

10th Grade Mathematics Ohio Graduation Test
Measurement Standard

Question 20
Benchmark A
Spring 2005

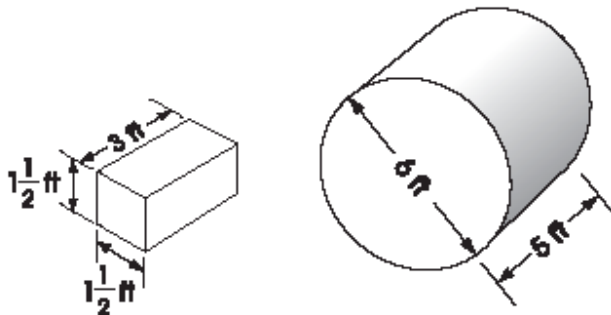
Dominic cuts out the largest possible circle from his 2-foot by 2-foot piece of art paper.

Which is a reasonable estimate of the fraction of the art paper that is left over?

- A. less than $\frac{1}{4}$
- B. between $\frac{1}{4}$ and $\frac{1}{2}$
- C. between $\frac{1}{2}$ and $\frac{3}{4}$
- D. more than $\frac{3}{4}$

Question 9
Benchmark B
Spring 2003

Mr. Anderson has machinery on his farm that allows him to bale hay two different ways: "round" and "square."

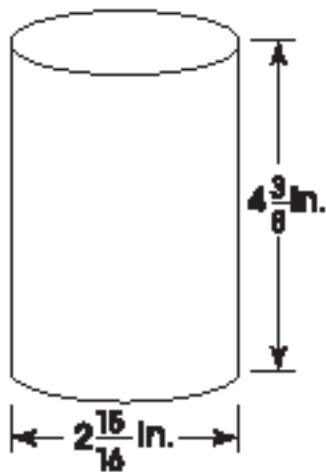


Approximately how many "square" bales contain the same amount of hay as one "round" bale?

- A. 14
- B. 17
- C. 21
- D. 84

Question 19
Benchmark B
Spring 2003

Cylindrical cans are being packed into rectangular boxes in two layers. Each layer consists of two rows of cans with three cans in each row. The dimensions of each can are shown below.

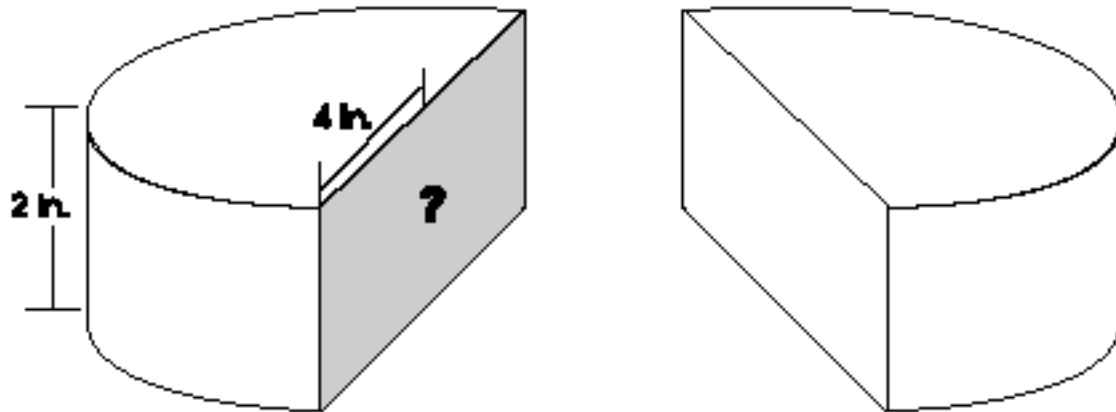


Which of the following is the smallest box that can hold all of the cans?

- A. 2 inches wide, 3 inches long, 2 inches high
- B. 4 inches wide, 6 inches long, 8 inches high
- C. 6 inches wide, 9 inches long, 5 inches high
- D. 6 inches wide, 9 inches long, 9 inches high

Question 17
Benchmark B
Spring 2004

Gene has a cylinder with radius 4 inches and height 2 inches. He cut the cylinder in half along the length of the diameter, as shown in the diagram below.



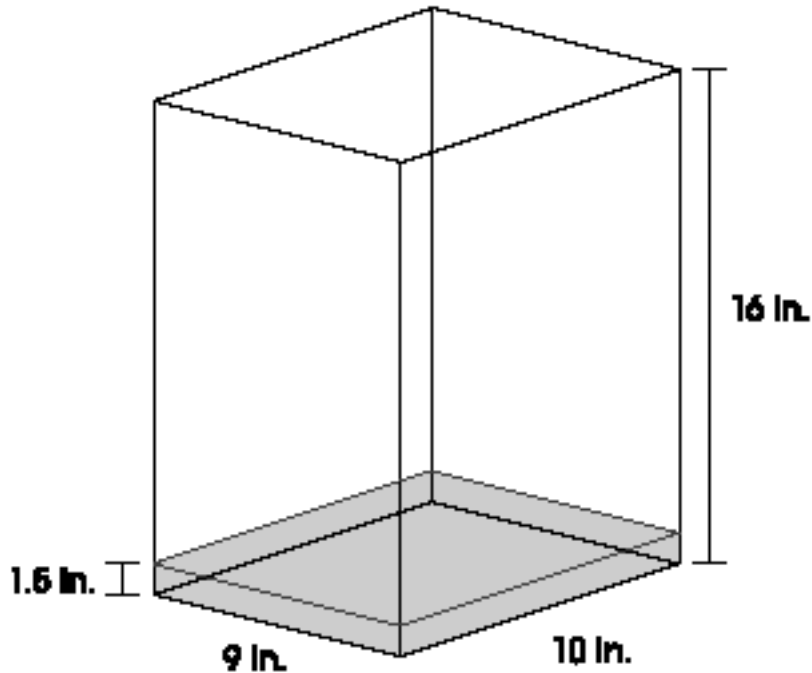
What is the area of the shaded cross-section?

- A. 48π square inches
- B. 24π square inches
- C. 16 square inches
- D. 8 square inches

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Question 10
Benchmark B
Question 10

Lester keeps his frog in a glass container with the dimensions shown below.

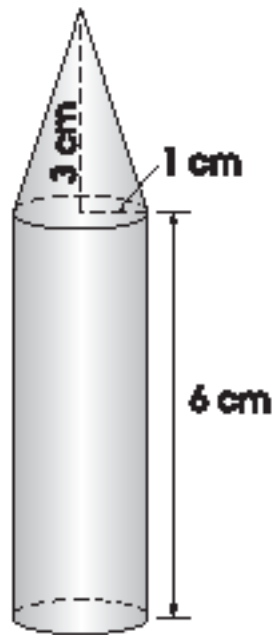


He pours water into the container to a height of 1.5 inches. What is the volume of water in the container?

- A. 135 cubic inches
- B. 216 cubic inches
- C. 1,440 cubic inches
- D. 2,160 cubic inches

Question 37
Benchmark B
Spring 2005

- . Marny wants to approximate the amount of wax needed to make a crayon. The dimensions of the crayon are shown below.



About how many cubic centimeters of wax are needed to make this crayon?

- A. 18 cm^3
- B. 22 cm^3
- C. 28 cm^3
- D. 88 cm^3

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Question 12
Benchmark C
Spring 2003

Douglas wants to fence a rectangular region for his dog. The length of this region should be at least 60 feet. The width should be greater than 20 feet and the distance around should be no more than 200 feet. Which dimensions could be used to build the fence for Douglas' dog?

- A. 25 ft by 80 ft
- B. 30 ft by 75 ft
- C. 35 ft by 60 ft
- D. 40 ft by 55 ft

Question 36
Benchmark C
Spring 2003

The Prom Decoration Committee decided to add the string of lights to its welcome sign, as shown in the drawing.

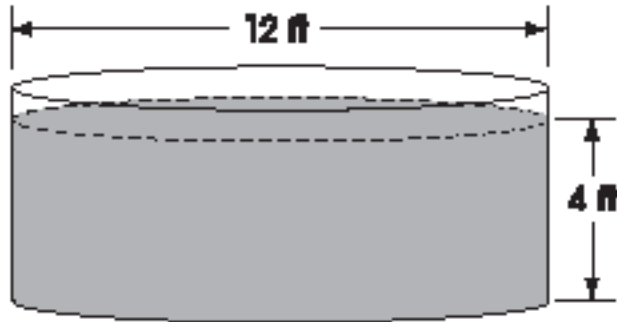


To the nearest foot, what is the minimum length of the string of lights the committee will need?

- A. 15 feet
- B. 18 feet
- C. 21 feet
- D. 33 feet

Question 37
Benchmark C
Spring 2004

A circular pool has a diameter of 12 feet.



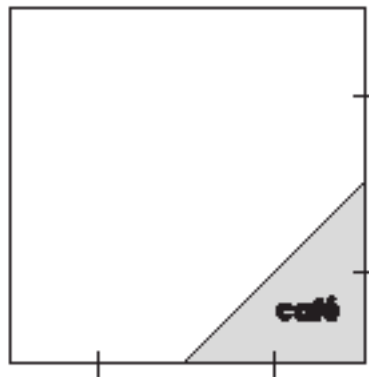
About how much water is needed to fill the pool to a depth of 4 feet?

- A. 75 cubic feet
- B. 150 cubic feet
- C. 450 cubic feet
- D. 1,800 cubic feet

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Question 26
Benchmark C
Spring 2004

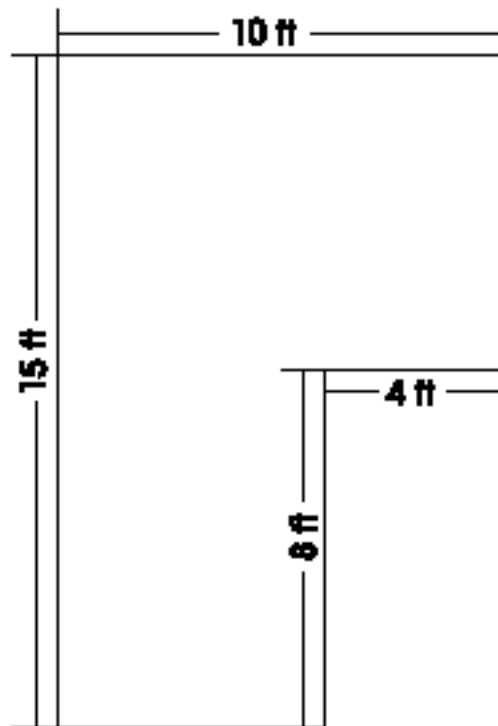
The floor plan of one room in a bookstore is a square with an area of 576 square feet. Part of this room is taken up by a café. The border of the café runs from the midpoints of two adjacent walls.



In your **Answer Document**, find the area, in square feet, of the café. Show your work or explain how you found your answer.

Question 5
Benchmark C
Spring 2005

A diagram of the floor plan of a storage room is shown below.



If the ceiling is 12 feet above the floor, what is the capacity of the storage room, in cubic feet?

- A. 118 ft³
- B. 600 ft³
- C. 1,416 ft³
- D. 1,800 ft³

Question 16
Benchmark C
Spring 2005

The area of a right triangle is 24 square feet. A second right triangle has a base that is 2 times as long as the first triangle's base and a height that is 3 times as long as the first triangle's height.

What is the area of the second triangle?

- A. 48 square feet
- B. 72 square feet
- C. 144 square feet
- D. 864 square feet

Question 4
Benchmark D
Spring 2003

The pilot of a small aircraft was given permission to land, and she lowered the wheels at an altitude of 1,500 feet. Two and a half minutes after lowering the wheels, the aircraft landed.

What was the plane's rate of descent, in feet per second, from the time the wheels were lowered to the time the plane landed?

- A. 10 ft/s
- B. 75 ft/s
- C. 375 ft/s
- D. 600 ft/s

Question 17
Benchmark D
Spring 2003

The Americans with Disabilities Act states that a wheelchair ramp must have a slope no greater than $\frac{1}{12}$, as shown in the diagram below.



Which of the following inequalities must be true of a ramp conforming to the Americans with Disabilities Act?

- A. $\tan A \leq \frac{1}{12}$
- B. $\tan A > \frac{1}{12}$
- C. $\tan A \geq \frac{12}{1}$
- D. $\tan A = 12$

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Question 28
Benchmark D
Spring 2004

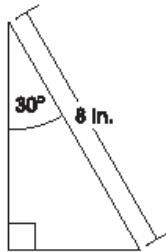
Alanis is moving and needs to pack two mirrors. The larger mirror fits in a box that is 18 inches wide by 20 inches long. Her smaller mirror is similar in proportion to the larger mirror. Alanis determines that the width of the smaller box needs to be a minimum of 9 inches.

What should be the minimum length of the box to hold the smaller mirror?

- A. 2 inches
- B. 6 inches
- C. 9 inches
- D. 10 inches

Question 40
Benchmark D
Spring 2004

A right triangle has the dimensions as shown in the diagram below.



What is the approximate area of the triangle?

- A. 8.0 square inches
- B. 11.3 square inches
- C. 13.9 square inches
- D. 16.0 square inches

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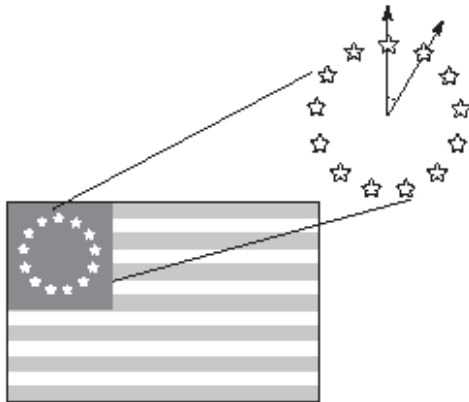
Question 12
Benchmark D
Spring 2005

Brian and Caleb walked 5 kilometers north from their car to set up their tent. They hiked 3 kilometers east from their campsite to look for firewood. Then they walked 2 kilometers south. Caleb said that after they had walked the 2 kilometers south, they were the same distance from their car as they were from their tent.

In your **Answer Document**, determine whether Caleb was correct by drawing a sketch of their hike and comparing the distances. Show your work.

Question 43
Benchmark E
Spring 2003

In 1776, Betsy Ross created a flag for George Washington that showed 13 stars arranged in a circle.



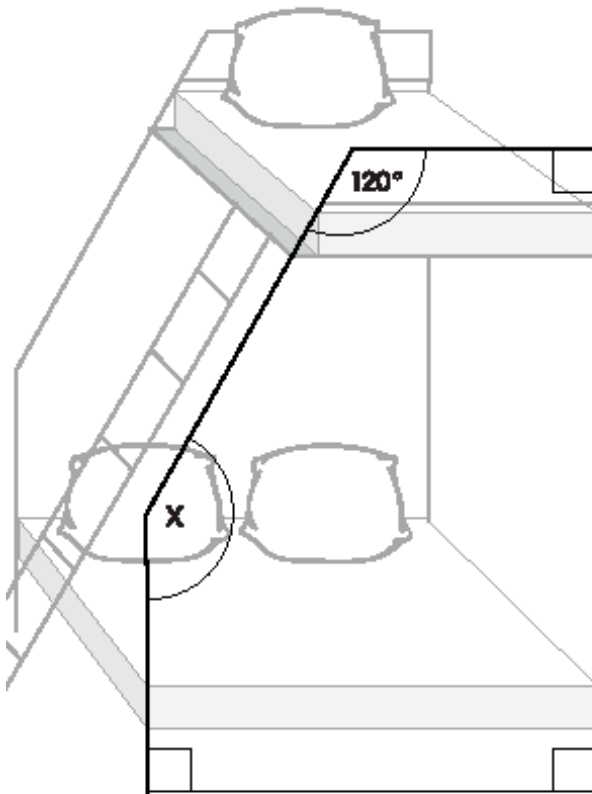
What is the approximate measure of the central angle shown?

- A. 6.9°
- B. 13.8°
- C. 16.3°
- D. 27.7°

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Question 4
Benchmark E
Spring 2004

Darius and his father are constructing a set of bunk beds as shown in the diagram below.

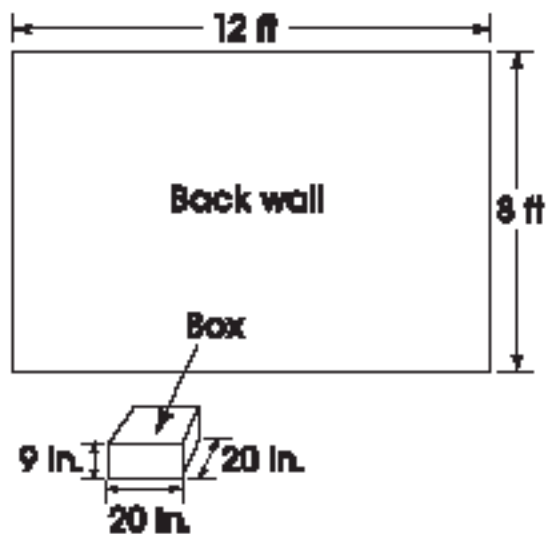


What is the measure of angle X?

- A. 540°
- B. 390°
- C. 150°
- D. 120°

Question 44
Benchmark E
Spring 2004

Identical boxes are to be stacked along the back wall of a storage room from floor to ceiling. The diagram shows the dimensions of the back wall and the dimensions of one of the boxes, which has a square base.

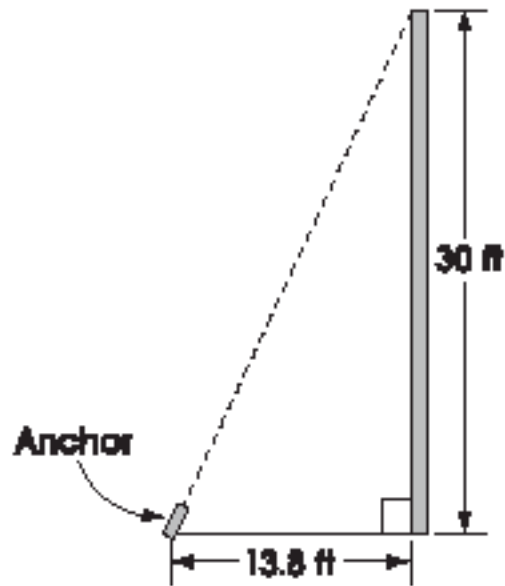


Which of these is the best estimate of the maximum number of boxes that can be stacked against the entire back wall?

- A. 200
- B. 70
- C. 50
- D. 15

Question 44
Benchmark E
Spring 2005

The anchoring wire of a telephone pole has snapped and needs to be replaced. The telephone pole is 30 feet tall. The anchor for the wire is 13.8 feet from the bottom of the pole.



Which of these is approximately the minimum length necessary for the new wire?

- A. 10 ft
- B. 21 ft
- C. 35 ft
- D. 44 ft

Question 25
Benchmark F
Spring 2003

Ernesco earns \$9.00 an hour at his summer job. His employer must pay him "time and a half" ($1\frac{1}{2}$ times his regular hourly earnings) for each hour over 40 hours per week. His employer withholds 15% of his gross pay for various taxes. The table shows Ernesco's work time for the week.

Ernesco's Hours

Mon	Tue	Wed	Thu	Fri
$8\frac{3}{4}$ h	9 h	$10\frac{1}{2}$ h	$11\frac{3}{4}$ h	$9\frac{1}{2}$ h

In your **Answer Document**, determine the amount of Ernesco's pay check, after taxes are withheld, for the week shown in the table. Show your work or provide an explanation to support your answer.