VIRGINIA STANDARDS OF LEARNING

Released Test

GRADE 4

MATHEMATICS

2009 Mathematics Standards of Learning

Released Spring 2014

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Items 1 through 13 are in the non-calculator section of the test.

Items 14 through 50 are in the calculator section of the test.

SAMPLE A

Which digit can be placed in the box to make this statement true?

$$2,\square 96 = 2{,}496$$

- **A** 2
- **B** 3
- **C** 4
- **D** 5

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

SAMPLE B

$24.4 + 10.3 =$?

What is the sum of $\frac{3}{5}$ and $\frac{1}{10}$?

- A $\frac{1}{5}$
- B $\frac{2}{5}$
- C $\frac{1}{2}$
- D $\frac{7}{10}$

Wilma drinks 1.09 liters of juice. Richard drinks 0.987 liter of juice. How much more juice does Wilma drink than Richard?

- **A** 0.103 liter
- **B** 0.878 liter
- **C** 1.917 liters
- **D** 2.077 liters

What is the least common multiple of 8 and 12 ?

- **A** 16
- **B** 24
- **C** 48
- **D** 96

What is the product of 84 and 76 ?

- **A** 6,164
- **B** 6,274
- **C** 6,384
- **D** 6,494

Directions: Type your answer in the box.

Kristin poured 6 ounces of lemonade into each of 19 glasses. Exactly how many ounces of lemonade did Kristin pour into all of these glasses?

_____ **ounces**

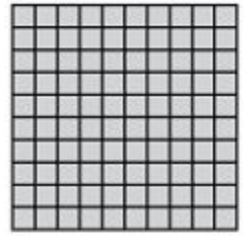
At a store, flowerpots cost $28 each. Which is closest to the total cost of 72 of these flowerpots?

- **A** $100
- **B** $210
- **C** $1,400
- **D** $2,100

A school choir sold 825 tickets for a concert. Each ticket cost $9. What was the total cost of all the tickets sold?

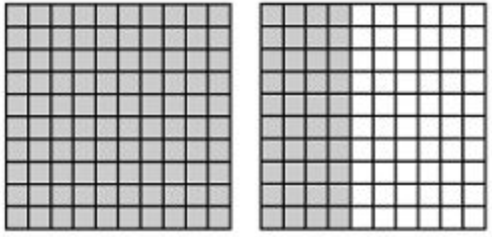
- **A** $7,425
- **B** $7,385
- **C** $7,285
- **D** $7,225

This model is shaded to represent 1 whole.

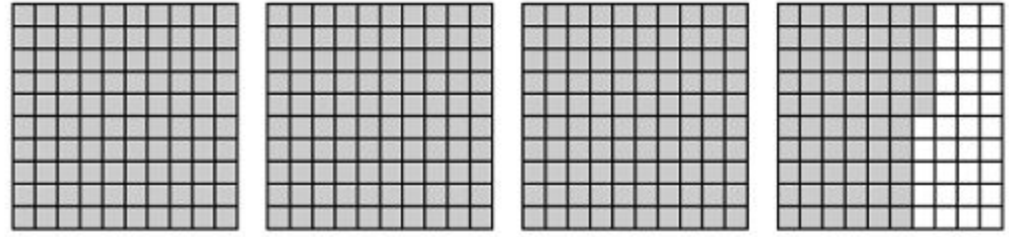


What is the sum of Model 1 and Model 2 shown below?

Model 1



Model 2



- **A** 0.379
- **B** 0.505
- **C** 3.79
- **D** 5.05

Directions: Type your answer in the box.

What is the difference between 3,240 and 578 ?

John ran a total of 342 minutes in a 7-day period. He ran about the same number of minutes each day. Which is closest to the number of minutes John ran on one of those days?

- **A** 20
- **B** 30
- **C** 50
- **D** 60

What is the difference between $\frac{5}{12}$ and $\frac{1}{4}$?

- A $\frac{1}{6}$
- B $\frac{1}{3}$
- C $\frac{1}{2}$
- D $\frac{2}{3}$

Carl does 25 sit-ups 3 times per day. What is the total number of sit-ups Carl does in 7 days?

- **A** 35
- **B** 75
- **C** 495
- **D** 525

Which number is a common factor of 15, 18, and 30 ?

- **A** 9
- **B** 6
- **C** 5
- **D** 3

The non-calculator section of the test ends here.

What digit is in the tenths place in this number?

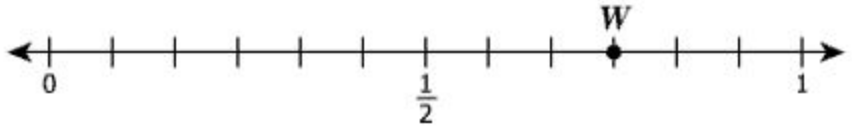
24.816

- **A** 1
- **B** 2
- **C** 6
- **D** 8

Which division statement represents $\frac{3}{8}$?

- **A** 3 divided by 8
- **B** 8 divided by 3
- **C** 3 divided by 11
- **D** 11 divided by 3

Which fraction is represented by point W shown on the number line?



- A $\frac{10}{13}$
- B $\frac{9}{12}$
- C $\frac{3}{8}$
- D $\frac{3}{12}$

Directions: Click and drag each selected place value to the correct box.

Identify the place value for each digit in the number 304,215.

Digit	Place Value
0	
1	
2	
3	
4	
5	

Millions	Hundred thousands
Ten thousands	Thousands
Hundreds	Tens
Ones	

This table shows the times it took four students to complete a 40-meter race.

Race Times

Student	Time (in seconds)
Joel	13.07
Justin	13.6
Maria	13.06
Melinda	13.7

Which statement about these times is true?

- **A** $13.7 > 13.07$
- **B** $13.07 > 13.6$
- **C** $13.6 > 13.7$
- **D** $13.06 > 13.07$

Which statement is true?

- **A** $89{,}045 < 84{,}905$
- **B** $84{,}950 < 85{,}049$
- **C** $8{,}240{,}579 < 8{,}209{,}745$
- **D** $8{,}504{,}297 < 8{,}054{,}972$

How is 2.32 written in words?

- **A** Two hundred thirty-two
- **B** Two and thirty-two tenths
- **C** Two and thirty-two hundredths
- **D** Two and thirty-two thousandths

What is 7,613,542 rounded to the nearest ten thousand?

- **A** 7,600,000
- **B** 7,610,000
- **C** 7,614,000
- **D** 7,620,000

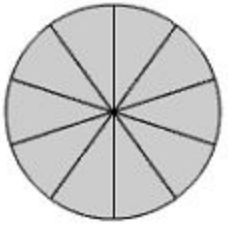
A fractional part of this group of triangles is shaded.

Which group below has an equivalent fraction of the arrows shaded?

- A
- B
- C
- D

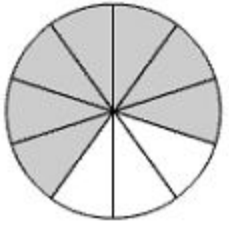
Model 1 is shaded to represent one whole.

Model 1



Model 2 is shaded to represent a fraction.

Model 2

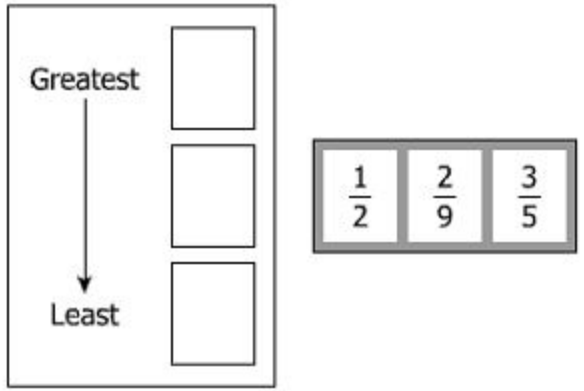


Which decimal number is represented in Model 2 ?

- **A** 1.7
- **B** 1.3
- **C** 0.7
- **D** 0.3

Directions: Click and drag each selected fraction to the correct box.

Order the fractions from greatest to least.



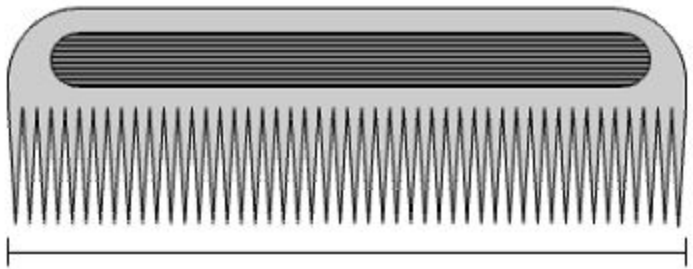
Which number, when rounded to the nearest hundredth, is equal to 7.59 ?

- **A** 7.595
- **B** 7.588
- **C** 7.584
- **D** 7.549

Which figure has less than four angles?

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

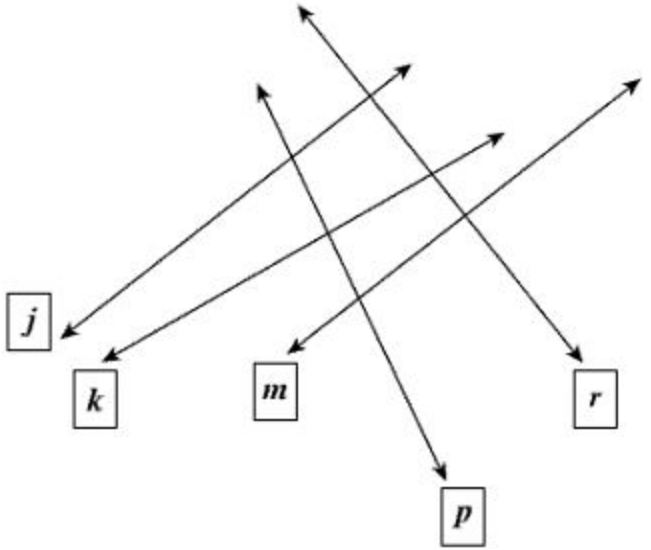
Which is closest to the length of this hair comb, in inches?



- **A** $4\frac{3}{4}$ inches
- **B** $4\frac{1}{2}$ inches
- **C** $4\frac{3}{8}$ inches
- **D** $4\frac{1}{4}$ inches

Directions: Click on a box to choose the two lines you want to select.

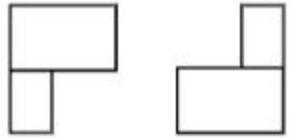
Identify two lines in the figure that appear to be parallel.

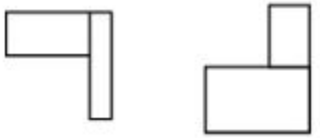


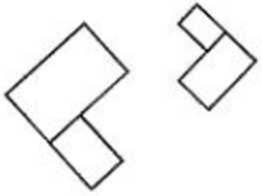
Lola's puppy weighed 6 pounds. What is the total number of ounces Lola's puppy weighed?

- **A** 48 ounces
- **B** 60 ounces
- **C** 72 ounces
- **D** 96 ounces

Which pair of figures appears to be congruent?

A 

C 

B 

D

A restaurant has 3 gallons of soup. What is the total number of pints of soup this restaurant has?

- **A** 12 pints
- **B** 18 pints
- **C** 24 pints
- **D** 48 pints

A basketball team left the school at 2:55 P.M. and returned at 5:45 P.M. What was the total amount of time that passed between the time this team left and returned to the school?

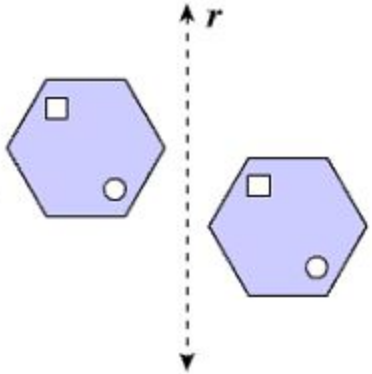
- **A** 2 hours 10 minutes
- **B** 2 hours 50 minutes
- **C** 3 hours 10 minutes
- **D** 3 hours 50 minutes

Which of these objects has a mass closest to 1 kilogram?

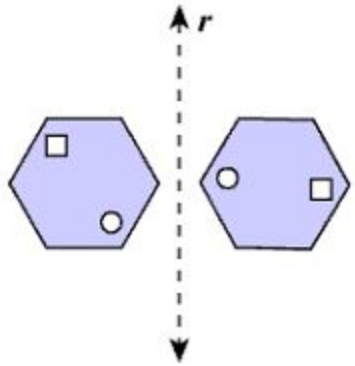
- **A** A desk
- **B** A pencil
- **C** A dictionary
- **D** A sheet of paper

Which picture shows a single reflection of the figure across line r ?

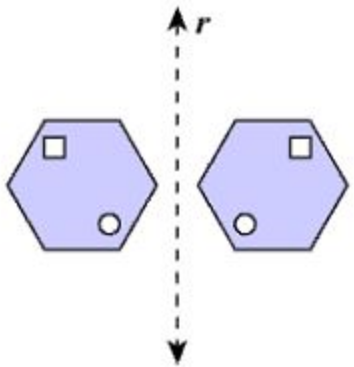
A



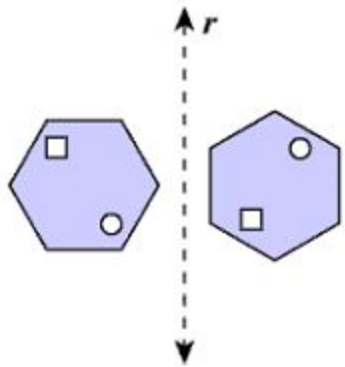
C



B

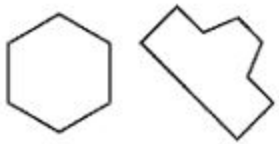


D



Which set of figures shows only octagons?

A

B 

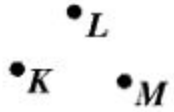
C

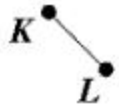
D

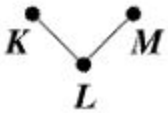
2 meters = __ millimeters

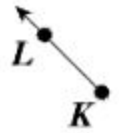
- **A** 20,000 millimeters
- **B** 2,000 millimeters
- **C** 200 millimeters
- **D** 20 millimeters

Which of the following represents ray KL ?

A 

C 

B 

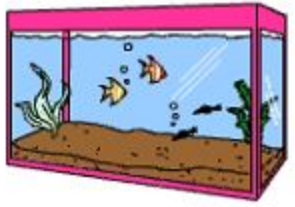
D 

Tyrone used 1 pint of liquid to completely fill a container. Which container could be the one Tyrone filled?

A

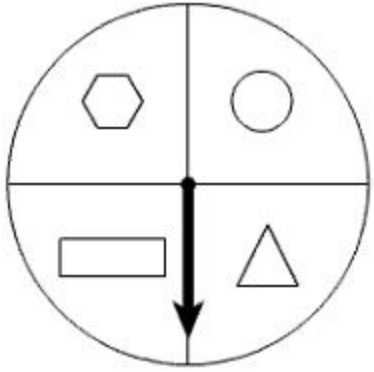
C

B

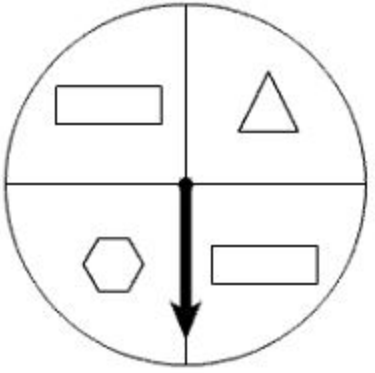
D 

Mandy is making a spinner game. She wants the arrow on the spinner to have an equally likely chance of landing on each of 4 spaces. Each space will have a different shape on it. Which appears to be the spinner Mandy should make?

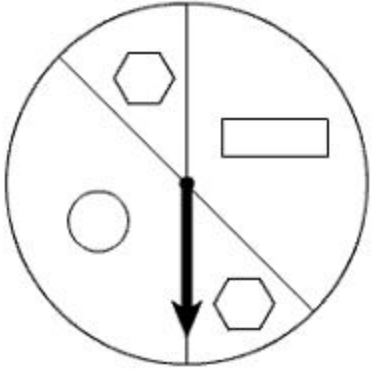
A



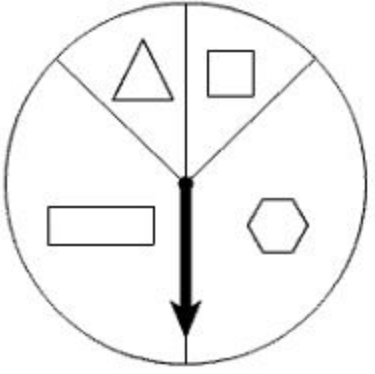
C



B



D



Which equation is true?

- **A** $4 \times 7 = 26 + 2$
- **B** $4 \times 8 = 32 + 2$
- **C** $7 \times 6 = 59 - 7$
- **D** $7 \times 8 = 64 - 7$

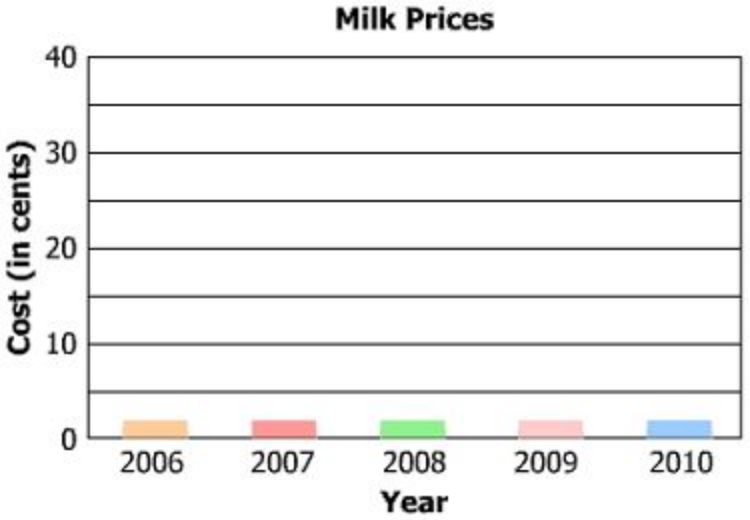
Directions: Click on a point above each bar where the top of the bar should be.

The price of a carton of school milk during 5 years is shown in the table.

Milk Prices

Year	Price
2006	$0.15
2007	$0.20
2008	$0.25
2009	$0.25
2010	$0.30

Make a bar graph using this information.



The table shows the total number of players on different numbers of bowling teams in a tournament.

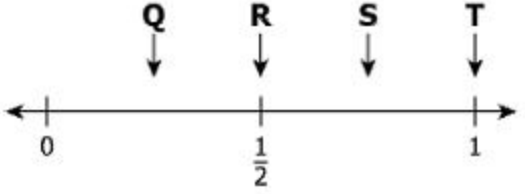
Bowling Teams

Total Number of Players	Number of Teams
8	2
28	7
32	8
52	?

The pattern continues in the same way. How many bowling teams are needed for a total of 52 players?

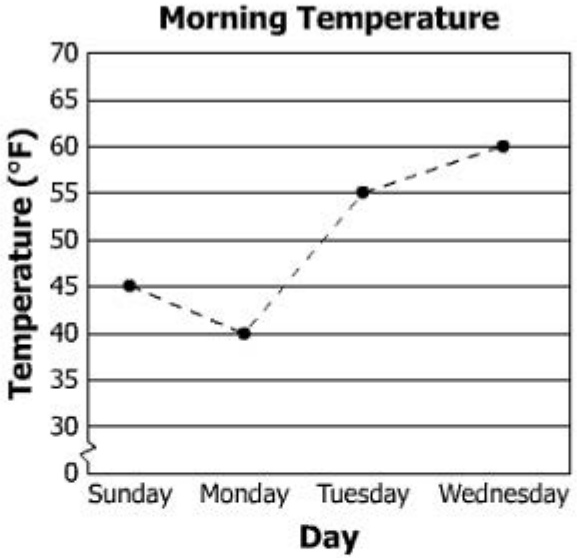
- **A** 13
- **B** 12
- **C** 11
- **D** 10

Lori has a coin with one side heads and one side tails. Which letter on this number line best represents the probability that this coin flipped one time will land with tails facing up?



- **A** Q
- **B** R
- **C** S
- **D** T

This graph shows the morning temperature in a city for each of four days.



The morning temperature on Thursday was 52°F. Based on the data in this graph, which day had a temperature closest to Thursday's temperature?

- **A** Sunday
- **B** Monday
- **C** Tuesday
- **D** Wednesday

Todd has the following folders in his backpack:

- **2 blue**
- **2 red**
- **2 yellow**
- **2 purple**

The folders are all the same size and shape. Todd reaches into his backpack and selects one folder without looking. What is the likelihood the folder will be green?

- **A** Certain
- **B** Likely, but not certain
- **C** Unlikely, but not impossible
- **D** Impossible

Which number sentence is correct?

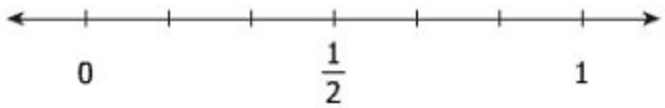
- **A** $3 \times 2 \times 3 = 2 \times 6$
- **B** $5 \times 2 \times 5 = 10 \times 2$
- **C** $4 \times 2 \times 6 = 12 \times 4$
- **D** $8 \times 3 \times 0 = 12 \times 2$

Which equation shows the use of the associative property of multiplication?

- **A** $2 \times (50 \times 1) = 2 \times 50$
- **B** $2 \times (50 \times 12) = (2 \times 50) \times 12$
- **C** $2 \times (50 \times 12) = 2 \times (12 \times 50)$
- **D** $2 \times (12 \times 50) = (2 + 12) \times (2 + 50)$

Directions: Click on the number line to put a point at the location you want to select.

Jeremy rolls a fair number cube labeled 1 through 6. Place a point on the number line to represent the probability that he will roll a 2 on the first roll.



An art club has 2 fourth-grade girls, 4 third-grade boys, 10 third-grade girls, and 8 fourth-grade boys. Which table correctly shows this information?

○ **A**

Students in Art Club

	Third Grade	Fourth Grade
Boys	4	2
Girls	10	8

○ **C**

Students in Art Club

	Third Grade	Fourth Grade
Boys	8	4
Girls	2	10

○ **B**

Students in Art Club

	Third Grade	Fourth Grade
Boys	2	4
Girls	10	8

○ **D**

Students in Art Club

	Third Grade	Fourth Grade
Boys	4	8
Girls	10	2

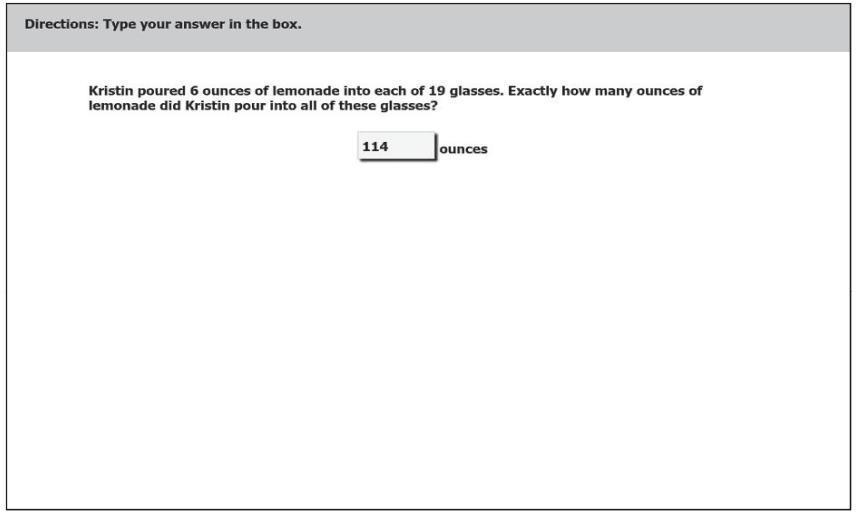
An increasing pattern is shown.

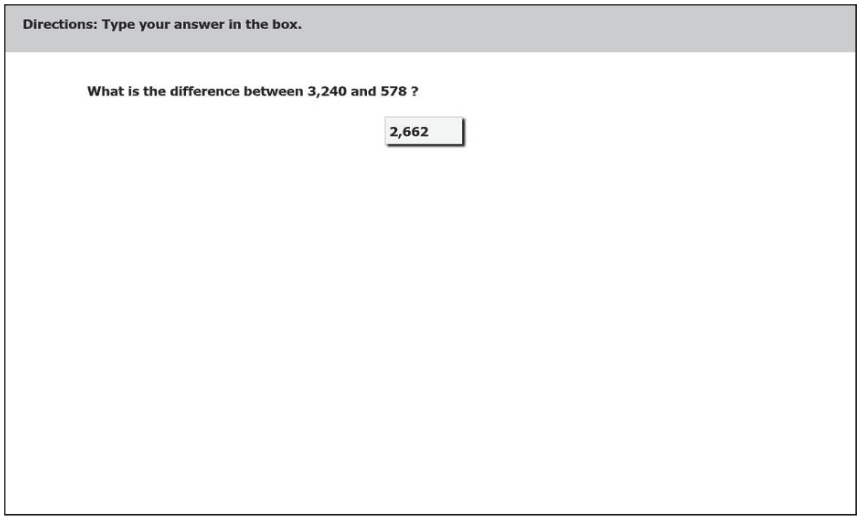
5, 14, 23, 32, 41

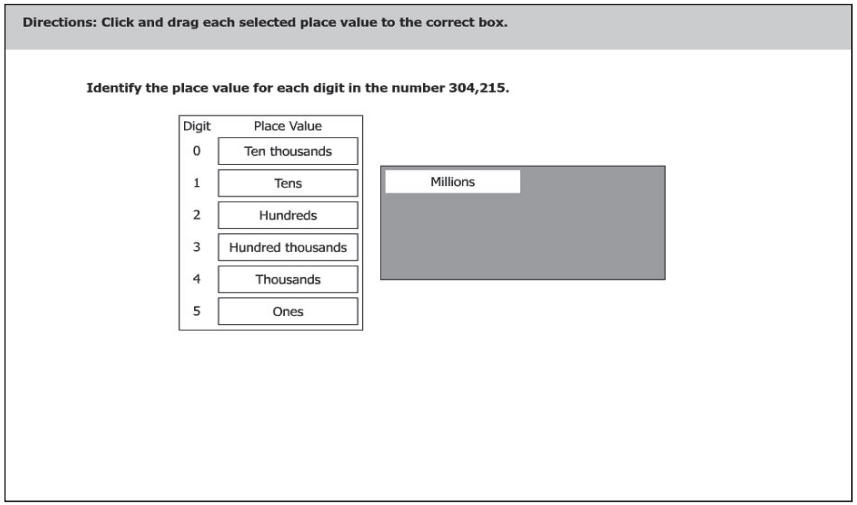
Which pattern uses the same rule as the pattern above?

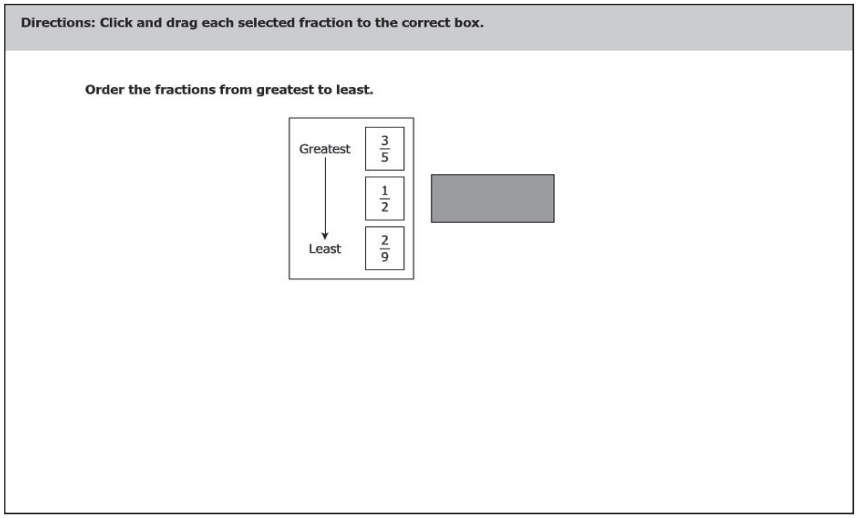
- **A** 42, 33, 24, 15, 6
- **B** 15, 23, 31, 39, 47
- **C** 13, 22, 31, 40, 49
- **D** 8, 19, 30, 41, 52

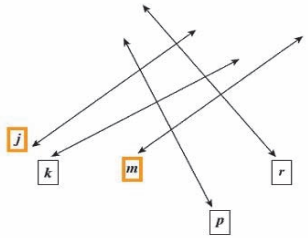
Grade 4 Mathematics
Released Test Spring 2014
Answer Key

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
1	MC	D	002	Computation and Estimation
2	MC	A	002	Computation and Estimation
3	MC	B	002	Computation and Estimation
4	MC	C	002	Computation and Estimation
5	TEI	Typed Response: 114 	002	Computation and Estimation
6	MC	D	002	Computation and Estimation
7	MC	A	002	Computation and Estimation
8	MC	D	002	Computation and Estimation

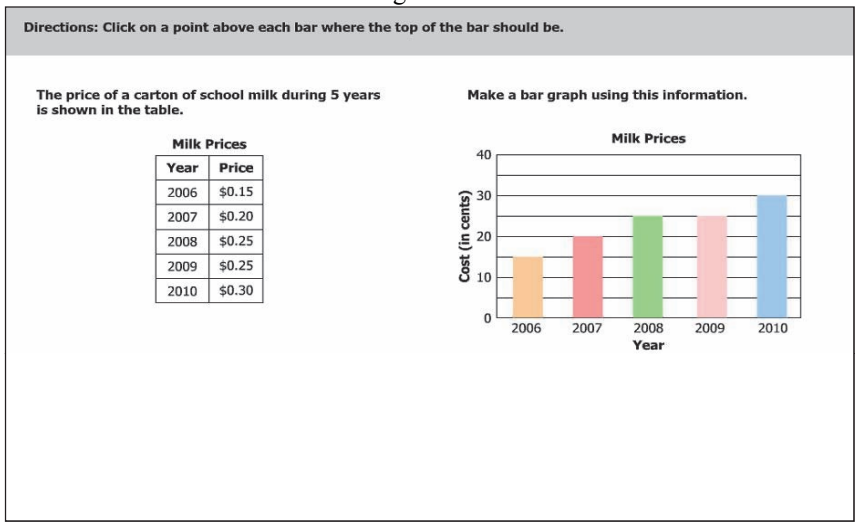
Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
9	TEI	Typed Response: 2,662 OR 2662 	002	Computation and Estimation
10	MC	C	002	Computation and Estimation
11	MC	A	002	Computation and Estimation
12	MC	D	002	Computation and Estimation
13	MC	D	002	Computation and Estimation
14	MC	D	001	Number and Number Sense
15	MC	A	001	Number and Number Sense
16	MC	B	001	Number and Number Sense

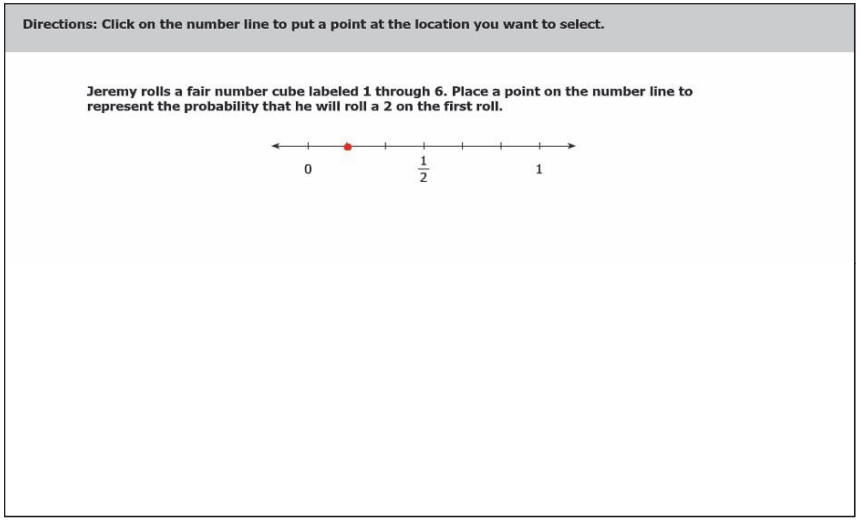
Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
17	TEI	Answers must be placed in this order from top to bottom: Ten thousands, Tens, Hundreds, Hundred thousands, Thousands, Ones 	001	Number and Number Sense
18	MC	A	001	Number and Number Sense
19	MC	B	001	Number and Number Sense
20	MC	C	001	Number and Number Sense
21	MC	B	001	Number and Number Sense
22	MC	A	001	Number and Number Sense
23	MC	C	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
24	TEI	Answers must be placed in this order from top to bottom: $\frac{3}{5}, \frac{1}{2}, \frac{2}{9}$ 	001	Number and Number Sense
25	MC	B	001	Number and Number Sense
26	MC	A	003	Measurement and Geometry
27	MC	A measurement of item in the online testing software, using the online ruler tool; measurement of printed copy of item will not match answer A	003	Measurement and Geometry

Test Sequence Number	Item Type: Multiple Choice (MC) or Technology-Enhanced Item (TEI)	Correct Answer	Reporting Category	Reporting Category Description
28	TEI	Both letters must be selected: j and m. Directions: Click on a box to choose the two lines you want to select. Identify two lines in the figure that appear to be parallel.  	003	Measurement and Geometry
29	MC	D	003	Measurement and Geometry
30	MC	A	003	Measurement and Geometry
31	MC	C	003	Measurement and Geometry
32	MC	B	003	Measurement and Geometry
33	MC	C	003	Measurement and Geometry
34	MC	B	003	Measurement and Geometry
35	MC	A	003	Measurement and Geometry
36	MC	B	003	Measurement and Geometry
37	MC	D	003	Measurement and Geometry
38	MC	C	003	Measurement and Geometry
39	MC	A	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
40	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra
41	TEI	The top of the bar for the year 2006 must be at 15 (the third interval line above zero). The top of the bar for the year 2007 must be at 20 (the fourth interval line above zero). The top of the bar for the year 2008 must be at 25 (the fifth interval line above zero). The top of the bar for the year 2009 must be at 25 (the fifth interval line above zero). The top of the bar for the year 2010 must be at 30 (the sixth interval line above zero). All bars must be raised to the correct heights.	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
42	MC	A	004	Probability, Statistics, Patterns, Functions, and Algebra
43	MC	B	004	Probability, Statistics, Patterns, Functions, and Algebra
44	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
45	MC	D	004	Probability, Statistics, Patterns, Functions, and Algebra
46	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra
47	MC	B	004	Probability, Statistics, Patterns, Functions, and Algebra
48	TEI	A point must be placed on the number line at $\frac{1}{6}$, which is located on the first hatch mark to the right of zero. 	004	Probability, Statistics, Patterns, Functions, and Algebra
49	MC	D	004	Probability, Statistics, Patterns, Functions, and Algebra
50	MC	C	004	Probability, Statistics, Patterns, Functions, and Algebra

Note: Items 1 through 13 are in the non-calculator section of the test. Items 14 through 50 are in the calculator section of the test.

Spring 2014 Released
Grade 4 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		144
2		183
3		207
4		225
5		239
6		251
7		262
8		271
9		280
10		288
11		295
12		302
13		309
14		315
15		321
16		327
17		332
18		338
19		343
20		349
21		354
22		359
23		364
24		369
25		374
26		379
27		384
28		389
29		394
30		399
31		**405**
32		410
33		416
34		421
35		427
36		433
37		439
38		446
39		452
40		460
41		467
42		476
43		485
44		495
45		**507**
46		521
47		538
48		562
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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