FCAT 2.0
Florida Comprehensive Assessment Test®

Grade 6
FCAT 2.0 Mathematics Sample Questions

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 FCAT 2.0 Mathematics tests and sample questions and answers are based on the 2007 Next Generation Sunshine State Standards.

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

Directions for Answering the Mathematics Sample Questions

Mark your answers on the Mathematics Sample Answer Sheets, which begin on page 14 of this booklet. If you don't know how to work a problem, ask your teacher to explain it to you. Your teacher has the answers to the sample questions.

You may need formulas and conversions to help you solve some of the problems. You may refer to the Reference Sheet on pages 4 and 5 as often as you like.

Calculators and rulers are NOT to be used with the Grade 6 FCAT 2.0 Mathematics Sample Questions.

Use the space in your Mathematics Sample Questions booklet to do your work on the multiple-choice and gridded-response questions, but be sure to put your answers on the Sample Answer Sheet.

> This symbol appears next to questions that require you to fill in your answer on a grid.

Directions for Completing the Response Grids

1. Work the problem and find an answer.
2. Write your answer in the answer boxes at the top of the grid.
   - Print your answer with the first digit in the left answer box OR with the last digit in the right answer box.
   - Print only one digit or symbol in each answer box. Do NOT leave a blank answer box in the middle of an answer.
   - Be sure to write a decimal point or fraction bar in the answer box if it is a part of the answer.
3. Fill in a bubble under each box in which you wrote your answer.
   - Fill in one and ONLY one bubble for each answer box. Do NOT fill in a bubble under an unused answer box.
   - Fill in each bubble by making a solid mark that completely fills the circle.
   - You MUST fill in the bubbles accurately to receive credit for your answer.

The Grade 6 response grid has several parts. Grids may be filled in from the left or the right. Do NOT leave spaces in the middle. Fill in all bubbles for numbers and symbols.

$(15 \times 6) + 6^2 =$

What decimal is equivalent to $5\frac{6}{100}$?

MIXED NUMBERS: Do NOT write a mixed number in an answer grid. Convert a mixed number, such as $13\frac{1}{4}$, to a fraction or a decimal because $13\frac{1}{4}$ would be read incorrectly as $\frac{131}{4}$. Equivalent decimals or fractions may be used in many answers.

CORRECT   **INCORRECT**

$12\frac{3}{4} + \frac{1}{2} =$ 5 3 / 4   OR   1 3 . 2 5   1 3 1 / 4

PERCENTS: Grid a percent value without the % symbol. Do NOT convert a percent to its decimal or fractional equivalent.

CORRECT   **INCORRECT**

What percent is equivalent to $\frac{30}{100}$?   3 0   . 3 0   OR   3 / 1 0

Grades 6–8 FCAT 2.0 Mathematics Reference Sheet

Area

Rectangle	$A = bh$
Parallelogram	$A = bh$
Triangle	$A = \frac{1}{2}bh$
Trapezoid	$A = \frac{1}{2}h(b_1 + b_2)$
Circle	$A = \pi r^2$

KEY

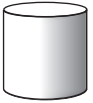|	
b = base	A = area
h = height	B = area of base
w = width	C = circumference
d = diameter	V = volume
r = radius	P = perimeter of base
ℓ = slant height	$S.A.$ = surface area

Use 3.14 or $\frac{22}{7}$ for π.

Circumference

$C = \pi d$ or $C = 2\pi r$

Volume/Capacity

Total Surface Area

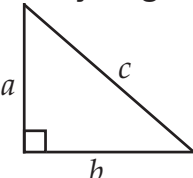|		Volume/Capacity	Total Surface Area
	Rectangular Prism	$V = bwh$ or $V = Bh$	$S.A. = 2bh + 2bw + 2hw$ or $S.A. = Ph + 2B$
	Right Circular Cylinder	$V = \pi r^2 h$ or $V = Bh$	$S.A. = 2\pi rh + 2\pi r^2$ or $S.A. = 2\pi rh + 2B$
	Right Square Pyramid	$V = \frac{1}{3}Bh$	$S.A. = \frac{1}{2}P\ell + B$
	Right Circular Cone	$V = \frac{1}{3}\pi r^2 h$ or $V = \frac{1}{3}Bh$	$S.A. = \frac{1}{2}(2\pi r)\ell + B$

Sum of the measures of the interior angles of a polygon = $180(n - 2)$

Measure of an interior angle of a regular polygon $= \dfrac{180(n - 2)}{n}$

where:

    n represents the number of sides

Grades 6–8 FCAT 2.0 Mathematics Reference Sheet

Pythagorean theorem

$$a^2 + b^2 = c^2$$

Simple interest formula

$$I = prt$$

where p = principal, r = rate, t = time

Slope-intercept form of a linear equation

$$y = mx + b$$

where m = slope and b = y-intercept

Distance, rate, time formula

$$d = rt$$

where d = distance, r = rate, t = time

Conversions within a System of Measure

1 yard = 3 feet
1 mile = 1,760 yards = 5,280 feet
1 acre = 43,560 square feet

1 cup = 8 fluid ounces
1 pint = 2 cups
1 quart = 2 pints
1 gallon = 4 quarts
1 pound = 16 ounces
1 ton = 2,000 pounds

1 meter = 100 centimeters = 1000 millimeters
1 kilometer = 1000 meters

1 liter = 1000 milliliters = 1000 cubic centimeters
1 gram = 1000 milligrams
1 kilogram = 1000 grams

1 minute = 60 seconds
1 hour = 60 minutes
1 year = 52 weeks = 365 days

Conversions between Systems of Measure

When converting from Customary to Metric, use these approximations.

1 inch = 2.54 centimeters
1 foot = 0.305 meter
1 mile = 1.61 kilometers

1 cup = 0.24 liter
1 gallon = 3.785 liters
1 ounce = 28.35 grams
1 pound = 0.454 kilogram

When converting from Metric to Customary, use these approximations.

1 centimeter = 0.39 inch
1 meter = 3.28 feet
1 kilometer = 0.62 mile

1 liter = 4.23 cups
1 liter = 0.264 gallon
1 gram = 0.0352 ounce
1 kilogram = 2.204 pounds

Temperature conversions between Celsius and Fahrenheit

$$°C = (°F − 32) ÷ 1.8$$
$$°F = (°C × 1.8) + 32$$

1 Which number line correctly represents the solution to the inequality $3x < 15$?

A.

B.

C.

D.
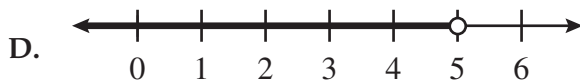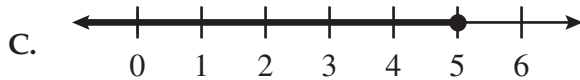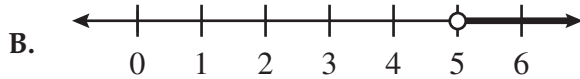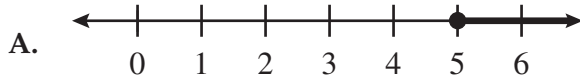
2 The steps below show a method for finding the value of the following expression.

$$(12.35 + 1.59) + 20.65$$

Step 1	$(12.35 + 1.59) + 20.65$
Step 2	$(1.59 + 12.35) + 20.65$
Step 3	$1.59 + (12.35 + 20.65)$
Step 4	$1.59 + (33.00)$
Step 5	34.59

Which property is used to show that Step 1 and Step 2 are equivalent expressions?
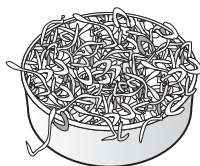
F.   associative property
G.   commutative property
H.   distributive property
I.   identity property

3 After eating lunch, Samantha compared the number of calories in each food item she ate to the total number of calories in her lunch. The picture below shows an approximate portion of the total calories for each food item she ate.
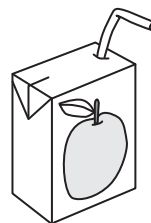
Samantha's Lunch
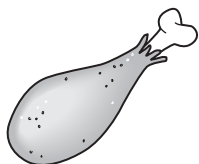
Chicken	Cole slaw	French fries	Juice	Oatmeal cookie
0.29	0.2	$\frac{1}{4}$	$\frac{1}{10}$	16%

Which of the following lists shows the numbers in order from least to greatest?

A. $\frac{1}{10}$, 16%, 0.2, $\frac{1}{4}$, 0.29

B. 16%, $\frac{1}{4}$, $\frac{1}{10}$, 0.2, 0.29

C. 0.29, 0.2, $\frac{1}{10}$, 16%, $\frac{1}{4}$

D. 0.2, $\frac{1}{4}$, 16%, $\frac{1}{10}$, 0.29

4 A television show announcer asked viewers to vote online for their favorite commercial. The viewers could choose from one of three commercials. The results of their votes are shown below.

- A total of 1,000 votes were cast.
- The first commercial received 25% of the votes.
- The second commercial received $\frac{2}{5}$ of the votes.

The third commercial received the remaining votes. What was the total number of votes for the third commercial?

5 Tim's workbench is in the shape of a trapezoid. A drawing of his workbench, with some of the dimensions, is shown below.

Tim's Workbench

32 inches

?
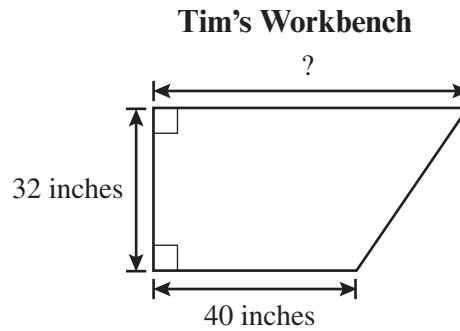
40 inches

not to scale

If the area of Tim's trapezoidal workbench has a total of 1,440 square inches, what is the total length, **in inches**, of the longest side of his workbench?

6 Xander is on a bowling team. He needs a mean score of 235 in 6 games to remain in first place on his team. His scores are listed below.

XANDER'S BOWLING SCORES
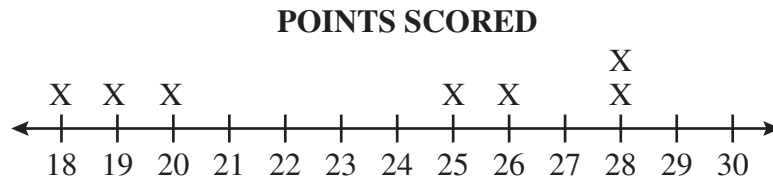
Game Number	Score
1	220
2	245
3	210
4	260
5	210
6	?

What score must Xander get in game 6 so that he has a mean score of 235 for all 6 games?

F. 220

G. 229

H. 235

I. 265

7 Hinsley kept a record of the number of points scored by some basketball players at school. The points scored by each player are represented by the line plot below.

POINTS SCORED

```
                                        X
   X  X  X              X  X           X
 +--+--+--+--+--+--+--+--+--+--+--+--+--+-->
  18 19 20 21 22 23 24 25 26 27 28 29 30
```

Which value is the median of the number of points scored by these basketball players?

A. 23

B. 25

C. 26

D. 28

8 The table below shows the numbers of calories a 100-pound person burns while swimming different numbers of hours.

CALORIES BURNED BY A 100-POUND PERSON

Number of Hours Swimming (x)	Number of Calories Burned (y)
0.5	90
1	180
1.5	270
2	360

Which of the following expressions could be used to find the number of calories a 100-pound person burns after swimming x hours?

F. $90x$

G. $180x$

H. $x \div 90$

I. $x \div 180$

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9 Jim is repainting a *free-throw key* of a basketball court. The free-throw key is made by combining a rectangle and a semicircle, as shown below.

Free-Throw Key

12 feet

19 feet
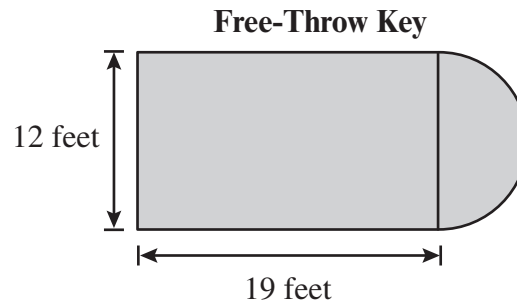
In order to know how much paint to purchase, Jim will determine the area of the free-throw key. What is the total area, **to the nearest whole square foot**, of the free-throw key shown in the diagram?

10 Mr. Nichols wants to store $25\frac{1}{2}$ cups of stew in containers. Each container holds a maximum of $1\frac{1}{2}$ cups of stew. What is the minimum number of containers Mr. Nichols needs to hold all the stew?

  A.   9

  B.   17

  C.   25

  D.   51

11 Camera World rents video cameras by the day. The store charges $6.00 per day and a one-time cleaning fee of $2.50. If x represents a number of days, which expression can be used to determine the total charge, in dollars, to rent a video camera for x days?

  F. $6(x + 2.50)$

  G. $2.50x + 6$

  H. $6x + 2.50$

  I. $8.50x$

12 Karla and Becky were practicing free throws. Karla attempted 24 free throws and was successful 8 times. Becky attempted 20 free throws and was successful 5 times. At these rates, how many more successful free throws would Karla make than Becky if they each attempted 180 free throws?

A. 15

B. 23

C. 27

D. 51

13 Mr. Gerard purchased different types of halogen light bulbs for the apartment building where he works. The information about the bulbs he purchased is shown in the table below.

HALOGEN LIGHT BULBS PURCHASED

Type of Light Bulb	Number Purchased	Total Cost
10-Watt Clear	9	$ 14.85
13-Watt Warm White	60	$119.40
20-Watt Capsule Bulb	6	$ 10.74
34-Watt Cool White	90	$147.60

Which type of light bulb costs the **least amount** per light bulb?

F. 10-Watt Clear

G. 13-Watt Warm White

**H.** 20-Watt Capsule Bulb

I. 34-Watt Cool White

14 In a regulation wrestling match, wrestlers compete within a circular zone 9 meters in diameter.

Wrestling Mat
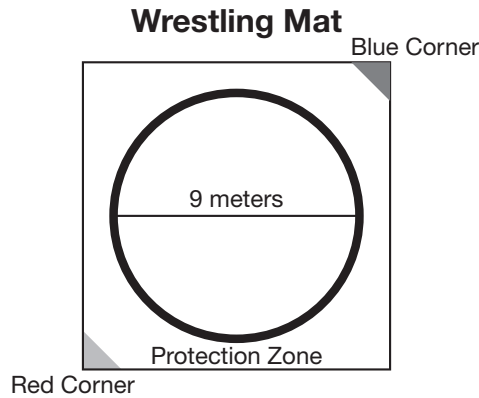
Which of the following is closest to the area of the circular zone?

A.   28.3 square meters

B.   56.5 square meters

C.   63.6 square meters

D.   254.3 square meters

15 Mr. Madsen worked 49 hours last week at his job. He spent $\frac{1}{5}$ of this time in meetings and $\frac{1}{3}$ of this time talking to customers on the phone. Which method would provide the most reasonable estimate of the total number of hours Mr. Madsen spent in meetings and talking to customers on the phone at his job last week?

F.   multiply $\frac{1}{4}$ by 50

G.   multiply $\frac{1}{2}$ by 50

H.   multiply $\frac{1}{5}$ by 50 and add $\frac{1}{3}$ to the product

I.   multiply $\frac{1}{5}$ by $\frac{1}{3}$ and multiply the product by 50

16 The diagram below represents Akeem's chocolate bar.

Akeem's Chocolate Bar
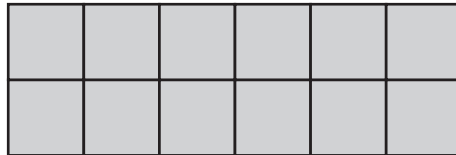
Akeem gave $\frac{1}{4}$ of his chocolate bar to his sister and saved the rest for himself. After dinner, he ate $\frac{1}{3}$ of the part he saved for himself. Which of the following represents the part of Akeem's chocolate bar that he had left?

A.

B.

C.

D.

Name _____

Answer all the Mathematics Sample Questions on the Sample Answer Sheets.

1 Ⓐ Ⓑ Ⓒ Ⓓ

2 Ⓕ Ⓖ Ⓗ Ⓘ

3 Ⓐ Ⓑ Ⓒ Ⓓ

4

	/	/	/	/	
⊙	⊙	⊙	⊙	⊙	⊙
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

5

	/	/	/	/	
⊙	⊙	⊙	⊙	⊙	⊙
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

6 Ⓕ Ⓖ Ⓗ Ⓘ

7 Ⓐ Ⓑ Ⓒ Ⓓ

8 Ⓕ Ⓖ Ⓗ Ⓘ

9

	/	/	/	/	
⊙	⊙	⊙	⊙	⊙	⊙
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	6	6	6
7	7	7	7	7	7
8	8	8	8	8	8
9	9	9	9	9	9

10 Ⓐ Ⓑ Ⓒ Ⓓ

11 Ⓕ Ⓖ Ⓗ Ⓘ

12 Ⓐ Ⓑ Ⓒ Ⓓ

13 Ⓕ Ⓖ Ⓗ Ⓘ

14 Ⓐ Ⓑ Ⓒ Ⓓ

15 Ⓕ Ⓖ Ⓗ Ⓘ

16 Ⓐ Ⓑ Ⓒ Ⓓ

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