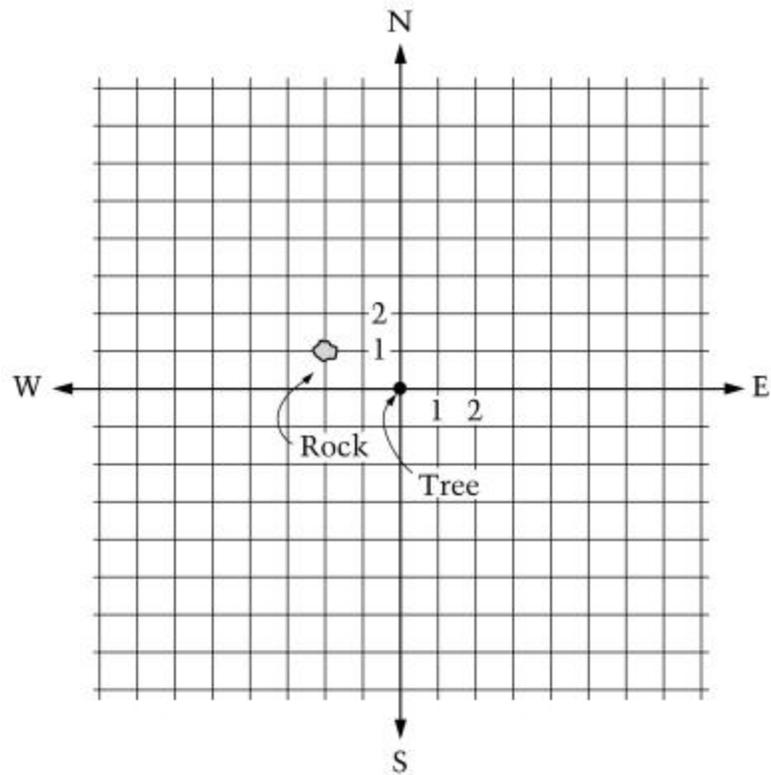


On the map below, the rock is located 2 miles west and 1 mile north of the tree. A treasure chest (not shown) is located 8 miles east and 4 miles north of the rock. Mark the location of the treasure chest on the map with an X.

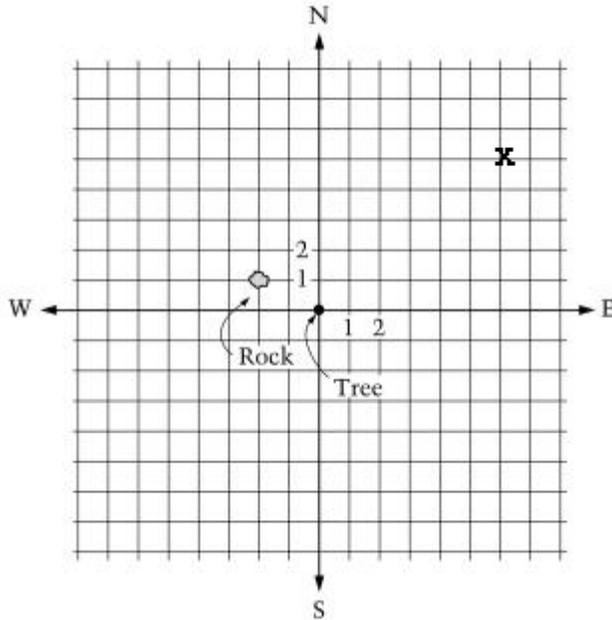


What is the position of the treasure chest with respect to the tree?

Answer: _____ miles east and _____ miles north of the tree

Scoring Guide

Solution:



6 miles east and 5 miles north of the tree

Score & Description

Correct #1

Treasure marked "X" at (6,5) on map (any X within the small squares that surround (6,5)) and fill-ins are correct

Correct #2

Treasure located incorrectly but both fill-ins are correct

Incorrect

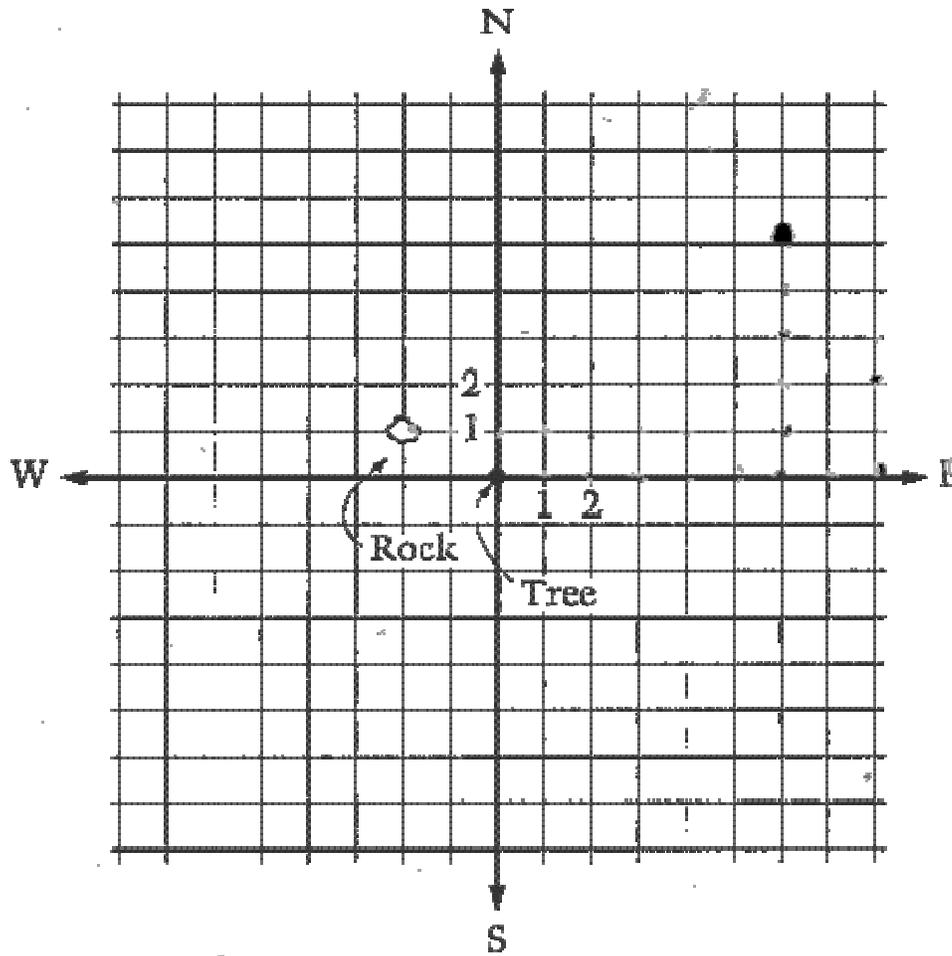
Any incorrect response

In this question, presented in context, the student needed to determine the effect of horizontal and vertical translations on a point in a coordinate plane.

*The use of more than one correct category in this question enabled NAEP to gather data on different ways students responded correctly to this question. Any one of these responses that fell into one of these correct categories earned full credit.

Correct #1 - Student Response

- 1 What is the position of the treasure chest with respect to the tree?

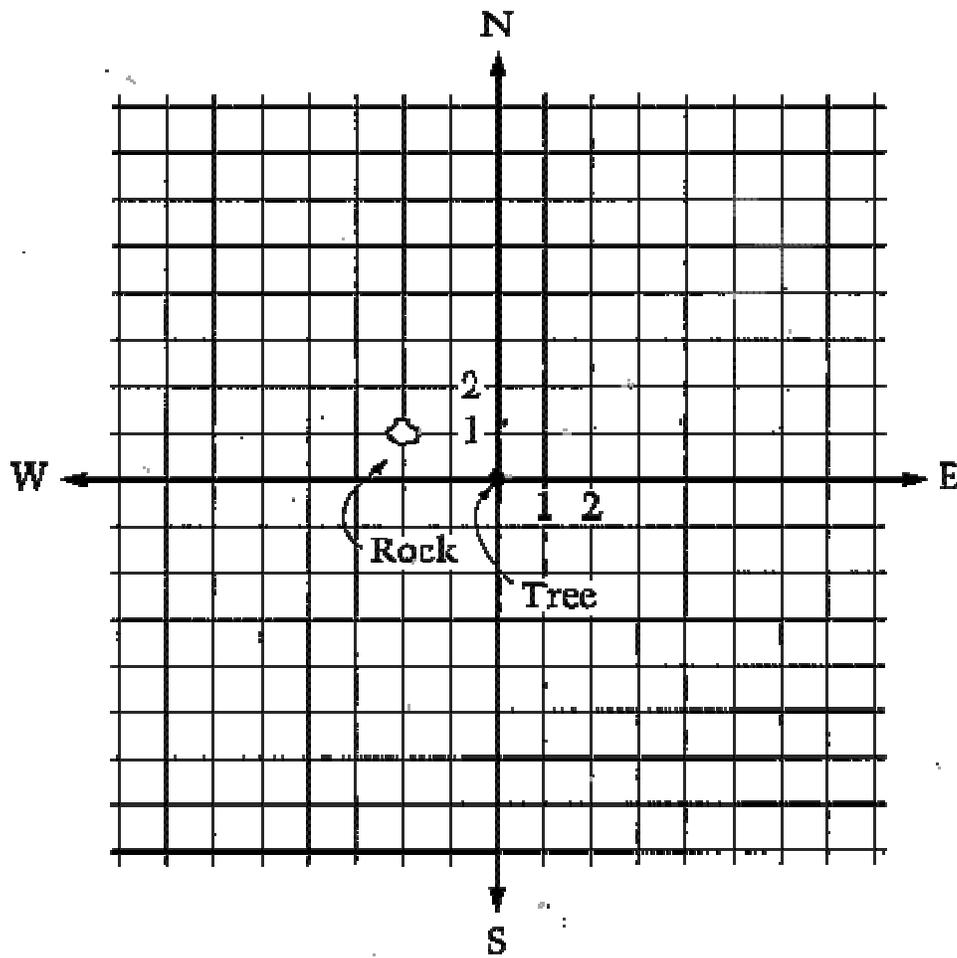


What is the position of the treasure chest with respect to the tree?

Answer: **6** miles east and **5** miles north of the tree

Correct #2 - Student Response

- 1 What is the position of the treasure chest with respect to the tree?

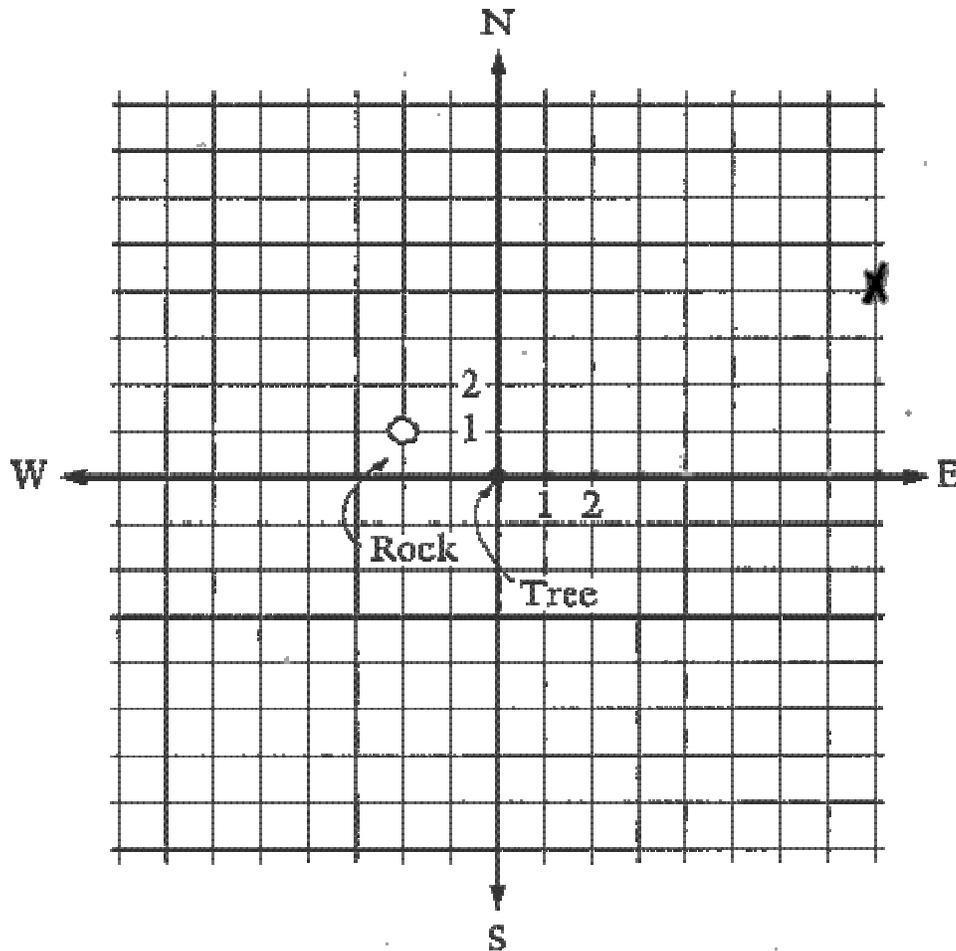


What is the position of the treasure chest with respect to the tree?

Answer: 6 miles east and 5 miles north of the tree

Incorrect - Student Response

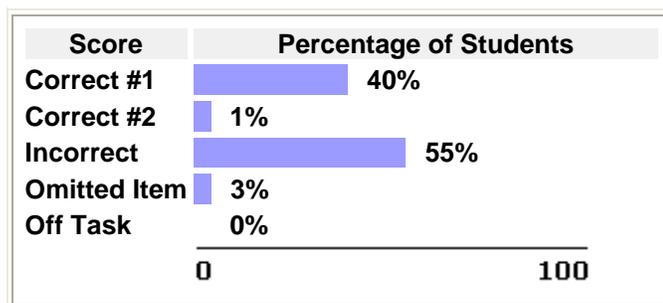
- 1 What is the position of the treasure chest with respect to the tree?



What is the position of the treasure chest with respect to the tree?

Answer: **3** miles east and **4** miles north of the tree

2003 National Performance Results



Note:

- These results are for public and nonpublic school students.

- Percentages may not add to 100 due to rounding.

Mathematical Content Area: *Algebra and functions*
Mathematical Ability: *Problem solving*

Mathematical Content Area

Algebra and functions

This question measures algebra and functions. This content area extends from work with simple patterns, to basic algebra concepts, to sophisticated analysis. Students are expected to use algebraic notation and thinking in meaningful contexts to solve mathematical and real-world problems, addressing an increasing understanding of the use of functions. Other topics assessed include using open sentences and equations as representational tools and using the notion of equivalent representations to transform and solve number sentences and equations of increasing complexity.

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.

	Description	Grade	Type	Difficulty
1	Locate position on grid	8th	Short Constructed Response	Medium