

What is the length of the toothpick in the figure above?

Answer: _____

Scoring Guide

Solution:

2 1/2 inches OR 2 1/2" OR 2 1/2 in OR
2 1/2 OR 2.5 OR 10/4

Score & Description

Correct

Correct response

Incorrect #3

10 1/2 or 10.5 inches

Incorrect #2

3 1/2 or 3.5 inches

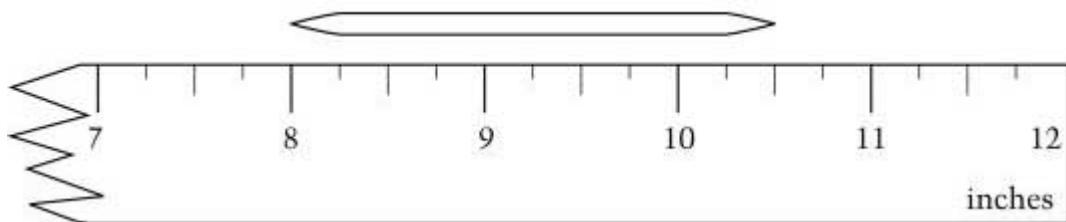
Incorrect #1

Incorrect response other than those described in 2 and 3

In this question the student needed to determine the length of a toothpick displayed above a portion of a ruler. One end of the toothpick was above the 8-inch mark on the ruler, and the other end of the toothpick was located above the 10 1/2-inch mark on the ruler. The student could subtract to find the length or the student could count the number of inches from 8 to 10 1/2.

*The use of more than one incorrect category in this question enabled NAEP to gather data on common student errors. Any response that fell into one of the incorrect categories earned no credit.

Correct - Student Response

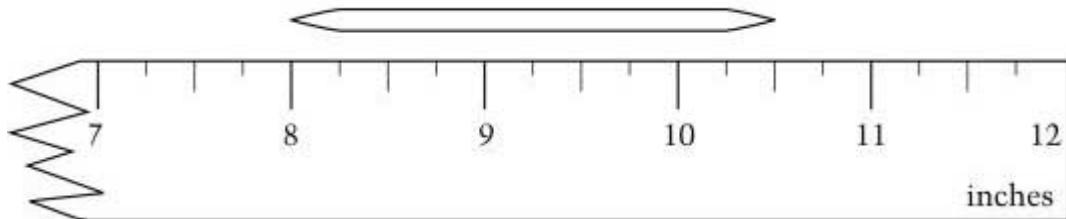


What is the length of the toothpick in the figure above?

Answer:

$2 \frac{1}{2}$ inches

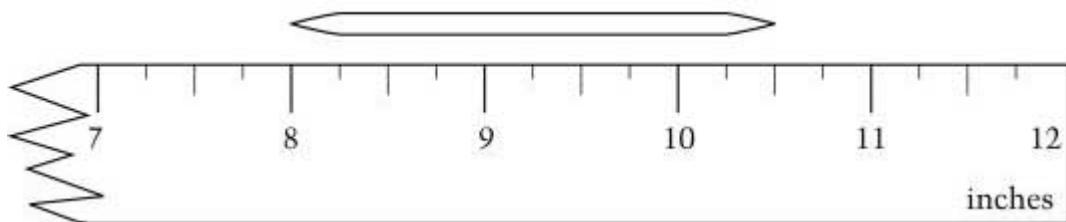
Incorrect #3 - Student Response



What is the length of the toothpick in the figure above?

Answer: $10\frac{1}{2}$

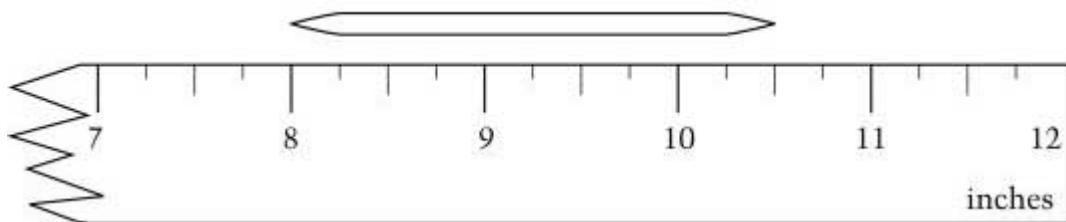
Incorrect #2 - Student Response



What is the length of the toothpick in the figure above?

Answer: $3\frac{1}{2}$ inches

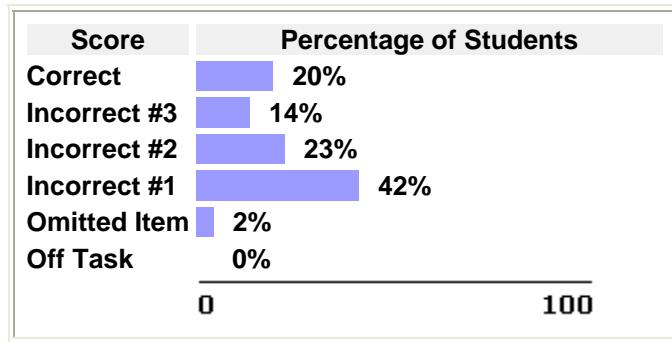
Incorrect #1 - Student Response



What is the length of the toothpick in the figure above?

Answer: 8 inches

2003 National Performance Results



Note:

- These results are for public and nonpublic school students.
 - Percentage may not add to 100 due to rounding.

Mathematical Content Area

Measurement

This question was classified in the measurement content area. This content area focuses on students' understanding of the process of measurement and on the use of numbers and measures to describe and compare mathematical and real-world objects. Students are asked to identify attributes, select appropriate units and tools, apply measurement concepts, and communicate measurement-related ideas. Students at grade 4 should understand and be able to use the measurement attributes of time, money, temperature, length, perimeter, area, capacity, weight/mass, and angle measure. At grades 8 and 12, in addition to these topics, students will also be expected to understand and demonstrate knowledge of volume and surface area, and they will be expected to solve problems that involve proportional thinking, combining or translating shapes, and applications that involve the use of complex measurement formulas. For some questions, measurement is assessed with real measuring devices.

Mathematical Ability

Problem solving

This question measures students' problem solving ability. Students demonstrate problem solving in mathematics when they recognize and formulate problems; determine the consistency of data; use strategies, data, models; generate, extend, and modify procedures; use reasoning in new settings; and judge the reasonableness and correctness of solutions. Problem solving situations require students to connect all of their mathematical knowledge of concepts, procedures, reasoning, and communication skills to solve problems.