



**NEW ENGLAND
COMMON ASSESSMENT PROGRAM**

Practice Test Resource Material

Grade 8

Mathematics

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Grade 8 Mathematics

Session 1—Non-Calculator

Position Number	Item Type	Correct Answer	Content Strand	GLE Stem Number	Depth-of-Knowledge Level
1	Multiple-choice (1 pt.)	C	Geometry & Measurement	1	2
2	Multiple-choice (1 pt.)	D	Functions & Algebra	1	2
3	Multiple-choice (1 pt.)	C	Functions & Algebra	2	1
4	Multiple-choice (1 pt.)	B	Data, Statistics & Probability	5	2
5	Short-answer (1 pt.)	N/A	Functions & Algebra	3	2
6	Short-answer (2 pts.)	N/A	Numbers & Operations	2	2
7	Short-answer (2 pts.)	N/A	Numbers & Operations	4	2

Session 2—Calculator Active

Position Number	Item Type	Correct Answer	Content Strand	GLE Stem Number	Depth-of-Knowledge Level
8	Multiple-choice (1 pt.)	D	Numbers & Operations	2	2
9	Multiple-choice (1 pt.)	B	Numbers & Operations	1	2
10	Multiple-choice (1 pt.)	C	Functions & Algebra	4	1
11	Multiple-choice (1 pt.)	A	Geometry & Measurement	5	2
12	Short-answer (1 pt.)	N/A	Data, Statistics & Probability	2	3
13	Constructed-response (4 pts.)	N/A	Functions & Algebra	1	2

NECAP Practice Test

Grade 8

Mathematics

Non-Calculator Short-Answer Item (2 points)

6 Anna and Barb practiced serving a volleyball over the net.

- Anna served the ball over the net 18 out of 25 times.
- Barb served the ball over the net 75% of the time.

Use fractions, decimals, or percents to show or explain which girl had the greater rate of success in serving the ball over the net.

Scoring Guide

Score	Description
2	Student shows or explains that Barb was more successful using fractions, decimals, or percents.
1	Student shows some correct strategy by correctly converting a percent to a fraction or decimal or a fraction to a percent or decimal.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Sample Responses:

Answers will vary; some explanations follow.

Barb had a higher rate of success because

$$\frac{18}{25} = 72\% \text{ and } 75\% > 72\%.$$

OR

$$75\% = \frac{75}{100} \text{ and } \frac{18}{25} = \frac{72}{100} \text{ and } \frac{75}{100} > \frac{72}{100}.$$

OR

$$75\% = 0.75 \text{ and } \frac{18}{25} = 0.72 \text{ and } 0.75 > 0.72.$$

* All students were provided the same amount of space in which to write their answers. For the purposes of this document, extraneous white space was removed from each student work sample to save space.

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Grade 8
Mathematics

Sample 2-Point Response

Barb

75%

Barb had greater success because 75% of her serves went over the net.

Anna

$$\frac{18}{25} \times 4 = \frac{72}{100}$$

$$\frac{318}{4} = 72$$

72%

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Grade 8
Mathematics**

Sample 1-Point Response

Barb Served a little bit better than Anna because anna got 72% over and Barb got 75% over the net.

NECAP Practice Test

Grade 8

Mathematics

Calculator-Active Short-Answer Item (2 points)

- 7 Sean and Barry are participating in a 30-mile bike race. Sean averages 20 miles per hour and Barry averages 15 miles per hour. How many miles will Barry be from the finish line when Sean finishes the race? Show your work or explain how you know.

Scoring Guide

Score	Description
2	Correct answer, 7.5 (miles), with explanation or work.
1	Correct answer. OR Explanation or work shows some correct strategy for solving the problem.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Sample Response:

Sean will take $30 \div 20 = 1.5$ hours to complete the race. After 1.5 hours, Barry will have traveled $1.5 \times 15 = 22.5$ miles. So Barry will be $30 - 22.5 = 7.5$ miles from the finish.

OR

Sean will take $30 \div 20 = 1.5$ hours to complete the race. Barry will take $30 \div 15 = 2$ hours to complete the race. $2 \text{ hours} - 1.5 \text{ hours} = 0.5 \text{ hours}$. $15 \text{ mph} \times 0.5 = 7.5 \text{ miles}$ (or $15 \div 2 = 7.5 \text{ miles}$).

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NECAP Practice Test Grade 8 Mathematics

Sample 2-Point Response

30 mi race
 $r \cdot t = d$

Sean	20m	+	t
Barry	15m	+	t-5

$D = rt$ $\frac{20}{15} = \frac{2}{1.5}$

$$\begin{array}{r} 20t = 15t - 5 \\ -5 \qquad \qquad -5 \\ \hline 15t = 15t \end{array}$$

15.0	1 1/2 hrs. = 30
- 7.5	

22.5	2 hrs. = 30
- 30.0	

- 7.5	

07.5	

at 1 1/2 hrs, Barry = 7.5m from finish line

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Grade 8
Mathematics

Sample 1-Point Response A

30 miles
S=20
B=15

S=30m
3=

7.5
 $2 \overline{)15}$
14
10

$\begin{array}{r} 15.0 \\ + 7.5 \\ \hline 22.5 \end{array}$

22.5m

$\begin{array}{r} 29.0 \\ - 11.5 \\ \hline 17.5 \end{array}$

17.5m

Sample 1-Point Response B

Sean will finish in $1\frac{1}{2}$ hours
Barry will finish in 2 hours
Barry will finish 7.5 miles
after Sean.

NECAP Practice Test

Grade 8

Mathematics

Calculator-Active Constructed-Response Item (4 points)

- 13 A scientist recorded the growth of a certain bacteria in the table below.

Time Elapsed (in minutes)	Number of Bacteria
0	26
15	52
30	104
45	208
60	416

- What is the number of bacteria when the time elapsed is 75 minutes?
- Explain the relationship between the time elapsed and the number of bacteria.
- What is the number of bacteria when the time elapsed is two hours? Show your work or explain how you know.

NECAP Practice Test

Grade 8

Mathematics

Calculator-Active Constructed-Response Item (4 points)

Scoring Guide

Score	Description
4	4 points.
3	3 points.
2	2 points.
1	1 point. OR Student shows minimal understanding of specific cases and generalization of patterns.
0	Response is incorrect or contains some correct work that is irrelevant to the skill or concept being measured.
Blank	No response.

Training Notes:

Part a: 1 point for correct answer (832)

Part b: 1 point for correct explanation

Part c: 2 points for correct answer (6656) and explanation

OR

1 point for correct answer only

or

for correct strategy or explanation

Sample Response:

Part a: $416 \times 2 = 832$

Part b: Sample explanation: The number of bacteria doubles every 15 minutes.

Part c: $416 \times 2^4 = 6656$; there will be 6656 bacteria in two hours. Student may show additional entries (832, 1664, 3328, 6656) or may multiply 416 by 16 or 416 by 2 four times.

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NECAP Practice Test
Grade 8
Mathematics

Sample 4-Point Response

a. There will be 832 bacteria

b. Every 15 minutes, the number of bacteria doubles

c.

75	832
90	1664
105	3328
120	6656

There will be 6656 bacteria

NECAP Practice Test
Grade 8
Mathematics

Sample 3-Point Response A

A) 75min. = 832 Bacteria

B) for each min. the Bacteria multiplied 2 times.

C)

minutes	Bacteria
60	416
75	832
90	1664
105	3328
120	6656

**NECAP Practice Test
Grade 8
Mathematics**

Sample 3-Point Response B

A. 832

B. The number of bacteria doubles in 15 minutes

C. 6656

NECAP Practice Test
Grade 8
Mathematics

Sample 2-Point Response

a)
$$\begin{array}{r} 60 \overline{) 416} \\ \underline{75} \\ 832 \end{array}$$

There will be 8.32
bacteria in 75 min.

b) Every 15 minutes of time elapsed, the number of bacteria doubles, so at 15 min. the # of bacteria is the number of bacteria at the beginning $\cdot 2$.

c) $26 \div 15 = 1.\overline{73}$ so every minute about 1.73 bacteria grow, so at 2 minutes you would have $(26 + (2 \cdot 1.73)) = 29.46$ bacteria will be there

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Grade 8
Mathematics

Sample 1-Point Response

A

0	26
15	52
30	104
45	208
60	416
75	832

Byou have to times by 2.

C In 2 hours ther will b 1,73,056
bacteria

NECAP Practice Test
Grade 8
Mathematics

Sample 0-Point Response

There will be 3328 because
it goes up double the number
it was before on the car +
So at 60 it was 416
a 65 you would do $416 + 416 =$
 832 for 70 you do $832 + 832 =$
 1664 for 75 you do $1664 +$
 $1664 = 3328$ for the number
of bacter a at 75 minutes