

# Grade 4

## FCAT 2.0 Mathematics

### Sample Answers

This booklet contains the answers to the FCAT 2.0 Mathematics sample questions, as well as explanations for the answers. It also gives the Next Generation Sunshine State Standards (NGSSS) benchmark assessed by each item. Although the Florida State Board of Education adopted the Common Core State Standards in the summer of 2010, these standards have not yet been implemented. For this reason, the FCAT 2.0 tests and sample questions and answers are based on the 2007 NGSSS. The benchmarks included in this booklet provide teachers with additional information. For more detailed information, follow this link to the Florida NGSSS website: <http://www.floridastandards.org/index.aspx>, or follow this link to the current benchmark language in the *FCAT 2.0 Mathematics Test Item Specifications*: <http://fcat.fldoe.org/fcat2/itemspecs.asp>.

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 and gridded-response items in FCAT 2.0 Mathematics tests are scored by awarding one point for each correct answer.

The intent of these sample test materials is to orient teachers and students to the types of questions on FCAT 2.0 tests. By using these materials, students will become familiar with the types of items and response formats they will see on the actual test. The sample questions and answers are not intended to demonstrate the length of the actual test, nor should student responses be used as an indicator of student performance on the actual test. Additional information about test items can be found in the *FCAT 2.0 Test Item Specifications* at <http://fcat.fldoe.org/fcat2/itemspecs.asp>.

The sample questions for students and the sample answers for teachers will only be available online, at <http://fcat.fldoe.org/fcat2/fcatitem.asp>.

**1** The correct answer is 56.7 meters.



Reporting Category: Number: Base Ten and Fractions

Benchmark: MA.4.A.2.3 Relate equivalent fractions and decimals with and without models, including locations on a number line. Also assesses MA.4.A.2.1 Use decimals through the thousandths place to name numbers between whole numbers. Also assesses MA.4.A.2.2 Describe decimals as an extension of the base-ten number system.

To solve this problem, change the mixed number,  $56\frac{7}{10}$ , to an equivalent decimal.

The whole number remains the same, and  $\frac{7}{10} = 0.7$ ;  $56\frac{7}{10} = 56.7$  meters.

5	6	.	7	
0	0		0	0
1	1		1	1
2	2		2	2
3	3		3	3
4	4		4	4
5	5		5	5
6	6		6	6
7	7		7	7
8	8		8	8
9	9		9	9

**2** The correct answer is 14.



Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.4.1 Generate algebraic rules and use all four operations to describe patterns, including nonnumeric growing or repeating patterns.

To solve the problem, determine the relationship between the three figures.

Figure 1 = 2 pieces

Figure 2 = 4 pieces

Figure 3 = 6 pieces

Each new figure has 2 more pieces than the figure before it.

Extend the pattern, by adding 2 pieces to each figure, to determine how many pieces will be in Figure 7.

Figure 4 = 8 pieces

Figure 5 = 10 pieces

Figure 6 = 12 pieces

Figure 7 = 14 pieces

Therefore, the correct answer is 14 pieces for Figure 7.

1	4			
0	0	0	0	0
●	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	●	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

**3** The correct answer is \$556.



Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.1.2 Multiply multi-digit whole numbers through four digits fluently, demonstrating understanding of the standard algorithm and checking for reasonableness of results, including solving real-world problems. Also assesses MA.4.A.1.1 Use and describe various models for multiplication in problem-solving situations, and demonstrate recall of basic multiplication and related division facts with ease.

To solve the problem, multiply 139 by 4. Mr. Avery spent \$556 to buy the four play kitchens.

\$	5	5	6	
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
●	●	5	5	
6	6	●	6	
7	7	7	7	
8	8	8	8	
9	9	9	9	

**4 The correct answer is C ( $5 \times 6$ ).**

Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.4.2 Describe mathematics relationships using expressions, equations, and visual representations.

To solve this problem, interpret the word problem. If Max drives 3 miles to work and 3 miles from work each day, then  $3 + 3 = 6$  miles a day. If he drives to and from work for 5 days, then the expression  $5 \times 6$  would determine the total number of miles he drove.

**5 The correct answer is I (the “Welcome” sign rotated  $90^\circ$  clockwise).**

Reporting Category: Geometry and Measurement

Benchmark: MA.4.G.5.2 Identify and describe the results of translations, reflections, and rotations of  $45^\circ$ ,  $90^\circ$ ,  $180^\circ$ ,  $270^\circ$ , and  $360^\circ$  degrees, including figures with line and rotational symmetry.

To solve this problem, imagine the sign rotating around a point. As it rotates, the “Welcome” on the sign faces different directions.

Turning the sign  $90^\circ$  *clockwise* moves the sign one-fourth of the way around a point. The “Welcome” on the sign is now pictured in option I.

**6** The correct answer is B (\$27).

Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.4.2 Describe mathematics relationships using expressions, equations, and visual representations.

To solve this problem, determine the relationship in the table:

$6 \div 2 = 3$ ,  $12 \div 4 = 3$ , and  $18 \div 6 = 3$ ; therefore, each notebook costs \$3. Using this information, the cost of any number of notebooks can be determined; therefore,  $9 \text{ notebooks} \times \$3 = \$27$ .

- 7 The correct answer is I  $\left(\frac{3}{10}\right)$ .

Reporting Category: Number: Base Ten and Fractions

Benchmark: MA.4.A.6.3 Generate equivalent fractions and simplify fractions.

To solve this problem, list all the factors of both the numerator and the denominator.

27 – 1, 3, 9, 27

90 – 1, 2, 3, 5, 6, 9, 10, 15, 18, 30, 45, 90

Determine the greatest common factor; 9.

Divide the greatest common factor into the numerator and the denominator.

$$27 \div 9 = 3$$

$$90 \div 9 = 10$$

The fraction equivalent to  $\frac{27}{90}$  is  $\frac{3}{10}$ . Therefore, I is the correct answer.

- 8 The correct answer is B  $\left(2\frac{5}{10}\right)$ .

Reporting Category: Number: Base Ten and Fractions

Benchmark: MA.4.A.2.3 Relate equivalent fractions and decimals with and without models, including locations on a number line. Also assesses MA.4.A.2.1 Use decimals through the thousandths place to name numbers between whole numbers. Also assesses MA.4.A.2.2 Describe decimals as an extension of the base-ten number system.

To solve this problem, recognize that 0.5 is five-tenths, also represented as  $\frac{5}{10}$ ; therefore, 2.5 is equivalent to  $2\frac{5}{10}$ .

Note: In this instance, the fraction was not written in simplest form.

- 9 The correct answer is G  $\left(9\frac{3}{4}\right)$ .

Reporting Category: Number: Base Ten and Fractions

Benchmark: MA.4.A.2.4 Compare and order decimals, and estimate fraction and decimal amounts in real-world problems. Also assesses MA.4.A.2.1 Use decimals through the thousandths place to name numbers between whole numbers. Also assesses MA.4.A.2.2 Describe decimals as an extension of the base-ten number system.

**First Strategy:**

To solve this problem, recognize that 9.8 is a little less than 10. Looking at each answer option, determine that G,  $9\frac{3}{4}$ , is also a little less than 10.

**OR**

**Second Strategy:**

To solve this problem, recognize that 0.8 is greater than half of a whole. Looking at each answer option, determine that the fractional part of option G,  $\frac{3}{4}$ , is the only fraction greater than one-half.



**10** The correct answer is D ( $15 + 10w$ ).

Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.4.3 Recognize and write algebraic expressions for functions with two operations.

To solve this problem, recognize that if Janelle saves \$10 each week, then in  $w$  weeks Janelle will have saved  $10w$  dollars. Janelle had saved \$15, so the total amount of money she will have saved is  $15 + 10w$ .

**11** The correct answer is 93,354.



Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.6.1 Use and represent numbers through millions in various contexts, including estimation of relative sizes of amounts or distances.

To solve this problem, determine that subtraction is the correct operation to find the increase in the population of Ireland.

$$4,459,547 - 4,366,193 = 93,354$$

9	3	3	5	4
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	●	●	3	3
4	4	4	4	●
5	5	5	●	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
●	9	9	9	9

- 12** The correct answer is H (picture displaying 4 groups of 6 with a remainder of 2).

Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.6.2 Use models to represent division as:

- the inverse of multiplication
- partitioning
- successive subtraction

To solve this problem, recognize that all 4 friends must receive an equal number of strawberries and all 26 strawberries must be shared.

For option H, all friends receive 6 strawberries and 2 are left. A total of 26 strawberries is accounted for, with each friend receiving the same number of strawberries. This is the correct answer.

- 13** The correct answer is D (1, 2, 4, 5, 8, 10, 20, 40).

Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.6.4 Determine factors and multiples for specified whole numbers.

To solve this problem, list all factors of 40 by identifying pairs of numbers whose product is 40.

$$1 \times 40, 2 \times 20, 4 \times 10, 5 \times 8$$

The complete list of factors is option D: 1, 2, 4, 5, 8, 10, 20, 40.

- 14** The correct answer is H ( $\frac{3}{4}$ ).

Reporting Category: Number: Base Ten and Fractions

Benchmark: MA.4.A.6.5 Relate halves, fourths, tenths, and hundredths to decimals and percents.

To solve this problem, convert 75% to  $\frac{75}{100}$ . The fraction that is equivalent to  $\frac{75}{100}$  is  $\frac{3}{4}$ .

**15** The correct answer is C (250 quarts).

Reporting Category: Number: Operations and Problems

Benchmark: MA.4.A.6.6 Estimate and describe reasonableness of estimates; determine the appropriateness of an estimate versus an exact answer.

To solve this problem, estimate the number of quarts of popcorn eaten per person in one year to be between 59 and 65. Using an estimate of 60 quarts per person, multiply by 4 to determine the number of quarts eaten by an American family of 4 in one year.

$$60 \times 4 = 240$$

Recognizing that 60 is closer to 59 than 65, compensate for that difference by increasing the estimate; therefore, 250 or C is the best estimate.

**16** The correct answer is G (picture with an area of about 28 square yards).

Reporting Category: Geometry and Measurement

Benchmark: MA.4.G.3.1 Describe and determine area as the number of same-sized units that cover a region in the plane, recognizing that a unit square is the standard unit for measuring area.

To solve this problem, estimate the area of each picture by counting the number of square units and compensating for partially shaded units. Of the pictures shown, only G has an area of about 28 square yards.

- 17** The correct answer is C (determining the amount of ground the bottom of the pool will cover).

Reporting Category: Geometry and Measurement

Benchmark: MA.4.G.3.2 Justify the formula for the area of the rectangle  
“area = base  $\times$  height.”

To solve this problem, consider each option to determine which measurement would be used. Of the options shown, only C requires the use of the area formula.

Option A requires the use of capacity.

Option B requires the use of perimeter.

Option D requires the use of volume.

**18** The correct answer is 16 square centimeters.



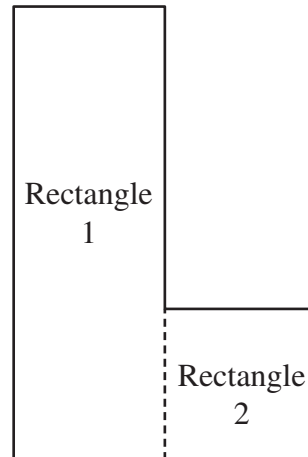
Reporting Category: Geometry and Measurement

Benchmark: MA.4.G.3.3 Select and use appropriate units, both customary and metric, strategies, and measuring tools to estimate and solve real-world area problems.

To solve this problem:

- Decompose the shape by separating it into two rectangles.
- Use the provided ruler to find the measurement, in centimeters, of the base and height of each rectangle.
- Find the area of each rectangle ( $A = bh$ ).
- Add the areas of the two rectangles to determine the area of the shape.

$$\begin{aligned} \text{Area of rectangle 1} &= 2 \text{ cm} \times 6 \text{ cm} = 12 \text{ cm}^2 \\ \text{Area of rectangle 2} &= 2 \text{ cm} \times 2 \text{ cm} = 4 \text{ cm}^2 \\ \text{Area of "L"} &= 12 \text{ cm}^2 + 4 \text{ cm}^2 = 16 \text{ cm}^2 \end{aligned}$$



Note: The shape may be decomposed into rectangles in other ways.

			<b>1</b>	<b>6</b>
0	0	0	0	0
1	1	1	●	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	●
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

**19** The correct answer is F (acute).

Reporting Category: Geometry and Measurement

Benchmark: MA.4.G.5.1 Classify angles of two-dimensional shapes using benchmark angles ( $45^\circ$ ,  $90^\circ$ ,  $180^\circ$ , and  $360^\circ$ ).

To solve this problem, locate  $\angle ACB$ . The angle is classified as an acute angle by recognizing that its measurement is less than  $90^\circ$ .

**20** The correct answer is C (top or bottom view of three-dimensional figure).

Reporting Category: Geometry and Measurement

Benchmark: MA.4.G.5.3 Identify and build a three-dimensional object from a two-dimensional representation of that object and vice versa.

To solve this problem, compare each view shown to determine if it is a view from the top, side(s), front, or base of the three-dimensional figure. Of the views shown, only C is another view of the figure. It represents a view from the top or bottom of the figure.



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