-91 *The Game Zone* 87 *Study Skill* 81 TWE: IE 24, 25, 29, 35, 36, 72, 73, 77, 78, 83, 89
MA-M-1.2.2 Compute (e.g., estimate, use pencil and paper, use calculator, round, use mental math) large and small quantities and check for reasonable and appropriate computational results	**Sample Demonstrator: 220** SE: 220-223, 228-231, 600-601 *Problem Solving Strategy* 226-227 TWE: IE 221, 229
MA-M-1.2.3 Apply ratios, proportional reasoning, and percents (e.g., constant rate of change, unit pricing)	**Sample Demonstrator: 220** SE: 170-173, 206-209, 216-219, 220-223, 228-231, 232-235, 236-240, 241-244 *Hands-on Lab* 216 *Spreadsheet Investigation* 245 *The Game Zone* 175 TWE: IE 171, 207, 211, 217, 221, 229, 233, 237, 238, 242
MA-M-1.2.4 Identify and use number theory concepts [prime numbers, prime factorization, composite numbers, factors, multiples, divisibility, greatest common factor (GCF), least common multiple (LCM)] to solve problems	SE: 34, 88-91, 98-101, 608, 609, 610, 612 TWE: TT 99
MA-M-1.2.5 Apply order of operations	SE: 11-15, 55, 616 TWE: DI 12 IE 12, 13

Sample Demonstrator
Number/Computation: Skills
MA-M-1.2.1 to MA-M-1.2.5

5-4 Finding Percents Mentally

What You'll Learn
Compute mentally with percents.

WHEN am I ever going to use this?

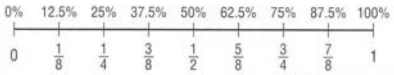
SCHOOL The table below lists the enrollment at Roosevelt Middle School by grade level.

1. 50% of the eighth grade class are females. Write 50% as a fraction.
2. Explain how you could find 50% of 104 without using a proportion.
3. Use mental math to find the number of females in the eighth grade class.
4. 25% of the sixth grade class play intramural basketball. Write 25% as a fraction.
5. Use mental math to find the number of students in the sixth grade who play intramural basketball.

Roosevelt Middle School Enrollment

Grade Level	Number of Students
Sixth	84
Seventh	93
Eighth	104

When you compute with common percents like 50% or 25%, it may be easier to use the fraction form of the percent. This number line shows some fraction-percent equivalents.



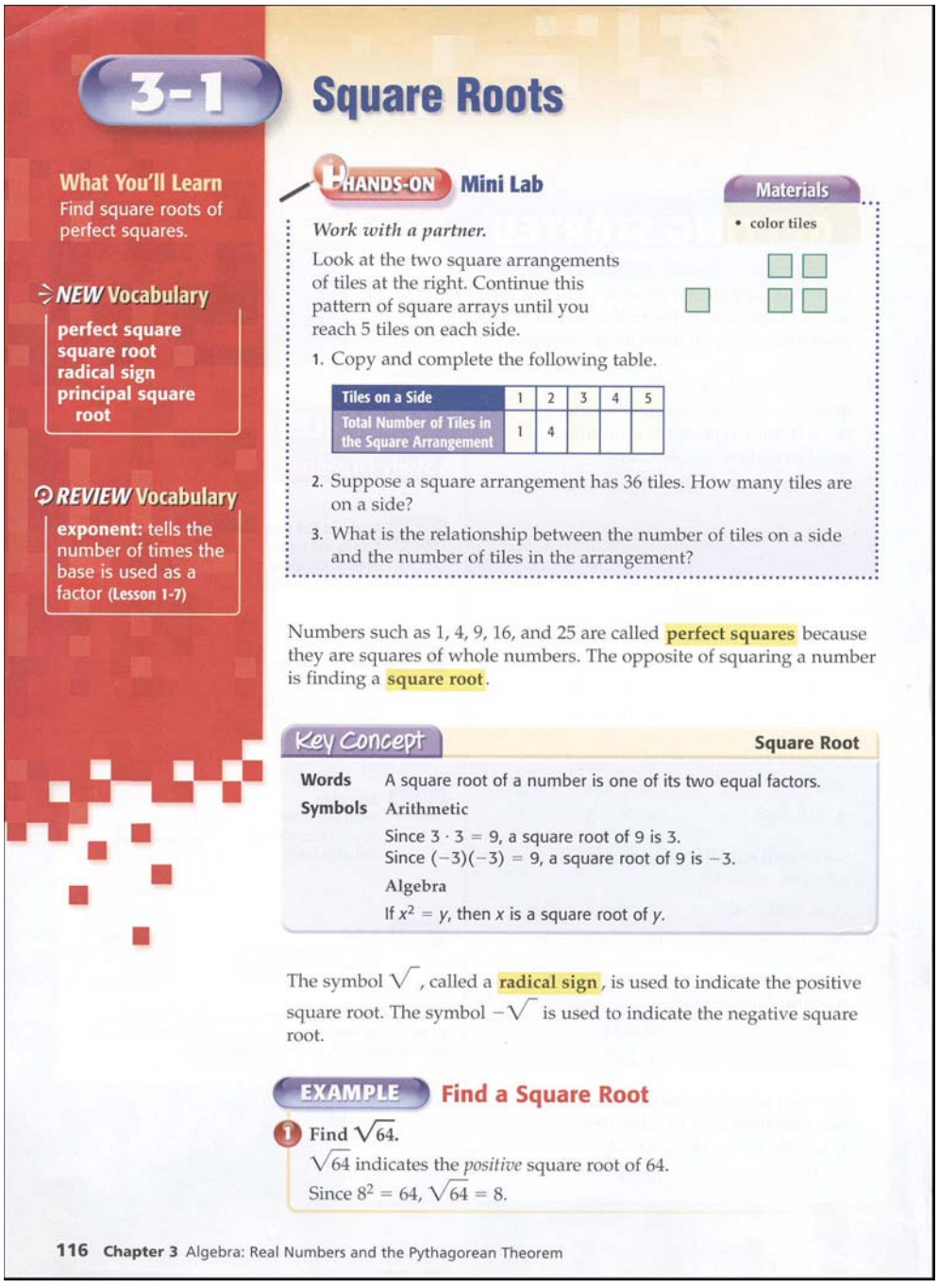
Some percents are used more frequently than others. So, it is a good idea to be familiar with these percents and their equivalent fractions.

Concept Summary — **Percent-Fraction Equivalents**

$25\% = \frac{1}{4}$	$20\% = \frac{1}{5}$	$16\frac{2}{3}\% = \frac{1}{6}$	$12\frac{1}{2}\% = \frac{1}{8}$	$10\% = \frac{1}{10}$
$50\% = \frac{1}{2}$	$40\% = \frac{2}{5}$	$33\frac{1}{3}\% = \frac{1}{3}$	$37\frac{1}{2}\% = \frac{3}{8}$	$30\% = \frac{3}{10}$
$75\% = \frac{3}{4}$	$60\% = \frac{3}{5}$	$66\frac{2}{3}\% = \frac{2}{3}$	$62\frac{1}{2}\% = \frac{5}{8}$	$70\% = \frac{7}{10}$
	$80\% = \frac{4}{5}$	$83\frac{1}{3}\% = \frac{5}{6}$	$87\frac{1}{2}\% = \frac{7}{8}$	$90\% = \frac{9}{10}$

Number/Computation	
Relationships	**Students will show Concepts and how Concepts are made between concepts and skills, explain why procedures work, and make generalizations about mathematics in meaningful ways for the following relationships:**
OBJECTIVES	**PAGE REFERENCES**
MA-M-1.3.1 How whole numbers, natural numbers, integers, fractions, decimals, percents, and irrational numbers (square roots and π only) relate to each other (e.g., convert between forms of rational numbers, compare, order)	**Sample Demonstrator: 116** SE: 17-21, 62-65, 116-119, 120-122, 125-129, 206-209, 319-320 *Study Skill* 16 *The Game Zone* 225 TWE: F 17, 62, 116, 120, 125, 206
MA-M-1.3.2 How properties such as commutative, associative, distributive, and identities show relationships among operations and may be used to justify steps in solving problems	SE: 11-15, 45-49, 50-53, 55 TWE: A 15
MA-M-1.3.3 How operations (addition and subtraction; multiplication and division; squaring and taking the square root of a number) are inversely related	**Sample Demonstrator: 116** SE: 45-49, 50-53, 56, 116-119, 146 TWE: F 50

Sample Demonstrator
Number/Computation: Relationships
MA-M-1.3.1 to MA-M-1.3.3



3-1 Square Roots

What You'll Learn
Find square roots of perfect squares.

NEW Vocabulary
- perfect square
- square root
- radical sign
- principal square root

REVIEW Vocabulary
exponent: tells the number of times the base is used as a factor (Lesson 1-7)

HANDS-ON Mini Lab

Materials
- color tiles

Work with a partner.

Look at the two square arrangements of tiles at the right. Continue this pattern of square arrays until you reach 5 tiles on each side.

1. Copy and complete the following table.

Tiles on a Side	1	2	3	4	5
Total Number of Tiles in the Square Arrangement	1	4			

2. Suppose a square arrangement has 36 tiles. How many tiles are on a side?
3. What is the relationship between the number of tiles on a side and the number of tiles in the arrangement?

Numbers such as 1, 4, 9, 16, and 25 are called **perfect squares** because they are squares of whole numbers. The opposite of squaring a number is finding a **square root**.

Key Concept — **Square Root**

Words A square root of a number is one of its two equal factors.

Symbols Arithmetic

Since $3 \cdot 3 = 9$, a square root of 9 is 3.
Since $(-3)(-3) = 9$, a square root of 9 is -3.

Algebra

If $x^2 = y$, then x is a square root of y.

The symbol $\sqrt{\ }$, called a **radical sign**, is used to indicate the positive square root. The symbol $-\sqrt{\ }$ is used to indicate the negative square root.

EXAMPLE 1 Find a Square Root

Find $\sqrt{64}$.

$\sqrt{64}$ indicates the *positive* square root of 64.

Since $8^2 = 64$, $\sqrt{64} = 8$.

116 **Chapter 3** Algebra: Real Numbers and the Pythagorean Theorem

Geometry/Measurement	
Concepts **Students will describe properties of, define, give examples, and/or apply to both real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-2.1.1 Basic geometric elements that include points, segments, rays, lines, angles, and planes	SE: 256-259, 306 *Hands-on Lab* 261 TWE: A 259 F 256
MA-M-2.1.2 Two-dimensional shapes including circles, regular polygons, quadrilaterals (square, rectangle, rhombus, parallelogram, trapezoid), and triangles (acute, obtuse, right, equilateral, scalene, isosceles)	**Sample Demonstrator: 272** SE: 262-265, 267-270, 272-275 *Hands-on Lab* 278 *Problem-Solving Strategy* 276-277 *The Game Zone* 285 TWE: A 265 F 263
MA-M-2.1.3 Common three-dimensional shapes including spheres, cones, cylinders, prisms (with polygonal bases), and pyramids (with polygonal bases)	SE: 331-334, 364 *Hands-on Lab* 330 TWE: DI 331 IE 332 A 334
MA-M-2.1.4 Congruence, symmetry, and similarity	SE: 279-281, 286-289 *Hands-on Lab* 283 TWE: A 289 F 279, 286 IE 287
MA-M-2.1.5 U.S. Customary and metric units of measurement	SE: 188-191, 203, 358-361 TWE: DI 189, 359

Sample Demonstrator
Geometry/Measurement: Concepts
MA-M-2.1.1 to MA-M-2.1.5

6-4 Classifying Quadrilaterals

What You'll Learn
Find missing angle measures in quadrilaterals and classify quadrilaterals.

NEW Vocabulary
- quadrilateral
- trapezoid
- parallelogram
- rectangle
- rhombus
- square

LINK To Reading
Everyday meaning of prefix quadri-: four

HANDS-ON Mini Lab

Materials
- paper
- straightedge
- protractor

Work with a partner.

The polygon at the right is a **quadrilateral**, since it has four sides and four angles.

STEP 1 Draw a quadrilateral.

STEP 2 Pick one vertex and draw the diagonal to the opposite vertex.

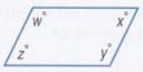
1. Name the shape of the figures formed when you drew the diagonal. How many figures were formed?
2. You know that the sum of the angle measures of a triangle is 180°. Use this fact to find the sum of the angle measures in a quadrilateral. Explain your reasoning.
3. Find the measure of each angle of your quadrilateral. Compare the sum of these measures to the sum you found in Exercise 2.

The angles of a quadrilateral have a special relationship.

Key Concept — **Angles of a Quadrilateral**

Words The sum of the measures of the angles of a quadrilateral is 360°.

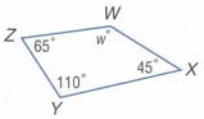
Model



Symbols $w + x + y + z = 360$

EXAMPLE 1 Find a Missing Angle Measure

Find the value of w in quadrilateral $WXYZ$.



$m\angle W + m\angle X + m\angle Y + m\angle Z =$	360	The sum of the measures is 360.
$w + 45 + 110 + 65 =$	360	Replace $m\angle W$ with w, $m\angle X$ with 45, $m\angle Y$ with 110, and $m\angle Z$ with 65.
$w + 220 =$	360	Simplify.
$-220 = -220$		Subtract 220 from each side.
$w =$	140	Simplify.

Geometry/Measurement	
Skills **Students will perform the following mathematical operations and/or procedures accurately and efficiently, and explain how they work in real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-2.2.1 Identify characteristics (e.g., sides, vertices, angles, faces, edges, congruent parts) of two-dimensional and three-dimensional shapes	SE: 262-265, 272-275, 331-333 *Hands-on Lab* 330 TWE: A 275 DI 273 F 262
MA-M-2.2.2 Use appropriate tools and strategies (e.g., combining and subdividing shapes) to find measures of both regular and irregular shapes	SE: 314-317, 319-323, 326-329 TWE: F 326 TT 328
MA-M-2.2.3 Move shapes in a coordinate plane: translate (slide), rotate (turn), reflect (flip), and dilate (magnify, reduce)	SE: 194-197, 290-294, 296-299, 300-303 *Hands-on Lab* 304-305 TWE: IE 195, 291, 292, 297, 301
MA-M-2.2.4 Estimate measurements in standard units	SE: 188-191, 358-361 TWE: DI 189, 359 IE 359, 360
MA-M-2.2.5 Use formulas to find area and perimeter of triangles and quadrilaterals, area and circumference of circles, and surface area and volume of rectangular prisms	**Sample Demonstrator: 347** SE: 314-317, 319-323, 326-329, 335-339, 342-345, 347-351, 352-356 TWE: IE 315, 320, 321, 327, 336, 337, 343, 348, 349, 353
MA-M-2.2.6 Estimate and determine measurement of angles	SE: 256-260, 306 TWE: A 259 F 256 IE 257
MA-M-2.2.7 Use Pythagorean theorem to find hypotenuse	SE: 132-136, 137-140 TWE: A 136 DI 133 F 137

Sample Demonstrator
Geometry/Measurement: Skills
MA-M-2.2.1 to MA-M-2.2.7

7-7 Surface Area of Prisms and Cylinders

What You'll Learn
Find the surface areas of prisms and cylinders.

NEW Vocabulary
surface area

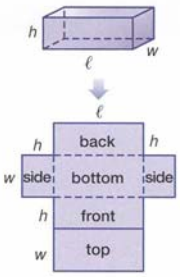
HANDS-ON Mini Lab

Materials
- 3 different-sized boxes
- centimeter ruler

The **surface area** of a solid is the sum of the areas of all its surfaces, or faces. In this lab, you will find the surface areas of rectangular prisms.

1. Estimate the area in square centimeters of each face for one of your boxes. Then find the sum of these six areas.
2. Now use your ruler to measure the sides of each face. Then find the area of each face to the nearest square centimeter. Find the sum of these areas and compare to your estimate.
3. Estimate and then find the surfaces areas of your other boxes.

One way to easily visualize all of the surfaces of a prism is to sketch a two-dimensional pattern of the solid, called a *net*, and label all its dimensions.



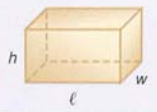
Faces		Area
top and bottom		$(\ell \cdot w) + (\ell \cdot w) = 2\ell w$
front and back		$(\ell \cdot h) + (\ell \cdot h) = 2\ell h$
two sides		$(w \cdot h) + (w \cdot h) = 2wh$
Sum of areas	→	$2\ell w + 2\ell h + 2wh$

Key Concept — **Surface Area of a Rectangular Prism**

Words The surface area S of a rectangular prism with length ℓ, width w, and height h is the sum of the areas of the faces.

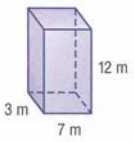
Symbols $S = 2\ell w + 2\ell h + 2wh$

Model



EXAMPLE **Surface Area of a Rectangular Prism**

1 Find the surface area of the rectangular prism.



$S = 2\ell w + 2\ell h + 2wh$	Write the formula.
$S = 2(7)(3) + 2(7)(12) + 2(3)(12)$	Substitution.
$S = 282$	Simplify.

The surface area is 282 square meters.

Geometry/Measurement	
Relationships	**Students will show Concepts and how Concepts are made between concepts and skills, explain why procedures work, and make generalizations about mathematics in meaningful ways for the following relationships:**
OBJECTIVES	**PAGE REFERENCES**
MA-M-2.3.1 How measurements and measurement formulas are related or different (perimeter and area; rate, time, and distance; circumference and area of a circle)	SE: 314-318, 319-323, 363, 364 TWE: DI 321
MA-M-2.3.2 How two-dimensional and three-dimensional figures are related as seen in different orientations (e.g., top view, side view, three-dimensional shapes drawn on isometric dot paper)	**Sample Demonstrator: 331** SE: 331-334, 364 *Hands-on Lab* 330 TWE: A 334 DI 331 IE 332
MA-M-2.3.3 How proportional figures are related (scale drawings, similar figures)	SE: 178-182, 184-187, 194-197 *Hands-on Lab* 183 TWE: DI 179, 185, 195

Sample Demonstrator
Geometry/Measurement: Relationships
MA-M-2.3.1 to MA-M-2.3.3

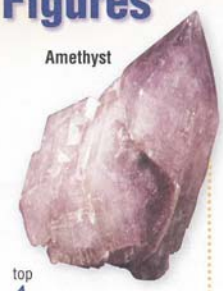
7-4 Three-Dimensional Figures

What You'll Learn
Identify and draw three-dimensional figures.

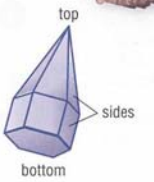
NEW Vocabulary
- plane
- solid
- polyhedron
- edge
- face
- vertex
- prism
- base
- pyramid

WHEN am I ever going to use this?

CRYSTALS A two-dimensional figure has two dimensions, length and width. A three-dimensional figure, like the Amethyst crystal shown at the right, has three dimensions, length, width, and depth (or height).

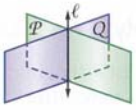


1. Name the two-dimensional shapes that make up the sides of this crystal.
2. If you observed the crystal from directly above, what two-dimensional figure would you see?
3. How are two- and three-dimensional figures related?

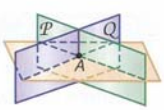


A **plane** is a two-dimensional flat surface that extends in all directions. There are different ways that planes may be related in space.

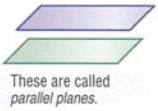
Intersect in a Line



Intersect at a Point

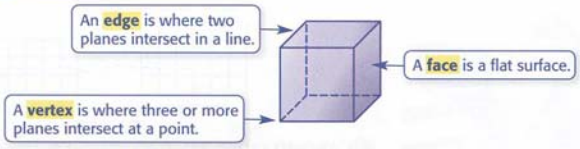


No Intersection



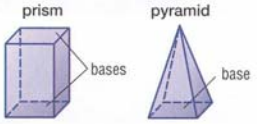
These are called *parallel planes.*

Intersecting planes can also form three-dimensional figures or **solids**. A **polyhedron** is a solid with flat surfaces that are polygons.



A **prism** is a polyhedron with two parallel, congruent faces called **bases**. A **pyramid** is a polyhedron with one base that is a polygon and faces that are triangles.

Prisms and pyramids are named by the shape of their bases.



msmath3.net/extra_examples

Lesson 7-4 Three-Dimensional Figures 331

Probability/Statistics	
Concepts **Students will describe properties of, define, give examples, and/or apply to both real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-3.1.1 Meaning of central tendency (mean, median, mode)	SE: 435-438 *Spreadsheet Investigation* 439 *The Game Zone* 441 TWE: A 437 F 435
MA-M-3.1.2 Meaning of dispersion (range, cluster, gaps, outliers)	SE: 442-445, 446-449, 459, 460 TWE: DI 443 IE 443
MA-M-3.1.3 Characteristics and appropriateness of graphs (e.g., bar, line, circle), and plots (e.g., line, stem-and-leaf, box-and-whiskers, scatter)	**Sample Demonstrator: 420** SE: 420-424, 426-429, 430-433, 446-449, 450-453, 539-542 *Graphing Calculator Investigation* 425, 543 *Problem-Solving Strategy* 537-538 TWE: F 420, 426, 430, 446

Sample Demonstrator
Probability/Statistics: Concepts
MA-M-3.1.1 to MA-M-3.1.3

9-1 Histograms

What You'll Learn
Construct and interpret histograms.

***NEW* Vocabulary**
histogram

***REVIEW* Vocabulary**
bar graph: a graphic form using bars to make comparisons of statistics (page 602)

WHEN **am I ever going to use this?**

CONCERTS The table shows the number of concerts with an average ticket price in each price range.

1. What do you notice about the price intervals?
2. What does each tally mark represent?
3. How is the frequency for each price range determined?

Average Ticket Prices of Top 20 Money Earning Concerts for 2001

Price	Tally	Frequency
$25.00–$49.99	𝍸 IIII	9
$50.00–$74.99	𝍸 II	7
$75.00–$99.99	I	1
$100.00–$124.99	II	2
$125.00–$149.99		0
$150.00–$174.99	I	1

Source: Pollstar

Data from a frequency table, such as the one above, can be displayed as a histogram. A **histogram** is a type of bar graph used to display numerical data that have been organized into equal intervals.

EXAMPLE **Draw a Histogram**

1 **FOOD** The frequency table at the right shows the number of Calories in certain soup-in-a-cup products. Draw a histogram to represent the data.

Step 1 Draw and label a horizontal and vertical axis. Include a title.

Calories of Soup-in-a-Cup

Calories	Tally	Frequency
100–149	II	2
150–199	𝍸 II	7
200–249	𝍸 III	8
250–299	I	1
300–349	I	1
350–399	I	1

Probability/Statistics	
Skills **Students will perform the following mathematical operations and/or procedures accurately and efficiently, and explain how they work in real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-3.2.1 Organize, represent, analyze, and interpret sets of data	SE: 420-424, 426-429, 430-433, 435-438, 442-445, 446-449, 450-453, 539-542 *Graphing Calculator Investigation* 425, 543 *Problem-Solving Strategy* 537-538 *Spreadsheet Investigation* 439 TWE: IE 421, 427, 426, 431, 436, 443, 447, 448, 451
MA-M-3.2.2 Construct and interpret displays of data (e.g., table, circle graph, line plot, stem-and-leaf plot, box-and-whiskers plot)	SE: 420-424, 426-429, 430-433, 446-449, 450-453 *Graphing Calculator Investigation* 425 TWE: IE 421, 427, 431, 447
MA-M-3.2.3 Find mean, median, mode, and range; recognize outliers, gaps, and clusters of data	SE: 435-438, 442-445 *Spreadsheet Investigation* 439 *The Game Zone* 441 TWE: A 437 DI 443
MA-M-3.2.4 Calculate theoretical probabilities and tabulate experimental results from simulations	**Sample Demonstrator: 396** SE: 374-377, 396-399, 400-403 *Graphing Calculator Exploration* 404-405 *The Game Zone* 395 TWE: IE 375, 397, 401
MA-M-3.2.5 Make predictions and draw conclusions from statistical data and probability experiments	SE: 406-409, 450-453 TWE: A 409 TT 408

OBJECTIVES	PAGE REFERENCES
MA-M-3.2.6 Use counting techniques, tree diagrams, area models, and tables to solve probability problems	SE: 380-383, 384-387, 388-391 *Hands-on Lab* 392-393 TWE: F 380, 384, 388
MA-M-3.2.7 Represent probabilities in multiple ways such as fractions, decimals, percents, and area models	**Sample Demonstrator: 396** SE: 374-377, 396-399, 400-403 *Graphing Calculator Investigation* 404-405 *The Game Zone* 395 TWE: IE 375, 397, 401

Sample Demonstrator
Probability/Statistics: Skills
MA-M-3.2.1 to MA-M-3.2.7

8-5 Probability of Compound Events

What You'll Learn
Find the probability of independent and dependent events.

NEW Vocabulary
- compound event
- independent events
- dependent events

WHEN am I ever going to use this?

GAMES A game uses a number cube and the spinner shown at the right.

1. A player rolls the number cube. What is P(odd number)?
2. The player spins the spinner. What is P(red)?
3. What is the product of the probabilities in Exercises 1 and 2?
4. Draw a tree diagram to determine the probability that the player will get an odd number and red.
5. Compare your answers for Exercises 3 and 4.

The combined action of rolling a number cube and spinning a spinner is a compound event. In general, a **compound event** consists of two or more simple events.

The outcome of the spinner does not depend on the outcome of the number cube. These events are independent. For **independent events**, the outcome of one event does not affect the other event.

Key Concept — **Probability of Two Independent Events**

Words	The probability of two independent events can be found by multiplying the probability of the first event by the probability of the second event.
Symbols	$P(A \text{ and } B) = P(A) \cdot P(B)$

EXAMPLE **Probability of Independent Events**

1 **The two spinners are spun. What is the probability that both spinners will show an even number?**

P(first spinner is even) $= \frac{3}{7}$

P(second spinner is even) $= \frac{1}{2}$

P(both spinners are even) $= \frac{3}{7} \cdot \frac{1}{2}$ or $\frac{3}{14}$

396 Chapter 8 Probability

Probability/Statistics	
Relationships **Students will show Concepts and how Concepts are made between concepts and skills, explain why procedures work, and make generalizations about mathematics in meaningful ways for the following relationships:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-3.3.1 How different representations of data (e.g., tables, graphs, diagrams, plots) are related	SE: 420-425, 426-429, 430-433, 539-542 *Graphing Calculator Investigation* 543 TWE: DI 421, 430 F 539
MA-M-3.3.2 How theoretical probability and experimental probability are related	SE: 374-377, 396-399, 400-403 TWE: A 399 DI 400 F 374
MA-M-3.3.3 How data gathering, bias issues, faulty data analysis, and misleading representations affect interpretations and conclusions about data (e.g., changing the scale on a graph, polling only a specific group of people, using limited or extremely small sample size)	**Sample Demonstrator: 406** SE: 406-409, 412, 450-453, 460 TWE: A 453 DI 407
MA-M-3.3.4 How probability and statistics are used to make predictions and/or draw conclusions	**Sample Demonstrator: 406** SE: 406-409, 412, 450-453, 460 TWE: DI 407, 451

Sample Demonstrator
Probability/Statistics: Relationships
MA-M-3.3.1 to MA-M-3.3.4

8-7 Using Sampling to Predict

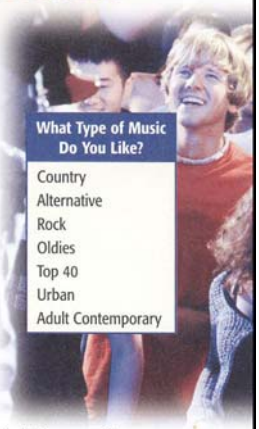
What You'll Learn
Predict the actions of a larger group by using a sample.

NEW Vocabulary
- sample
- population
- unbiased sample
- simple random sample
- stratified random sample
- systematic random sample
- biased sample
- convenience sample
- voluntary response sample

WHEN am I ever going to use this?

ENTERTAINMENT The manager of a radio station wants to conduct a survey to determine what type of music people like.

1. Suppose she decides to survey a group of people at a rock concert. Do you think the results would represent all of the people in the listening area? Explain.
2. Suppose she decides to survey students at your middle school. Do you think the results would represent all of the people in the listening area? Explain.
3. Suppose she decides to call every 100th household in the telephone book. Do you think the results would represent all of the people in the listening area? Explain.



The manager of the radio station cannot survey everyone in the listening area. A smaller group called a **sample** is chosen. A sample is representative of a larger group called a **population**.

For valid results, a sample must be chosen very carefully. An **unbiased sample** is selected so that it is representative of the entire population. Three ways to pick an unbiased sample are listed below.

Concept Summary — **Unbiased Samples**

Type	Definition	Example
Simple Random Sample	A simple random sample is a sample where each item or person in the population is as likely to be chosen as any other.	The name of each student attending a school is written on a piece of paper. The names are placed in a bowl, and names are picked without looking.
Stratified Random Sample	In a stratified random sample, the population is divided into similar, non-overlapping groups. A simple random sample is then selected from each group.	Students are picked at random from each grade level at a school.
Systematic Random Sample	In a systematic random sample, the items or people are selected according to a specific time or item interval.	From an alphabetical list of all students attending a school, every 20th person is chosen.

406 Chapter 8 Probability

Algebraic Ideas	
Concepts **Students will describe properties of, define, give examples, and/or apply to both real-world and mathematical situations:**	
OBJECTIVES	**PAGE REFERENCES**
MA-M-4.1.1 Variables, equations, inequalities, and algebraic expressions	SE: 11-15, 45-49, 50-53, 474-477, 478-481, 484-487, 492-495, 496-499, 500-504 *Hands-on Lab* 482-483 *The Game Zone* 491 TWE: IE 12, 46, 47, 51, 475, 479, 485, 493, 497, 501, 502
MA-M-4.1.2 Functions (e.g., the relationship between time and cost of some long distance phone calls, $y = 2x + 1$) through tables, graphs, verbal rules, and algebraic notations	**Sample Demonstrator: 522** SE: 517-520, 522-525 *Hands-on Lab* 521 TWE: IE 518, 523
MA-M-4.1.3 Rectangular (Cartesian) coordinate system/grid and ordered pairs	SE: 142-145, 148 TWE: A 145 F 142 IE 143

Sample Demonstrator
Algebraic Ideas: Concepts
MA-M-4.1.1 to MA-M-4.1.3

11-3 Graphing Linear Functions

What You'll Learn
Graph linear functions by using function tables and plotting points.

NEW Vocabulary
- **linear function**
- ***x*-intercept**
- ***y*-intercept**

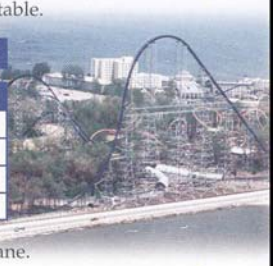
REVIEW Vocabulary
- **ordered pair:** a pair of numbers used to locate a point on a coordinate plane (Lesson 3-6)

WHEN **am I ever going to use this?**

ROLLER COASTERS The *Millennium Force* roller coaster has a maximum speed of 1.5 miles per minute. If x represents the minutes traveled at this maximum speed, the function rule for the distance traveled is $y = 1.5x$.

1. Copy and complete the following function table.

Input	Rule	Output	(Input, Output)
x	$1.5x$	y	(x, y)
1	1.5(1)	1.5	(1, 1.5)
2	1.5(2)		
3			
4			



2. Graph the ordered pairs on a coordinate plane.
3. What do you notice about the points on your graph?

Ordered pairs of the form (input, output), or (x, y), can represent a function. These ordered pairs can then be graphed on a coordinate plane as part of the graph of the function.

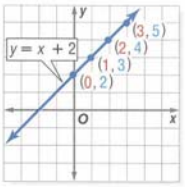
EXAMPLE **Graph a Function**

1 Graph $y = x + 2$.

Step 1 Choose some values for x. Make a function table. Include a column of ordered pairs of the form (x, y).

x	$x + 2$	y	(x, y)
0	0 + 2	2	(0, 2)
1	1 + 2	3	(1, 3)
2	2 + 2	4	(2, 4)
3	3 + 2	5	(3, 5)

Step 2 Graph each ordered pair. Draw a line that passes through each point. Note that the ordered pair for any point on this line is a solution of $y = x + 2$. The line is the complete graph of the function.



Check It appears from the graph that $(-2, 0)$ is also a solution. Check this by substitution.

$y = x + 2$ Write the function.

$0 \stackrel{?}{=} -2 + 2$ Replace x with -2 and y with 0.

$0 = 0$ ✓ Simplify.

522 **Chapter 11** Algebra: Linear Functions

Algebraic Ideas	
Skills	**Students will perform the following mathematical operations and/or procedures accurately and efficiently, and explain how they work in real-world and mathematical situations:**
OBJECTIVES	**PAGE REFERENCES**
MA-M-4.2.1 Simplify numerical and algebraic expressions	SE: 11-15, 469-473, 570-573, 574-577, 580-583, 584-587, 590-592 *The Game Zone* 579 TWE: A 15 IE 12, 571, 575, 581, 585, 591
MA-M-4.2.2 Solve simple equations and inequalities	**Sample Demonstrator: 45** SE: 45-49, 50-53, 92-95, 496-499, 500-504 *Hands-on Lab* 482-483 TWE: IE 46, 47, 51, 93, 497, 501, 502
MA-M-4.2.3 Model equations and inequalities concretely (e.g., algebra tiles or blocks), pictorially (e.g., graphs, tables), and abstractly (e.g., equations)	**Sample Demonstrator: 45** SE: 45-49, 50-53, 92-95, 496-499, 500-504, 548-551 TWE: A 49, 504 DI 51 F 45, 496
MA-M-4.2.4 Use variables to describe numerical patterns	SE: 512-515, 517-520 *Hands-on Lab* 516, 521 TWE: A 515 DI 513
MA-M-4.2.5 Represent and use functions through tables, graphs, verbal rules, and equations	SE: 517-520, 522-525, 533-536, 544-547, 560-563, 5675-568 *Graphing Calculator Investigation* 564 *Hands-on Lab* 521 *The Game Zone* 531 TWE: A 525 F 517, 522

OBJECTIVES	PAGE REFERENCES
MA-M-4.2.6 Write and solve equations that represent everyday situations	**Sample Demonstrator: 45** SE: 45-49, 50-53, 92-95, 478-481, 496-499, 500-504 TWE: A 481 IE 51, 93, 479, 497, 502

Sample Demonstrator
Algebraic Ideas: Skills
MA-M-4.2.1 to MA-M-4.2.6

1-8 Solving Addition and Subtraction Equations

What You'll Learn
Solve equations using the Subtraction and Addition Properties of Equality.

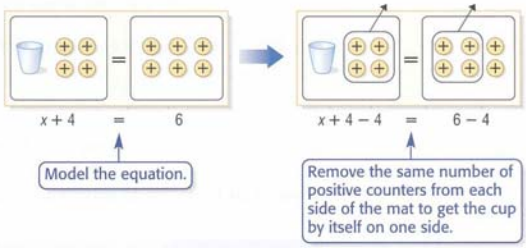
NEW Vocabulary
solve
solution
inverse operations

HANDS-ON Mini Lab

Materials
- cups
- counters
- equation mat

Work with a partner.

When you **solve** an equation, you are trying to find the values of the variable that makes the equation true. These values are called the **solutions** of the equation. You can use cups, counters, and an equation mat to solve $x + 4 = 6$.



The number of positive counters remaining on the right side of the mat represents the value of x. So when $x = 2$, $x + 4 = 6$ is true.

Solve each equation using cups and counters.

1. $x + 1 = 4$
2. $x + 3 = 7$
3. $x + (-4) = -5$
4. Explain how you would find a value of x that makes $x + (-3) = -8$ true without using models.

In the Mini Lab, you solved the equation $x + 4 = 6$ by *removing*, or subtracting, the same number of positive counters from each side of the mat. This suggests the **Subtraction Property of Equality**.

Key Concept — **Subtraction Property of Equality**

Words If you subtract the same number from each side of an equation, the two sides remain equal.

Symbols

Arithmetic	Algebra
$7 = 7$	$x + 4 = 6$
$7 - 3 = 7 - 3$	$x + 4 - 4 = 6 - 4$
$4 = 4$	$x = 2$

You can use this property to solve any addition equation. Remember to check your solution by substituting it back into the original equation.

Algebraic Ideas	
Relationships	**Students will show Concepts and how Concepts are made between concepts and skills, explain why procedures work, and make generalizations about mathematics in meaningful ways for the following relationships:**
OBJECTIVES	**PAGE REFERENCES**
MA-M-4.3.1 How everyday situations, tables, graphs, patterns, verbal rules, and equations relate to each other	**Sample Demonstrator: 160** SE: 6-10, 39-42, 45-49, 50-53, 478-481, 496-499, 500-504, 512-515, 517-520, 522-575 *Hands-on Lab* 516, 521 TWE: A 481 IE 51, 93, 479, 497, 502, 518, 523
MA-M-4.3.2 How the change in one variable affects the change in another variable (e.g., if rate remains constant, an increase in time results in an increase in distance)	**Sample Demonstrator: 160** SE: 160-164, 166-169, 522-525, 526-529 *Graphing Calculator Investigation* 532 *Spreadsheet Investigation* 165 *The Game Zone* 531 TWE: DI 523, 527

Sample Demonstrator
Algebraic Ideas: Relationships
MA-M-4.3.1 to MA-M-4.1.3

4-2 Rate of Change

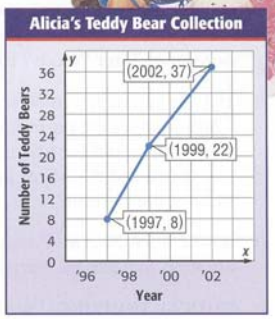
What You'll Learn
Find rates of change.

NEW Vocabulary
rate of change

WHEN am I ever going to use this?

HOBBIES Alicia likes to collect teddy bears. The graph shows the number of teddy bears in her collection between 1997 and 2002.

1. By how many bears did Alicia's collection increase between 1997 and 1999? Between 1999 and 2002?
2. Between which years did Alicia's collection increase the fastest?



A **rate of change** is a rate that describes how one quantity changes in relation to another. In the example above, the rate of change in Alicia's teddy bear collection from 1997 to 1999 is shown below.

change or difference in the number of bears

$$\frac{(22 - 8) \text{ bears}}{(1999 - 1997) \text{ years}} = \frac{14 \text{ bears}}{2 \text{ years}} = 7 \text{ bears per year}$$

change or difference in the number of years

EXAMPLE Find a Rate of Change

1 **HEIGHTS** The table at the right shows Ramón's height in inches between the ages of 8 and 13. Find the rate of change in his height between ages 8 and 11.

Age (yr)	8	11	13
Height (in.)	51	58	67

$$\frac{\text{change in height}}{\text{change in age}} = \frac{(58 - 51) \text{ inches}}{(11 - 8) \text{ years}}$$ Ramón grew from 51 to 58 inches tall from age 8 to age 11.

$$= \frac{7 \text{ inches}}{3 \text{ years}}$$ Subtract to find the change in heights and ages.

$$\approx \frac{2.3 \text{ inches}}{1 \text{ year}}$$ Express this rate as a unit rate.

Ramón grew an average of about 2.3 inches per year.

Your Turn

a. Find the rate of change in his height between ages 11 and 13.

STUDY TIP
Mental Math
You can also find a unit rate by dividing the numerator by the denominator.

Codes Used for TWE Pages

A	Assess
DI	Daily Intervention
F	Focus
IE	In-Class Example
NS	Number Sense

LESSON PLAN CORRELATIONS

Chapter 1 Algebra: Integers	
LESSON	**KENTUCKY OBJECTIVES**
1-1 A Plan for Problem Solving	MA-M-4.3.1
1-2 Variables, Expressions, and Properties	MA-M-1.2.5, MA-M-1.3.2, MA-M-4.1.1, MA-M-4.2.1
1-3 Integers and Absolute Value	MA-M-1.1.1, MA-M-1.1.6, MA-M-1.3.1
1-4 Adding Integers	MA-M-1.2.1
1-5 Subtracting Integers	MA-M-1.2.1
1-6 Multiplying and Dividing Integers	MA-M-1.2.1, MA-M-1.2.4
1-7 Writing Expressions and Equations	MA-M-4.3.1
1-8 Solving Addition and Subtraction Equations	MA-M-1.3.2, MA-M-1.3.3, MA-M-4.1.1, MA-M-4.2.2, MA-M-4.2.3, MA-M-4.2.6, MA-M-4.3.1
1-9 Solving Multiplication and Division Equations	MA-M-1.3.2, MA-M-1.3.3, MA-M-4.1.1, MA-M-4.2.2, MA-M-4.2.3, MA-M-4.2.6, MA-M-4.3.1

Chapter 2 Fractions and Decimals	
LESSON	**KENTUCKY OBJECTIVES**
2-1 Fractions and Decimals	MA-M-1.1.1, MA-M-1.3.1
2-2 Comparing and Ordering Rational Numbers	MA-M-1.1.1
2-3 Multiplying Rational Numbers	MA-M-1.2.1
2-4 Dividing Rational Numbers	MA-M-1.2.1
2-5 Adding and Subtracting Like Fractions	MA-M-1.2.1
2-6 Adding and Subtracting Unlike Fractions	MA-M-1.2.1, MA-M-1.2.4
2-7 Solving Equations with Rational Numbers	MA-M-4.2.2, MA-M-4.2.3, MA-M-4.2.6
2-8 Powers and Exponents	MA-M-1.1.5, MA-M-1.2.4
2-9 Scientific Notation	MA-M-1.1.5

Chapter 3 Algebra: Real Numbers and the Pythagorean Theorem	
LESSON	**KENTUCKY OBJECTIVES**
3-1 Square Roots	MA-M-1.1.2, MA-M-1.3.1, MA-M-1.3.3
3-2 Estimating Square Roots	MA-M-1.1.2, MA-M-1.3.1
3-3 The Real Number System	MA-M-1.3.1
3-4 The Pythagorean Theorem	MA-M-2.2.7
3-5 Using the Pythagorean Theorem	MA-M-2.2.7
3-6 Distance on the Coordinate Plane	MA-M-4.1.3

Chapter 4 Properties, Algebra, and Geometry	
LESSON	**KENTUCKY OBJECTIVES**
4-1 Ratios and Rates	MA-M-1.1.3
4-2 Rate of Change	MA-M-4.3.2
4-3 Slope	MA-M-4.3.2
4-4 Solving Proportions	MA-M-1.1.3, MA-M-1.2.3
4-5 Similar Polygons	MA-M-2.3.3
4-6 Scale Drawings and Models	MA-M-2.3.3
4-7 Indirect Measurement	MA-M-2.1.5, MA-M-2.2.4
4-8 Dilations	MA-M-2.2.3, MA-M-2.3.3

Chapter 5 Percent	
LESSON	**KENTUCKY OBJECTIVES**
5-1 Ratios and Percents	MA-M-1.1.1, MA-M-1.1.6, MA-M-1.2.3, MA-M-1.3.1
5-2 Fractions, Decimals, and Percents	MA-M-1.1.1, MA-M-1.1.6
5-3 The Percent Proportion	MA-M-1.1.3, MA-M-1.1.6, MA-M-1.2.3
5-4 Finding Percents Mentally	MA-M-1.1.6, MA-M-1.2.2, MA-M-1.2.3
5-5 Percent and Estimation	MA-M-1.2.2, MA-M-1.2.3
5-6 The Percent Equation	MA-M-1.1.6, MA-M-1.2.3
5-7 Percent of Change	MA-M-1.2.3
5-8 Simple Interest	MA-M-1.2.3

Chapter 6 Geometry	
LESSON	**KENTUCKY OBJECTIVES**
6-1 Line and Angle Relationships	MA-M-2.1.1, MA-M-2.2.6
6-2 Triangles and Angles	MA-M-2.1.2, MA-M-2.2.1
6-3 Special Right Triangles	MA-M-2.1.2
6-4 Classifying Quadrilaterals	MA-M-2.1.2, MA-M-2.2.1
6-5 Congruent Polygons	MA-M-2.1.4, MA-M-2.1.2
6-6 Symmetry	MA-M-2.1.4
6-7 Reflections	MA-M-2.2.3
6-8 Translations	MA-M-2.2.3
6-9 Rotations	MA-M-2.2.3

Chapter 7 Geometry: Measuring Area and Volume	
LESSON	**KENTUCKY OBJECTIVES**
7-1 Area of Parallelograms, Triangles, and Trapezoids	MA-M-2.2.2, MA-M-2.2.5, MA-M-2.3.1
7-2 Circumference and Area of Circles	MA-M-1.1.2, MA-M-1.3.1, MA-M-2.2.2, MA-M-2.2.5, MA-M-2.3.1
7-3 Area of Complex Figures	MA-M-2.2.2, MA-M-2.2.5
7-4 Three-Dimensional Figures	MA-M-2.1.3, MA-M-2.2.1, MA-M-2.3.2
7-5 Volume of Prisms and Cylinders	MA-M-2.2.5
7-6 Volume of Pyramids and Cones	MA-M-2.2.5
7-7 Surface Area of Prisms and Cylinders	MA-M-2.2.5
7-8 Surface Area of Pyramids and Cones	MA-M-2.2.5
7-9 Precision and Significant Digits	MA-M-2.1.5, MA-M-2.2.4

Chapter 8 Probability	
LESSON	**KENTUCKY OBJECTIVES**
8-1 Probability of Simple Events	MA-M-3.2.4, MA-M-3.2.7, MA-M-3.3.2
8-2 Counting Outcomes	MA-M-3.2.6
8-3 Permutations	MA-M-3.2.6
8-4 Combinations	MA-M-3.2.6
8-5 Probability of Compound Events	MA-M-3.2.4, MA-M-3.2.7, MA-M-3.3.2
8-6 Experimental Probability	MA-M-3.2.4, MA-M-3.2.7, MA-M-3.3.2
8-7 Using Sampling to Predict	MA-M-3.2.5, MA-M-3.3.3, MA-M-3.3.4

Chapter 9 Statistics and Matrices	
LESSON	**KENTUCKY OBJECTIVES**
9-1 Histograms	MA-M-3.1.3, MA-M-3.2.1, MA-M-3.2.2, MA-M-3.3.1
9-2 Circle Graphs	MA-M-3.1.3, MA-M-3.2.1, MA-M-3.2.2, MA-M-3.3.1
9-3 Choosing an Appropriate Display	MA-M-3.1.3, MA-M-3.2.1, MA-M-3.2.2, MA-M-3.3.1
9-4 Measure of Central Tendency	MA-M-3.1.1, MA-M-3.2.1, MA-M-3.2.3
9-5 Measures of Variation	MA-M-3.1.2, MA-M-3.2.1, MA-M-3.2.3
9-6 Box-and-Whisker Plots	MA-M-3.1.2, MA-M-3.1.3, MA-M-3.2.1, MA-M-3.2.2
9-7 Misleading Graphs and Statistics	MA-M-3.1.3, MA-M-3.2.1, MA-M-3.2.2, MA-M-3.2.5, MA-M-3.3.3, MA-M-3.3.4
9-8 Matrices	Supports Kentucky and National Math Standards and Objectives

Chapter 10 Algebra: More Equations and Inequalities	
LESSON	**KENTUCKY OBJECTIVES**
10-1 Simplifying Algebraic Expressions	MA-M-4.2.1
10-2 Solving Two-Step Equations	MA-M-1.3.2, MA-M-4.1.1
10-3 Writing Two-Step Equations	MA-M-4.1.1, MA-M-4.2.6, MA-M-4.3.1
10-4 Solving Equations With Variables on Each Side	MA-M-4.1.1
10-5 Inequalities	MA-M-4.1.1
10-6 Solving Inequalities by Adding or Subtracting	MA-M-4.1.1, MA-M-4.2.2, MA-M-4.2.3, MA-M-4.2.6, MA-M-4.2.1
10-7 Solving Inequalities by Multiplying or Dividing	MA-M-4.1.1, MA-M-4.2.2, MA-M-4.2.3, MA-M-4.2.6, MA-M-4.3.1

Chapter 11 Algebra: Linear Functions	
LESSON	**KENTUCKY OBJECTIVES**
11-1 Sequences	MA-M-4.2.4, MA-M-4.3.1
11-2 Functions	MA-M-4.1.2, MA-M-4.2.4, MA-M-4.2.5, MA-M-4.3.1
11-3 Graphing Linear Functions	MA-M-4.1.2, MA-M-4.2.5, MA-M-4.3.1, MA-M-4.3.2
11-4 The Slope Formula	MA-M-4.3.2
11-5 Slope-Intercept Form	MA-M-4.2.5
11-6 Scatter Plots	MA-M-3.1.3, MA-M-3.2.1, MA-M-3.3.1
11-7 Graphing Systems of Equations	MA-M-4.2.5
11-8 Graphing Linear Inequalities	MA-M-4.2.3

Chapter 12 Algebra: Nonlinear Functions and Polynomials	
LESSON	**KENTUCKY OBJECTIVES**
12-1 Linear and Nonlinear Functions	MA-M-4.2.5
12-2 Graphing Quadratic Functions	MA-M-4.2.5
12-3 Simplifying Polynomials	MA-M-4.2.1
12-4 Adding Polynomials	MA-M-4.2.1
12-5 Subtracting Polynomials	MA-M-4.2.1
12-6 Multiplying and Dividing Polynomials	MA-M-4.2.1
12-7 Multiplying Monomials and Polynomials	MA-M-4.2.1

STANDARDS FOR MATHEMATICS
EVALUATION INSTRUMENT

Content/Process	Comments
1. Material is comprehensive and includes content emphasized in Kentucky's Learning Goals and Academic Expectations and supported by the Core Content for Assessment, Program of Studies, and relevant National Standards.	Content emphasized in Kentucky's Learning Goals and Academic Expectations is covered in Core Content statements MA-M-1.1.1, MA-M-1.1.5, MA-M-1.2.1, MA-M-1.2.2, MA-M-1.2.3, MA-M-1.2.4, MA-M-1.3.1, MA-M-1.3.3, MA-M-2.1.1, MA-M-2.1.2, MA-M-2.1.4, MA-M-2.1.5, MA-M-2.2.2, MA-M-2.2.5, MA-M-2.2.6, MA-M-3.1.1, MA-M-3.1.2, MA-M-3.1.3, MA-M -3.2.2, MA-M-3.2.3, MA-M-3.2.5, MA-M-3.2.6, MA-M-3.3.1, MA-M-3.3.4, MA-M-4.1.1, MA-M-4.1.2, MA-M-4.1.3, MA-M-4.2.2, MA-M-4.2.4, MA-M-4.2.6, and MA-M-4.3.1. Based on the key findings from TIMMS, *Glencoe Mathematics: Applications and Concepts* meets or exceeds national or international standards in grades 6-8.

Content/Process	Comments
2. Content appears to be free from factual errors.	*Glencoe Mathematics: Applications and Concepts, Course 3* is the product of ongoing classroom-oriented research that involves students, teachers, curriculum supervisors, administrators, parents, and college-level mathematics educators. Prior to publication of any Glencoe program, typical research activities include a review of educational research and recommendations made by groups such as NCTM; mail surveys of mathematics educators, discussion groups involving mathematics teachers, department heads, and supervisors; focus groups involving mathematics educators; face-to-face interviews with mathematics educators; telephone surveys of mathematics educators; in-depth analysis of manuscript by a wide range of reviewers and consultants; and field tests in which students and teachers use pre-publication manuscript in the classroom.
3. Content makes Concepts to other content areas across the curriculum.	There is an emphasis on integrating algebra, geometry, measurement, proportional reasoning, statistics, probability, technology, and problem solving. In addition, interdisciplinary Concepts that relate mathematics to other content areas students are studying are a part of every lesson and **WebQuest Interdisciplinary Projects** relate mathematics to other content areas students are studying.

Content/Process	Comments
4. Concepts and application of skills to real-life situations are introduced when appropriate.	Relevant, real-life applications are a part of every lesson. Practical problem solving is linked to students' real-life interests. **Chapter Openers**, **WebQuest Interdisciplinary Projects**, and **What's Math Got to Do With It? Real-Life Videos** enable students to become more deeply engaged in a problem situation.
5. Content appears to be free of social, ethnic, racial, religious, gender, and geographical bias.	*Glencoe Mathematics: Applications and Concepts, Course 3* is the product of ongoing classroom-oriented research that involves students, teachers, curriculum supervisors, administrators, parents, and college-level mathematics educators. Prior to publication of any Glencoe program, typical research activities include a review of educational research and recommendations made by groups such as NCTM; mail surveys of mathematics educators, discussion groups involving mathematics teachers, department heads, and supervisors; focus groups involving mathematics educators; face-to-face interviews with mathematics educators; telephone surveys of mathematics educators; in-depth analysis of manuscript by a wide range of reviewers and consultants; and field tests in which students and teachers use pre-publication manuscript in the classroom.

Content/Process	Comments
6. Material is flexible and accommodates various learning styles, interest/ability levels, and intelligences, including adaptations and accommodations for students with special needs.	*Glencoe Mathematics: Applications and Concepts, Course 3* introduces new concepts in a variety of ways to meet the needs of all learners. In addition to more traditional instructional experiences, *Glencoe Mathematics: Applications and Concepts, Course 3* encourages students to **do** mathematics. **Project CRISS Study Skills** strategies and **English Language Learners (ELL)** activities appear in the Teacher Wraparound Edition for each chapter.
7. Reading level is appropriate for interest and ability level of intended student group; level remains consistent throughout.	The readability level is 7.3 Dale Chall.

Content/Process	Comments
8. Content reflects research-based practices (e.g., hands-on activities, technology, problem-solving situations).	**Hands-On Labs** give students hands-on experience, with a partner or group, in discovering mathematical concepts for themselves and taking responsibility for their own learning. Practical problem solving is linked to students' real-life interests. **WebQuest Interdisciplinary Projects** enable students to become more deeply engaged in a problem situation. Students are given multiple opportunities to utilize the world of technology in studying and exploring mathematics. **Internet Concepts**, **Graphing Calculator Investigations, Spreadsheet Investigations**, various CD-ROM programs, and **Videoquizzes** all contribute to student experiences in using technology to apply mathematics and solve problems.
9. Concepts are explored in depth and reinforced throughout.	Based on findings from TIMSS, *Glencoe Mathematics: Applications and Concepts, Course 3* meets or exceeds national and international standards in grades 6-8. It emphasizes geometry, measurement, and proportionality as well as algebra, fractions, and statistics. *Course 3* lays the foundation of a structured scope and sequence throughout the *Glencoe Mathematics: Applications and Concepts* series that introduces and reinforces topics needed for success in algebra 1 and geometry. In addition to the Student Edition and wide variety of print ancillaries, a full-curriculum CD-ROM is available for *Course 3* in addition to an extensive array of correlated interactive practice and review activities online at msmath3.net.

Assessment	Comments
1. Student assessment is aligned with the instructional program. Assessment activities are similar to learning activities.	The curriculum alignment to Kentucky Core Content Standards promotes the ability of students to perform well on CATS tests and other standardized tests. Forms of self-assessment in the Student Edition include **Mixed Review**, **Standardized Test Practice**, **Mid-Chapter Practice Tests**, and chapter **Practice Tests.**
2. Assessment activities examine the extent to which students have internalized and made sense of mathematical concepts and whether they can use mathematics to communicate their ideas.	Every chapter has a **Study Guide and Review** that includes Vocabulary and Concept Check, and Lesson-by-Lesson Exercises and Examples, a chapter **Practice Test** that included Vocabulary and Concepts, Skills and Applications, and Standardized Test Practice, and a **Standardized Test Practice** that has been aligned and verified by *The Princeton Review*.
3. Assessment activities provide opportunities for students to demonstrate knowledge and skills in real-life situations and interdisciplinary applications.	Every chapter has a **Study Guide and Review** that includes Vocabulary and Concept Check, and Lesson-by-Lesson Exercises and Examples. Every lesson has an **Assess** suggestion in the Teacher's Wraparound Edition that involves higher-level thinking, writing, speaking, or modeling.

Assessment	Comments
4. A variety of assessments (e.g., diagnostic, formative, summative, open response, multiple choice, individual, small group, oral, demonstrations, presentations, self and peer, performance, portfolio prompts) is included.	In the Student Edition, every lesson has a **Standardized Test Practice and Mixed Review**. Every chapter has **Mixed Review**, **Standardized Test Practice**, **Mid-Chapter Practice Tests**, and chapter **Practice Tests**. In the Teacher's Wraparound Edition, every lesson includes a **5-Minute Check** that covers the previous lesson or chapter, and an **Assess** activity that involves higher-order thinking, writing, speaking, or modeling. The black-line assessment masters for each chapter include three **Multiple Choice Tests** and three **Free-Response Tests** designed for varying levels of student ability. There is also an **Extended Response Assessment with Scoring Rubric**, a **Vocabulary Test and Review**, four **Quizzes**, a **Mid-Chapter Test**, a **Cumulative Review**, and a 2-page **Standardized Test Practice**. Diagnostic black-line masters include **Unit Tests**, **Semester Tests**, and a **Final Test**. Other supplementary assessment materials include **MindJogger Videoquizzes**, **ExamView® Pro Test Bank CD-ROM**, and **5-Minute Check Transparencies with Standardized Test Practice**.

Assessment	Comments
5. Assessment activities provide opportunities for student integration of technology in the assessment process.	The **MathPASS: Tutorial Plus** for *Glencoe Mathematics: Applications and Concepts, Course 3* provides an interactive, self-paced tutorial for a complete middle school mathematics curriculum. The lessons are correlated directly to *Glencoe Mathematics: Applications and Concepts*. Each lesson, or concept, includes a pretest, tutorial, guided practice, and posttest. Students' answers to the pretests automatically determine whether they need the tutorial for each concept, so students can take responsibility for their own learning–without taking teacher time for grading. **Online Study Tools** include comprehensive review and intervention tools that are available anytime, anyplace simply by logging on to msmath3.net. Self-check quizzes are available for every lesson, and immediate feedback helps students check their progress and find specific pages and examples in the Student Edition whenever they need extra review. These **Online Study Tools** also include extra examples, chapter tests, standardized test practice, and vocabulary review.

Organization and Structure	Comments
1. Organization is logical and allows for spiraling of content.	*Glencoe Mathematics: Applications and Concepts, Course 3* is composed of 12 chapters, each having 6 to 9 lessons. Each lesson follows a straight forward format. The lesson begins with *What You'll Learn* and *NEW Vocabulary* which provides the objective of the lesson and new vocabulary introduced in the lesson. Completely worked-out examples with clear explanations parallel the exercises in the **Guided Practice** and **Practice and Applications** sections. In the **Skill and Concept Check** exercises, students define, describe, and explain mathematical concepts. The **Guided Practice** exercises present a representative sample of the exercises in the **Practice and Applications** exercises. The **Practice and Applications** exercises provide plenty of skill practice as well as practice in applying algebraic concepts to both real-life and mathematical problem situations. The **Standardized Test Practice and Mixed Review** exercises are spiraled and cumulative. Each chapter concludes with a comprehensive **Getting Ready for the Next Lesson** section that reviews prerequisite skills necessary to complete the next lesson.
2. Language is clear and concise with correct grammar and sentence structure.	Prior to publication of any Glencoe program, an in-depth analysis of manuscript by a wide range of reviewers and consultants is conducted. Field tests in which students and teachers use pre-publication manuscript in the classroom also helps ensure accuracy.

Organization and Structure	Comments
3. Vocabulary and key terms are clearly defined and easily accessible within each lesson.	Each lesson begins with a list of words labeled **NEW Vocabulary**. These vocabulary words are found in highlighted, bold-face type where they are defined in the lesson.
4. Visual illustrations (e.g., graphs, charts, models) and examples are clearly presented and content-related.	Graphs, charts, and models are used throughout the book to illustrate concepts. Completely worked-out examples with clear explanations parallel the exercises in the **Guided Practice** and **Practice and Applications** sections.
5. Illustrations and language reflect diversity (e.g., racial, ethnic, culture, age, gender, disabilities).	Many lessons open with a discussion of a diverse topic. The applications found throughout each lesson span many diverse topics.
6. Legible type, length of lines, spacing, page layout, and width of margins contribute to overall appearance and use.	Prior to publication of any Glencoe program, an in-depth analysis of manuscript by a wide range of reviewers and consultants is conducted. Field tests in which students and teachers use pre-publication manuscript in the classroom also helps ensure accuracy.
7. Student materials seem durable and conducive to daily student use (e.g., size, weight).	The very best materials are used in all Glencoe products. The materials are easy for students to use, both in school and at home.
8. Textbook includes appropriate and sufficient glossary, index, and appendices.	The **Student Handbook** can be found on pp. 598-716. It contains sections on **Prerequisite Skills, Extra Practice, Mixed Problem Solving**, **English-Spanish Glossary, Selected Answers,** and an **Index.**

Organization and Structure	Comments
9. Materials are organized into units of study (or similar structures) with daily lessons that include worthwhile, real-world tasks.	*Glencoe Mathematics: Applications and Concepts, Course 3* is composed of 13 chapters, each having 5 to 10 lessons. Each lesson follows a straight forward format, starting with a real-life situation that points out how mathematics is used in students' everyday lives as well as in the world about them. You will also find *What you'll learn* and *When am I ever going to use this?* at the beginning of every lesson. These sections provide the objective of the lesson and a relevant benefit of learning the concept. The **Practice and Applications** exercises provide plenty of skill practice as well as practice in applying algebraic concepts to both real-life and mathematical problem situations.
10. Materials can be easily understood by students and parents.	The reading level of *Glencoe Mathematics: Applications and Concepts, Course 3* is on target at 7.3 Dale Chall. In addition, the material presented is interesting and related to students' lives. The **Parent and Student Study Guide** and **Family Letters and Activities** available for each chapter encourage students' families to become active participants in their students' learning.

Student Experiences	Comments
1. The program emphasizes students *doing* mathematics rather than *memorizing* mathematics.	Doing mathematics is so much more effective than memorizing mathematics! That is why *Glencoe Mathematics: Applications and Concepts, Course 3* gives teachers and students several opportunities to engage in projects of varying lengths that put mathematics in motion. These opportunities include **WebQuest Interdisciplinary Projects** found in each unit and **Hands-on Labs** and **Hands-on Mini Labs** found throughout the book.
2. Both group and individual activities are included.	*Glencoe Mathematics: Applications and Concepts, Course 3* offers multiple opportunities for students to learn cooperatively as well as individually. In addition to more traditional instructional experiences, **Hands-on Labs** give students hands-on experience, with a partner or group, in discovering mathematical concepts.
3. Materials and activities provide authentic applications that allow students to make meaningful Concepts across the curriculum, to real-world situations, and to interrelated mathematical concepts.	Practical problem solving is linked to students' real-life interests. There is an emphasis on integrating algebra, geometry, measurement, proportional reasoning, statistics, probability, technology, and problem solving. In addition, interdisciplinary Concepts are a part of every lesson and **WebQuest Interdisciplinary Projects** relate mathematics to other content areas students are studying.

Student Experiences	Comments
4. Materials and activities encourage students to explore and investigate mathematical ideas through various problem-solving techniques.	Practical problem solving is linked to students' real-life interests. **WebQuest Interdisciplinary Projects** enable students to become more deeply engaged in a problem situation. Students are given multiple opportunities to utilize the world of technology in studying and exploring mathematics. **Internet Concepts**, **Graphing Calculator Investigations, Spreadsheet Investigations**, various CD-ROM programs, and **Videoquizzes** all contribute to student experiences in using technology to apply mathematics and solve problems.
5. Materials and activities ask students to read, write, and discuss mathematics.	In the **Skill and Concept Check** exercises found in each lesson, students define, describe, and explain mathematical concepts. Special activities found in these exercises include **Writing Math** exercises and **Find the Error** exercises.
6. Materials and activities ask students to reflect upon, clarify, justify, and generalize their mathematical ideas.	Each lesson contains a **Critical Thinking** exercise in which students explain, justify, and prove mathematical relationships. Students are shown how to organize information about each chapter by using a **Foldables Study Organizer.**

Technology	Comments
1. In order for students to focus on decision-making, reflection, reasoning, and problem solving, instructional activities incorporate the use of technology (e.g., calculators, probes, computers) and include instructions on how to use the technology tools.	Students are given multiple opportunities to utilize the world of technology in studying and exploring mathematics **Internet Concepts**, **Graphing Calculator Investigations, Spreadsheet Investigations**, various CD-ROM programs, and **Videoquizzes** all contribute to student experiences in using technology to apply mathematics and solve problems.
2. Various forms of media are included (e.g., CDs, videos, computer software)	The following items are included in the program: **State Test Prep CD-ROM Middle School**, **KY TestCheck & Worksheet Builder CD-ROM**, **MathPASS Tutorial CD-ROM**, **KY Interactive Lesson Planner**, **KY CATS Prep CD-ROM**, **Using the Internet in the Math Classroom**, **MindJogger Videoquizzes**, and **Multimedia Application CD-ROM**.
3. Student materials are available online.	Free access to **Glencoe Math Website** and **Online Study Tools** is provided with the program.

Resource Materials	Comments
1. Teacher materials coordinate easily with student materials (e.g., additional resources included at point of need, student pages shown, manipulatives appropriate for indicated lesson, instructional technology indicated).	Each lesson in the Teacher's Wraparound Edition (TWE) begins with a **Chapter Resource Manager**, which includes instructional technology. A list of materials and manipulatives for each lesson is included at the beginning of each lesson. Each student page is shown in the TWE on the same pages as related teacher's materials.
2. Activities are included that adapt to the various learning styles, intelligences, and interest/ability levels.	In the TWE, ideas for **Differentiated Instruction** and **Daily Intervention** are provided for each lesson. **English Language Learner (ELL)** and **Project CRISS^{SM} Study Skill** suggestions are given at the beginning of each chapter.
3. Extension activities including adaptations and accommodations for students with special needs.	In the TWE, ideas for **Differentiated Instruction** and **Daily Intervention** are provided for each lesson. **English Language Learner (ELL)** and **Project CRISS^{SM} Study Skill** suggestions are given at the beginning of each chapter.
4. Resources provide objectives, background information, common student errors, hints, advice for lesson implementation and real-world Concepts, Concepts within mathematics, and references (e.g., solutions manuals, study guides).	The following features are provided throughout the TWE: **Bellringer** activities, **Daily Intervention**, and **Tips for New Teachers.** Ancillary materials include **Study Guide and Intervention, Practice, Reading to Learn Mathematics, Enrichment, Calculator and Spreadsheet Masters, Real-Life Career Masters, Classroom Math Games, Science and Math Lab Manual,** and a **Quick Review Math Handbook.**

Resource Materials	Comments
5. Suggestions are made for integration of themes and/or interdisciplinary instruction.	The TWE includes the features **Daily Intervention** which often includes suggestions of an interdisciplinary nature. Ancillary materials include **Real-Life Career Masters** and **Science and Math Lab Manual.**
6. Suggestions are made for family and community involvement and school/home communication.	The **Parent and Student Study Guide** and **Family Letters and Activities** available for each chapter encourage students' families to become active participants in their students' learning.
7. The included media are durable, easy to use, and have technical merit.	All included media are made to last and can be easily incorporated into lessons.
8. Teacher resources are available online.	Free access to **Glencoe Math Website** and **Online Study Tools**, as well as is provided with the program.

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