VIRGINIA STANDARDS OF LEARNING

Released Test

GRADE 5

MATHEMATICS

2009 Mathematics Standards of Learning

Released Spring 2014

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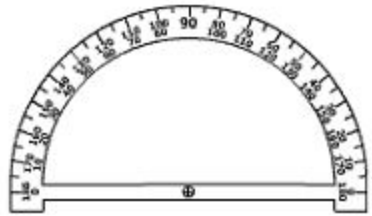
Items 1 through 16 are in the non-calculator section of the test.

Items 17 through 50 are in the calculator section of the test.

SAMPLE A

A measurement tool is shown.



This tool could be used to identify the —

- **A** temperature
- **B** elapsed time
- **C** mass of an object
- **D** measure of an angle

Directions: Type your answer in the box. Use "." for the decimal point.

SAMPLE B

$0.42 \div 2 = \underline{\ ?\ }$

$56.791 + 1.9 = \underline{\quad ? \quad}$

- **A** 58.691
- **B** 57.691
- **C** 56.981
- **D** 56.810

Which decimal is equivalent to $\frac{3}{5}$?

- **A** 0.30
- **B** 0.35
- **C** 0.53
- **D** 0.60

A parking garage has 12 levels. Each level has 86 parking spaces. What is the total number of parking spaces in the garage?

- **A** 98
- **B** 168
- **C** 932
- **D** 1,032

What is the value of this expression?

$$6 + 4(8 - 5)$$

- **A** 18
- **B** 30
- **C** 33
- **D** 72

Which list of numbers is ordered from least to greatest?

$\frac{3}{12}$, $\frac{8}{9}$, 0.75, 0.22

- **A** $\frac{3}{12}$, 0.22, $\frac{8}{9}$, 0.75
- **B** $\frac{8}{9}$, 0.75, $\frac{3}{12}$, 0.22
- **C** 0.22, $\frac{3}{12}$, 0.75, $\frac{8}{9}$
- **D** 0.22, 0.75, $\frac{3}{12}$, $\frac{8}{9}$

Based on the order of operations, which shows the first step in simplifying this expression?

$$16 \div 2 + 6(7 + 4 \times 5)$$

- **A** $8 + 6(7 + 4 \times 5)$
- **B** $16 \div 8(7 + 4 \times 5)$
- **C** $16 \div 2 + 6(11 \times 5)$
- **D** $16 \div 2 + 6(7 + 20)$

Directions: Type your answer in the box. Use the "." for the decimal point.

This table shows the weights of Vincent's three dogs.

Vincent's Dogs

Name	Weight (in kilograms)
Hannah	7.5
Wilson	11.6
Dillon	28.9

What is the difference between the combined weight of Hannah and Dillon and the weight of Wilson?

_____ **kilograms**

Mary Lee has a total of 216 eggs. Using these eggs, she will fill empty egg cartons that each hold 12 eggs. What is the greatest number of egg cartons that Mary Lee can fill completely?

- **A** 18
- **B** 19
- **C** 228
- **D** 2,592

What is the product of 5.06 and 2.1 ?

- **A** 10.526
- **B** 10.626
- **C** 1.518
- **D** 1.508

Directions: Type your answer in the box. Use "." for the decimal point.

$493.57 \div 7 = \underline{\ ?\ }$

The cost for a movie ticket is $5.50. Soft drinks cost $1.25 each. What is the total cost for 13 people to each purchase a movie ticket and a soft drink?

- **A** $16.25
- **B** $19.75
- **C** $72.75
- **D** $87.75

Students are comparing their heights. Jose is $4\frac{1}{6}$ feet tall, Lee is $4\frac{1}{4}$ feet tall, Judi is $4\frac{1}{12}$ feet tall, and Sammy is $4\frac{2}{3}$ feet tall. Which student is the tallest?

- **A** Jose
- **B** Lee
- **C** Judi
- **D** Sammy

Michael has a total of 10 pies to serve. This table shows the amounts of pie Michael has already served.

Michael's Pies

Pie	Cherry	Peach	Apple
Amount Served	$2\frac{3}{4}$	$1\frac{2}{3}$	$3\frac{1}{2}$

Which mixed number represents the total amount of pie Michael has left to serve?

- **A** $2\frac{1}{12}$ pies
- **B** $3\frac{1}{12}$ pies
- **C** $6\frac{11}{12}$ pies
- **D** $7\frac{11}{12}$ pies

The state of Virginia has a total area of 39,594 square miles. The state of Maryland has a total area of 9,774 square miles. How much larger is the total area of Virginia than Maryland?

- **A** 29,820 square miles
- **B** 30,220 square miles
- **C** 30,820 square miles
- **D** 49,368 square miles

Karla bought 3 packages of chicken. The total weight of the chicken in these packages is 7.52 pounds. This table shows the weight of the chicken in two packages.

Packages of Chicken

Package	Weight (in pounds)
X	2.59
Y	?
Z	1.38

What is the weight of the chicken in package Y ?

- **A** 3.55 pounds
- **B** 3.87 pounds
- **C** 3.97 pounds
- **D** 4.45 pounds

This chart shows the number of miles Tyra walked on each of three days.

Tyra's Walking Chart

Day	Number of Miles
1	$2\frac{1}{2}$
2	$1\frac{3}{4}$
3	$\frac{5}{6}$

What is the total number of miles Tyra walked on these three days?

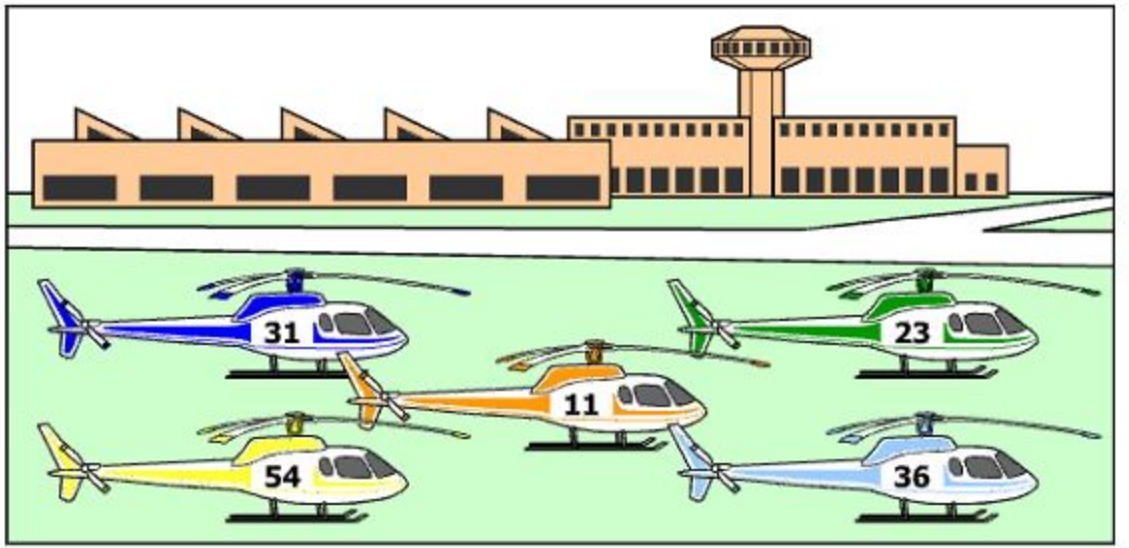
- **A** $3\frac{1}{12}$ miles
- **B** $4\frac{1}{4}$ miles
- **C** $4\frac{1}{2}$ miles
- **D** $5\frac{1}{12}$ miles

The non-calculator section of the test ends here.

A set of basketball uniforms contains only odd-numbered jerseys. Which could be three of the jersey numbers from this set of uniforms?

- **A** 11, 33, 44
- **B** 15, 41, 55
- **C** 21, 35, 52
- **D** 34, 42, 50

Tristan saw five helicopters parked at the airport.



Which list shows all of the odd numbers on the helicopters?

- **A** 36, 54
- **B** 11, 31
- **C** 11, 23, 31
- **D** 11, 31, 36, 54

Which of the following digits could be found in the ones place of a number that is divisible by 2 ?

- **A** 0
- **B** 1
- **C** 3
- **D** 5

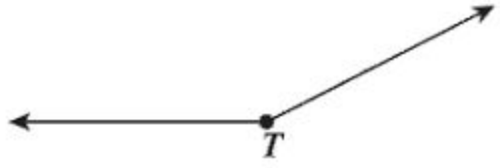
Directions: Type your answer in the box.

What is 7,459.82 rounded to the nearest whole number?

530 milliliters = __ liter(s)

- **A** 0.53
- **B** 5.3
- **C** 53,000
- **D** 530,000

Which is closest to the measure of $\angle T$?



- **A** 27°
- **B** 33°
- **C** 153°
- **D** 167°

Marissa drew a figure with the following characteristics.

- **Four congruent sides**
- **Two pairs of parallel sides**
- **Two pairs of congruent opposite angles**
- **No right angles**

Which term best describes the figure Marissa drew?

- **A** Triangle
- **B** Rhombus
- **C** Rectangle
- **D** Trapezoid

Mario began watching a movie at the time shown on the clock.

The movie was 2 hours and 25 minutes long. What time did the movie end?

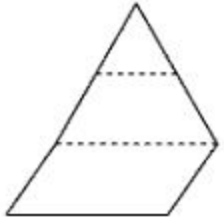
- **A** 7:55 P.M.
- **B** 8:30 P.M.
- **C** 9:30 P.M.
- **D** 9:55 P.M.

To determine the amount of peanuts a bag will hold, Toby needs to find the —

- **A** area
- **B** length
- **C** volume
- **D** perimeter

Directions: Click and drag the three figure names to the boxes.

This is a flat figure. Destiny plans to cut this figure along the dashed line segments.



Identify the names of the three figures she will form.

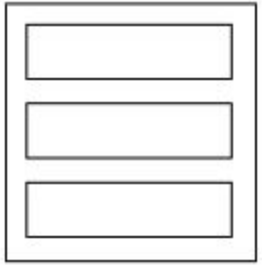
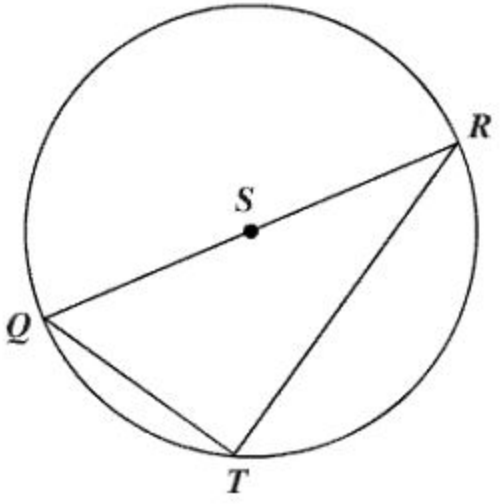


Figure Names

Triangle	Rhombus	Parallelogram	Square	Trapezoid

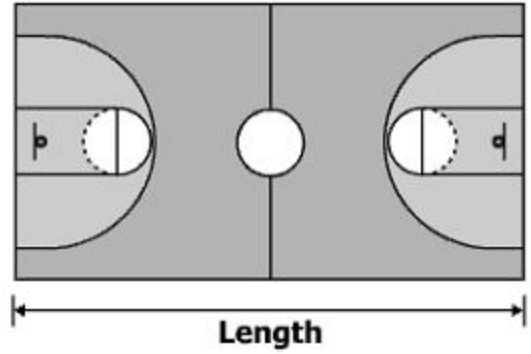
Point S is the center of the circle shown.



Which line segment is a radius of the circle?

- A $\overline{QR}$
- B $\overline{SR}$
- C $\overline{QT}$
- D $\overline{TR}$

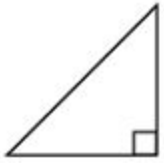
The city is building a new outdoor basketball court.

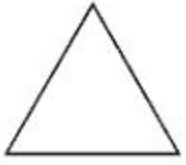


Which is most likely the length of the new outdoor basketball court?

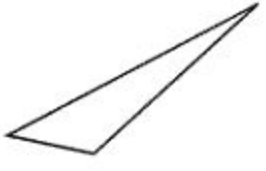
- **A** 94 inches
- **B** 94 feet
- **C** 94 centimeters
- **D** 94 kilometers

Which triangle appears to be a scalene triangle?

A 

B 

C

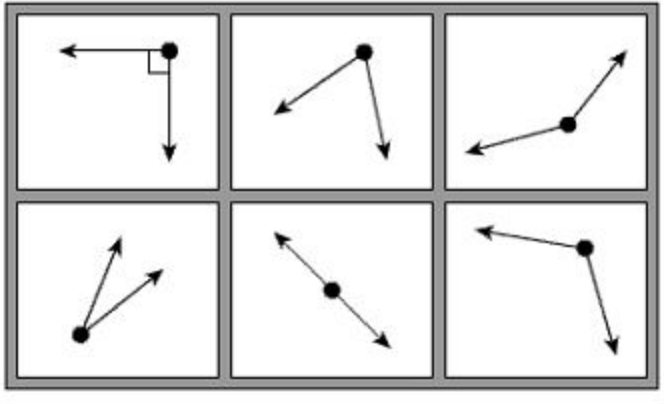
D 

Perimeter is used to find the —

- **A** distance from a ceiling to the floor
- **B** amount of blacktop on a playground
- **C** amount of floor space covered by a carpet
- **D** distance around the edge of a swimming pool

Directions: Click on a box to choose each angle you want to select. You must select all correct angles.

Identify each angle that appears to be an acute angle.



What is the area of a right triangle with a base of 4 feet and a height of 8 feet?

- **A** 12 square feet
- **B** 16 square feet
- **C** 24 square feet
- **D** 32 square feet

The chart shows the different shirts, pants, and shoes Simon has in his closet.

Outfit Choices

Color of Shirt	Color of Pants	Type of Shoes
Navy (N)	Khaki (K)	Boots (B)
Red (R)	Grey (G)	Sneakers (S)
White (W)		

Which lists all of the possible combinations Simon can create of one shirt, one pair of pants, and one pair of shoes?

A
N, R, W
K, G
B, S

B
N, K, B
N, K, S
N, G, B
N, G, S
R, K, B
R, K, S
R, G, B
R, G, S
W, K, B
W, K, S
W, G, B
W, G, S

C
N, K, B
N, G, S
R, K, B
R, G, S
W, K, B
W, G, S

D
N, K, B
N, K, S
N, R, B
N, R, S
R, K, B
R, K, S
R, W, B
R, W, S
W, K, B
W, K, S
W, N, B
W, N, S

This table shows the number of fish in each of 7 aquariums.

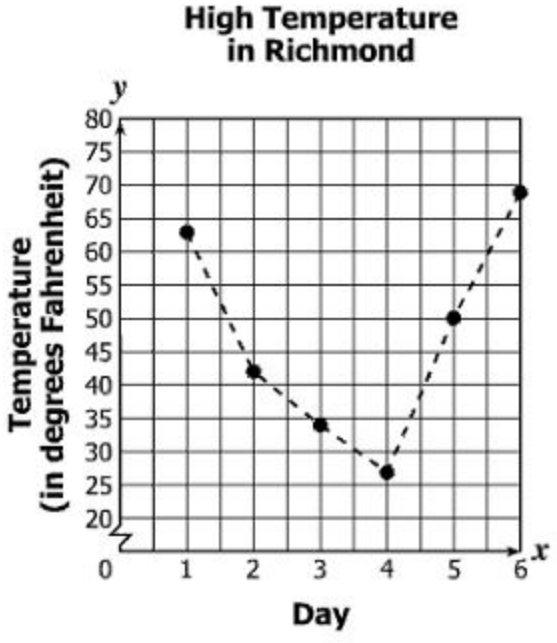
Fish in Aquariums

Aquarium	1	2	3	4	5	6	7
Number of Fish	19	30	24	30	39	25	22

Jeff emptied all the fish from these aquariums and put a fair share of these fish into each of these 7 aquariums. The number of fish he will put into each aquarium represents the —

- **A** median
- **B** range
- **C** mean
- **D** mode

This graph shows the high temperature in Richmond for each of 6 days.



Based on this graph, which statement is true?

- **A** The greatest increase in high temperature on the graph occurs between Day 4 and Day 5.
- **B** The greatest increase in high temperature on the graph occurs between Day 5 and Day 6.
- **C** The greatest decrease in high temperature on the graph occurs between Day 2 and Day 3.
- **D** The greatest decrease in high temperature on the graph occurs between Day 3 and Day 4.

Brad has 2 bags with blocks that are all the same shape and size. There are 5 blocks in Bag A and 2 blocks in Bag B as shown.

Blocks in Bags

Bag A	Bag B
Blue Green Orange Red Yellow	Purple White

Brad will randomly select one block from each bag. Which list shows all of the possible combinations of one block from each bag?

A

Blue, Purple
Green, White
Orange, Purple
Red, White
Yellow, Purple

B

Blue, Purple
Blue, White
Green, Purple
Green, White
Orange, Purple
Orange, White
Red, Purple
Red, White
Yellow, Purple
Yellow, White

C

Blue, Purple
Blue, White
Green, Purple
Green, White
Orange, Purple
Red, White
Yellow, Purple

D

Blue, Purple
Blue, Blue
Green, White
Green, Green
Orange, Purple
Orange, Orange
Red, White
Red, Red
Yellow, Purple
Yellow, Yellow

Directions: Type your answer in the box.

A set of data is shown.

$$\{24, 14, 37, 14, 25, 37, 14, 33, 27\}$$

What is the mode for this set of data?

A number machine uses a rule to change numbers. This table shows the results.

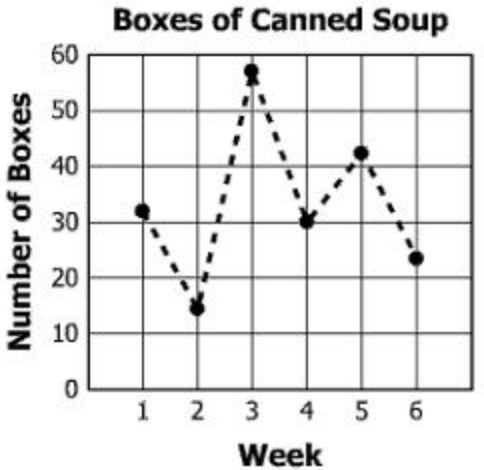
Number Machine Results

Input	Output
20	5
36	9
44	11
84	21

Which could be the rule the number machine uses to change the input numbers to the output numbers?

- **A** Add 15
- **B** Subtract 15
- **C** Divide by 4
- **D** Multiply by 4

This graph shows the number of boxes of canned soup that were delivered to a grocery store each week for six weeks.



Based on this graph, which statement is true?

- **A** The number of boxes of soup delivered to the store in Week 6 is more than the number of boxes of soup delivered to the store in Week 4.
- **B** The number of boxes of soup delivered to the store in Week 3 is less than the number of boxes of soup delivered to the store in Week 5.
- **C** The number of boxes of soup delivered to the store in Week 1 is about the same as the number of boxes of soup delivered to the store in Week 4.
- **D** The number of boxes of soup delivered to the store in Week 2 is about the same as the number of boxes of soup delivered to the store in Week 5.

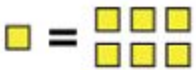
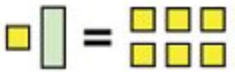
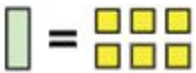
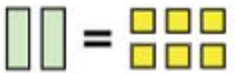
Ms. Chapman wrote this equation on the board.

$$1 + n = 6$$

She drew a model of this equation using this key.

Key
$= n$
$= 1$

Which model best represents Ms. Chapman's equation?

- A 
- C 
- B 
- D 

Which rule can be used to find the next number in this increasing pattern?

3, 4, 6, 9, 13, 18, 24, __

- **A** Add 7 to 24
- **B** Add 6 to 24
- **C** Add 5 to 24
- **D** Add 3 to 24

Jordan needs to walk 6 more miles this week to reach his weekly goal of 21 miles. Which number sentence can be used to find n, the total number of miles that Jordan has walked so far this week?

- **A** $n = 6 + 21$
- **B** $n + 6 = 21$
- **C** $n = 6 \times 21$
- **D** $n - 6 = 21$

The table shows the number of points Ellie scored in each of five games.

Points Scored in Games

Game	Points Scored
1	10
2	5
3	12
4	8
5	15

The range is 10 because it is the —

- **A** middle number of points she scored
- **B** number of points she scored most often
- **C** fair share of the number of points she scored
- **D** difference between the highest and lowest number of points she scored

This stem-and-leaf plot shows the number of pies sold at a bakery each day for 14 days.

Number of Pies Sold

Stem	Leaf
1	8 9 9 9
2	4 4 5 5 5 5 5 6
3	0 0

Key
1|0 means 10

Based on the information in the stem-and-leaf plot, which statement is correct?

- **A** The greatest number of pies sold on any day was 30.
- **B** The greatest number of pies sold on any day was 25.
- **C** The least number of pies sold on any day was 8.
- **D** The least number of pies sold on any day was 0.

This sample space shows all the possible combinations of one type of main dish and one type of drink from which Roberto can choose.

Cereal, Milk
Cereal, Juice
Eggs, Milk
Eggs, Juice
Pancakes, Milk
Pancakes, Juice

According to the sample space, what is the probability Roberto will select eggs and juice?

- **A** $\frac{2}{4}$
- **B** $\frac{2}{6}$
- **C** $\frac{1}{5}$
- **D** $\frac{1}{6}$

Directions: Type your answer in the box.

What is the 7th term in this decreasing pattern?

73, 64, 56, 49, 43, . . .

This set of data shows the number of pages that Caden read each night for 5 nights.

$$\{15,\ 12,\ 18,\ 10,\ 30\}$$

What is the range for this set of data?

- **A** 20
- **B** 18
- **C** 17
- **D** 15

Which situation could be represented by the open sentence $15 - 5 = p$?

- **A** Stuart is reading a book that has a total of 15 chapters. He reads 5 chapters every day. How many days will it take Stuart to finish this book?
- **B** Stuart is reading a book that has a total of 15 chapters. He has already read 5 chapters. How many chapters of the book are left for Stuart to read?
- **C** Stuart is reading a book that has a total of 15 chapters. This book has 5 chapters less than the book Stuart read last week. How many chapters were in the book Stuart read last week?
- **D** Stuart is reading a book that has a total of 15 chapters. This is 5 times the number of chapters as the book Stuart read last week. How many chapters were in the book Stuart read last week?

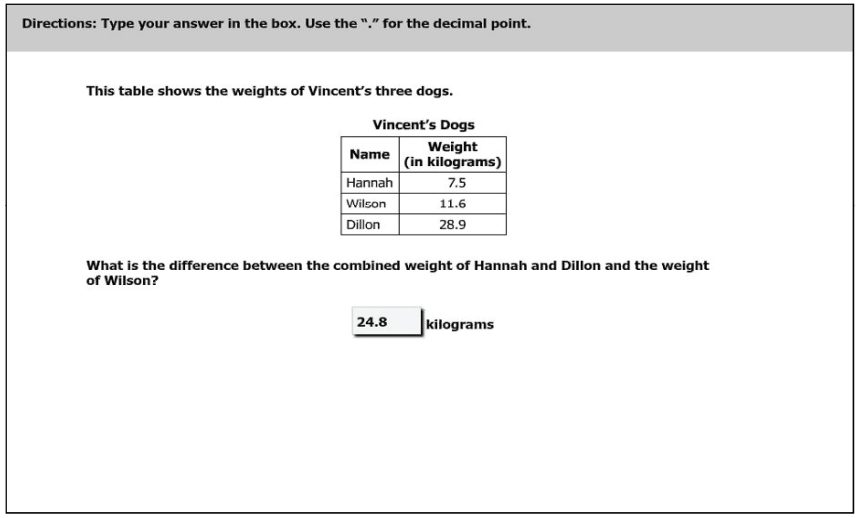
Which equation shows the distributive property?

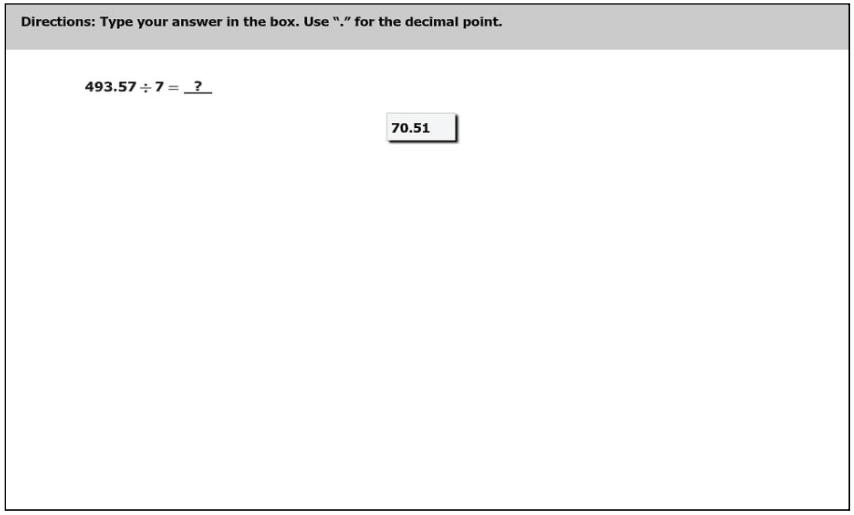
- **A** $256 \times 1 = 256$
- **B** $5 \times 9 \times 4 = 4 \times 9 \times 5$
- **C** $(8 \times 6) + (8 \times 7) = 8(6 + 7)$
- **D** $(12 + 19) + 13 = 12 + (19 + 13)$

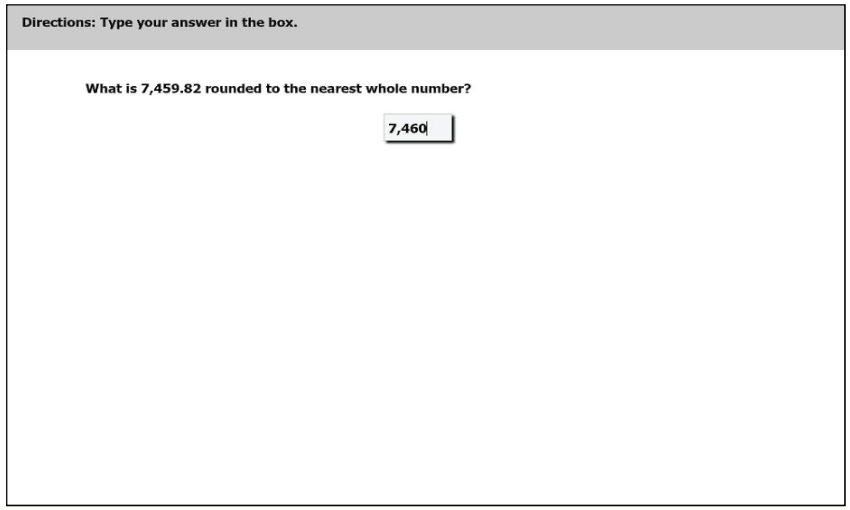
Sylvia has 18 pieces of red, cherry-flavored candy to share equally among friends. Which is a variable in this situation?

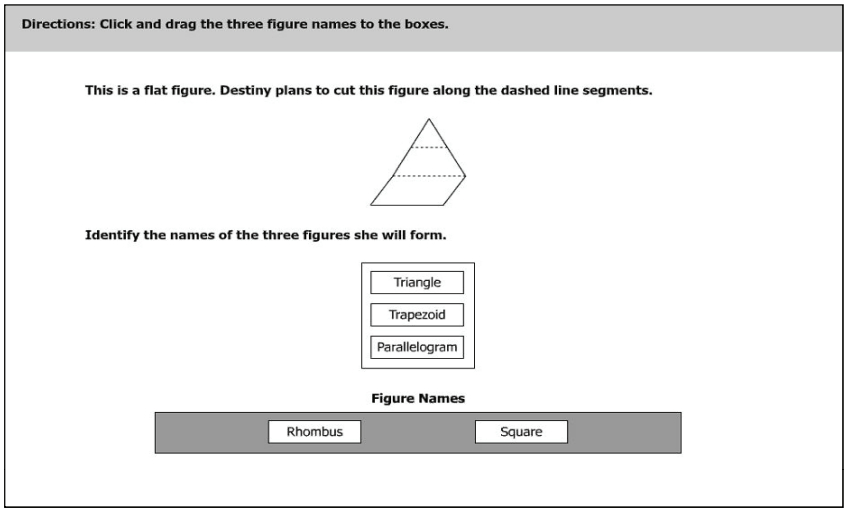
- **A** The number of friends who will receive candy
- **B** The number of pieces of candy that Sylvia has
- **C** The flavor of each piece of candy
- **D** The color of each piece of candy

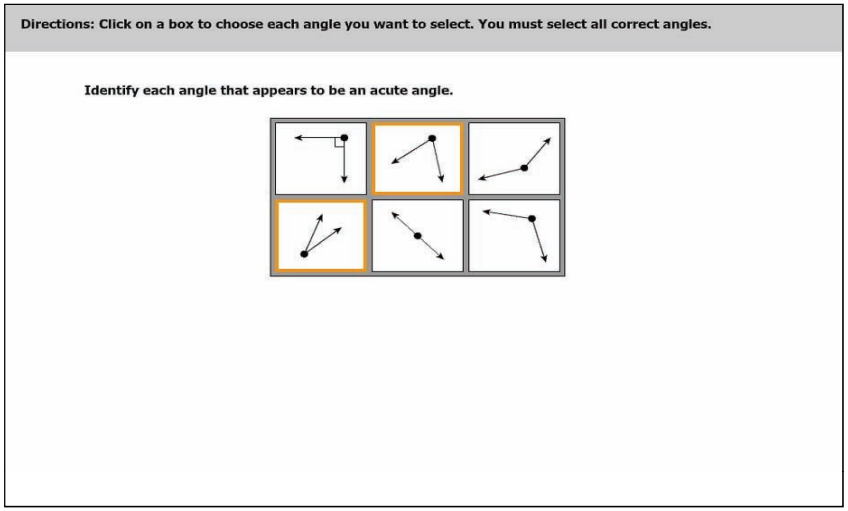
Grade 5 Mathematics
Released Test Spring 2014
Answer Key

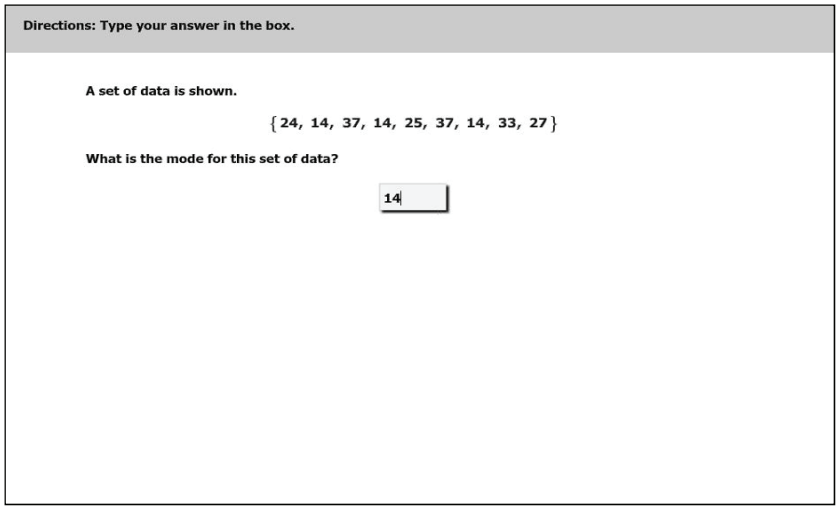
Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
1	MC	A	002	Computation and Estimation
2	MC	D	001	Number and Number Sense
3	MC	D	002	Computation and Estimation
4	MC	A	002	Computation and Estimation
5	MC	C	001	Number and Number Sense
6	MC	D	002	Computation and Estimation
7	TEI	Typed Response: 24.8, 24.80, OR 24.800 	002	Computation and Estimation
8	MC	A	002	Computation and Estimation
9	MC	B	002	Computation and Estimation

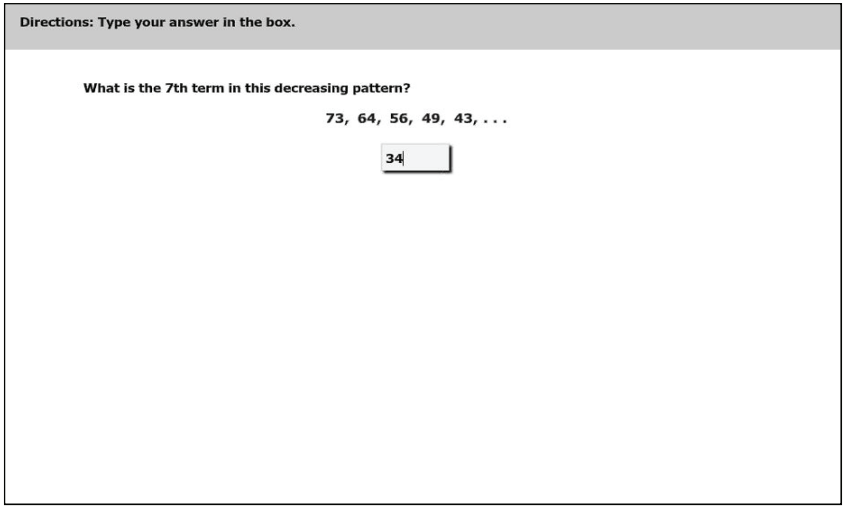
Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
10	TEI	Typed Response: 70.51 OR 70.510 	002	Computation and Estimation
11	MC	D	002	Computation and Estimation
12	MC	D	001	Number and Number Sense
13	MC	A	002	Computation and Estimation
14	MC	A	002	Computation and Estimation
15	MC	A	002	Computation and Estimation
16	MC	D	002	Computation and Estimation
17	MC	B	001	Number and Number Sense
18	MC	C	001	Number and Number Sense
19	MC	A	001	Number and Number Sense

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
20	TEI	Typed response: 7,460 OR 7460 	001	Number and Number Sense
21	MC	A	003	Measurement and Geometry
22	MC	C	003	Measurement and Geometry
23	MC	B	003	Measurement and Geometry
24	MC	D	003	Measurement and Geometry
25	MC	C	003	Measurement and Geometry

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
26	TEI	Answers: Triangle, Trapezoid, and Parallelogram These three answers, and only these answers, must be selected. The order of the answers does not matter.  	003	Measurement and Geometry
27	MC	B	003	Measurement and Geometry
28	MC	B	003	Measurement and Geometry
29	MC	D	003	Measurement and Geometry
30	MC	D	003	Measurement and Geometry

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
31	TEI	Answers: The angle located in the first row, second column and the angle located in the second row, first column. Both answers, and only these answers, must be selected. 	003	Measurement and Geometry
32	MC	B	003	Measurement and Geometry
33	MC	B	004	Probability, Statistics, Patterns, Functions, and Algebra
34	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
35	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra
36	MC	B	004	Probability, Statistics, Patterns, Functions, and Algebra

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
37	TEI	Typed Response: 14 	004	Probability, Statistics, Patterns, Functions, and Algebra
38	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
39	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
40	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
41	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra
42	MC	B	004	Probability, Statistics, Patterns, Functions, and Algebra
43	MC	D	004	Probability, Statistics, Patterns, Functions, and Algebra
44	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra
45	MC	D	004	Probability, Statistics, Patterns, Functions, and Algebra

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
46	TEI	Typed Response: 34 	004	Probability, Statistics, Patterns, Functions, and Algebra
47	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra
48	MC	B	004	Probability, Statistics, Patterns, Functions, and Algebra
49	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
50	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra

Items 1 through 16 are in the non-calculator section of the test. Items 17 through 50 are in the calculator section of the test.

Spring 2014 Released
Grade 5 Mathematics Standards of Learning Test
Total Raw Score to Scaled Score Conversion Table

Total Raw Score If you get this many items correct:	**Total Scaled Score** Then your converted scaled score is:
0	0
1	136
2	176
3	200
4	217
5	231
6	243
7	253
8	262
9	271
10	279
11	286
12	293
13	299
14	306
15	312
16	318
17	323
18	329
19	334
20	340
21	345
22	351
23	356
24	361
25	366
26	372
27	377
28	382
29	388
30	393
31	399
32	**405**
33	410
34	416
35	423
36	429
37	436
38	443
39	450
40	458
41	467
42	476
43	486
44	497
45	**510**
46	525
47	543
48	568
49	600
50	600

A **total raw score** (left column) is converted to a **total scaled score** (right column). The total scaled score may range from 0 to 600.

A scaled score of 400 or more means the student passed the SOL test, while a scaled score of 399 or less means the student did not pass the test. A scaled score of 500 or more indicates the student passed the SOL test at an advanced level.

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