



**NEW ENGLAND  
COMMON ASSESSMENT PROGRAM**

**Released Items  
2011**

**Grade 8  
Mathematics**

# Mathematics



Items with this symbol were selected from Session One—no calculators or other mathematics tools allowed.



1 A bacteria sample is placed under a microscope. The length of one bacterium is  $4.6 \times 10^{-4}$  millimeters. What is this measurement written in standard form?

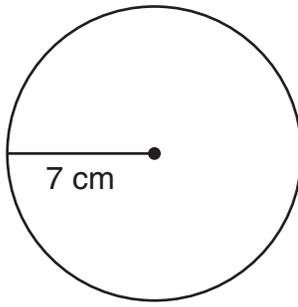
- A. 0.000046 mm
- B. 0.000460 mm
- C. 0.460000 mm
- D. 0.461040 mm



2 Jim traveled 10 kilometers in 20 minutes. At that rate, how far would he travel in one hour?

- A. 10 kilometers
- B. 20 kilometers
- C. 30 kilometers
- D. 60 kilometers

3 Look at this circle.



What is the approximate area of the circle?

- A. 77 square centimeters
- B. 154 square centimeters
- C. 308 square centimeters
- D. 615 square centimeters



4 Jason is planning a checkers tournament. This table shows how many games will be played for different numbers of players.

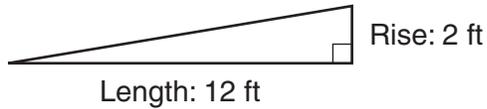
**Checkers Tournament**

Number of Players	Number of Games
2	1
3	3
4	6
5	10
6	15

Based on the pattern in the table, how many games will be played if there are 9 players in the tournament?

- A. 21
- B. 25
- C. 36
- D. 38

- 5 The diagram below shows the steepness of a ramp.

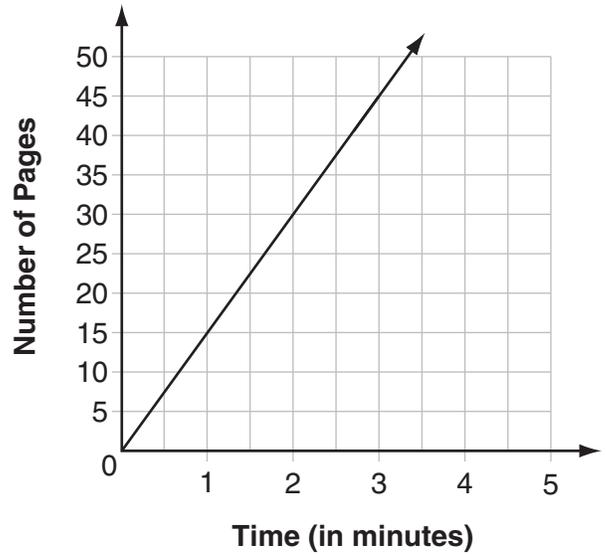


Which statement describes the ramp's steepness?

- A. The ramp rises 1 foot for every 6 feet of length.
- B. The ramp rises 6 feet for every 1 foot of length.
- C. The ramp rises 1 foot for every 10 feet of length.
- D. The ramp rises 10 feet for every 1 foot of length.



- 6 The graph below shows the number of pages a copy machine prints over time.



At what rate does the copy machine print the pages?

- A. 1 page every 15 minutes
- B. 3 pages every 2 minutes
- C. 6 pages every  $\frac{1}{2}$  minute
- D. 15 pages every 1 minute

- 7 The price of a sweater is  $s$  dollars. The price of a pair of boots is  $b$  dollars. The price of the sweater is \$10 less than 2 times the price of the pair of boots. Which equation relates the price of the sweater to the price of the pair of boots?

- A.  $s = 10 - 2b$
- B.  $s = 2b - 10$
- C.  $s = (10 - 2)b$
- D.  $s = 2(b - 10)$



- 8 Which expression is **not** equivalent to  $20(n - 5)$ ?

- A.  $20n - 5$
- B.  $20n - 100$
- C.  $(n - 5) \times 20$
- D.  $20 \times n - 20 \times 5$

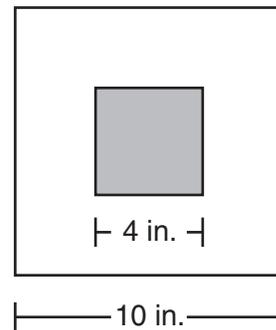
- 9 This table shows the distance Deana rode her bike on each of six days.

Day	1	2	3	4	5	6	7
Miles	3	6	4	7	8	10	

How many miles must Deana ride on Day 7 to have a mean distance of 6 miles per day for these seven days?

- A. 2 miles
- B. 4 miles
- C. 6 miles
- D. 7 miles

- 10 These squares appear on a computer screen.



The computer will randomly choose a point within the 10-inch square. What is the probability that the point will be within the **shaded** square?

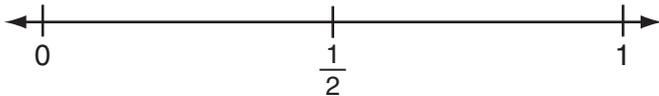
- A. 0.16
- B. 0.25
- C. 0.40
- D. 0.50



11 Look at these numbers.

$$\frac{3}{4} \quad 35\% \quad 0.3$$

Copy this number line into your Student Answer Booklet.



Place the numbers in the correct order on the number line.



12 Solve this equation.

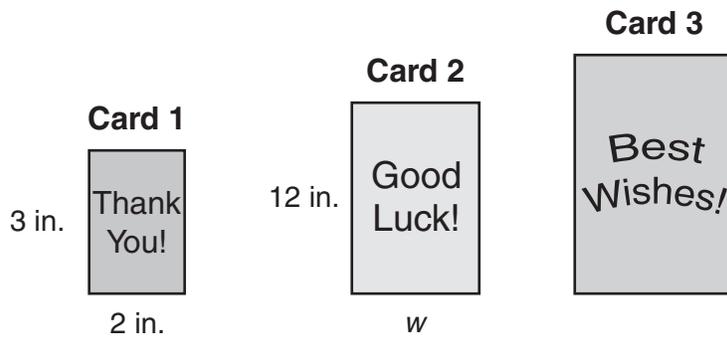
$$\frac{y}{4} - 4 = 5$$

- 13 This chart shows the percent of students from each of two schools who play in the school band.

School	Percent of Students in the Band
Lakeview	5%
Mountainside	20%

- a. A total of 40 students are in the Lakeview band. How many students attend Lakeview School?
- b. Explain how it is possible for the band at Mountainside to have fewer members than the band at Lakeview.
- 14 The perimeter of a square is 40 inches. The length of each side of the square is  $4x - 2$  inches. What is the value of  $x$ ? Show or explain how you found your answer.

- 15 The shapes of these three greeting cards are similar rectangles. The cards are not drawn to scale.



- What is the length, in inches, of the side labeled  $w$  on Card 2? Show your work or explain how you know.
- The area of Card 2 is how many times as great as the area of Card 1? Show your work or explain how you know.
- The sides of Card 3 are  $n$  times as long as the sides of Card 1. The area of Card 3 is how many times as great as the area of Card 1? Show your work or explain how you know.