



**NEW ENGLAND  
COMMON ASSESSMENT PROGRAM**

**Released Items  
2006**

**Grade 8  
Mathematics**

# Mathematics



Item selected from Session One—no calculators or other mathematics tools allowed.



1 Which mixed number is equivalent to 1.375?

- A.  $1\frac{1}{3}$
- B.  $1\frac{3}{8}$
- C.  $1\frac{2}{5}$
- D.  $1\frac{3}{4}$

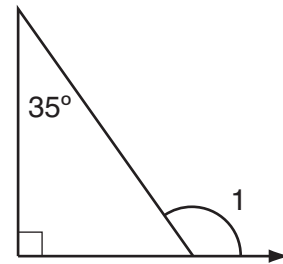


2 Katie makes a necklace using the pattern of 2 red beads followed by 3 blue beads. She uses a total of 75 beads for the necklace. How many red beads does Katie use?

- A. 25
- B. 30
- C. 45
- D. 50



3 Look at this diagram.

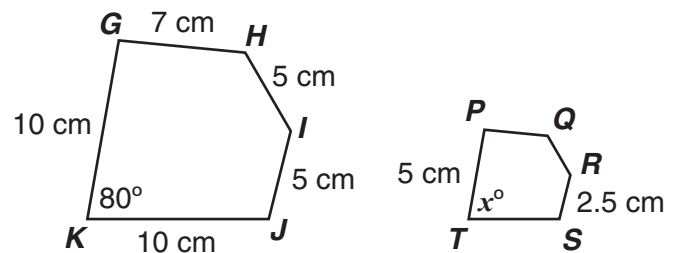


What is the measure of  $\angle 1$ ?

- A.  $55^\circ$
- B.  $115^\circ$
- C.  $125^\circ$
- D.  $135^\circ$



4 Pentagon  $GHIJK \sim$  pentagon  $PQRST$ .



What is the value of  $x$ ?

- A. 40
- B. 80
- C. 100
- D. 160

- 5 Julia's phone calling plan is based on a set price of \$24.00 a month for local calls and \$0.04 a minute for long distance calls. If Julia makes  $m$  minutes of long distance calls in a month, which expression represents her cost, in dollars, for that month?

- A.  $m(24.00 - 0.04)$
- B.  $m(24.00 + 0.04)$
- C.  $24.00m + 0.04$
- D.  $24.00 + 0.04m$

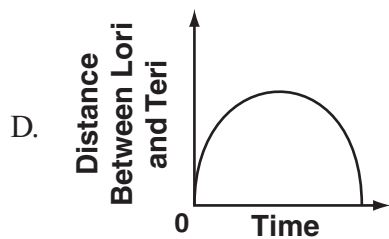
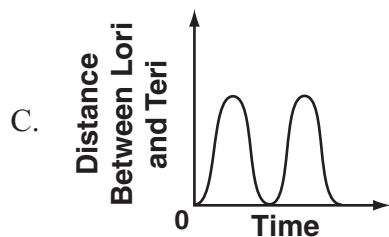
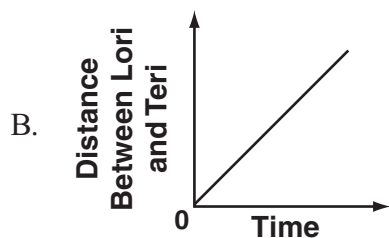
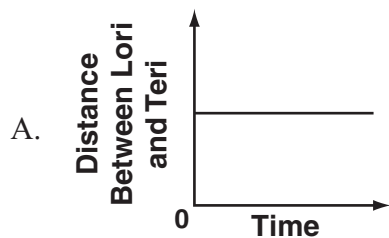
- 6 Dan is filling a swimming pool with water at a constant rate. The table below shows the depth of the water over time.

Time Filling (in hours)	Depth of Water (in feet)
1	$1\frac{1}{2}$
2	2
3	$2\frac{1}{2}$
4	3

How can Dan calculate the depth of the water after 6 hours of filling?

- A. Multiply  $\frac{1}{2}$  by 6 and add 1.
- B. Multiply  $1\frac{1}{2}$  by 6.
- C. Multiply  $2\frac{1}{2}$  by 2.
- D. Multiply 1 by 6 and add  $\frac{1}{2}$ .

- 7 Lori is riding her bicycle around a circular track. Teri is standing at the center of the track. Which graph shows how the distance between Lori and Teri relates to the time since Lori started riding?



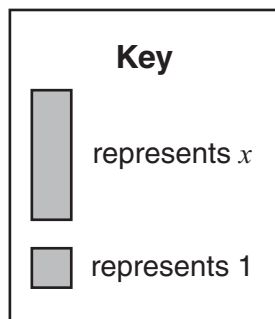
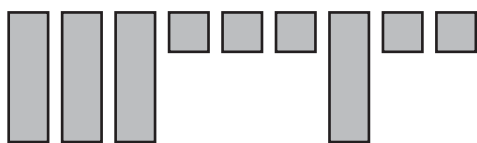
- 8 Kate uses the formula below to calculate the volume of a sphere with radius  $r$ .

$$V = \frac{4}{3}\pi r^3$$

What is the approximate volume of a sphere with a radius of 3 inches? ( $\pi$  is approximately 3.14)

- A. 113 cubic inches  
B. 339 cubic inches  
C. 1017 cubic inches  
D. 3052 cubic inches

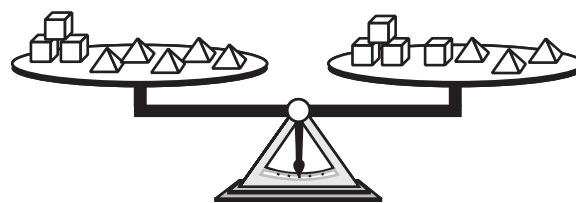
- 9 Look at this model.













Which expression does the model show?

- A.  $9x$
- B.  $4x + 5$
- C.  $x^4 + 5x$
- D.  $x^4 + 5$

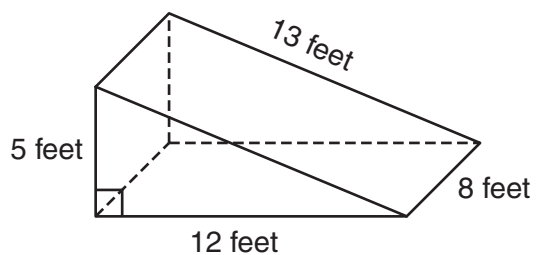
- 10 The scale shown below is balanced.



Which statement is true?

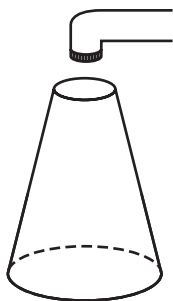
- A.  weighs the same as 
- B.  weighs the same as   

- C.  weighs the same as 
- D.  weighs the same as   


- 11 The ramp shown below is a triangular prism.

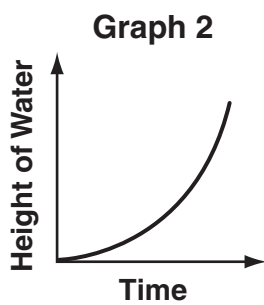
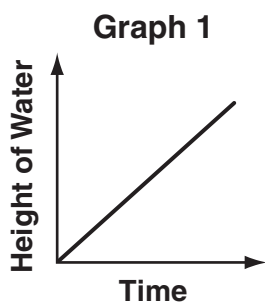


What is the volume of the ramp in cubic feet?

- 12 Look at this container.



Water flows into this container at a constant rate. Look at Graph 1 and Graph 2 below.



Explain how you know which graph best represents the height of the water over time.



- 13 Larry buys a sweater that has a regular price of \$40. The sweater is on sale for 30% off. What is the sale price of the sweater? Show your work or explain how you know.
- 14 Triangle  $ABC$  has a base of 5 inches and a height of 4 inches. Triangle  $ABC$  is similar to triangle  $DEF$ . Triangle  $DEF$  has dimensions that are 3 times as great as those of triangle  $ABC$ . **How many times as great** is the area of triangle  $DEF$  compared to the area of triangle  $ABC$ ? Show your work or explain how you know.
- 15 When a knight sets out on a quest, he must choose a road to follow.
- 3 out of every 5 knights take the High Road. The others take the Low Road.
  - Of the knights taking the High Road, 80% are successful in their quest. The others fail.
  - Of the knights taking the Low Road, 40% are successful in their quest. The others fail.
- a. A knight is chosen at random. What is the probability he will take the Low Road? Show your work or explain how you know.
- b. A knight is chosen at random. What is the probability he will take the High Road and succeed in his quest? Show your work or explain how you know.

## Grade 8 Mathematics Released Item Information

Released Item Number	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
No Tools Allowed	✓	✓	✓	✓									✓		
Content Strand <sup>1</sup>	NO	NO	GM	GM	FA	FA	FA	FA	FA	FA	GM	FA	NO	GM	DP
GLE Code	7-2	7-4	7-2	7-5	7-1	7-1	7-2	7-3	7-3	7-4	7-6	7-2	7-4	7-5	7-5
Depth of Knowledge Code	1	2	2	1	2	2	2	1	1	2	2	2	2	2	3
Item Type <sup>2</sup>	MC	MC	MC	MC	MC	MC	MC	MC	MC	MC	SA	SA	SA	SA	CR
Answer Key	B	B	C	B	D	A	A	A	B	A					
Total Possible Points	1	1	1	1	1	1	1	1	1	1	1	1	2	2	4

<sup>1</sup>Content Strand: NO = Numbers & Operations, GM = Geometry & Measurement, FA = Functions & Algebra, DP = Data, Statistics, & Probability

<sup>2</sup>Item Type: MC = Multiple Choice, SA = Short Answer, CR = Constructed Response



