

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.

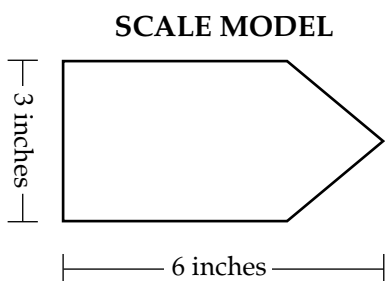
Why are we taking FCAT?

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.

Directions: It should take 30–45 minutes to answer the 16 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 FCAT Reference Sheet on pages 11 and 12 as often as you like for the formulas and conversions needed to answer the questions.

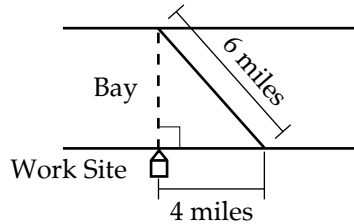
Work the multiple-choice and gridded-response questions using the FCAT calculator or scrap paper, but be sure to put your answers in the answer book. For the “Think, Solve, and Explain” questions, show your work in the answer book, because you will be scored on your work as well as your answer.

- 1** Kim wants to build a full-size boat out of plywood. Kim drew the scale model of the boat as shown below.



- If the width of the full-size boat will be 4 feet, what will be the length of the boat in feet? Use the scale model to help you determine your answer.
- A. 2 feet
B. 4 feet
C. 8 feet
D. 12 feet
- 2** A sphere has a surface area of 1256 square meters. What is the radius of the sphere?
- F. 10 meters
G. 20 meters
H. 100 meters
I. 200 meters

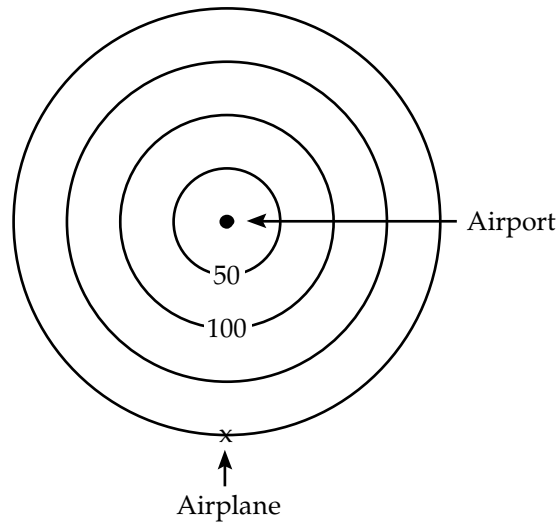
- 3** An archaeologist is trying to calculate the distance from her work site to a point directly across the bay from her work site. The bridge in the picture below is 6 miles long. The archaeologist's work site is 4 miles from the beginning of the bridge.




What is the distance in miles from the archaeologist's work site to a point directly across the bay? Round your answer to the nearest tenth of a mile.

- A. 3.2 miles
- B. 4.5 miles
- C. 7.2 miles
- D. 10.0 miles

- 4** Wendy, an air traffic controller, is watching her radar screen. She sees an airplane approaching the airport. The space between each range ring on the radar screen below represents 50 miles.



If the airplane is traveling in a straight line at 100 miles per hour, how many hours will it take the plane to reach the airport?


-  **5** Sarah is taking her car to Toni's garage to have the oil and filter changed and the radiator filled with antifreeze. The sign below is posted in Toni's garage.

JOB COSTS AT TONI'S GARAGE

Job	Cost for Parts and Labor
Fill Antifreeze	\$5.00
Change Oil	\$6.00
Change Filter	\$7.99
Rotate Tires	\$10.00
Detail Interior	\$25.00

10% discount with any 3 or more services performed

Excluding tax, how much money all together will Sarah pay for the services she wants done?

-  **6** While making a duplicate key, Jamille accidentally drops it into a box with 15 other keys and must retrieve it. Jamille is randomly taking keys out of the box without putting them back in. What is the probability that he will select the correct key on the second try? Write your answer as a decimal number or a fraction.

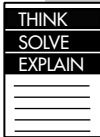
- 7** Chris surveyed 20 employees in the marketing department of a company that has 14 departments and 300 employees. He would like to determine if the company should play classical music in the cafeteria at lunchtime.

THINK
SOLVE
EXPLAIN

In the answer book, explain why the results of Chris's survey are or are not representative of the entire company.

8

The table below shows the approximate number of students who received a bachelor's degree in computer and information science during the years indicated.



**STUDENTS RECEIVING COMPUTER
AND INFORMATION SCIENCE DEGREES**

Year	Number of Students
1968	600
1970	1,500
1975	5,000
1982	20,000
1984	32,000
1986	42,000

Complete the following in the answer book:

Part A On the grid, label the y -axis up to 72,000. Plot and connect the points for the data in the table to make a line graph.

Part B Use the graph from Part A to predict the number of computer and information science degrees that would have been awarded in 1990 if the trend had continued.

Part C In 1990 approximately 27,000 computer and information science degrees were awarded to students. Explain why the prediction you made in Part B differs from what was observed.

- 9 Which of the numbers below is greatest?

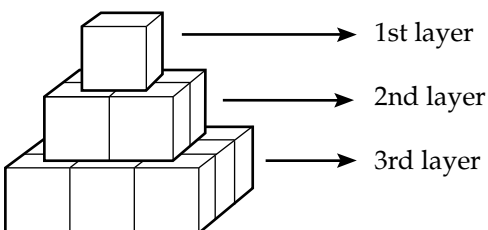
F. $\sqrt{119}$

G. $\frac{119}{11}$

H. 0.11×10^2

I. 11% of 119

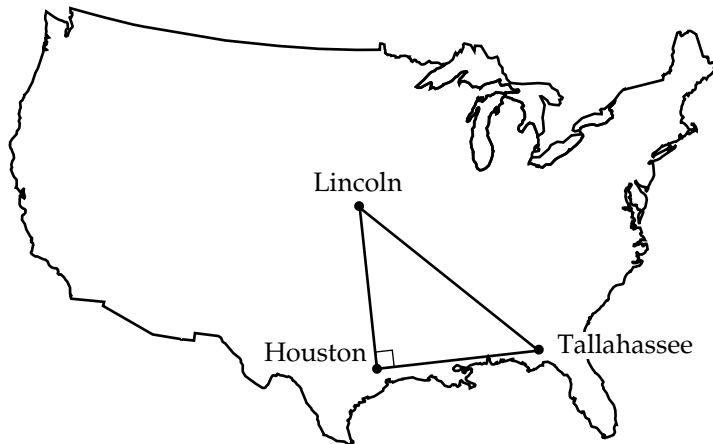
- 10 Shane is making a pyramid-shaped structure using wooden cubes as shown in the picture below.



How many cubes will be needed to make the **fourth** layer if the same pattern is continued?

- A. 9
B. 16
C. 20
D. 25

- 11** Airplane routes between the cities of Tallahassee, Houston, and Lincoln form an isosceles right triangle. There are approximately 800 miles between Tallahassee and Houston and 800 miles between Houston and Lincoln.



Approximately how many miles are there between Tallahassee and Lincoln?

- F. 800 miles
- G. 1,131 miles
- H. 1,386 miles
- I. 1,600 miles



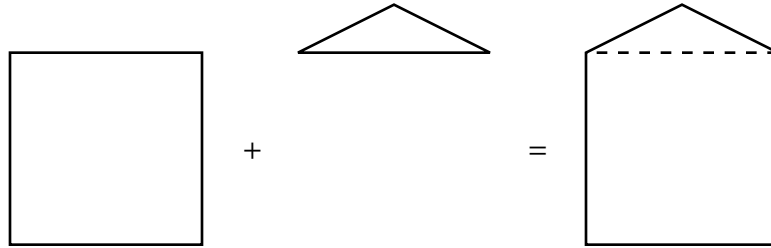
- 12** Kelly is training to run a marathon, which is a distance of approximately 26 miles. To prepare for the race, she runs 5 miles each Monday, Wednesday, and Friday. On each Thursday and Saturday she runs 10 miles. She does not train on Sunday or Tuesday. At the end of four weeks of training, Kelly will have run the equivalent of how many marathons?



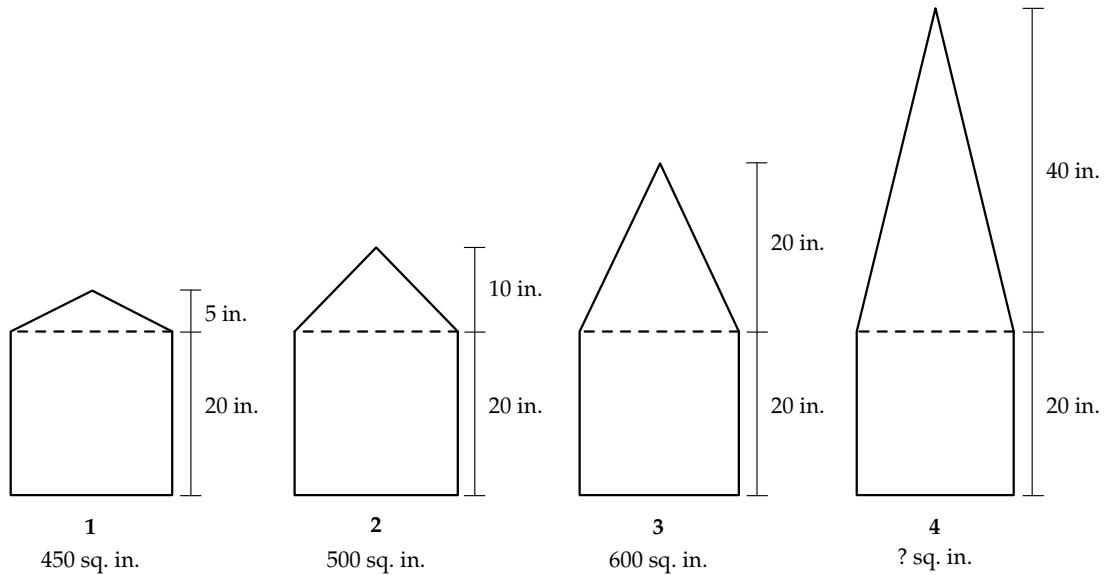
- 13** Juan and Alex are both saving money for college. Juan saves \$150 per month and currently has \$2,000 in the bank. Alex saves \$250 per month and has only \$1,000 in the bank. Not counting the interest they will earn, how many months will it take until both boys have saved the same amount of money?



14 A square and a triangle can be combined to make an irregular pentagon, as shown in the resulting figure below.



The figures below show pentagons and their areas as the height of each triangular portion is doubled.

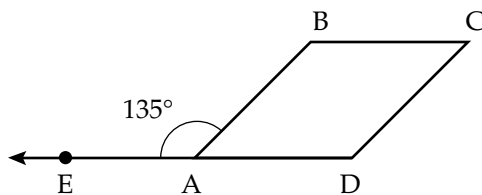


What is the area, in square inches, of the fourth pentagon?



- 15** Alexa plans to save a portion of the money she earns babysitting. She wants to save \$1.35 out of each hour's pay. She is paid \$2.25 per hour for babysitting. Write a decimal number or a fraction that tells which part of Alexa's hourly babysitting wage she plans to save.

- 16** Polygon ABCD, shown in the diagram below, is a rhombus.



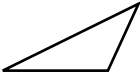
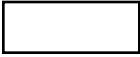

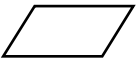

What is the measure, in degrees, of $\angle ABC$ if the measure of $\angle EAB$ is 135° ?

- A. 45°
- B. 135°
- C. 180°
- D. 225°

This is the end of the sample questions.








FCAT Mathematics Reference Sheet

		Area
	Triangle	$\frac{1}{2}bh$
	Rectangle	lw
	Trapezoid	$\frac{1}{2}h(b_1 + b_2)$
	Parallelogram	bh
	Circle	πr^2

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

Use 3.14 or $\frac{22}{7}$ for π .

Circumference = $\pi d = 2\pi r$

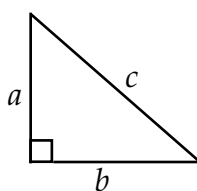
		Volume	Total Surface Area
	Right Circular Cone	$\frac{1}{3}\pi r^2h$	$\frac{1}{2}(2\pi r)l + \pi r^2 = \pi r l + \pi r^2$
	Square Pyramid	$\frac{1}{3}lw h$	$4(\frac{1}{2}l l) + l^2 = 2l l + l^2$
	Sphere	$\frac{4}{3}\pi r^3$	$4\pi r^2$
	Right Circular Cylinder	πr^2h	$2\pi r h + 2\pi r^2$
	Rectangular Solid	lwh	$2(lw) + 2(hw) + 2(lh)$

In the following formulas, n represents the number of sides.

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

In a regular polygon, the measure of an interior angle is equal to $180(n - 2) \div n$.

FCAT Mathematics Reference Sheet

<p style="text-align: center;">Pythagorean Theorem: $a^2 + b^2 = c^2$</p> 	<p>Distance between two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$:</p> $\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$
<p>Slope-intercept form of an equation of a line, where m = slope and b = the y-intercept:</p> $y = mx + b$	<p>Midpoint between two points $P_1(x_1, y_1)$ and $P_2(x_2, y_2)$:</p> $\left(\frac{x_2 + x_1}{2}, \frac{y_2 + y_1}{2} \right)$
<p>Distance, rate, time formula, where d = distance, r = rate, t = time:</p> $d = rt$	<p style="text-align: center;">Simple Interest = $p rt$</p> <p style="text-align: center;">where p = principal, r = rate, t = time.</p>

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 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 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

