

2005

FCAT

Florida Comprehensive Assessment Test

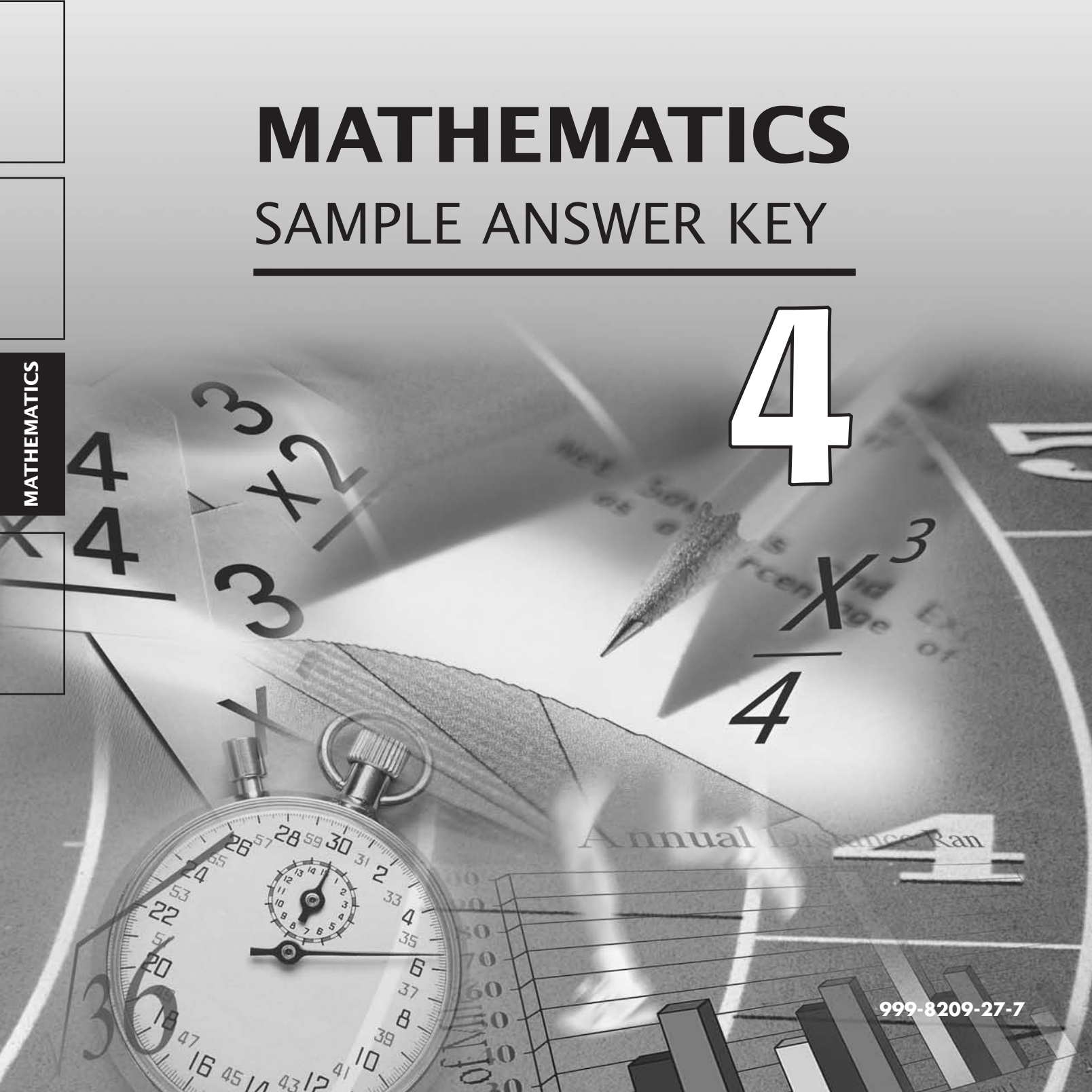
TEACHER'S BOOKLET

MATHEMATICS

SAMPLE ANSWER KEY

4

MATHEMATICS



999-8209-27-7

FCAT Sample Test Materials

These sample test materials are designed to help students prepare to answer FCAT questions. These materials introduce them to the kinds of questions they will answer when they take FCAT and include hints for responding to FCAT questions. The FCAT Mathematics sample test materials for Grade 4 are composed of the books described below:

- Sample Test Book**
Includes a mathematics sample test, a sample answer sheet, and instructions for completing the sample test. (Copies are available for all students in the tested grade.)
- Sample Answer Key**
Includes answers and explanations for the questions in the sample test. (Copies are available for classroom teachers only.)

= This book

Copyright Statement for This Assessment and School Performance Publication

Authorization for reproduction of this document is hereby granted to persons acting in an official capacity within the Uniform System of Public K–12 Schools as defined in Section 1000.01(4), Florida Statutes. The copyright notice at the bottom of this page must be included in all copies.

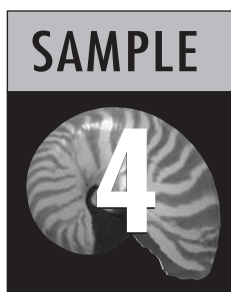
All trademarks and trade names found in this publication are the property of their respective owners and are not associated with the publishers of this publication.

Permission is **NOT** granted for distribution or reproduction outside of the Uniform System of Public K–12 Schools or for commercial distribution of the copyrighted materials without written authorization from the Florida Department of Education. Questions regarding use of these copyrighted materials should be sent to the following:

The Administrator
Assessment and School Performance
Florida Department of Education
Tallahassee, Florida 32399-0400

Copyright © 2004
State of Florida
Department of State

FCAT Mathematics Sample Answer Key



This book contains answers to the FCAT Mathematics sample test questions. It also gives the *Sunshine State Standards* benchmark assessed by each item on the sample test.

In addition, one or more possible approaches to solving the questions are provided. Students may use approaches other than these and still receive credit if they also obtain a correct answer.

Multiple-choice items on FCAT Mathematics tests are scored by awarding one point for each correct answer.

- 1 The correct answer is C (a single 90° turn [rotation]).

Strand: C—Geometry and Spatial Sense

Benchmark: MA.C.2.2.2 The student predicts, illustrates, and verifies which figures could result from a flip, slide, or turn of a given figure.

To solve the problem, first look at the sign. Look at the H.

First Strategy:

Think about the way an H normally looks. Think about what happened to it to make it look the way it does now.

To get to the position it is in now, it must have been turned clockwise about its lower left corner or turned counterclockwise about its lower right corner. To get to its present position, it must have gone through a single 90° turn (rotation).

OR

Second Strategy:

Go through the different options to find the correct one.

Imagine how the H would look if it went through a flip. It would look the same, just in a different place.

Imagine how the H would look if it went through a slide. It would look the same, just moved over or up.

Imagine how the H would look if it went through a single 90° turn (rotation). It would look like the H on the elementary school sign.

Imagine how the H would look if it went through a single 180° turn (rotation). It would look the same, but moved down and over to the left or right.

The correct answer is that the H went through a single 90° turn (rotation).

2 The correct answer is I (centimeter).

Strand: B—Measurement

Benchmark: MA.B.2.2.2 The student selects and uses appropriate standard and nonstandard units of measurement, according to type and size. (Also assesses MA.B.4.2.1 determines which units of measurement, such as seconds, square inches, and dollars per tankful, to use with answers to real-world problems.)

To decide which unit of measurement is most appropriate, first look at the drawing. Then look at the different measurement units.

A liter is used to measure volume and a kilogram is used to measure mass. Neither would be appropriate to measure the height of the plant.

A meter is used to measure length, but it is too long to measure the small plant shown in the drawing.

The fourth option is centimeter, which is used to measure length. It is a small enough unit to be appropriate for measuring the plant in the drawing.

3 The correct answer is B (Tuesday).

Strand: A—Number Sense, Concepts, and Operations

Benchmark: MA.A.1.2.2 The student understands the relative size of whole numbers, commonly used fractions, decimals, and percents.

To find the answer, first find which number in the table is the smallest.

To do that, compare the digits in the ones place. All of the answer choices have 0 in the ones place.

Then compare the digits in the tenths place. The number with the smallest value in the tenths place is 0.02, which has a 0 in the tenths place. This number is the smallest number.

Then see which day had 0.02 inches of rain recorded. It was Tuesday.

Tuesday was the day of the week that Sam recorded the **least** amount of rainfall.

4 The correct answer is G ($d = 76 - 61$).

Strand: D—Algebraic Thinking

Benchmark: MA.D.2.2.2 The student uses informal methods, such as physical models and graphs, to solve real-world problems involving equations and inequalities. (Also assesses MA.D.2.2.1 represents a given simple problem situation.)

To solve this problem, decide which operation is used to find the difference between two numbers.

Subtraction should be used to find d , the difference between the two average temperatures. Subtract the smaller number (61) from the larger number (76).

The correct expression is $d = 76 - 61$.

5 The correct answer is C (Orange Bowl).

Strand: E—Data Analysis and Probability

Benchmark: MA.E.1.2.1 The student solves problems by generating, collecting, organizing, displaying, and analyzing data using histograms, bar graphs, circle graphs, line graphs, pictographs, and charts. (Also assesses MA.E.1.2.3 analyzes real-world data to recognize patterns and relationships of the measures of central tendency.)

To find out which stadium holds the second greatest number of people, look at the bar graph.

Find the bar that shows the greatest number of people. It should be the tallest bar, and it represents about 83,000 people. That is the bar for Florida Field.

Then find the bar that shows the second greatest number of people. It should be the second tallest bar, and it represents about 80,000 people. That is the bar for the Orange Bowl.

The Orange Bowl holds the second greatest number of people.

- 6** The correct answer is G (80 square feet).

Strand: C—Geometry and Spatial Sense

Benchmark: MA.C.3.2.1 The student represents and applies a variety of strategies and geometric properties and formulas for two- and three-dimensional shapes to solve real-world and mathematical problems. (Also assesses MA.C.2.2.1 understands the concepts of spatial relationships.)

First Strategy:

To find the area, count how many squares are along the length of Javier's bedroom (the shaded area on the grid). Then count how many squares are along the width of the bedroom.

Using the formula for the area of a rectangle, multiply the length of Javier's bedroom by the width of his bedroom.

$$10 \times 8 = 80 \text{ square feet}$$

OR

Second Strategy:

Count the squares in Javier's bedroom, with each square equaling one square foot. The total number of squares is 80.

The area of Javier's bedroom is 80 square feet.

- 7** The correct answer is D (the fourth scale with 8 apples, reading 2 pounds).

Strand: B—Measurement

Benchmark: MA.B.4.2.2 The student selects and uses appropriate instruments and technology, including scales, rulers, thermometers, measuring cups, protractors, and gauges, to measure in real-world situations.

To solve this problem, look at the scales.

This kind of scale is read like a clock. Start at the top and read the numbers in a clockwise direction.

The scale holding 2 pounds of apples is the scale with the arrow pointing at the 2.

The fourth scale shows 2 pounds of apples.

- 8** The correct answer is H (8, 2).

Strand: C—Geometry and Spatial Sense

Benchmark: MA.C.3.2.2 The student identifies and plots positive ordered pairs (whole numbers) in a rectangular coordinate system (graph).

First find the shoe department on the grid. Then start at 0 and see how to get to the shoe department from 0.

Starting at 0, move 8 units to the right and then 2 units up. The number of moves to the right (8) goes first in the ordered pair. Then the number of moves up (2) goes second in the ordered pair.

The shoe department is located at the ordered pair (8, 2).

9 The correct answer is B (6).

Strand: E—Data Analysis and Probability

Benchmark: MA.E.2.2.1 The student uses models, such as tree diagrams, to display possible outcomes and to predict events.

First Strategy:

Multiply the number of colors of leather (2) by the number of colors of beads (3).

$$2 \times 3 = 6$$

There are 6 different color combinations Pat can make.

OR

Second Strategy:

Make a list of all the possible combinations.

Black leather–Red beads

Black leather–Blue beads

Black leather–Yellow beads

White leather–Red beads

White leather–Blue beads

White leather–Yellow beads

Count the number of combinations. There are 6 different color combinations possible.

10 The correct answer is G (boy, girl).

Strand: D—Algebraic Thinking

Benchmark: MA.D.1.2.1 The student describes a wide variety of patterns and relationships through models, such as manipulatives, tables, graphs, and rules using algebraic symbols. (Also assesses MA.D.1.2.2 generalizes a pattern, relation, or function.)

To solve this problem, see how the pattern repeats itself.

The complete pattern has been repeated twice:

girl, girl, boy, boy, girl, girl, boy, boy,

The two unknown students will be the last student in the third group and the first student in the fourth group.

The two unknown students will be a boy, then a girl.

11 The correct answer is A (81 ounces).

Strand: B—Measurement

Benchmark: MA.B.2.2.1 The student uses direct (measured) and indirect (not measured) measures to calculate and compare measurable characteristics.

To find the number of ounces in 5 pounds, 1 ounce, first find the number of ounces in 5 pounds.

There are 16 ounces in 1 pound. Multiply 16 ounces by 5 pounds.

$$16 \times 5 = 80$$

There are 80 ounces in 5 pounds.

Then add 1 ounce to 80 ounces to get a total weight of 81 ounces.

- 12** The correct answer is H ($20 \times b$).

Strand: D—Algebraic Thinking

Benchmark: MA.D.2.2.1 The student represents a given simple problem situation using diagrams, models, and symbolic expressions translated from verbal phrases, or verbal phrases translated from symbolic expressions, etc. (Also assesses MA.D.2.2.2 uses informal methods to solve real-world problems involving equations and inequalities.)

To solve this problem, decide which operation can be used to find “20 times as many.”

The word *times* refers to multiplication. The number 20 is multiplied by the letter *b* to represent the number of species of ants.

13 The correct answer is D (0.28).

Strand: A—Number Sense, Concepts, and Operations

Benchmark: MA.A.1.2.4 The student understands that numbers can be represented in a variety of equivalent forms using whole numbers, decimals, fractions, and percents. (Also assesses MA.A.1.2.1 associates names of numbers with numerals and MA.A.1.2.3 understands concrete and symbolic representations.)

To solve this problem, change $\frac{7}{25}$ to a decimal number.

First Strategy:

Divide 25 into 7.

$$\begin{array}{r} 0.28 \\ 25 \overline{)7.00} \\ \underline{50} \\ 200 \\ \underline{200} \\ 0 \end{array}$$

The answer is 0.28.

OR

Second Strategy:

Change the $\frac{7}{25}$ to an equivalent fraction over the denominator 100.

$$\frac{7}{25} \times \frac{4}{4} = \frac{28}{100}$$

The fraction $\frac{28}{100}$ is equivalent to the decimal number 0.28.

- 14** The correct answer is G (1,619 miles).

Strand: A—Number Sense, Concepts, and Operations

Benchmark: MA.A.3.2.3 The student adds, subtracts, and multiplies whole numbers, decimals, and fractions, including mixed numbers, and divides whole numbers to solve real-world problems, using appropriate methods of computing, such as mental mathematics, paper and pencil, and calculator.

You can use subtraction to determine “how much larger” something is.

Subtract the smaller diameter (1,413) from the larger diameter (3,032).

$$\begin{array}{r} 3,032 \\ - 1,413 \\ \hline 1,619 \end{array}$$

The diameter of Mercury is 1,619 miles larger than the diameter of Pluto.

- 15** The correct answer is C (Angle C).

Strand: C—Geometry and Spatial Sense

Benchmark: MA.C.1.2.1 The student, given a verbal description, draws and/or models two- and three-dimensional shapes and uses appropriate geometric vocabulary to write a description of a figure or a picture composed of geometric figures.

To solve the problem, look at each of the angles labeled in the drawing.

An obtuse angle is an angle greater than 90° (a right angle) and less than 180° (a straight line). The only angle shown that appears to be greater than 90° and less than 180° is angle C.

Angle C is an obtuse angle.



FLORIDA DEPARTMENT OF EDUCATION
www.fldoe.org

Assessment and School Performance
Florida Department of Education
Tallahassee, Florida

Copyright © 2004 State of Florida Department of State

ISBN 999-8209-27-7



9 789998 209275

MATHEMATICS