

Student Name _____

SUNSHINE STATE STANDARDS

MATHEMATICS



MATHEMATICS

SUNSHINE STATE STANDARDS

TEST BOOK

RELEASED OCTOBER 2005

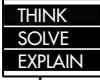
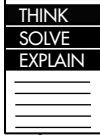

LAST USED: MARCH 2005

GRADE

8

**This page is as it appeared for the Spring 2004 test administration.
It has since been modified for all subsequent administrations.**

FCAT Question Symbols

	<p>This symbol appears next to questions that require short written answers. Use about 5 minutes to answer these questions.</p> <p>A complete and correct answer to each of these questions is worth 2 points. A partially correct answer is worth 1 point.</p>
	<p>This symbol appears next to questions that require longer written answers. Use about 10–15 minutes to answer these questions.</p> <p>A complete and correct answer to each of these questions is worth 4 points. A partially complete answer is worth 1, 2, or 3 points.</p>
	<p>This symbol appears next to questions that require you to fill in your answer on a grid. Answers may be gridded using several correct formats. You MUST fill in the bubbles accurately to receive credit for your answer.</p>

Directions for Completing the Response Grid

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.
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.

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Grades 6–8 FCAT Mathematics Reference Sheet

Area



Triangle

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



Rectangle

$$A = lw$$



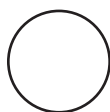
Trapezoid

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



Parallelogram

$$A = bh$$



Circle

$$A = \pi r^2$$

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.

KEY

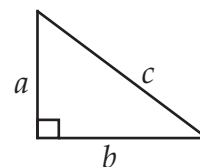
b = base	d = diameter
h = height	r = radius
l = length	A = area
w = width	C = circumference
S.A. = surface area	V = volume

Use 3.14 or $\frac{22}{7}$ for π .

Circumference

$$C = \pi d \quad \text{or} \quad C = 2\pi r$$

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

$$S.A. = 2\pi r h + 2\pi r^2$$

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

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

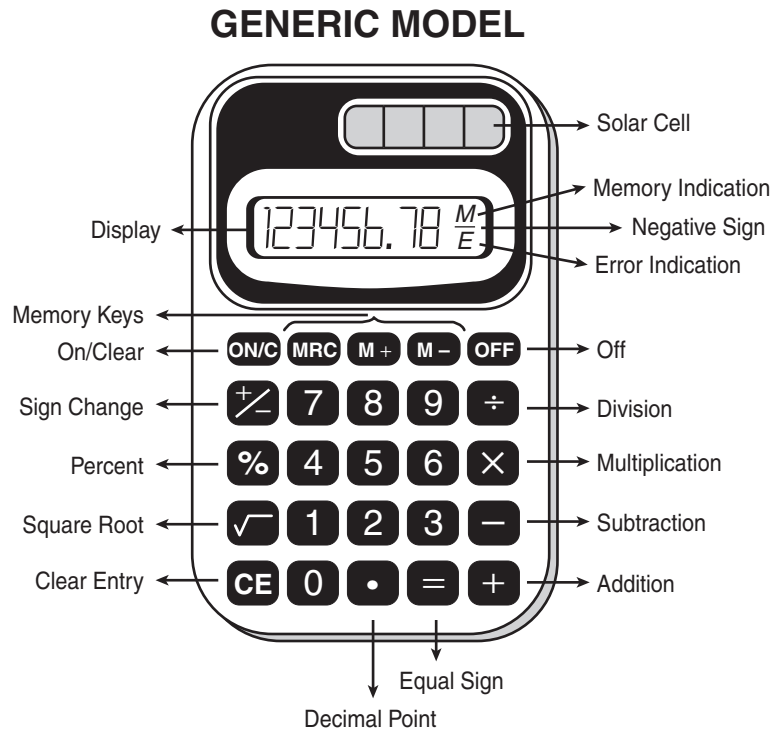
1 liter = 1000 milliliters = 1000 cubic centimeters
 1 meter = 100 centimeters = 1000 millimeters
 1 kilometer = 1000 meters
 1 gram = 1000 milligrams
 1 kilogram = 1000 grams

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

1 pound = 16 ounces
 1 ton = 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).

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



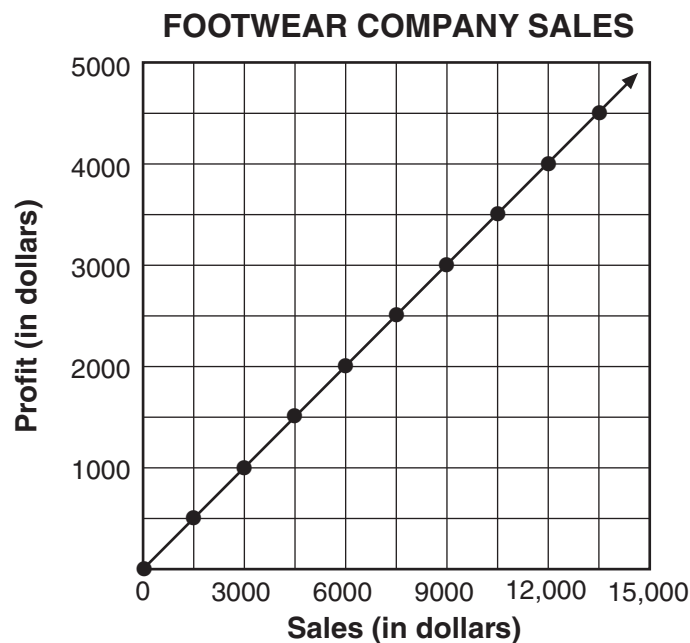
HELPFUL HINTS FOR TAKING THE FCAT MATHEMATICS SSS TEST

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.

Use the space in the Test Book to do your work. Then mark your Test Book for the answer you have chosen. If you change your answer, be sure to erase completely.

The correct answer for each multiple-choice question is circled. To the left of each answer choice is the percentage of students who chose that answer.

- 1 The Footwear Company used the following graph to relate sales to profit.



What amount of sales, in dollars, generated \$3500 in profits?

- 17% A. \$1500
- 3% B. \$3500
- 19% C. \$9500
- 61% **D. \$10,500**

Benchmark	Content Focus	Content Difficulty
MA.E.1.3.1	line graphs	Low

- 2 The scatter plot below shows the number of calories burned per minute while running, based on a runner's body weight.



Which statement below is **best** supported by this scatter plot?

- 6% **F.** As body weight increases, the number of calories burned per minute doubles.
- 4% **G.** As body weight increases, the number of calories burned per minute decreases.
- 88% **H.** As body weight increases, the number of calories burned per minute increases.
- 2% **I.** As body weight increases, the number of calories burned per minute remains the same.

Benchmark	Content Focus	Content Difficulty
MA.E.1.3.1	scatter plots	Low

3 On his mathematics test, Carlos had 20 correct out of 25 problems.

Which of the following is NOT another way of expressing 20 out of 25?

6% **A.** $\frac{4}{5}$

6% **B.** 0.80

5% **C.** 80%

83% **D.** $\frac{5}{4}$

Benchmark	Content Focus	Content Difficulty
MA.A.1.3.4	fractions/percents	Moderate

4 Fran purchased 2 pounds of walnuts at \$4.89 per pound and 2 pounds of chocolate chips at \$2.48 per pound. Which expression represents the total cost of Fran's purchases?

- 78% **F.** $2(4.89 + 2.48)$
- 8% **G.** $2(4.89 \times 2.48)$
- 3% **H.** $2 + (4.89 \times 2.48)$
- 11% **I.** $(2 + 4.89) \times (2 + 2.48)$

Benchmark	Content Focus	Content Difficulty
MA.A.3.3.1	distributive property	Moderate

- 5 When Ryan lifts weights for his first set, he lifts 15 pounds less than half of the maximum weight he can lift. This is represented by the equation below, where m represents the maximum weight Ryan can lift, and f represents the weight of his first set.

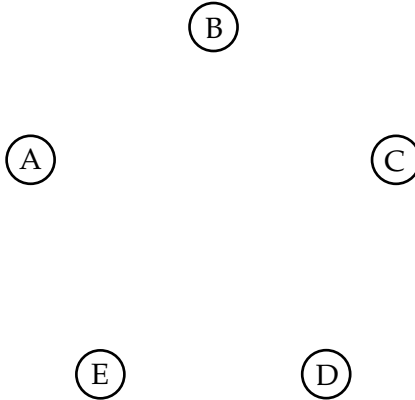
$$f = \frac{1}{2}m - 15$$

If the weight of Ryan's first set is 135 pounds, what is the maximum weight he can lift?

- 18% A. 52.5 pounds
 14% B. 60.0 pounds
 26% C. 285.0 pounds
 42% **D.** 300.0 pounds

Benchmark	Content Focus	Content Difficulty
MA.D.2.3.2	solving equations	Moderate

- 6 An architect designed a park with 5 different play areas as shown in the diagram below.



The architect wants to connect each play area directly to each of the other play areas with cement walkways. The expression $\frac{n(n - 1)}{2}$, where n represents the number of play areas, can be used to determine how many different walkways are needed. How many walkways are needed to connect the 5 play areas?

Example of a Correct Gridded Response:

			1	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	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Acceptable Gridded Response(s)
10

Benchmark	Content Focus	Content Difficulty
MA.D.1.3.2	evaluating expressions	Moderate

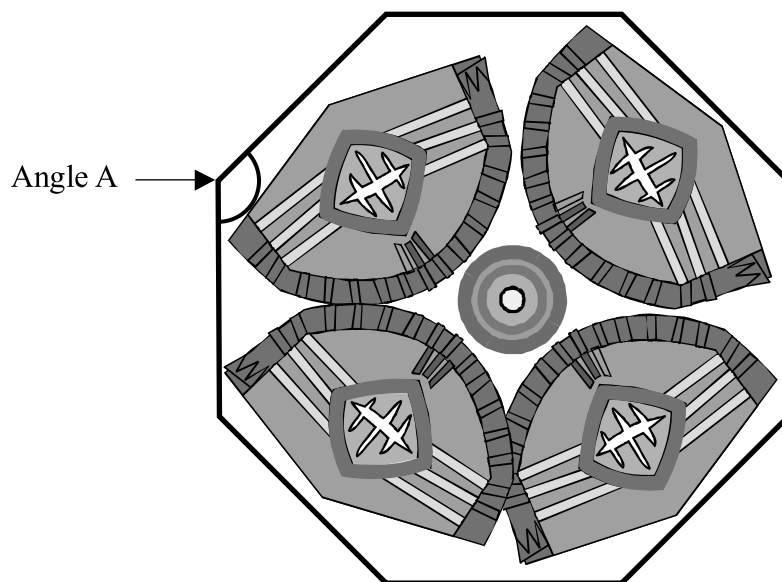
Percentage of Students Answering Correctly
67

8 A city youth program has a total yearly budget of \$220,000. Of the total budget, 17% is spent on administrative costs, 25% is spent on supplies, and 30% is spent on art programs. The rest of the budget is spent on sports programs. How much is spent on sports programs?

- 50% **F.** \$61,600
- 20% **G.** \$66,000
- 15% **H.** \$116,000
- 15% **I.** \$158,400

Benchmark	Content Focus	Content Difficulty
MA.A.3.3.3	decimal computation	Moderate

- 9 Chang views the design below in his kaleidoscope. The outside border of the design is a regular octagon.

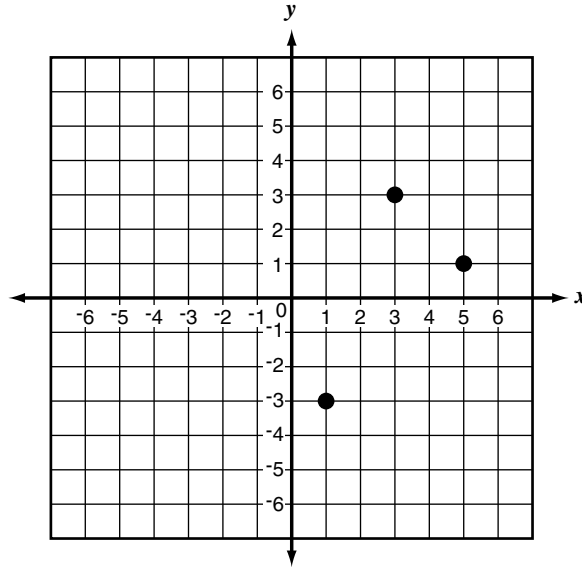


What is the measure, in degrees, of $\angle A$ in the design?

- 14% A. 45
 7% B. 90
 68% C. 135
 11% D. 180

Benchmark	Content Focus	Content Difficulty
MA.C.1.3.1	angles	Moderate

- 10 Hilde wanted to draw a parallelogram on a coordinate plane.



She gave the following coordinates for three of the four vertices of the parallelogram: (3, 3), (5, 1), and (1, -3). Which coordinates **best** represent the location of the fourth vertex of the figure?

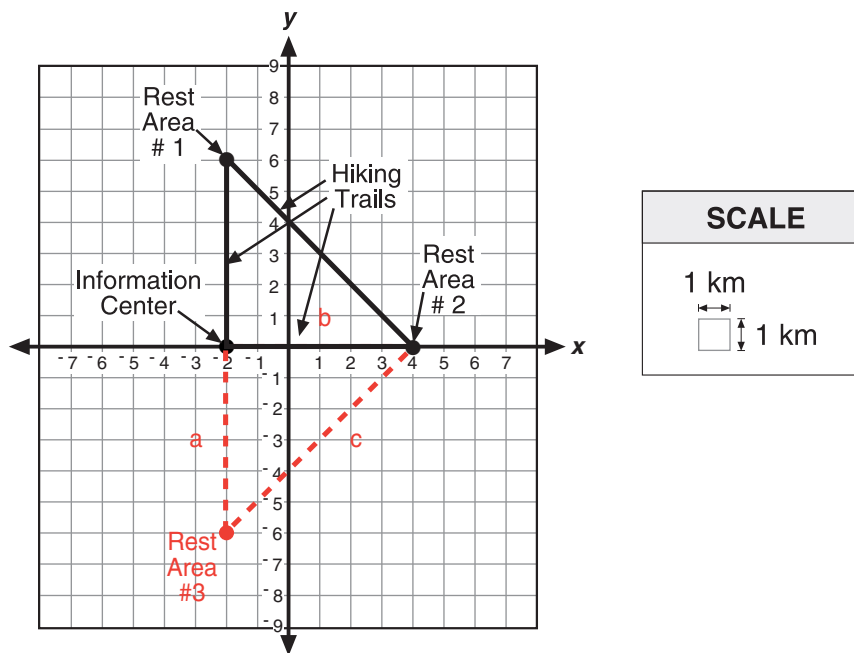
- 9% E. (1, -1)
- 64% **G.** (-1, -1)
- 10% H. (-1, 1)
- 16% I. (5, -4)

Benchmark	Content Focus	Content Difficulty
MA.C.3.3.2	identifying coordinates	Moderate

11

In its first design for a new park, the Park Service planned to build two rest areas. Each of the rest areas would be 6 kilometers from the Information Center, with Rest Area #1 due north and Rest Area #2 due east of the Center. The three locations would be connected by straight hiking trails, as shown in the diagram.

THINK
SOLVE
EXPLAIN



Part A The final plan added Rest Area #3 to the design shown above, with straight hiking trails between all three rest areas and the Information Center. The point used to locate Rest Area #3 was the reflection over the x -axis of the point that locates Rest Area #1. What should be the coordinates of Rest Area #3?

Coordinates of Rest Area #3 (-2, -6)

Part B To the nearest tenth kilometer, calculate the length of the shortest hiking trail from Rest Area #2 to Rest Area #3.

$$\begin{aligned} a^2 + b^2 &= c^2 \\ (6)^2 + (6)^2 &= c^2 \\ 36 + 36 &= c^2 \\ 72 &= c^2 \\ \sqrt{72} &= c \\ c &\approx 8.4852813 \end{aligned}$$

Length of trail 8.5 km

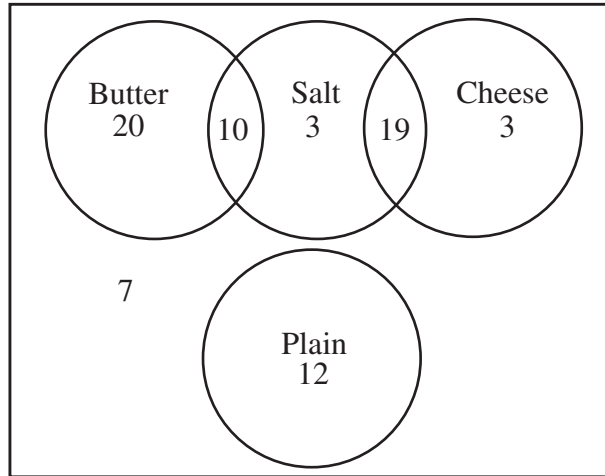
Benchmark	Content Focus	Content Difficulty
MA.C.3.3.1	reflections	High

Percentage of Students Receiving				
Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
57	38	6		

- 12 A marketing representative asked movie-ticket holders how they liked their popcorn served. The results are shown in the Venn diagram below.

THINK
SOLVE
EXPLAIN

POPCORN SURVEY



Part A Create a table, in the space below, that correctly represents all of the data in the Venn diagram.

Be sure to include:

- a title for the table
- column labels
- accurate information

Popcorn Survey

How Moviegoers Like Their Popcorn	Number of Responses
Plain	12
Butter only	20
Butter and salt	10
Salt only	3
Cheese only	3
Salt and cheese	19
Other	7

Part B On the lines below, explain the significance of the number 7 on the diagram and give a reasonable explanation for its position on the diagram.

Explanation These seven ticket holders do not eat popcorn that fits the survey categories so the number seven is positioned outside of all of the categories.

These seven people prefer another variety of popcorn or do not eat popcorn at all.

Or

Other acceptable explanation.

Part C How many movie-ticket holders participated in the survey? 74

Benchmark	Content Focus	Content Difficulty
MA.E.1.3.1	interpretation of data	High

Percentage of Students Receiving				
Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
12	18	43	13	15

13 What is the value of the expression $2 \times 7^2 - 3 \times 8 + 6 \times 5 + 4$?

- 58% **A.** 108
- 5% **B.** 206
- 36% **C.** 3,834
- 1% **D.** 6,444

Benchmark	Content Focus	Content Difficulty
MA.A.3.3.2	order of operations	Moderate

- 14 A star's color gives an indication of its temperature and age. The chart below shows seven types of stars and the lowest recorded temperature of each type.

STARS

Type	Lowest Temperature (in Fahrenheit degrees)	Color
A	1.35×10^4	Blue-White
B	2.08×10^4	Blue
F	1.08×10^4	White
G	9.0×10^3	Yellow
K	6.3×10^3	Orange
M	5.4×10^3	Red
O	4.5×10^4	Blue

Which type of star has the lowest temperature?

- 9% F. B
 6% G. G
 69% **H. M**
 15% I. O

Benchmark	Content Focus	Content Difficulty
MA.A.1.3.2	relative size of numbers	Moderate

15 As Uranus orbits the Sun, the distance from its closest point to the Sun, or its *perihelion*, is 1703 million miles. The distance from its farthest point, or its *aphelion* to the Sun, is 1.866×10^9 miles. What is the difference in these distances?

- 39% **A.** 1.63×10^8 miles
- 17% **B.** 163×10^8 miles
- 24% **C.** 1.701×10^9 miles
- 19% **D.** 1701×10^9 miles

Benchmark	Content Focus	Content Difficulty
MA.A.2.3.1	scientific notation	Moderate

- 17** Lee's aerobics instructor told the class that a person should maintain a target heart rate for at least 20 minutes. The equation $t = 0.7(220 - a)$, where a represents the person's age in years and t represents the target heart rate, can be used to find the person's target heart rate. What is the target heart rate of a person who is 14 years old?




Example of a Correct Gridded Response:

		1	4	4
○	○	○	○	○
○	○	○	○	○
0	0	●	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
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

Acceptable Gridded Response(s)
144, 144.2

Benchmark	Content Focus	Content Difficulty
MA.D.2.3.2	solving equations	Moderate

Percentage of Students Answering Correctly
66

- 18**  Nina is taking a dance class **twice** a week for 6 weeks. Each class will last $1\frac{1}{2}$ hours. How many hours all together will Nina have spent in dance class at the end of the 6 weeks?

Example of a Correct Gridded Response:

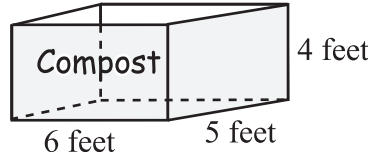
			1	8
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
0	0	0	0	0
1	1	1	<input checked="" type="checkbox"/>	1
2	2	2	<input type="checkbox"/>	2
3	3	3	<input type="checkbox"/>	3
4	4	4	<input type="checkbox"/>	4
5	5	5	<input type="checkbox"/>	5
6	6	6	<input type="checkbox"/>	6
7	7	7	<input type="checkbox"/>	7
8	8	8	<input checked="" type="checkbox"/>	8
9	9	9	<input type="checkbox"/>	9

Acceptable Gridded Response(s)
18

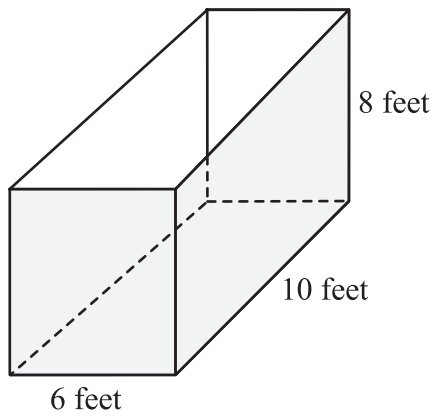
Benchmark	Content Focus	Content Difficulty
MA.A.3.3.3	fraction computation	Moderate

Percentage of Students Answering Correctly
66

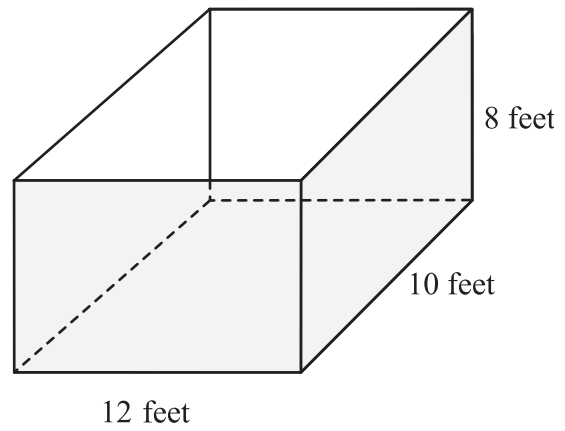
- 19 Laura made a compost bin with the dimensions shown.



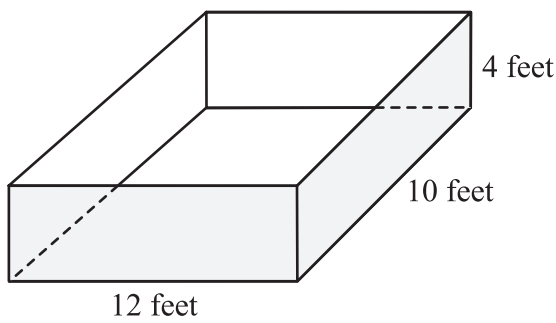
She wants to double the volume of the bin. Which of the following bins will have a volume that is twice the volume of Laura's bin?



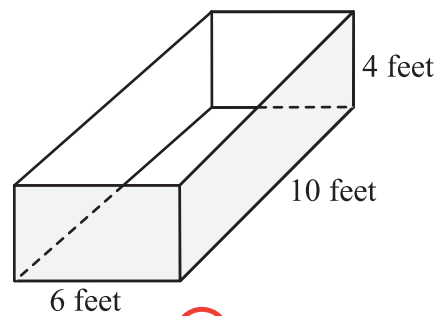
2% F.



61% H.



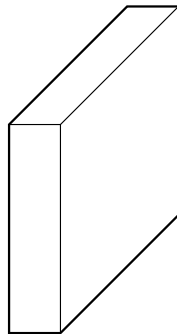
3% G.



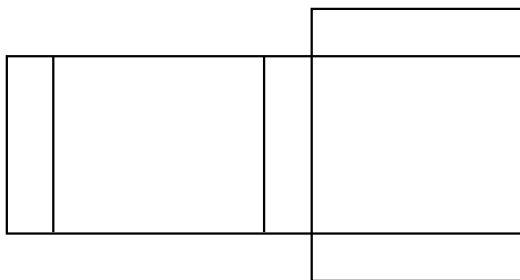
34% I.

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.3	change in volume	Moderate

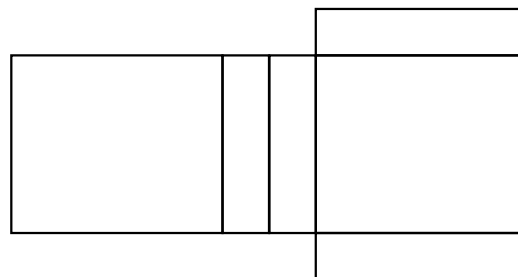
- 20 Tran designed this shipping box for a freight company.



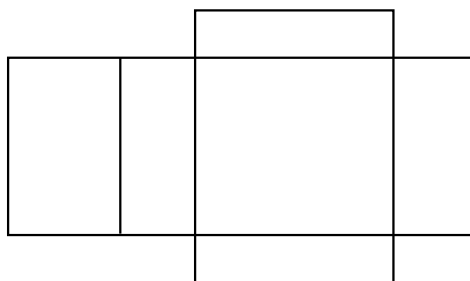
Which of the patterns below could be folded to make the shipping box?



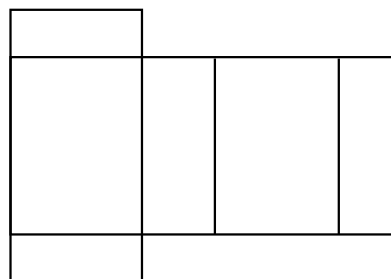
78% **A.**



7% **C.**



8% **B.**



7% **D.**

Benchmark	Content Focus	Content Difficulty
MA.C.1.3.1	two-dimensional figures	Moderate

- 21** Marie is using orange juice in an experiment on citric acid. She will conduct the experiment 30 times and will use 4 ounces of juice for each experiment. How many **quarts** of orange juice will Marie use to complete all the experiments?
- 10% **F.** 30 quarts
 - 18% **G.** 15 quarts
 - 27% **H.** 7.5 quarts
 - 44% **I.** 3.75 quarts

Benchmark	Content Focus	Content Difficulty
MA.B.2.3.2	customary capacity	Moderate

- 22** Mandy worked at a supermarket offering customers samples of new fruit drinks. Each customer selected and sampled one flavor. Mandy recorded the number of original and remaining samples by flavor on the chart.

BOTTLED SAMPLES

Flavor	Original Number of Samples	Remaining Number of Samples
Lemon	300	25
Orange	400	93
Strawberry	350	43

Which of the following statements is supported by the data in the chart?

- 16% **A.** Lemon was selected the greatest number of times.
- 36% **B.** Orange was selected the greatest number of times.
- 4% **C.** Lemon and orange were selected an equal number of times.
- 43% **D.** Orange and strawberry were selected an equal number of times.

Benchmark	Content Focus	Content Difficulty
MA.E.3.3.1	interpretation of data	Moderate

- 23 The rates for Aaron’s cellular phone service are displayed below.



PHONE RATES

Weekdays	\$0.12 per minute
Weeknights	\$0.07 per minute
Weekends	\$0.05 per minute

During the first month Aaron used his phone for 151 minutes on weekends, 200 minutes on weeknights, and 32 minutes on weekdays. According to the rates on the chart, how much should Aaron be charged for his phone service the first month?

Example of a Correct Gridded Response:

	2	5	.	3	9
	/	/	/		
	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	•	2	2	2	2
3	3	3	•	3	3
4	4	4	4	4	4
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

Acceptable Gridded Response(s)
25.39

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.2	time	Moderate

Percentage of Students Answering Correctly
64

24

A used-car dealer needed to sell a car. He priced it at \$4500 the first day it was on the lot. The second day he reduced the price by 5%. What was the price of the car after this reduction?



Example of a Correct Gridded Response:

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

Acceptable Gridded Response(s)
4275

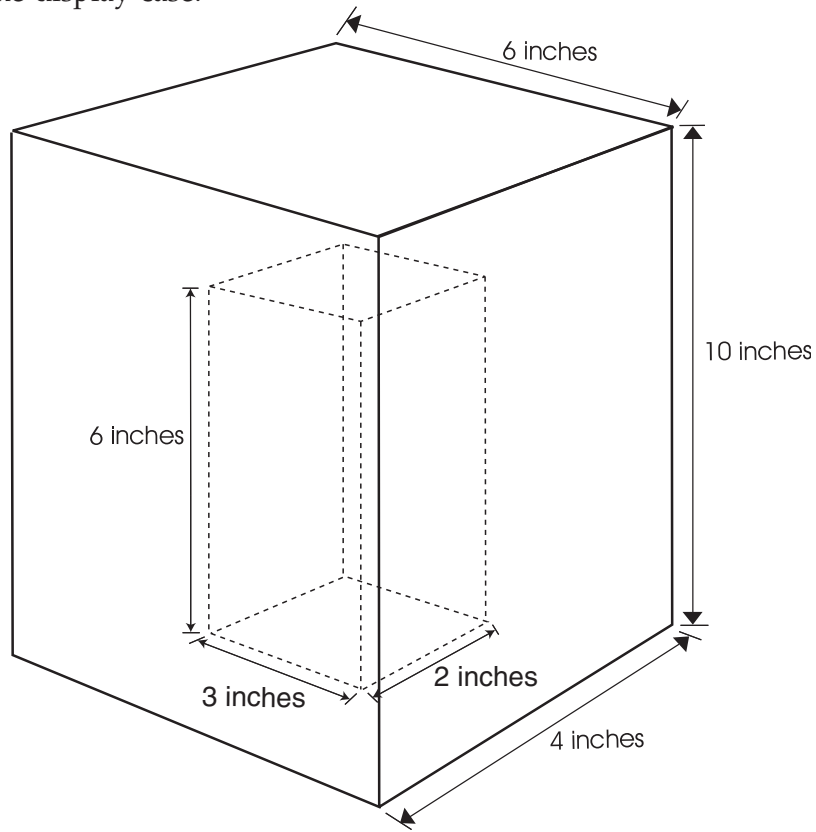
Benchmark	Content Focus	Content Difficulty
MA.A.3.3.3	percent increase	Moderate

Percentage of Students Answering Correctly
55

25

A craft shop makes small rectangular display cases that are 6 inches by 3 inches by 2 inches. The cases are shipped in rectangular boxes that are 10 inches by 6 inches by 4 inches. The extra space in the packing box is filled with packing material to protect the display case.

THINK
SOLVE
EXPLAIN



Find the **volume** of the space in the box that is filled with packing material. Show your work or explain in words how you found your answer.

$$V = l \cdot w \cdot h$$

$$V_1 = 4'' \cdot 6'' \cdot 10''$$

$$V_1 = 240 \text{ cubic inches}$$

$$V_1 - V_2$$

$$240 \text{ cubic inches} - 36 \text{ cubic inches} = 204 \text{ cubic inches}$$

$$V_2 = 6'' \cdot 3'' \cdot 2''$$

$$V_2 = 36 \text{ cubic inches}$$

Or explanation similar to the following:

Volume of the large box is 240 cubic inches. Volume is found by multiplying length times width times height. $10'' \times 6'' \times 4'' = 240$ cubic inches.

The volume of the small box is 36 cubic inches. Volume of the small box is found using the same formula. $6'' \times 3'' \times 2'' = 36$ cubic inches.

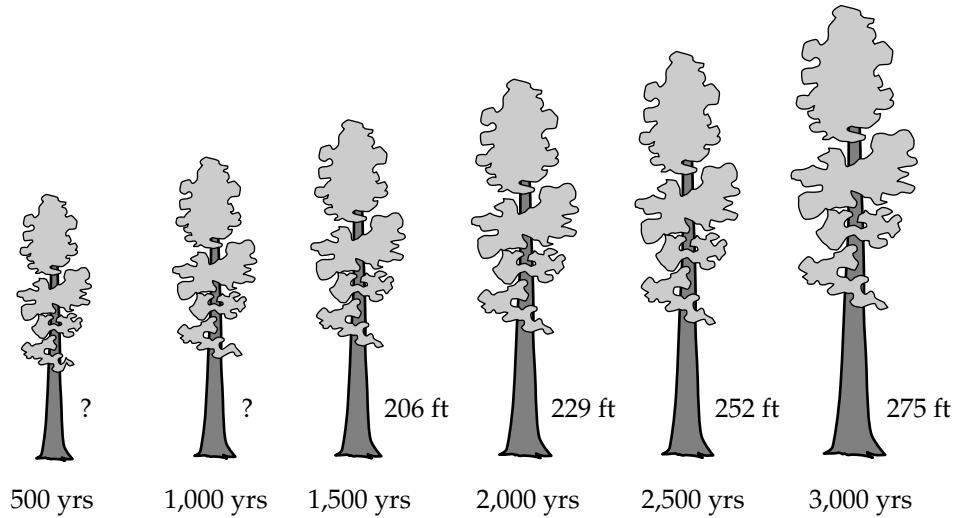
The volume of the packing material is found by subtracting the small box from the large box. 36 cubic inches subtracted from 240 cubic inches is 204 cubic inches of packing material.

Volume 204 cubic inches

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.1	volume	Moderate

Percentage of Students Receiving				
Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
53	19	27		

- 26 The General Sherman Tree in Sequoia National Park, California, has grown to be 275 feet tall and is about 3,000 years old. The diagram below shows the approximate height, in feet, of the General Sherman Tree at various ages.

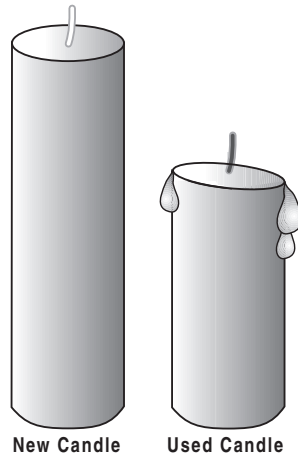


Assuming the tree grew at a steady rate, what was the height of the tree, in feet, at 500 years of age?

- 5% F. 23 feet
- 3% G. 69 feet
- 90% **H.** 160 feet
- 3% I. 183 feet

Benchmark	Content Focus	Content Difficulty
MA.D.1.3.1	functions	Moderate

- 27 Ms. Jacques bought some candles that are advertised to burn for 30 hours. She used one of the candles until it had burned down as shown.



Which is closest to the number of hours remaining until the used candle burns completely?

- 9% A. 10 hours
- 18% B. 15 hours
- 64% **C. 20 hours**
- 9% D. 25 hours

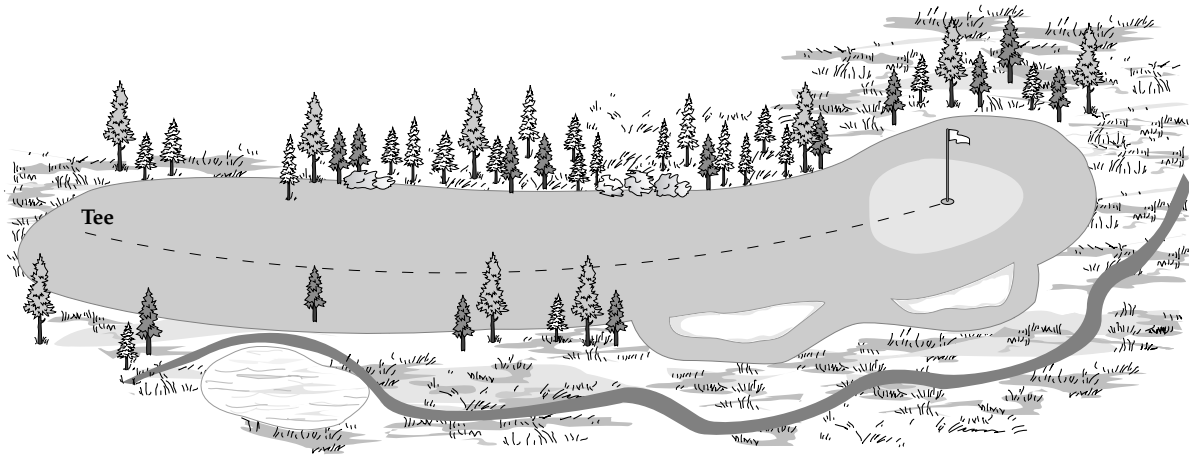
Benchmark	Content Focus	Content Difficulty
MA.A.4.4.1	time estimate	Low

28 A plane is flying at an altitude of 27,000 feet. The pilot of the plane is trying to avoid a storm and increases the plane's altitude by ascending 3,500 feet. When the pilot sees he has not ascended far enough to avoid the storm, he ascends another 5,000 feet and finally another 2,500 feet. What is the plane's new altitude?

- 6% F. 11,000 feet
- 14% G. 16,000 feet
- 3% H. 23,000 feet
- 76% **I.** 38,000 feet

Benchmark	Content Focus	Content Difficulty
MA.A.3.3.3	whole number computation	Moderate

- 29 A brochure advertises a new public golf course. The cover of the brochure shows a picture of the 18th hole on the course.




SCALE
0.5 inches = 50 yards

The distance from the tee to the 18th hole is 4.5 inches on the brochure. Based on the scale above, what is the distance in yards?

- 5% A. 900 yards
- 64% **B. 450 yards**
- 28% C. 225 yards
- 3% D. 113 yards

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.4	scale drawing	Moderate

- 30**  In 1900 John Herlinger set the record for the longest walk on hands. He walked on his hands from Vienna, Austria, to Paris, France, over a period of 55 days. Every day he walked for 10 hours, averaging a speed of 1.58 miles per hour. What is the total number of miles John Herlinger walked on his hands to set the record?

Example of a Correct Gridded Response:

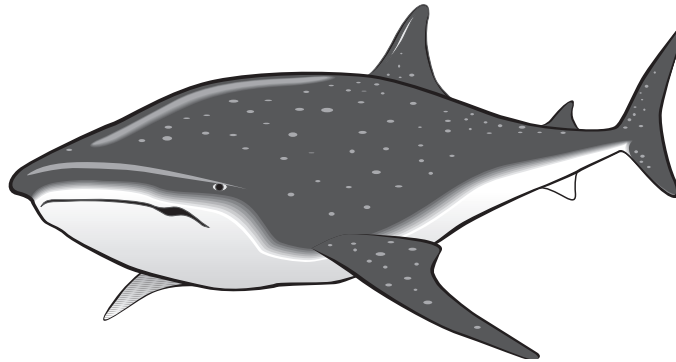
			8	6	9
	/	/	/		
•	•	•	•	•	•
0	0	0	0	0	0
1	1	1	1	1	1
2	2	2	2	2	2
3	3	3	3	3	3
4	4	4	4	4	4
5	5	5	5	5	5
6	6	6	•	6	6
7	7	7	7	7	7
8	8	•	8	8	8
9	9	9	9	•	9

Acceptable Gridded Response(s)
869

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.2	rate	Moderate

Percentage of Students Answering Correctly
55

- 31** The world's largest fish is the whale shark, which grows to be as much as 60 feet in length.



Rhonda wants to draw a picture of a 60-foot whale shark using a scale of $\frac{1}{4}$ inch = 5 feet. What will be the length, in inches, of the whale in her drawing?

Example of a Correct Gridded Response:

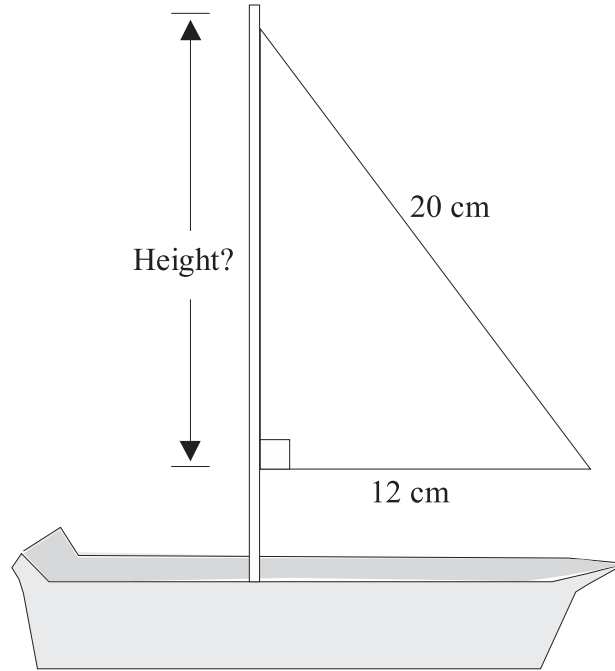
				3
/	/	/	/	/
•	•	•	•	•
0	0	0	0	0
1	1	1	1	1
2	2	2	2	2
3	3	3	3	3
4	4	4	4	4
5	5	5	5	5
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Acceptable Gridded Response(s)
3

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.4	scale	Moderate

Percentage of Students Answering Correctly
44

32 Sabrina enjoys sailing. She wants to build this model sailboat:



What is the height of the model's sail in centimeters (cm)?

Example of a Correct Gridded Response:

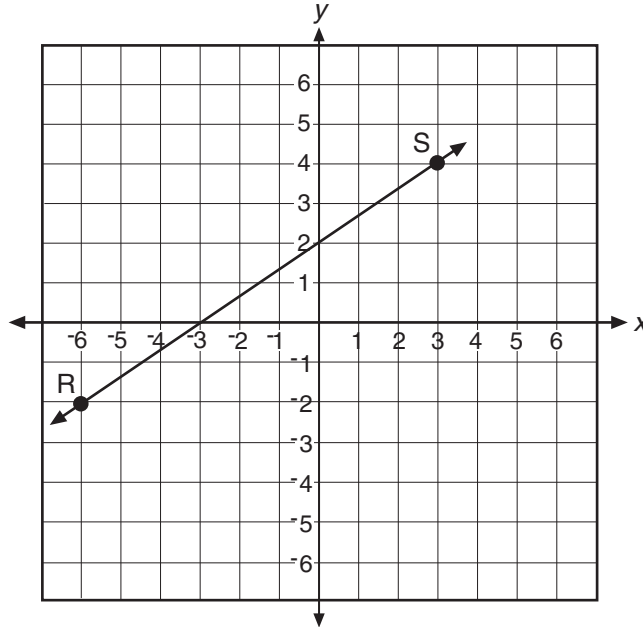
			1	6
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○
○	○	○	○	○

Acceptable Gridded Response(s)
16

Benchmark	Content Focus	Content Difficulty
MA.C.2.3.1	perpendicularity	Moderate

Percentage of Students Answering Correctly
33

- 33 Line RS represents a skateboard ramp.



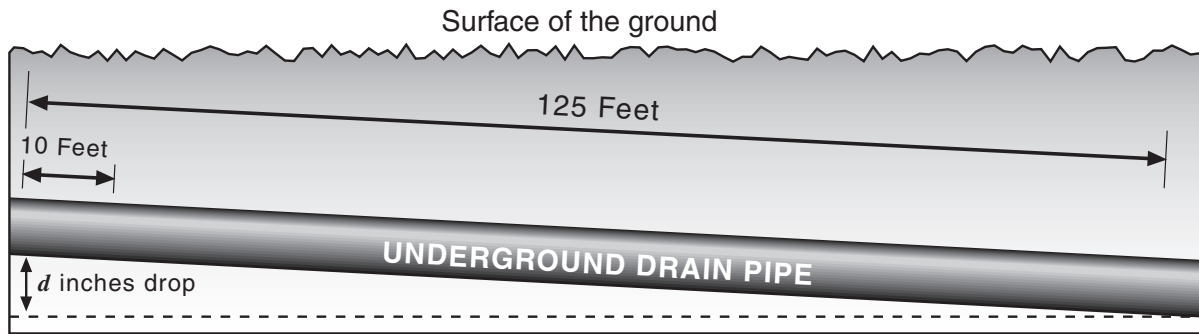
What is the slope of the ramp?

- 35% **F.** $\frac{2}{3}$
- 15% **G.** $\frac{3}{2}$
- 29% **H.** $-\frac{2}{3}$
- 21% **I.** $-\frac{3}{2}$

Benchmark	Content Focus	Content Difficulty
MA.C.3.3.2	slope	Low

- 34** An architect is designing the layout of underground pipes to drain water from a large piece of property that is being developed. The pipes must drop $\frac{1}{4}$ inch for each 10 feet of the pipe's length.

THINK
SOLVE
EXPLAIN



Part A Write an equation that can be used to find the total amount of drop for the length of a pipe in feet.

Let d represent the total amount of drop, and let l represent the length of a pipe.

Equation $d = (L \div 10) \frac{1}{48}$ or equivalent equation

Part B Use your equation to calculate the total drop, in inches, of a 125-foot-long section of this pipe. Show your work.

Work Space

Work or explanation equivalent to the following:

$$d = (125 \div 10) \times .25$$

$$d = 12.5 \times .25$$

$$d = 3.125$$

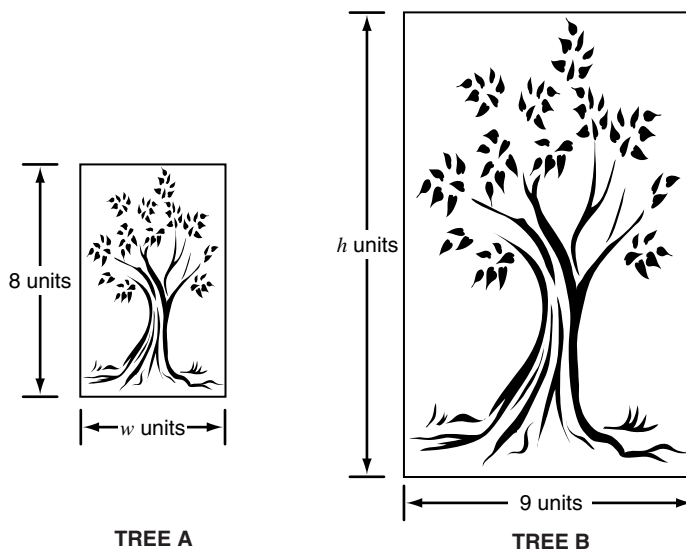
Total inches of drop 3.125

Benchmark	Content Focus	Content Difficulty
MA.D.2.3.1	equations	High

Percentage of Students Receiving				
Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
63	22	16		

35 In graphics class, Ben made two prints of trees on similar sheets of paper.

THINK
SOLVE
EXPLAIN



Part A Write a proportion, using w and h , which could be used to find the width of the paper used for Tree A or the height of the paper used for Tree B.

Proportion $\frac{w}{8} = \frac{9}{h}$ or similar equivalent proportion

Part B If the width of the paper used for Tree A is 6 units, what is the height of the paper used for Tree B?

Explanation or work equivalent to the following:

$$\frac{6}{8} = \frac{9}{h} \qquad 6h = 72$$

$$h = 12$$

Height of paper used for Tree B 12 units

Part C Ben created another similar print, Tree C on a sheet of paper that had a height of 36 units. What was the width of the paper?

Explanation or work equivalent to the following:

$$\frac{w}{36} = \frac{9}{12} \qquad 12w = 324$$

$$w = 27$$

Width of the paper for Tree C 27 units

Benchmark	Content Focus	Content Difficulty
MA.C.2.3.1	similarity	High

Percentage of Students Receiving				
Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
60	12	12	4	

36 Ryan made clay models of each member of his family. The model of his father is 8 inches tall. His father is actually 6 feet tall. Ryan will use the scale factor from his father’s model to make a model of his brother. If Ryan’s brother is actually $4\frac{1}{2}$ feet tall, how tall, in inches, should Ryan make the model of his brother?

8% **A.** $1\frac{3}{4}$ inches

19% **B.** $3\frac{1}{3}$ inches

18% **C.** 5 inches

55% **D.** 6 inches

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.4	scale drawing	Moderate

- 37 One of the banks in Key West is moving to a new office building. The floor plan of the new location is shown below. All of the offices around the perimeter of the building have windows. The three corner offices have been assigned to managers, and a random drawing will be used to assign the remaining offices.

FLOOR PLAN

Manager	office	office	Manager				
office	<table border="1"> <tr> <td>office</td> <td>office</td> </tr> <tr> <td>office</td> <td>office</td> </tr> </table>		office	office	office	office	office
office	office						
office	office						
rest room			office				
elevator			office				
stairs	office	office	Manager				

What are the **odds in favor** of the next person being assigned an office with a window?

- 51% **F.** 8 to 4
 28% **G.** 4 to 8
 10% **H.** 11 to 4
 12% **I.** 4 to 11

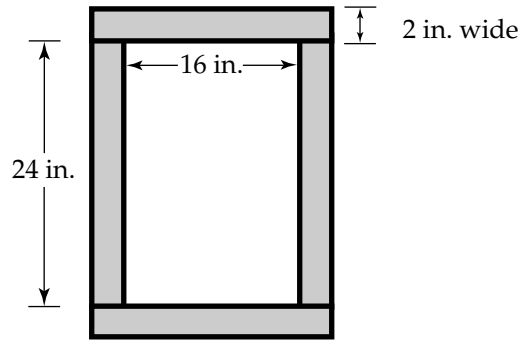
Benchmark	Content Focus	Content Difficulty
MA.E.2.3.2	odds	Moderate

38 James has a rectangular office that measures 6 feet by 10 feet. He will be moving to an office that is 2 feet longer and 2 feet wider. How much more area will James have in his new office?

- 20% A. 4 square feet
- 44% **B.** 36 square feet
- 6% C. 60 square feet
- 30% D. 96 square feet

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.3	change in area	Moderate

- 39 Dan is making a rectangular flower box. He is using wood that is 2 inches wide to make the flower box. The diagram below shows how the completed flower box will look from above.



What is the perimeter, in inches, of the outside of the flower box?

Example of a Correct Gridded Response:

			9	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	5	5	5
6	6	6	6	•
7	7	7	7	7
8	8	8	8	8
9	9	9	•	9

Acceptable Gridded Response(s)
96

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.1	perimeter	Moderate

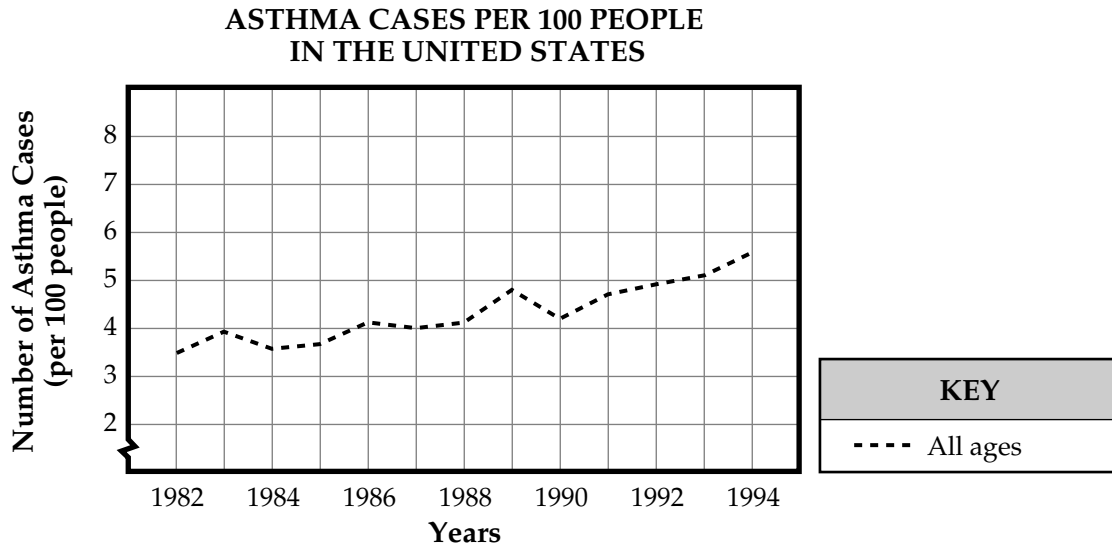
Percentage of Students Answering Correctly
24

41 The low temperatures for 6 consecutive days in a Montana city were 9° , 3° , 4° , 16° , 11° , and 5° . What would the low temperature have to be on the seventh day to have a **mean** low temperature of 9° for the week?

- 29% **F.** 8°
- 10% **G.** 9°
- 56% **H.** 15°
- 5% **I.** 20°

Benchmark	Content Focus	Content Difficulty
MA.E.1.3.2	mean	Moderate

- 42 The graph below shows the number of asthma cases per 100 people in the United States from 1982 to 1994.

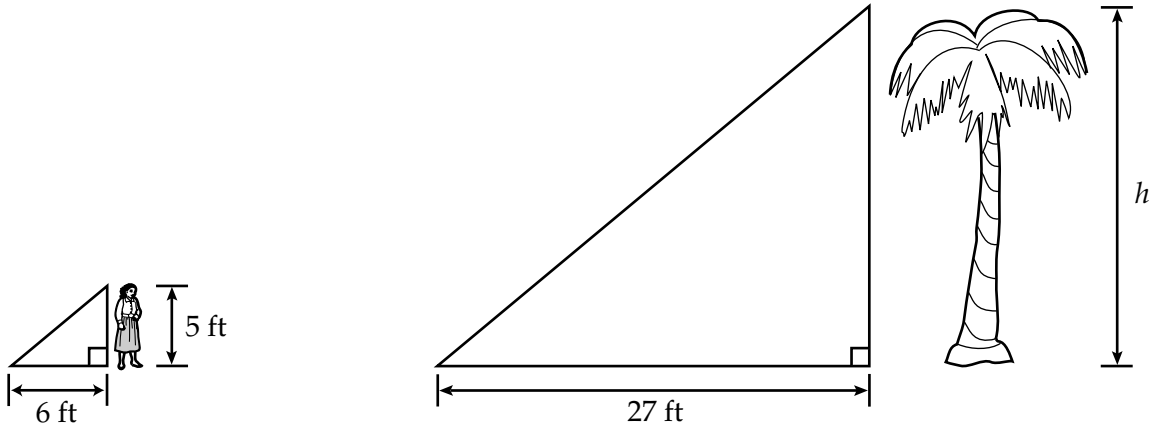


Which of the following claims can be supported by this data?

- 10% A. In 1989, approximately 4% of the people in the United States had asthma.
- 67% **B.** In 1990, between 4% and 5% of the people in the United States had asthma.
- 9% C. Between 1990 and 1991, there was a decrease in the asthma rate for all ages.
- 14% D. Between 1989 and 1990, there was an increase in the asthma rate for all ages.

Benchmark	Content Focus	Content Difficulty
MA.E.3.3.1	interpretation of data	Low

- 43 Crista works for a company that cuts down diseased palm trees before they fall and cause damage. She must determine the height of the palm tree.



Crista is 5 feet tall and has measured her shadow to be 6 feet long. At the same time, she measured the tree's shadow to be 27 feet long. What is the height (h) of the palm tree?

- 4% F. 16 feet
- 39% **G.** 22.5 feet
- 49% H. 26 feet
- 7% I. 32.4 feet

Benchmark	Content Focus	Content Difficulty
MA.C.3.3.1	similarity	Moderate

44 What value of x makes this equation true?

$$x + 6 \div 3 = 17$$

- 50% **A.** 15
- 47% **B.** 45
- 2% **C.** 51
- 1% **D.** 58

Benchmark	Content Focus	Content Difficulty
MA.D.2.3.2	solving equations	Low

45 Audrey’s parents gave her \$5 to play video games at the mall. Each game costs a quarter to play. Which choice is NOT a correct method for determining the total number of games she can play?

- 9% **F.** Take the number of dollars she has and divide it by $\frac{1}{4}$.
- 25% **G.** Take the number of dollars she has and multiply it by 4.
- 16% **H.** Take the number of dollars she has and divide it by 0.25.
- 50% **I.** Take the number of dollars she has and multiply it by 0.25.

Benchmark	Content Focus	Content Difficulty
MA.A.3.3.1	effects of operation	Moderate

- 46** Mario wants to rent a video game system. A video game system costs \$10.00 to rent for three days. Each game costs \$4.00 **per day** to rent.

THINK
SOLVE
EXPLAIN

Part A

Complete the table below to show how many dollars Mario will have to spend to rent the video game system and one game for the number of days given.

VIDEO SYSTEM AND GAME RENTALS

Number of Days	Total Cost
3	\$22
6	\$44
9	\$66
12	\$88

Part B

How much will Mario have to pay if he wants to rent three games and the video game system for 15 days?

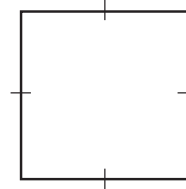
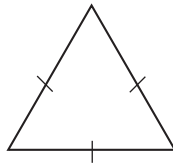
$$\begin{aligned}
 & (\# \text{ of 3-day increments} \times \$10) + (\# \text{ of days} \times \# \text{ of games} \times \$4) \\
 & 5(10) + 15(3 \times 4) \\
 & 50 + 180 \\
 & 230
 \end{aligned}$$

Amount \$230.00

Benchmark	Content Focus	Content Difficulty
MA.D.1.3.2	generalizing rules/expressions	High

Percentage of Students Receiving				
Score Point 0	Score Point 1	Score Point 2	Score Point 3	Score Point 4
48	35	17		

- 47 The line segments composing both shapes below are all congruent. The perimeter of the triangle is 36 units in length.



What is the perimeter, in units, of the square?


Example of a Correct Gridded Response:

			4	8
	/	/	/	
•	•	•	•	•
0	0	0	0	0
1	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	●
9	9	9	9	9

Acceptable Gridded Response(s)
48

Benchmark	Content Focus	Content Difficulty
MA.B.1.3.1	perimeter	Low

Percentage of Students Answering Correctly
53

- 48**  A cargo ship can hold up to 500 tons of cargo. The chart below shows how the distance from the water line to the bottom of the ship (the draft depth) is affected by the number of tons of cargo the ship is carrying.

DRAFT DEPTH OF SHIP

Cargo (in tons)	Draft Depth (in feet)
15	20
20	22.5
25	25
30	27.5
35	30

If the pattern in the chart continues, what will be the draft depth of the ship, in feet, if the ship is carrying 40 tons of cargo?

Example of a Correct Gridded Response:

	3	2	.	5
	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
0	0	0	0	0
1	1	1	1	1
2	2	<input checked="" type="checkbox"/>	2	2
3	<input checked="" type="checkbox"/>	3	3	3
4	4	4	4	4
5	5	5	5	<input checked="" type="checkbox"/>
6	6	6	6	6
7	7	7	7	7
8	8	8	8	8
9	9	9	9	9

Acceptable Gridded Response(s)
32.5

Benchmark	Content Focus	Content Difficulty
MA.D.1.3.1	number sequences	Low

Percentage of Students Answering Correctly
77

- 49** The value of a painting in Erin’s Gallery may increase by as much as 4% of its current value from one month to the next. The gallery values a certain painting at \$500.00 in November. Which of the inequalities below represents the painting’s possible values (v) in December?

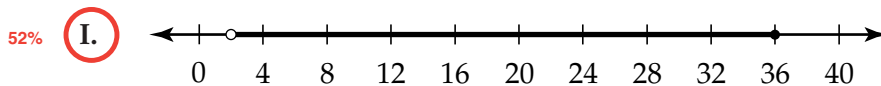
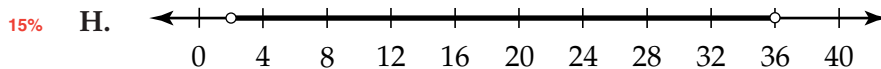
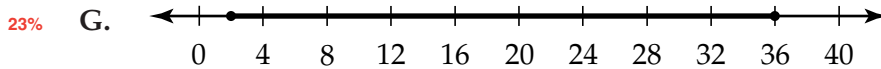
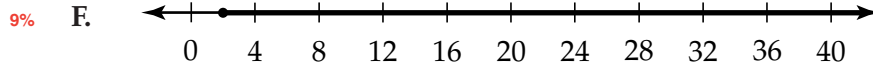
- 50% **A.** $500 \leq v \leq 520$
 19% **B.** $500 \leq v \leq 700$
 26% **C.** $500 \geq v \geq 520$
 6% **D.** $500 \geq v \geq 700$

Benchmark	Content Focus	Content Difficulty
MA.D.2.3.2	translating inequalities	Moderate

- 50** Soon after a young duckling hatches, it considers the first thing it sees to be its mother. This process can happen only during a certain period of time called the “critical window.” The critical window is greater than 2 hours and continues for no more than 36 hours after hatching, as shown in the inequality below.

$$2 < \text{critical window} \leq 36$$

Which is the correct graph of this inequality?



Benchmark	Content Focus	Content Difficulty
MA.D.2.3.1	graphic representations of inequalities	Low

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MATHEMATICS

SUNSHINE STATE STANDARDS

TEST BOOK

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GRADE

8



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