2006

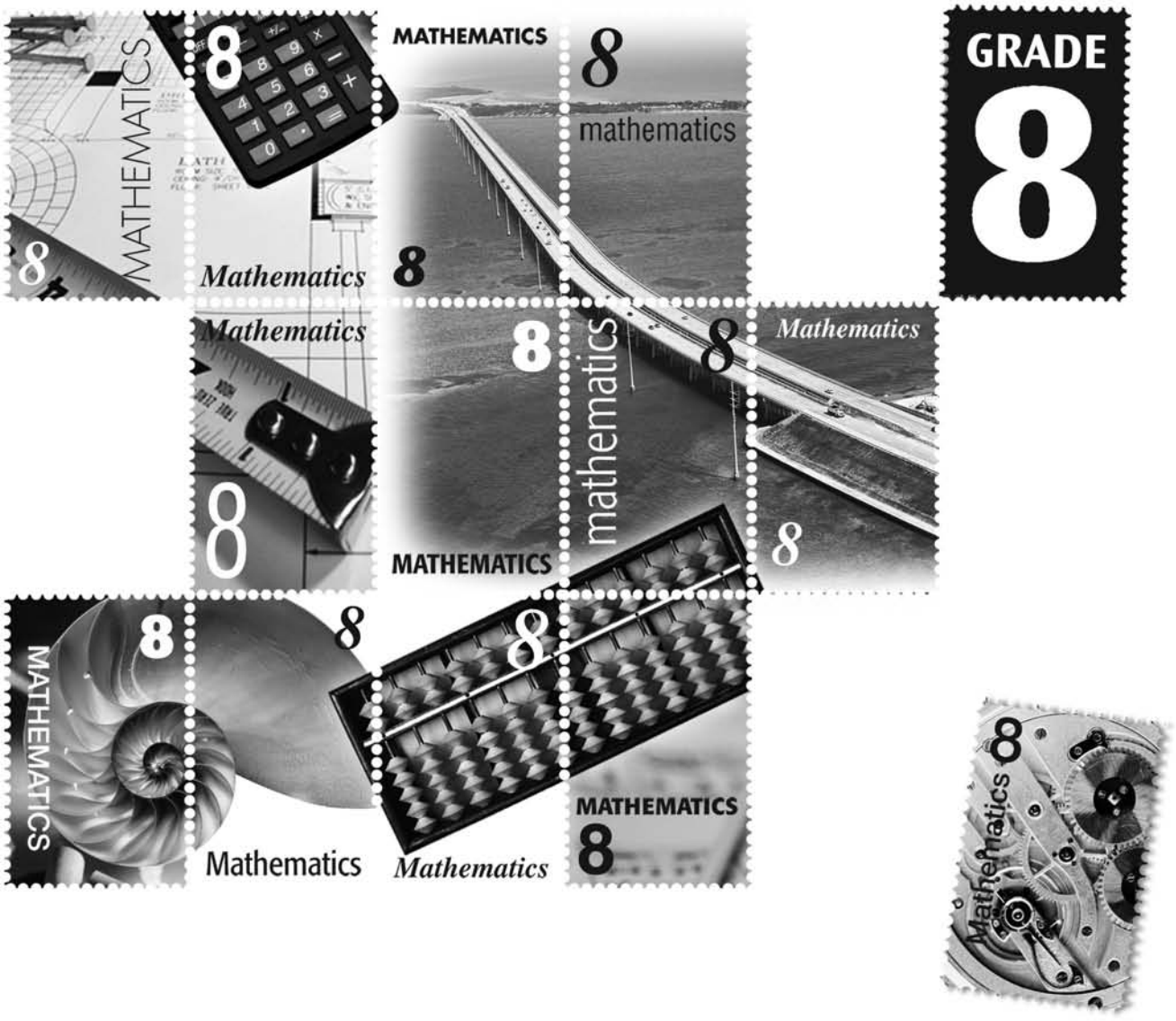
FCAT

Florida Comprehensive Assessment Test

Student Name

MATHEMATICS

MATHEMATICS
SAMPLE TEST & ANSWER BOOK



999-8243-10-6

FCAT Sample Test Materials

These sample test materials are designed to help you prepare to answer FCAT questions. These materials introduce you to the kinds of questions you will answer when you take FCAT and include hints for responding to the different kinds of FCAT questions. The FCAT Mathematics sample test materials for Grade 8 are composed of the books described below:

☑ **Sample Test and Answer Book**
Includes a mathematics sample test, a sample answer book, 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

FCAT Mathematics Sample Test Book

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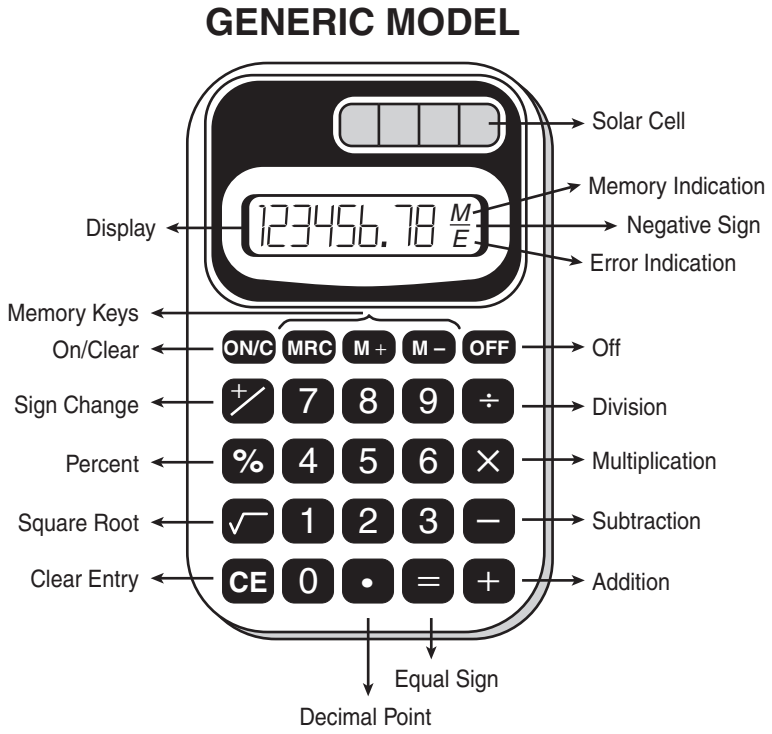
Calculator Instructions

This is a picture of a generic calculator and its parts.



HELPFUL HINTS FOR TAKING THE FCAT MATHEMATICS TEST

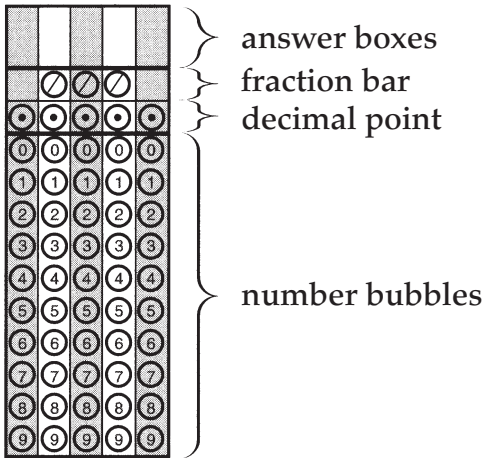
1. Read the problem very carefully. Then decide whether or not you need the calculator to help you solve the problem.
2. When starting a new problem, always clear your calculator by pressing the clear key.
3. If you see an **E** in the display, clear the error before you begin.
4. If you see an **M** in the display, clear the memory and the calculator before you begin.
5. If the number in the display is not one of the answer choices, check your work. Remember that when computing with certain types of fractions, you may have to round the number in the display.
6. Remember, your calculator will NOT automatically perform the algebraic order of operations.
7. Calculators might display an incorrect answer if you press the keys too quickly. When working with calculators, use careful and deliberate keystrokes, and always remember to check your answer to make sure that it is reasonable.
8. The negative sign may appear either to the left or to the right of the number.
9. Always check your answer to make sure that you have completed all of the necessary steps.

How to Complete the Response Grids

Mathematics test questions with this symbol  require that you fill in a grid in your answer book. There may be more than one correct way to fill in a response grid. This section shows you different ways the response grid may be completed.

Parts of a Response Grid

For Grade 8, response grids have the following parts:



Directions

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.

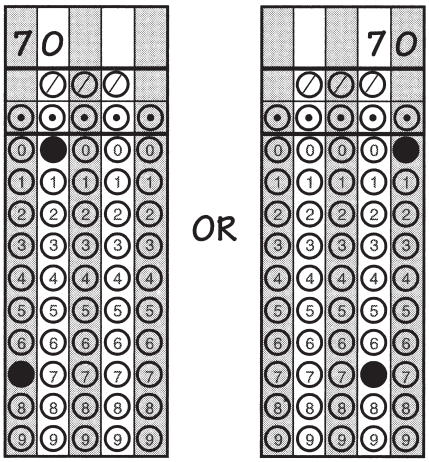
3. Fill in a bubble under each box in which you wrote your answer.

- 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 black mark that completely fills the circle.
- You MUST fill in the bubbles accurately to receive credit for your answer.

Examples

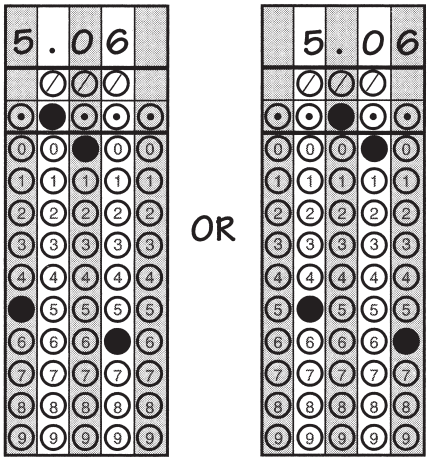
Whole Number

60 + 10 =



Decimal

Show the decimal equivalent of $5\frac{6}{100}$.

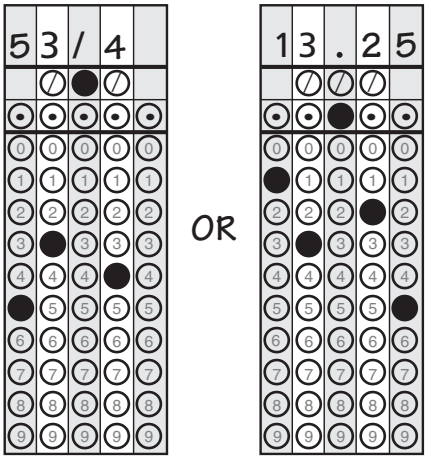


Fraction

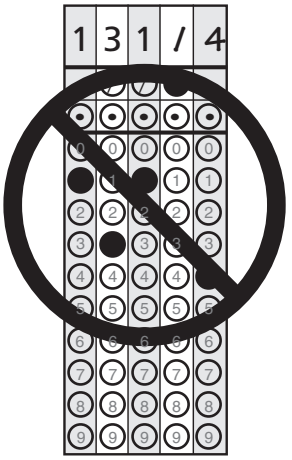
NOTE: You may NOT write a **mixed number** such as $13\frac{1}{4}$ in the answer grid. If your answer is a mixed number, you must convert the answer to an improper fraction, such as $\frac{53}{4}$, or to a decimal number, such as 13.25. If you tried to fill in $13\frac{1}{4}$, it would be read as $\frac{131}{4}$ and would be counted wrong.

$12\frac{3}{4} + \frac{1}{2} =$

CORRECT



INCORRECT

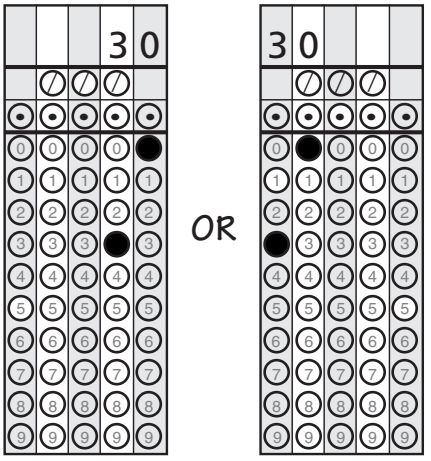


Percent

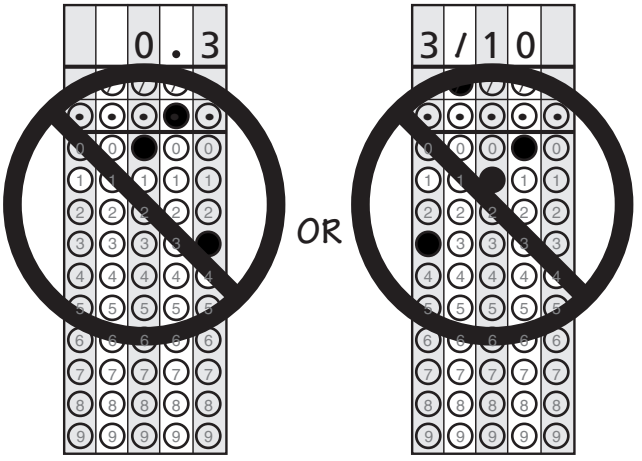
When a percent is required to answer a question, do NOT convert the percent to its decimal or fractional equivalent. Grid in the percent value without the % symbol.

30%

CORRECT

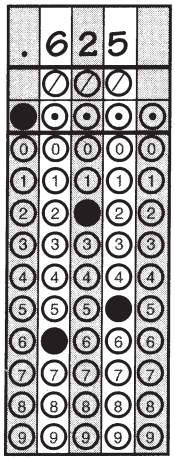


INCORRECT

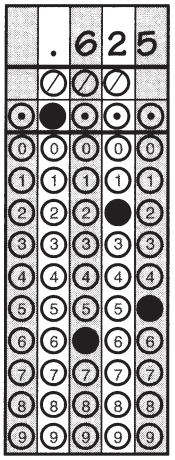


Decimal or Fraction

Many answers may be shown as either a decimal or a fraction.



OR



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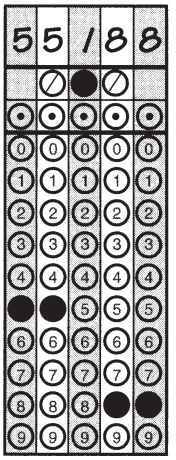

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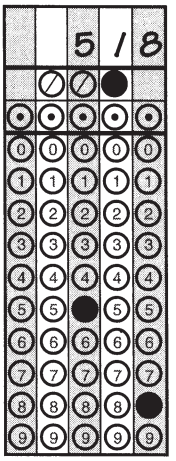
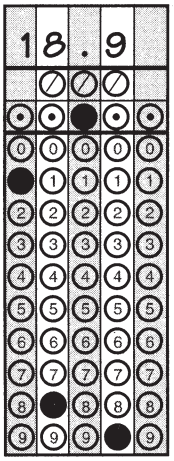


Ranges

A correct answer within a range of values may be represented in various ways. For example, for the inequality

$$18.8 < n < 19.2$$

values of n could be written as shown below.



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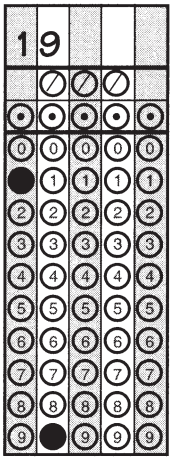

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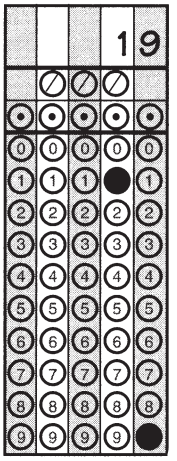

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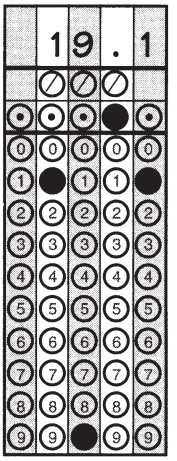

There are also other correct answers.

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Taking the FCAT Mathematics Sample Test

Hints for Taking the FCAT Mathematics Test

Here are some hints to help you do your best when you take the FCAT Mathematics test. Keep these hints in mind when you answer the sample questions.

- ✓ **Learn how to answer each kind of question. The FCAT Mathematics test for Grade 8 has four types of questions: multiple-choice, gridded-response, short-response, and extended-response.**
- ✓ **Read each question carefully and think about ways to solve the problem before you try to answer the question.**
- ✓ **Answer the questions you are sure about first. If a question seems too difficult, skip it and go back to it later.**
- ✓ **Be sure to fill in the answer bubbles correctly. Do not make any stray marks around answer spaces.**
- ✓ **Think positively. Some problems may seem hard to you, but you may be able to figure out what to do if you read each question carefully.**
- ✓ **When you have finished each problem, reread it to make sure your answer is reasonable.**
- ✓ **Relax. Some people get nervous about tests. It's natural. Just do your best.**

How to Answer the "Think, Solve, Explain" Questions

Answers to the short- and extended-response problems can receive full or partial credit. You should try to answer these questions even if you are not sure of the correct answer. If a portion of the answer is correct, you will get a portion of the points.

- **Allow about 5 minutes to answer the short "Think, Solve, Explain" questions and about 10 to 15 minutes to answer the long questions.**
- **Read the question carefully.**
- **If you do not understand the question, read and answer one part at a time.**
- **Be sure to answer every part of the question.**
- **Use numbers and other information from the problem to answer the question.**
- **Show your work. This shows that you understand how to solve the problem.**
- **Write your explanations in clear, concise language. Use only the space provided in the Sample Answer Book.**
- **Check your work to make sure the procedure and calculations are correct.**
- **Reread your explanation to make sure it says what you want it to say.**

Directions for Taking the Mathematics Sample Test

The Sample Test contains the Reference Sheet and 16 questions. It should take about 30 to 45 minutes to answer all the questions. You will mark your answers in the Sample Answer Book, which begins on page 23. If you don't know how to work a problem, just ask your teacher to explain it to you. Your teacher has the answers to the sample test questions.

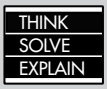
You may need formulas and conversions to help you solve some of the problems. You may refer to the Reference Sheet on page 13 as often as you like.

Use the space in your Mathematics Sample Test Book to do your work on the multiple-choice and gridded-response questions, but be sure to put your answers in the Sample Answer Book. For the "Think, Solve, Explain" questions, show your work in the Sample Answer Book, because you will be scored on your work as well as on your answer.

Before you begin, remove the Sample Answer Book by tearing along the dotted line.

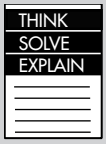
FCAT Mathematics Sample Test

FCAT Question Symbols



This symbol appears next to questions that require short written answers. Use about 5 minutes to answer these questions.

A complete and correct answer to each of these questions is worth 2 points. A partially correct answer is worth 1 point.



This symbol appears next to questions that require longer written answers. Use about 10 to 15 minutes to answer these questions.

A complete and correct answer to each of these questions is worth 4 points. A partially correct answer is worth 1, 2, or 3 points.

This symbol appears next to questions that require you to fill in your answer on a grid in your answer book. There may be more than one correct way to fill in a response grid. You MUST fill in the bubbles accurately to receive credit for your answer.

A correct answer to each of these questions is worth 1 point.

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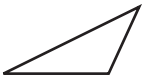
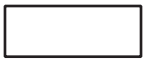
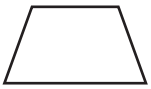
Grades 6–8 FCAT Mathematics Reference Sheet

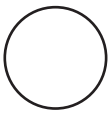
Area


Triangle $A = \frac{1}{2}bh$


Rectangle $A = lw$


Trapezoid $A = \frac{1}{2}h(b_1 + b_2)$


Parallelogram $A = bh$


Circle $A = \pi r^2$

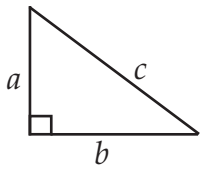
KEY	
b = base	d = diameter
h = height	r = radius
l = length	A = area
w = width	C = circumference
$S.A.$ = surface area	V = volume
Use 3.14 or $\frac{22}{7}$ for π.	

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.

Circumference

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

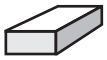
Pythagorean Theorem



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

Volume/Capacity


Right Circular Cylinder $V = \pi r^2 h$


Rectangular Prism $V = lwh$

Total Surface Area

Right Circular Cylinder $S.A. = 2\pi rh + 2\pi r^2$

Rectangular Prism $S.A. = 2(lw) + 2(hw) + 2(lh)$

Conversions

1 yard = 3 feet = 36 inches
1 mile = 1760 yards = 5280 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 = 2000 pounds

Metric numbers with four digits are presented without a comma (e.g., 9960 kilometers). For metric numbers greater than four digits, a space is used instead of a comma (e.g., 12 500 liters).

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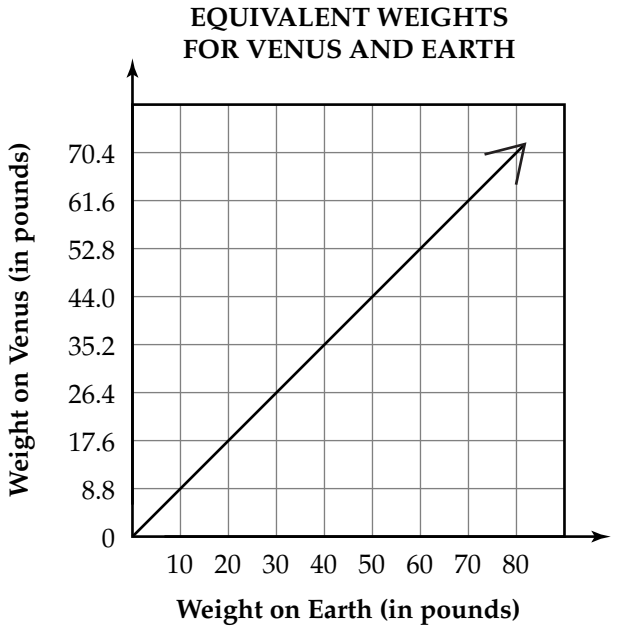
Fold and Tear Carefully Along Dotted Line.

1 The graph below represents the equivalent weights, in pounds, of people on the planets Venus and Earth.



What is the weight of a person on Earth if his or her equivalent weight on Venus is 44 pounds?

A. 30 pounds

B. 40 pounds

C. 50 pounds

D. 60 pounds

2 The two figures shown below are congruent. All the angles in the two figures are right angles.

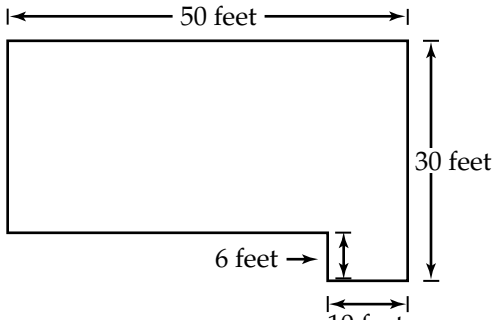


Figure 1

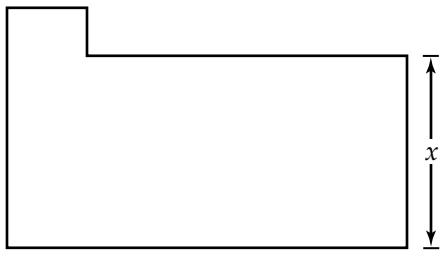


Figure 2

What is the measure of side x in Figure 2?

F. 36 feet

G. 30 feet

H. 24 feet

I. 10 feet

3 A popular word processing software package costs $120.00. It costs $25.00 more than twice the cost of a less popular software package. The cost of the less popular package *(c)* can be represented by $2c + 25 = 120$. What is the price of the less popular software package?

A. $190.00

B. $107.50

C. $72.50

D. $47.50

4 The table below lists seven heavy metals and their atomic weights.

ATOMIC WEIGHTS OF METALS

Metal	Atomic Weight
Curium	247
Berkelium	247
Californium	251
Einsteinium	252
Fermium	257
Mendelevium	258
Nobelium	259

What is the difference between the **median** atomic weight and the **mode** atomic weight for these seven metals?

5 When investigating an automobile accident, law enforcement officials use the formula below to estimate the speed of a car based on the length of skid marks made by the car tires.

$$s = \sqrt{24m}$$

In the formula, s represents the speed of the car in miles per hour, and m represents the length of the skid marks, in feet.

If a car leaves a skid mark of 37.5 feet, what was its approximate speed, in miles per hour?

6 THINK SOLVE EXPLAIN

Go to your Sample Answer Book to answer Number 6.

7 Which of the following, when divided by 5, will always be greater than 5?

F. all numbers less than 5

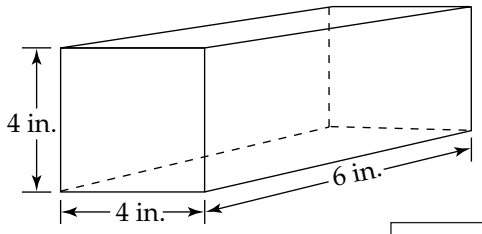
G. all numbers between 0 and 10

H. all numbers between 5 and 25

I. all numbers greater than 25

8 Marion is designing and building a small jewelry box. She wants the dimensions of the box to be one-half the dimensions of the box shown below.

JEWELRY BOX



Volume = 96 cubic inches

If the dimensions of the box above are each divided in half, the volume of Marion's new jewelry box will be what fraction of the volume of the original jewelry box?

9 What is the value of the expression below?

$$3^3 - 9 + 15 \div (5 - 2)$$

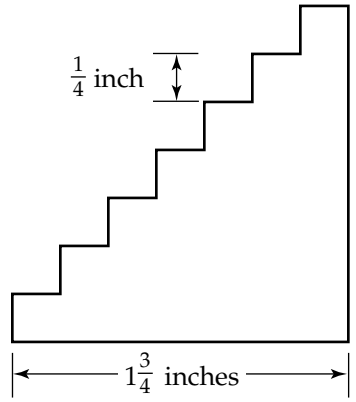
10 Diane is completing a chart showing the body lengths of three different mammals.

MAMMAL BODY LENGTHS

Name of Animal	Length (in inches)
duck-billed platypus	?
ocelot	36
spiny anteater	24

The ratio of the length of the duck-billed platypus to the length of the spiny anteater is 5 to 6. What number should Diane use to replace the question mark in the chart?

11 An architect created the scale drawing below showing a set of steps on a child's playhouse.



Which of these was the scale used for the drawing if the actual height of each step is 6 inches?

A.

SCALE
$\frac{1}{8}$ inch = 1 foot

C.

SCALE
$\frac{2}{3}$ inch = 1 foot

B.

SCALE
$\frac{1}{4}$ inch = 1 foot

D.

SCALE
$\frac{1}{2}$ inch = 1 foot

12 In 1980, the population of Coral Gables, Florida, was about 43,200. In 1990, the population was about 40,100. What was the approximate percent of decrease in population over this ten-year period?

F. 7%

G. 8%

H. 31%

I. 93%

13 SOLVE EXPLAIN

Go to your Sample Answer Book to answer Number 13.

14 Mr. Baker is having some photos enlarged for his studio. He wants to enlarge a photo that is 5 inches by 7 inches so the dimensions are 3 times larger than the original. How many times larger than the original photo will the **area** of the new photo be?

15 The chart below shows the pattern of discounts Jake is giving on poster board purchases.

JAKE'S ART SUPPLIES

POSTER BOARD

BLOWOUT

SUPER DISCOUNTS

Number of Sheets Bought	Discount
2–3	10%
4–7	15%
8–15	20%
16–31	25%

If the discount pattern continued, what would be the minimum number of sheets of poster board that could be purchased at a 35% discount?

16 A car traveling at a certain speed will travel 87 feet per second. How many yards will the car travel in 90 seconds if it maintains that same speed?

A. 87 yards

B. 653 yards

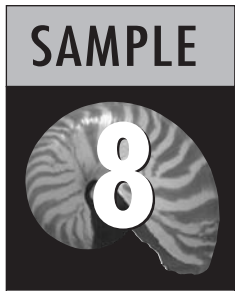
C. 2,610 yards

D. 7,830 yards

This is the end of the Mathematics Sample Test.
Until time is called, go back and check your work or answer questions you did not complete. When you have finished, close your Sample Test Book and Sample Answer Book.

Name_____

FCAT Mathematics Sample Answer Book



Answer all the questions that appear in the Sample Test Book in this Sample Answer Book. Answer multiple-choice questions by filling in the bubble for the answer you select. Answer gridded-response questions by filling in the correct bubbles. Write your answers to "Think, Solve, Explain" questions on the lines provided.

To remove your Sample Answer Book, carefully tear along the dotted line.

Fold and Tear Carefully Along Dotted Line.

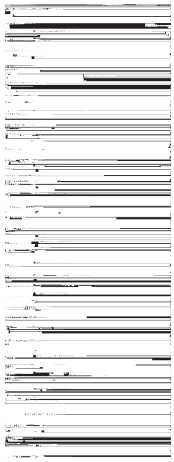
Go On

1 Ⓐ Ⓑ Ⓒ Ⓓ

2 Ⓕ Ⓖ Ⓗ Ⓘ

3 Ⓐ Ⓑ Ⓒ Ⓓ

4



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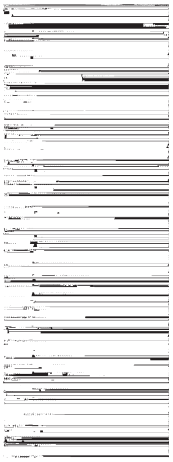

6 THINK SOLVE EXPLAIN

A play is running at the local theater. There are a total of 500 seats available for each performance. The 100 seats in Section A cost $40.00 per seat. The rest of the theater seats are in Section B. The Section B seats cost less per seat and are all the same price. For a recent performance, the theater sold tickets for all 500 seats and made $13,000.00 all together.

Part A On the line below, write an equation that could be used to determine the price (p) of each ticket in Section B of the theater.

Equation _____

Part B Find the price of each ticket in Section B of the theater. Show the work necessary to determine the correct price.

Price _____

7 Ⓕ Ⓖ Ⓗ Ⓘ

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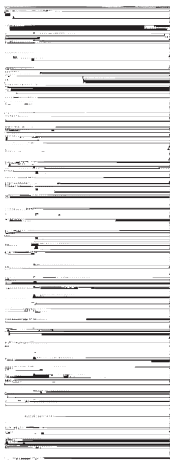

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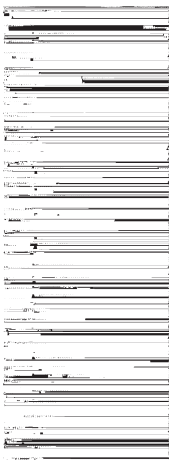

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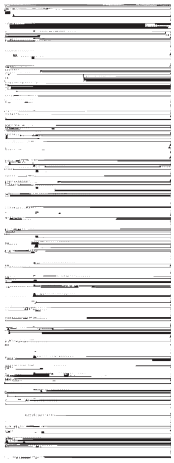

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13 THINK SOLVE EXPLAIN

The Jackson Development Company has developed plans to build a large apartment complex in either Oxon Hill or Campbell. They want to build in the city where the greatest population growth has occurred.

The developers found the following population listings for the two cities over 30 years.

CITY POPULATION DATA

Year	Oxon Hill	Campbell
1960	25,000	23,500
1970	41,325	35,750
1980	45,250	50,000
1990	51,500	55,000

Complete the following on the next page.

Part A Use the information in the table to construct a double line graph to show the difference in growth between the two cities.

Part B Compare the information provided by both the table and the graph. Write the name of the city in which the company should build the apartments.

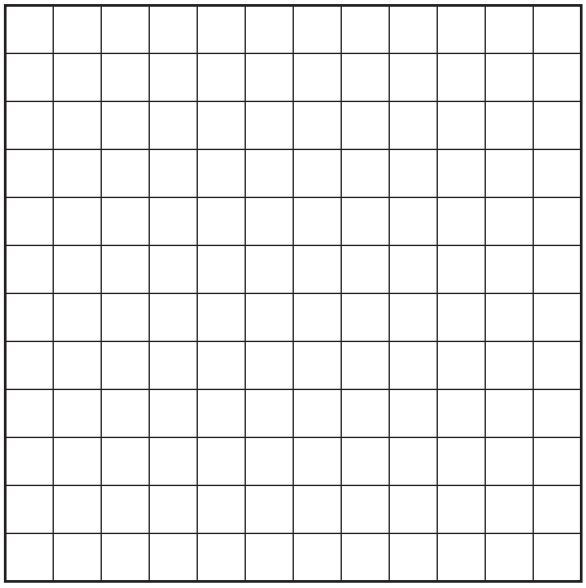
Part C Use the data from both the table and the graph to justify the selection you made in ***Part B***. Explain in words how you made your decision.

Part A Construct a double line graph on the grid below.

Be sure to include:

- labels for the axes
- appropriate and consistent scales
- all the data
- a key

POPULATION GROWTH
OF OXON HILL AND CAMPBELL



Part B In which city should the company build?

City _____

Part C Explain in words how you made your decision.

_____

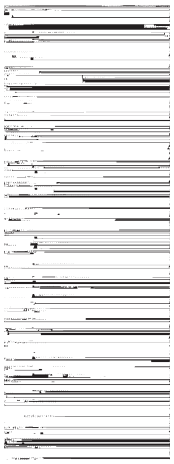
_____

_____

_____

_____

14



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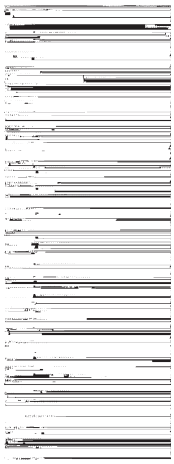

16 Ⓐ Ⓑ Ⓒ Ⓓ

This is the end of the Mathematics Sample Answer Book.
Until time is called, go back and check your work or answer questions you did not complete. When you have finished, close your Sample Test Book and Sample Answer Book.

MATHEMATICS

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