

# About FCAT

## Questions and Answers About the Test

*What kind of test is the FCAT mathematics test?*

FCAT contains test questions and performance tasks that are challenging for all students. The FCAT Mathematics Test will include content from five areas in mathematics: Number Sense, Measurement, Geometry and Spatial Sense, Algebraic Thinking, and Data Analysis and Probability. You will find that the questions in these content areas are from real-world settings and traditional mathematics. You will also notice that the questions require you to use problem-solving strategies and to think problems through carefully.

*What kinds of questions will be on FCAT?*

Many of the test questions on FCAT are like those you may have seen in other classroom or standardized tests. FCAT includes multiple-choice and gridded-response questions. For gridded-response questions, you will solve mathematics problems and then fill in a response grid. FCAT also includes questions called “performance tasks.” This Sample Test Book provides examples of the types of questions that will be on FCAT.

*What is a performance task?*

When you do a performance task, you think about the answer to a question and then write the answer in your own words. You will be asked to provide short responses such as an equation or the solution to a problem. You will also be asked to provide some responses that will take longer to complete. For these longer questions, you may be asked to construct a graph or solve a multi-step problem. Performance tasks are called “Think, Solve, and Explain” questions in mathematics and “Read, Think, and Explain” questions in reading.

*May I use a calculator for the mathematics test?*

Students at Grade 5 may not use calculators. At Grades 8 and 10, students may use only calculators provided for FCAT.

*Why are we taking FCAT?*

Recently, what students in Florida are expected to learn and be able to do has increased a great deal. The job market of today requires people who are proficient in advanced mathematics and can read difficult and technical texts. FCAT is being given to measure achievement of the higher standards that are being taught to and learned by Florida students.



# FCAT Mathematics Sample Test Book

**Directions:** It should take 30–45 minutes to answer the 15 questions in this book. Read each problem carefully and think about ways to solve the problem before you try to answer the question. Write your answers in the answer book. You will not receive credit for anything written in the test book. Use the reference sheet on page 11 as often as you like for the formulas and conversions needed to answer the questions.

Work the multiple-choice and gridded-response questions using the FCAT calculator or scrap paper, but be sure to put your answers in the answer book. For the “Think, Solve, and Explain” questions, show your work in the answer book, because you will be scored on your work as well as your answer.

- 1** Use this function table to find the value of  $y$  when  $x = 5$ .

$x$	$y$
0	1
1	4
2	7
3	10

- A. 10
- B. 13
- C. 16
- D. 17

- 2** Due to an increase in the cost of building materials, the cost of remodeling a building is now 28% more than its original cost. If the original cost was \$5,438, what is the new cost, to the nearest dollar, after the increase?

- F. \$19,421
- G. \$6,961
- H. \$5,466
- I. \$1,523

- 3** A round steel rod is 5.75 feet long. If you cut the steel rod into 10 equal pieces, how many **inches** long will each piece be?

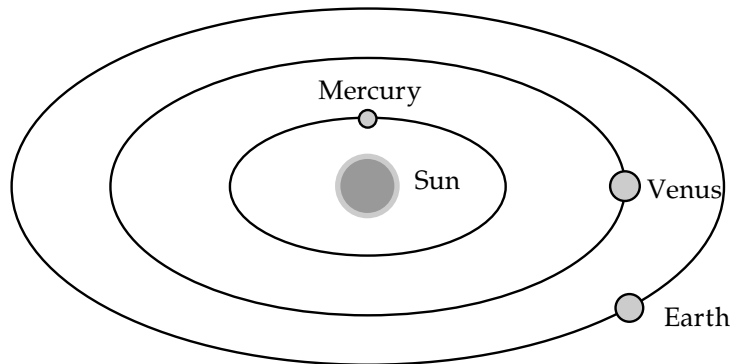
- A. 0.479 inch
- B. 0.575 inch
- C. 5.75 inches
- D. 6.9 inches



- 4 Under water, a sound wave travels 73,920 feet in 14 seconds. What is the sound wave's speed in feet per second?




- 5 Carmello is making a model of our solar system. His model looks like the one shown below.

**SCALE**


1 centimeter = 6 million miles

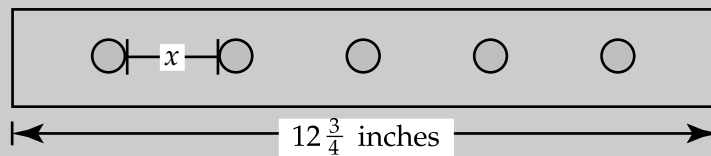
At a certain point, the distance between the orbital paths of Mercury and Venus is 31.2 million miles. According to the scale above, how far apart in centimeters should the orbital paths be at that point on the model?

- 6**  Ms. Clark, a salesperson, receives a weekly base salary of \$250 plus 8% of her weekly sales. At the end of one week, she earned \$410. This can be represented by the equation below, where  $s$  represents the amount of sales for the week.

$$250 + 0.08s = 410$$

What is the amount of Ms. Clark's sales for that week?

- 7**  George made a wooden rack for holding test tubes. He drilled 5 holes, each  $\frac{3}{4}$  inch in diameter, in a piece of wood  $12\frac{3}{4}$  inches long, as shown below. The space at each end of the rack is the same size as the space between any two holes on the piece of wood.



What is the distance ( $x$ ) between any two holes on the rack? In the answer book, show your work or explain in words how to determine the answer.

8

A group of children were asked in which room of the house they prefer to do homework. The table below shows the number of children who prefer each room.

THINK  
SOLVE  
EXPLAIN

---



---



---



---

Room	Number of Children
Bedroom	330
Living Room	220
Kitchen	250
Dining Room	200

Using the data from the table above, complete the following in the answer book:

*Part A* On the grid, create a bar graph.

*Part B* Complete the circle graph.

*Part C* Determine which graph more clearly shows that more than half of the children prefer to study in the bedroom or the kitchen. Use the information from both graphs to justify your answer.

- 9 The approximate land areas of the seven continents are listed in the table below.

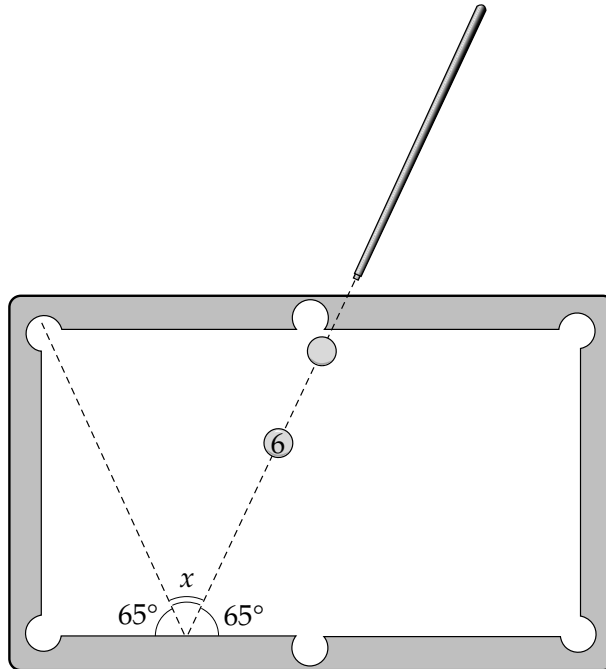
LAND AREA OF THE CONTINENTS

Continent	Area (in square miles)
North America	9.4 million
South America	6.9 million
Europe	3.8 million
Asia	17.3 million
Africa	11.7 million
Australia	3.3 million
Antarctica	5.4 million

What is the approximate **mean** land area of the seven continents?

- F. 17.3 million square miles
- G. 14.0 million square miles
- H. 8.3 million square miles
- I. 6.9 million square miles

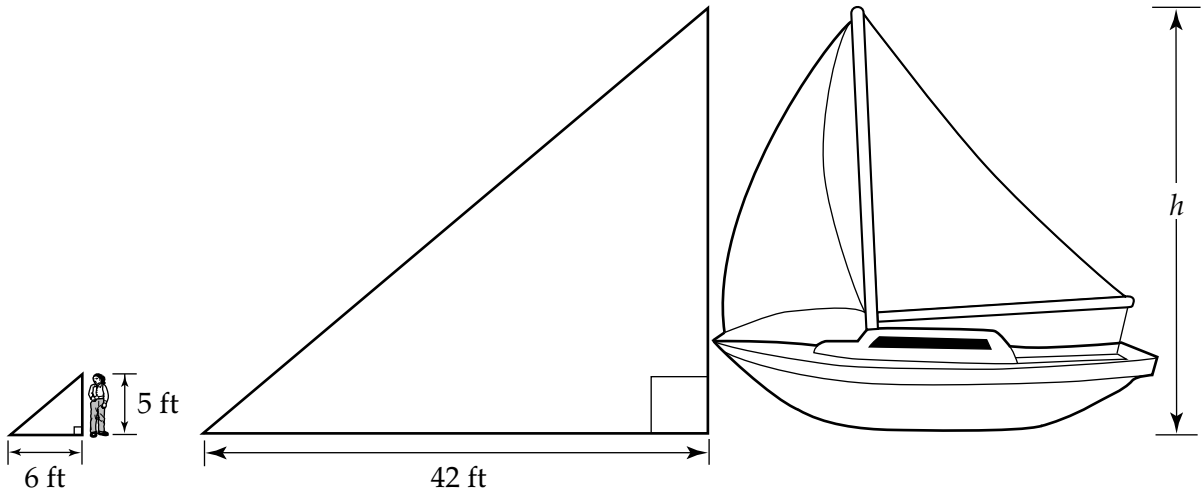
- 10 Jackie is playing pool and wants to try a complicated shot. She wants to hit the number six ball into the corner pocket as shown below.



Jackie knows the angle measures shown in the diagram. What angle ( $x$ ) must the path of the ball take so it will go in the corner pocket?

- A. 50 degrees
- B. 130 degrees
- C. 180 degrees
- D. 245 degrees

- 11** Jasmine needs to know the height of her sailboat. She is 5 feet tall and casts a shadow 6 feet long, as shown below.



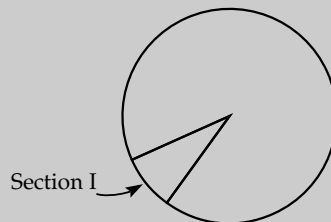
If the sailboat casts a shadow 42 feet long at the same time of day, how tall is the sailboat ( $h$ ) ?

- F. 53 feet
- G. 50 feet
- H. 35 feet
- I. 30 feet

- 12** For the following problem, you will be required to use ESTIMATION strategies.

THINK  
SOLVE  
EXPLAIN

Margo wants to cover the top of her table with a mosaic pattern made out of different color tiles. The tiles come in boxes that contain 125 tiles. Margo has determined that Section I of the table top, shown in the drawing below, will require approximately 57 tiles to complete the pattern.



ESTIMATE the whole number of boxes of tiles that Margo should purchase to complete the mosaic design for the entire table top. In the answer book, show your work or explain in words how to determine an estimate.

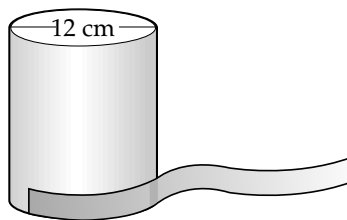


- 13 What is the value of the expression below?



$$\frac{(3 - 1)}{4 + 8 \div 2 \times 3}$$

- 14 A cylindrical column 12 centimeters in diameter is strengthened by wrapping one steel band around the base of the column, with no overlap. What should be the length of the steel band in centimeters? Use one of the approximations for  $\pi$  found on the FCAT Reference Sheet.



- 15 In a group of 30 people, 27 are right-handed and the others are left-handed. If one person is selected at random from this group, what is the probability that person will be left-handed? Write your answer as a decimal number or a fraction.

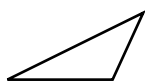


This is the end of the sample questions.



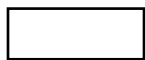
# FCAT Mathematics Reference Sheet

## Formulas



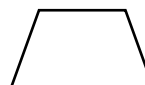
Triangle

$$\text{Area} = \frac{1}{2}bh$$



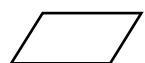
Rectangle

$$\text{Area} = lw$$



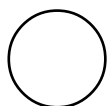
Trapezoid

$$\text{Area} = \frac{1}{2}h(b_1 + b_2)$$



Parallelogram

$$\text{Area} = bh$$



Circle

$$\text{Area} = \pi r^2$$

$$\text{Circumference} = \pi d = 2\pi r$$

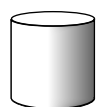
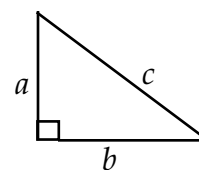
### Key

$b$  = base                       $d$  = diameter  
 $h$  = height                    $r$  = radius  
 $l$  = length  
 $w$  = width

Use 3.14 or  $\frac{22}{7}$  for  $\pi$ .

In a polygon, the sum of the measures of the interior angles is equal to  $180(n - 2)$ , where  $n$  represents the number of sides.

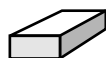
Pythagorean Theorem       $c^2 = a^2 + b^2$



Right Circular Cylinder

$$\text{Volume} = \pi r^2h$$

$$\text{Total Surface Area} = 2\pi rh + 2\pi r^2$$



Rectangular Solid

$$\text{Volume} = lwh$$

$$\text{Total Surface Area} = 2(lw) + 2(hw) + 2(lh)$$

## Conversions

1 yard = 3 feet = 36 inches  
 1 mile = 1,760 yards = 5,280 feet  
 1 acre = 43,560 square feet  
 1 hour = 60 minutes  
 1 minute = 60 seconds

1 cup = 8 fluid ounces  
 1 pint = 2 cups  
 1 quart = 2 pints  
 1 gallon = 4 quarts

1 liter = 1000 milliliters = 1000 cubic centimeters  
 1 meter = 100 centimeters = 1000 millimeters  
 1 kilometer = 1000 meters  
 1 gram = 1000 milligrams  
 1 kilogram = 1000 grams

1 pound = 16 ounces  
 1 ton = 2,000 pounds





