



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

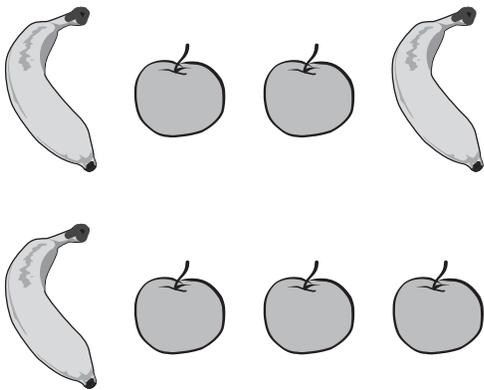
**Released Items
Support Materials
2006**

**Grade 4
Mathematics**

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

N&O 3.1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 999 through equivalency, composition, decomposition, or place value **using models, explanations, or other representations**; and positive **fractional numbers** (benchmark fractions: $\frac{a}{2}$, $\frac{a}{3}$, $\frac{a}{4}$, $\frac{a}{6}$, or $\frac{a}{8}$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area and set models where the number of parts in the whole is equal to the denominator; and **decimals** (within a context of money) as a part of 100 **using models, explanations, or other representations**.

1 Look at this set of fruit.



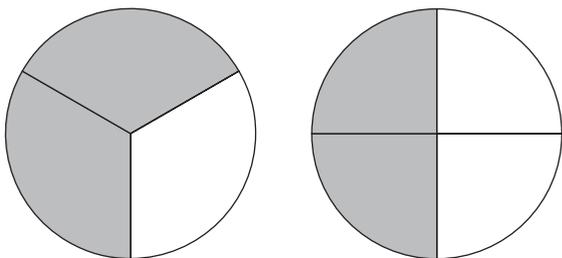
What fraction of the set of fruit is apples?

- A. $\frac{3}{8}$
- B. $\frac{3}{5}$
- C. $\frac{5}{8}$
- D. $\frac{5}{3}$

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

N&O 3.2 Demonstrates understanding of the relative magnitude of numbers from 0 to 999 by ordering whole numbers; by comparing whole numbers to benchmark whole numbers (100, 250, 500, or 750); or by comparing whole numbers to each other; and comparing or identifying equivalent positive fractional numbers ($a/2$, $a/3$, $a/4$ where a is a whole number greater than 0 and less than or equal to the denominator) using models, number lines, or explanations.

2 Look at these circles.



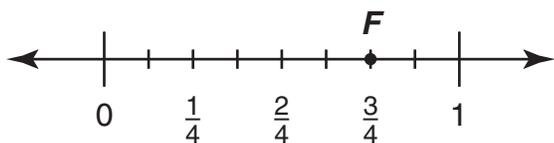
Which statement is true?

- A. $\frac{2}{3}$ is less than $\frac{2}{4}$
- B. $\frac{2}{3}$ is equal to $\frac{2}{4}$
- C. $\frac{2}{3}$ is greater than $\frac{2}{4}$

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

N&O 3.2 Demonstrates understanding of the relative magnitude of numbers from 0 to 999 by ordering whole numbers; by comparing whole numbers to benchmark whole numbers (100, 250, 500, or 750); or by comparing whole numbers to each other; and comparing or identifying equivalent positive fractional numbers ($a/2$, $a/3$, $a/4$ where a is a whole number greater than 0 and less than or equal to the denominator) using models, number lines, or explanations.

3 Look at this number line.



What fraction is equivalent to the fraction at point F on the number line?

- A. $\frac{3}{8}$
- B. $\frac{2}{3}$
- C. $\frac{6}{8}$
- D. $\frac{6}{4}$

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

N&O 3.3 Demonstrates conceptual understanding of mathematical operations by describing or illustrating the inverse relationship between addition and subtraction of whole numbers; and the relationship between repeated addition and multiplication using models, number lines, or explanations.



4 Jan solved this problem.

$$\begin{array}{r} 346 \\ + 251 \\ \hline 597 \end{array}$$

Which number sentence could Jan use to prove her answer is correct?

- A. $597 + 346 = \square$
- B. $597 - 346 = \square$
- C. $346 - 251 = \square$
- D. $251 + 597 = \square$

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

N&O 3.4 Accurately solves problems involving addition and subtraction with and without regrouping; the concept of multiplication; and addition or subtraction of decimals (in the context of money).



- 5 The chart below shows how many tickets band members have sold to their concert.

	Number of Tickets Sold
Adult	86
Child	51

The band members want to sell 200 total tickets. How many more tickets do the band members need to sell?

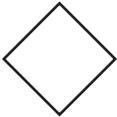
- A. 137
- B. 127
- C. 73
- D. 63

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

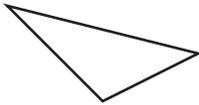
G&M 3.1 Uses properties or attributes of angles (number of angles) or sides (number of sides or length of sides) or composition or decomposition of shapes to identify, describe, or distinguish among triangles, squares, rectangles, rhombi, trapezoids, hexagons, or circles.

- 6 An artist is making a window. He needs a piece of glass in the shape of a triangle. All the sides of the triangle must be the same length. Which piece of glass can he use?

A.



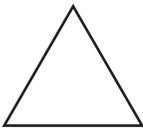
B.



C.



D.

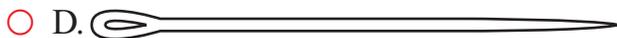
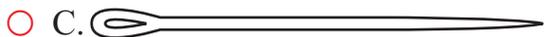
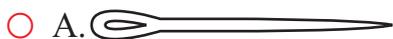


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GRADE 4 MATHEMATICS

G&M 3.7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

7 Use a ruler to answer this question.

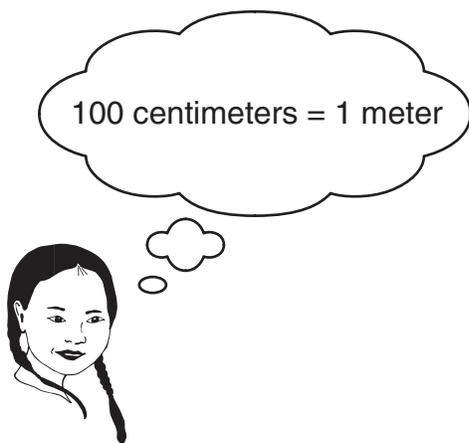
Which needle is exactly 6 centimeters long?



NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

G&M 3.7 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands.

- 8 The height of a tree is 368 centimeters.
Which measurement also shows the height of the tree?



- A. 3 meters 68 centimeters
- B. 36 meters 8 centimeters
- C. 36 meters 80 centimeters
- D. 300 meters 68 centimeters

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

F&A 3.1 Identifies and extends to specific cases a variety of patterns (linear and non-numeric) represented in models, tables, or sequences by extending the pattern to the next one, two, or three elements, or finding missing elements.

9 Look at this pattern.

50, 41, 32, ?, 14, 5

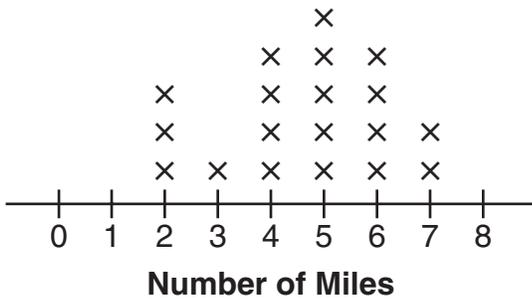
What number is missing in the pattern?

- A. 9
- B. 23
- C. 24
- D. 33

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

DSP 3.2 Analyzes patterns, trends, or distributions in data in a variety of contexts by determining or using most frequent (mode), least frequent, largest, or smallest.

- 10 This line plot shows the number of miles each student in Mr. Miller's class rode his or her bike last week.



Key
× represents 1 student

What was the greatest number of miles any student in the class rode his or her bike last week?

- A. 2
- B. 5
- C. 7
- D. 8

**NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS**

N&O 3.1 Demonstrates conceptual understanding of rational numbers with respect to: whole numbers from 0 to 999 through equivalency, composition, decomposition, or place value **using models, explanations, or other representations**; and **positive fractional numbers** (benchmark fractions: $a/2$, $a/3$, $a/4$, $a/6$, or $a/8$, where a is a whole number greater than 0 and less than or equal to the denominator) as a part to whole relationship in area and set models where the number of parts in the whole is equal to the denominator; and **decimals** (within a context of money) as a part of 100 **using models, explanations, or other representations**.



11 The chart below describes a number.

Hundreds	Tens	Ones
6	23	5

What is the number?

Scoring Guide

Score	Description
1	Student has correct answer, 835 .
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE A)



11 The chart below describes a number.

Hundreds	Tens	Ones
6	23	5

What is the number?

835

Student's answer is correct.

SCORE POINT 1
(EXAMPLE B)



11 The chart below describes a number.

Hundreds	Tens	Ones
6	23	5

What is the number?

eight hundred
threede five

Student's answer is correct.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE A)



11 The chart below describes a number.

Hundreds	Tens	Ones
6	23	5

What is the number?

628

Student's answer is incorrect.

SCORE POINT 0
(EXAMPLE B)



11 The chart below describes a number.

Hundreds	Tens	Ones
6	23	5

What is the number?

The Number is 6,235.

Student's answer is incorrect.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

G&M 3.1 Uses properties or attributes of angles (number of angles) or sides (number of sides or length of sides) or composition or decomposition of shapes to identify, describe, or distinguish among triangles, squares, rectangles, rhombi, trapezoids, hexagons, or circles.



- 12 Dave read these clues about a shape.
- It has four sides.
 - It has sides that are all different lengths.

Dave guessed the shape is a rhombus. Explain why Dave's guess is correct or incorrect.

Scoring Guide

Score	Description
1	Student has a correct explanation.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Sample Response:

The shape cannot be a rhombus because the sides are all different lengths.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE A)



12 Dave read these clues about a shape.

- It has four sides.
- It has sides that are all different lengths.

Dave guessed the shape is a rhombus. Explain why Dave's guess is correct or incorrect.

It is incorrect because
a rhombus has sides that
are the same lengths.

Student's explanation is correct.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE A)



12 Dave read these clues about a shape.

- It has four sides.
- It has sides that are all different lengths.

Dave guessed the shape is a rhombus. Explain why Dave's guess is correct or incorrect.

Dave is incorrect because rombus has six sides.

Student's explanation is incorrect.

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GRADE 4 MATHEMATICS**

DSP 3.5 For a probability event in which the sample space may or may not contain equally likely outcomes, **determines** the likelihood of the occurrence of an event (using “more likely”, “less likely”, or “equally likely”).



- 13** There are 20 students in Mrs. Harrison’s class. Each student’s name is written on a piece of paper and put in a bag. Mrs. Harrison will pick one piece of paper from the bag.

On the first pick, it is **more likely** that the paper will have a girl’s name. On the chart below, write the number of girls and the number of boys that could be in Mrs. Harrison’s class.

Mrs. Harrison’s Class

Students	Number of Students
Girls	
Boys	
Total	20

Scoring Guide

Score	Description
1	Student completes table to show more girls than boys and a total of 20 students.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

**NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS**

Sample Responses:

11 girls, 9 boys

12 girls, 8 boys

13 girls, 7 boys

14 girls, 6 boys

15 girls, 5 boys

16 girls, 4 boys

17 girls, 3 boys

18 girls, 2 boys

19 girls, 1 boy

20 girls, 0 boys

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE A)



- 13 There are 20 students in Mrs. Harrison's class. Each student's name is written on a piece of paper and put in a bag. Mrs. Harrison will pick one piece of paper from the bag.

On the first pick, it is **more likely** that the paper will have a girl's name. On the chart below, write the number of girls and the number of boys that could be in Mrs. Harrison's class.

Mrs. Harrison's Class

Students	Number of Students
Girls	19
Boys	1
Total	20

Student has a correct answer.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE A)



- 13 There are 20 students in Mrs. Harrison's class. Each student's name is written on a piece of paper and put in a bag. Mrs. Harrison will pick one piece of paper from the bag.

On the first pick, it is **more likely** that the paper will have a girl's name. On the chart below, write the number of girls and the number of boys that could be in Mrs. Harrison's class.

Mrs. Harrison's Class

Students	Number of Students
Girls	10
Boys	10
Total	20

Student's answer is incorrect.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE B)



- 13 There are 20 students in Mrs. Harrison's class. Each student's name is written on a piece of paper and put in a bag. Mrs. Harrison will pick one piece of paper from the bag.

On the first pick, it is **more likely** that the paper will have a girl's name. On the chart below, write the number of girls and the number of boys that could be in Mrs. Harrison's class.

Mrs. Harrison's Class

Students	Number of Students
Girls	11
Boys	4
Total	20

Student's answer is incorrect.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE C)



- 13 There are 20 students in Mrs. Harrison's class. Each student's name is written on a piece of paper and put in a bag. Mrs. Harrison will pick one piece of paper from the bag.

On the first pick, it is **more likely** that the paper will have a girl's name. On the chart below, write the number of girls and the number of boys that could be in Mrs. Harrison's class.

Mrs. Harrison's Class

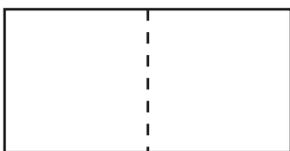
Students	Number of Students
Girls	9
Boys	11
Total	20

Student's answer is incorrect.

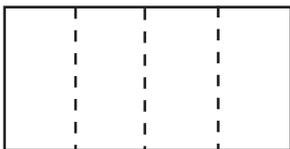
NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

N&O 3.2 Demonstrates understanding of the relative magnitude of numbers from 0 to 999 by ordering whole numbers; by comparing whole numbers to benchmark whole numbers (100, 250, 500, or 750); or by comparing whole numbers to each other; and comparing or identifying equivalent positive fractional numbers ($a/2$, $a/3$, $a/4$ where a is a whole number greater than 0 and less than or equal to the denominator) using models, number lines, or explanations.

- 14 a. Shade $\frac{1}{2}$ of this rectangle.



- b. Shade $\frac{2}{4}$ of this rectangle.



- c. Circle the statement that is **true**.

$\frac{1}{2}$ is greater than $\frac{2}{4}$

$\frac{1}{2}$ is less than $\frac{2}{4}$

$\frac{1}{2}$ is equal to $\frac{2}{4}$

**NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS**

Scoring Guide

Score	Description
2	Student correctly shades both rectangles and makes a correct comparison in part c.
1	Student correctly shades both rectangles. OR Student makes a correct comparison in part c.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.

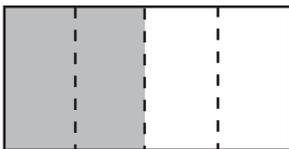
Blank	No response
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Sample Responses:

Part a:



Part b:

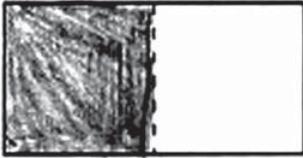


Part c: $\frac{1}{2}$ is equal to $\frac{2}{4}$

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 2
(EXAMPLE A)

- 14 a. Shade $\frac{1}{2}$ of this rectangle.



- b. Shade $\frac{2}{4}$ of this rectangle.



Student correctly shades both rectangles. (1 point)

- c. Circle the statement that is **true**.

$\frac{1}{2}$ is greater than $\frac{2}{4}$

$\frac{1}{2}$ is less than $\frac{2}{4}$

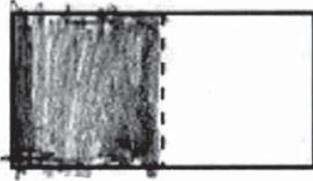
$\frac{1}{2}$ is equal to $\frac{2}{4}$

Student's answer is correct.
(1 point)

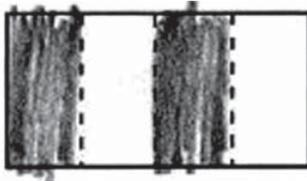
NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 2
(EXAMPLE B)

- 14 a. Shade $\frac{1}{2}$ of this rectangle.



- b. Shade $\frac{2}{4}$ of this rectangle.



Student correctly shades both rectangles. (1 point)

- c. Circle the statement that is **true**.

$\frac{1}{2}$ is greater than $\frac{2}{4}$

$\frac{1}{2}$ is less than $\frac{2}{4}$

$\frac{1}{2}$ is equal to $\frac{2}{4}$

Student's answer is correct.
(1 point)

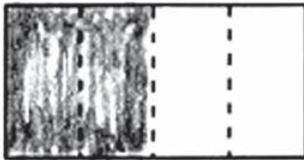
NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE A)

- 14 a. Shade $\frac{1}{2}$ of this rectangle.



- b. Shade $\frac{2}{4}$ of this rectangle.



Student correctly shades both rectangles. (1 point)

- c. Circle the statement that is **true**.

$\frac{1}{2}$ is greater than $\frac{2}{4}$

$\frac{1}{2}$ is less than $\frac{2}{4}$

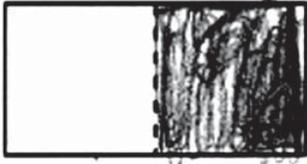
$\frac{1}{2}$ is equal to $\frac{2}{4}$

Student's answer is incorrect.
(0 points)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE B)

- 14 a. Shade $\frac{1}{2}$ of this rectangle.



- b. Shade $\frac{2}{4}$ of this rectangle.



Student does not correctly shade both rectangles.
(0 points)

- c. Circle the statement that is **true**.

$\frac{1}{2}$ is greater than $\frac{2}{4}$

$\frac{1}{2}$ is less than $\frac{2}{4}$

$\frac{1}{2}$ is equal to $\frac{2}{4}$

Student's answer is correct.
(1 point)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE A)

- 14 a. Shade $\frac{1}{2}$ of this rectangle.



- b. Shade $\frac{2}{4}$ of this rectangle.



Student does not correctly shade either rectangle.
(0 points)

- c. Circle the statement that is **true**.

$\frac{1}{2}$ is greater than $\frac{2}{4}$

$\frac{1}{2}$ is less than $\frac{2}{4}$

$\frac{1}{2}$ is equal to $\frac{2}{4}$

Student's answer is incorrect.
(0 points)

**NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS**

F&A 3.4 Demonstrates conceptual understanding of equality by showing equivalence between two expressions using models or different representations of the expressions; or by finding the value that will make an open sentence true (e.g., $2 + \square = 7$). (limited to one operation and limited to use addition, subtraction, or multiplication)



- 15 Look at this number sentence.

$$2 \times 4 = \square \times 8$$

What number makes the number sentence true? Show your work or explain how you know.

Scoring Guide

Score	Description
2	Student writes the correct number, 1 , and explains how he/she determined the answer.
1	Student writes the correct number. OR Student has a correct strategy with a minor computation error.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Sample Response:

Student explains that each side must equal 8.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 2
(EXAMPLE A)



- 15 Look at this number sentence.

$$2 \times 4 = \square \times 8$$

What number makes the number sentence true? Show your work or explain how you know.

$$2 \times 4 = 8 \quad 8 \times 1 = 8$$

Student's answer is correct and work is shown. (2 points)

SCORE POINT 1
(EXAMPLE A)



- 15 Look at this number sentence.

$$2 \times 4 = \square \times 8$$

Student's answer is correct with no work or explanation. (1 point)

What number makes the number sentence true? Show your work or explain how you know.

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE A)



- 15 Look at this number sentence.

$$2 \times 4 = \square \times 8$$

What number makes the number sentence true? Show your work or explain how you know.

$$2 \times 4 = 6 \times 8$$

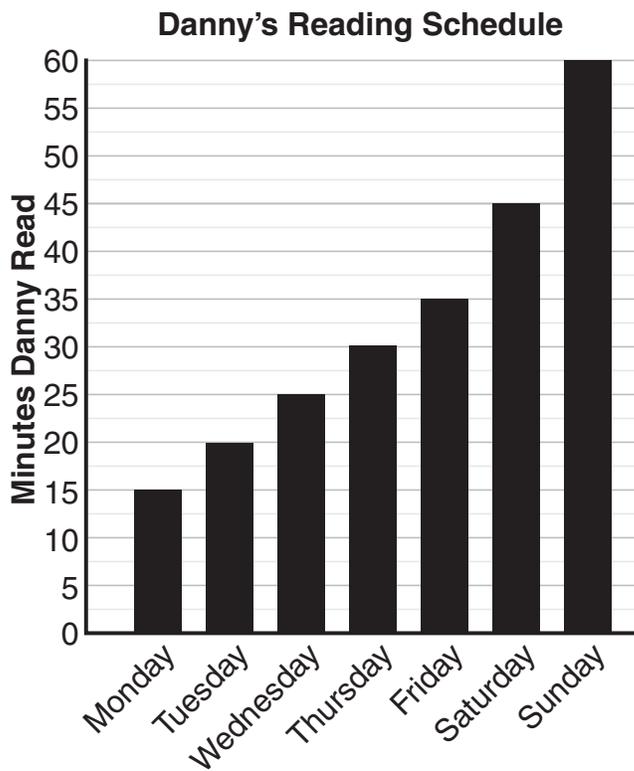
Student's answer is incorrect.
(0 points)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

DSP 3.1 Interprets a given representation (line plots, tally charts, tables, or bar graphs) to answer questions related to the data, to analyze the data to formulate conclusions, or to make predictions.

(IMPORTANT: Analyzes data consistent with concepts and skills in *M(DSP)–3–2.*)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

- b. Use the bar graph to write a question for which the answer is 40 minutes.

**NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS**

Scoring Guide

Score	Description
2	Student gives the correct answer, 5 (minutes) , for part a and writes a correct question or statement for part b.
1	Student gives the correct answer for part a. OR Student writes a correct question or statement for part b.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response

Sample Responses:

Part b: How many more minutes did Danny read on Sunday than Tuesday?

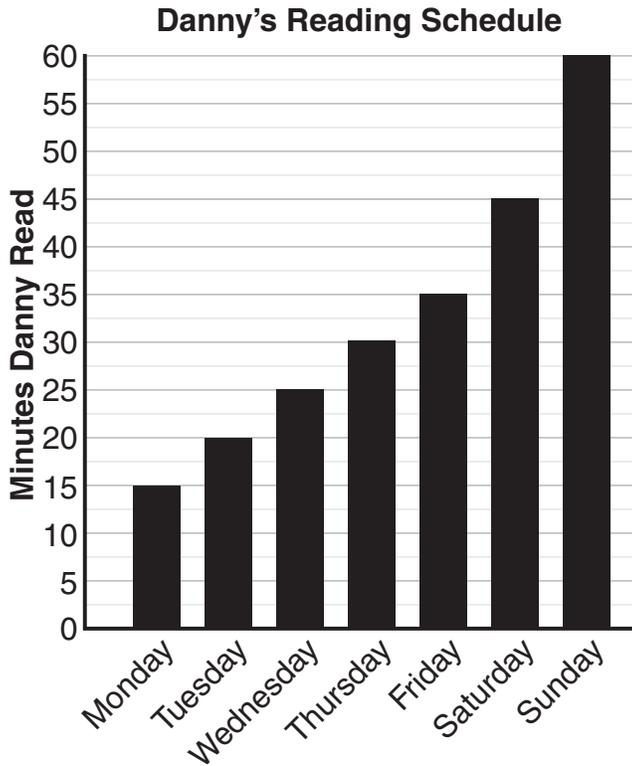
OR

How many minutes did Danny read on Monday and Wednesday combined?

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 2
(EXAMPLE A)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

Danny read 5 minutes more.

a) Student's answer is correct.
(1 point)

- b. Use the bar graph to write a question for which the answer is 40 minutes.

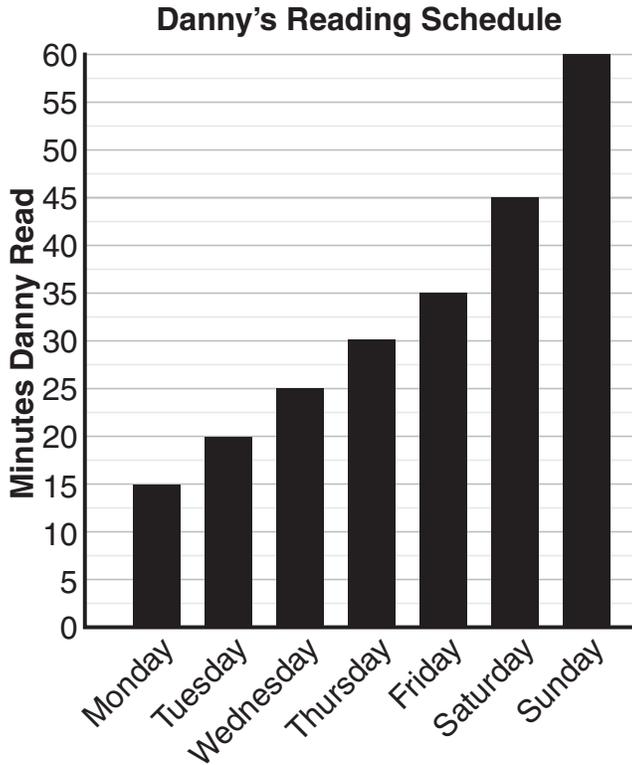
How many more minutes did
Danny read on Sunday than Tuesday?

b) Student writes an appropriate
question. (1 point)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 2
(EXAMPLE B)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

Danny read five more minutes on Friday than Thursday.

a) Student's answer is correct. (1 point)

- b. Use the bar graph to write a question for which the answer is 40 minutes.

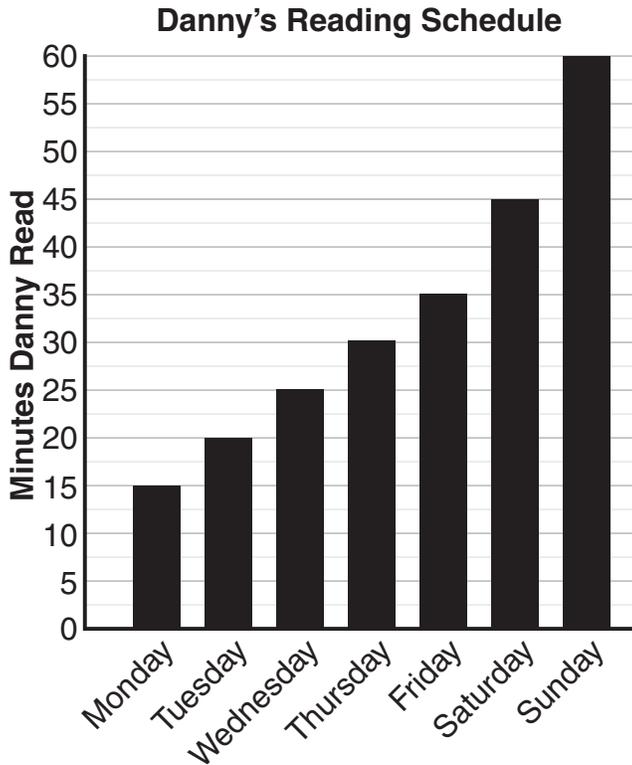
If on Saturday, Danny read five minutes less then how many minutes would he have read for?

b) Student writes an appropriate question. (1 point)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE A)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

5 more minutes

a) Student's answer is correct. (1 point)

- b. Use the bar graph to write a question for which the answer is 40 minutes.

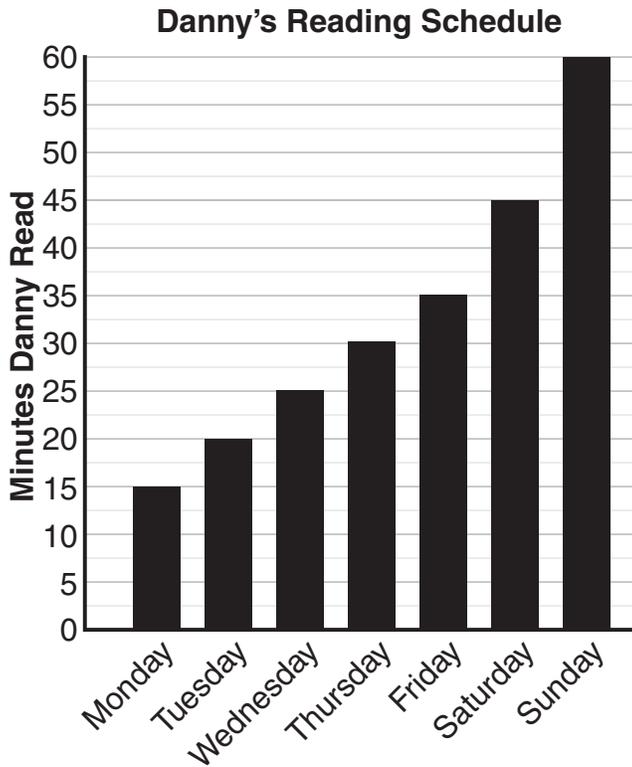
how many more minutes did he read on Sunday than Monday " answer is 40 "

b) Student's question cannot be answered with "40 minutes." (0 points)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 1
(EXAMPLE B)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

Danny read five more mins. on Friday than he read on Thursday

a) Student's answer is correct. (1 point)

- b. Use the bar graph to write a question for which the answer is 40 minutes.

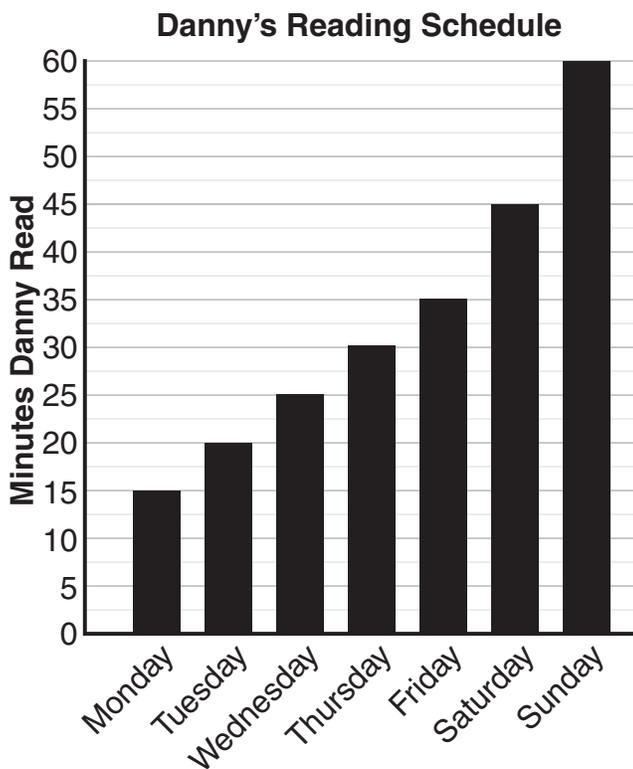
How many more minutes would Danny have to read on Monday to get to 40 minutes.

b) Student's question cannot be answered with "40 minutes." (0 points)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE A)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

Danny read 10 more minutes on Friday than she did on Thursday.

a) Student's answer is incorrect. (0 points)

- b. Use the bar graph to write a question for which the answer is 40 minutes.

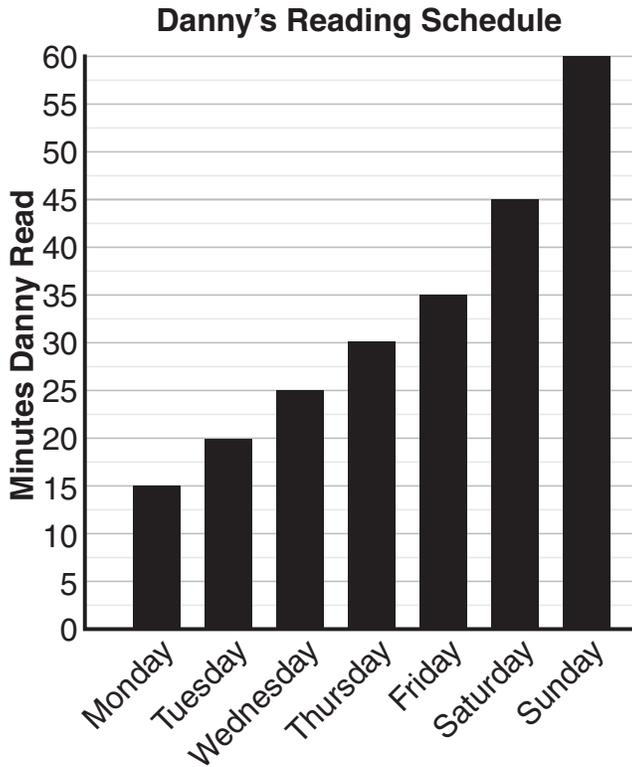
One what day does Danny read for 40 minutes.

b) Student's question cannot be answered with "40 minutes." (0 points)

NECAP 2006 RELEASED ITEMS
GRADE 4 MATHEMATICS

SCORE POINT 0
(EXAMPLE B)

- 16 This bar graph shows the number of minutes Danny read each day for a week.



- a. How many more minutes did Danny read on Friday than he read on Thursday?

1 more minute

a) Student's answer is incorrect. (0 points)

- b. Use the bar graph to write a question for which the answer is 40 minutes.

there is no question

b) Student's answer is incorrect. (0 points)