X. Mathematics, Grade 4

Grade 4 Mathematics
SESSION 1

This session contains 11 questions.

*You may **not** use a calculator during this session.*

Directions

Read each question carefully and then answer it as well as you can. You must record all answers in this Test & Answer Booklet.

For some questions, you will mark your answers by filling in the circles in your Test & Answer Booklet. Make sure you darken the circles completely. Do not make any marks outside of the circles. If you need to change an answer, be sure to erase your first answer completely.

For other questions, you will need to fill in an answer grid. Directions for completing questions with answer grids are provided on the next page.

If a question asks you to show or explain your work, you must do so to receive full credit. Write your response in the space provided. Only responses written within the provided space will be scored.

Directions for Completing Questions with Answer Grids

1. Work the question and find an answer.

2. Enter your answer in the answer boxes at the top of the answer grid.

3. Print only one number or symbol in each box. Do not leave a blank box in the middle of an answer.

4. Under each answer box, fill in the circle that matches the number or symbol you wrote above. Make a solid mark that completely fills the circle.

5. Do not fill in a circle under an unused answer box.

6. If you need to change an answer, be sure to erase your first answer completely.

7. See below for examples of how to correctly complete an answer grid.

EXAMPLES

1   Sonya is thinking of a number. She wrote multiples of her number in a box, as shown.

```
16      32
    24
20      12
```

Which of the following could be Sonya's number?

Ⓐ 3

Ⓑ 4

Ⓒ 6

Ⓓ 8

2 Find the sum.

$$\frac{6}{100} + \frac{3}{10}$$

Ⓐ $\frac{36}{100}$

Ⓑ $\frac{9}{110}$

Ⓒ $\frac{63}{110}$

Ⓓ $\frac{36}{200}$

This question has three parts. Be sure to label each part of your response.

3   This table shows the length, in kilometers, of each trail in a park.

Park Trails

Trail	Length (kilometers)
Blue	1.6
Red	0.6
White	1.65
Green	0.8
Purple	1.58

A. Which trail has the shortest length?

B. List the trails in order of length from shortest to longest.

C. Which trail has a length closest to the length of the Blue Trail? Show or explain how you got your answer.

Write your answers on the next page.

3

4   Carmen wrote this expression in a notebook.

$$1 + 1 + \frac{1}{4} + \frac{2}{4}$$

Which of these is **not** equal to Carmen's expression?
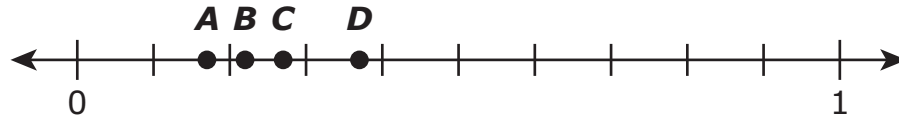
Ⓐ $\frac{3}{4} + 2$

Ⓑ $\frac{3}{4} + 2 + \frac{1}{4}$

Ⓒ $1 + 1 + \frac{2}{4} + \frac{1}{4}$

Ⓓ $1 + 1 + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$

5   Four points are shown on this number line.

Which point represents where 0.27 is located on the number line?

Ⓐ   point *A*

Ⓑ   point *B*

Ⓒ   point *C*

Ⓓ   point *D*

**This question has three parts. Be sure to label each part of your response.**

6 A playground has a basketball court and a sandbox. The length of the sandbox is 18 feet.

A. The length of the basketball court is 5 times the length of the sandbox.

Write an equation that can be used to find b, the length in feet of the basketball court.

B. What is the length, in feet, of the basketball court? Show or explain how you got your answer.

C. The length of the playground is twice the length of the basketball court **and** the sandbox added together.

What is the total length, in feet, of the playground? Show or explain how you got your answer.
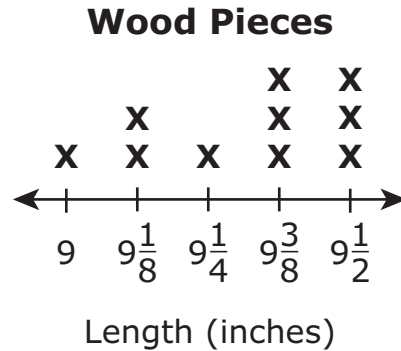

Write your answers on the next page.

6

7   Which pairs of models show a correct comparison of $\frac{3}{5}$ and $\frac{2}{3}$?

Select the **two** correct answers.

A

B

C

D

E

F
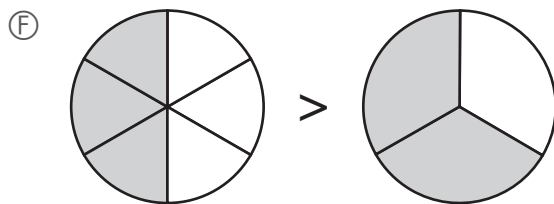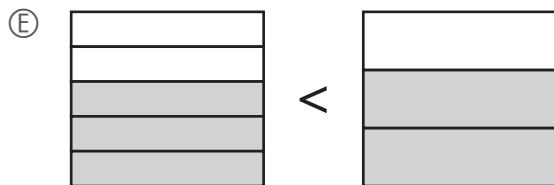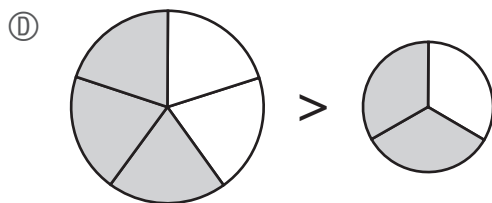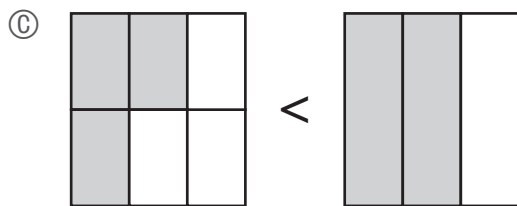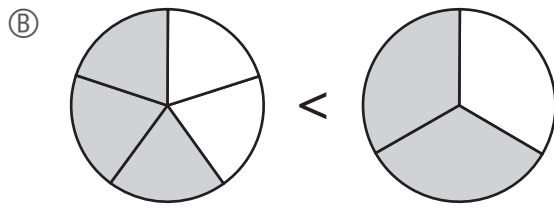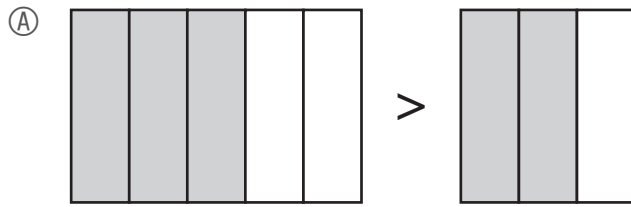
8 A carpenter measured the lengths, in inches, of some pieces of wood. The lengths are shown in this line plot.

Wood Pieces

```
                X   X
        X       X   X
X   X   X   X   X
```

$$9 \quad 9\frac{1}{8} \quad 9\frac{1}{4} \quad 9\frac{3}{8} \quad 9\frac{1}{2}$$

Length (inches)

The carpenter collected all the pieces of wood with a length of $9\frac{3}{8}$ inches. Then he placed those pieces end to end in a straight line.

What is the total length of the pieces of wood the carpenter placed in a straight line?

Ⓐ $17\frac{1}{8}$ inches

Ⓑ $18\frac{1}{8}$ inches

Ⓒ $27\frac{1}{8}$ inches

Ⓓ $28\frac{1}{8}$ inches

This question has two parts.

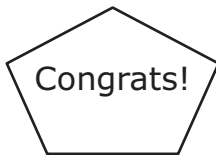**9** A teacher has two sets of stickers in different shapes to give to students.
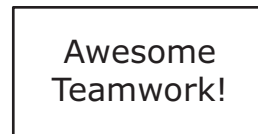
Part A

The first set has five stickers.

Which of these stickers appear to have at least one obtuse angle?
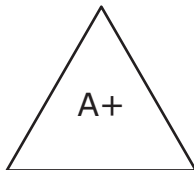
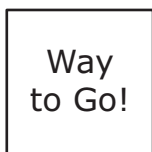Select the **two** correct answers.

Ⓐ

Congrats!

Ⓑ
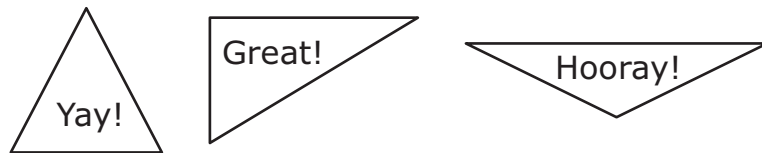
Awesome
Teamwork!

Ⓒ

A+

Ⓓ

Great
Job!

Ⓔ

Way
to Go!

Part B

The second set has three triangle stickers, as shown.

Which of these sentences correctly describes one of the stickers?

Ⓐ The "Yay!" sticker appears to be a right triangle because it has three right angles.

Ⓑ The "Great!" sticker appears to be a right triangle because it has one right angle.

Ⓒ The "Hooray!" sticker appears to be a right triangle because it has two right angles.

Ⓓ The "Hooray!" sticker appears to be a right triangle because it has one right angle.

10   An artist bought 5 yards of rope. Which of the following is equivalent to 5 yards?

     Ⓐ   3 feet

     Ⓑ   15 feet

     Ⓒ   60 feet

     Ⓓ   180 feet

11   A teacher wrote this number on the board.

<div align="center">24,473</div>

The value of the digit in the thousands place is how many times the value of the digit in the hundreds place?

Enter your answer in the answer boxes at the top of the answer grid **and** completely fill the matching circles.

Grade 4 Mathematics
SESSION 2

This session contains 9 questions.

*You may **not** use a calculator during this session.*

Directions

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7. See below for examples of how to correctly complete an answer grid.

EXAMPLES

12 What is *fourteen thousand, two hundred five* written in standard form?

Enter your answer in the answer boxes at the top of the answer grid **and** completely fill the matching circles.

13   A dashed line is drawn on this figure.
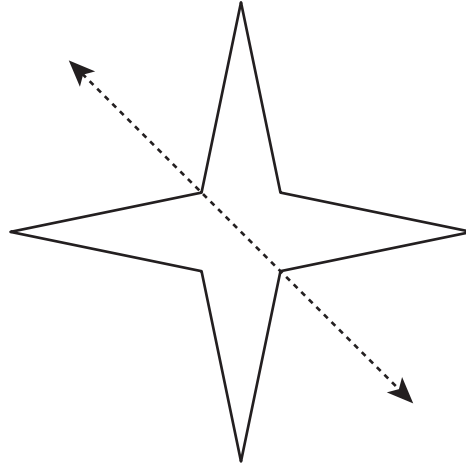
Which of these sentences are true?

Select the **two** correct answers.

Ⓐ   The dashed line is a line of symmetry for the figure.

Ⓑ   The dashed line is not a line of symmetry for the figure.

Ⓒ   The figure has a total of 0 lines of symmetry.

Ⓓ   The figure has a total of 2 lines of symmetry.

Ⓔ   The figure has a total of 4 lines of symmetry.

14 Some angles are shown in this diagram.
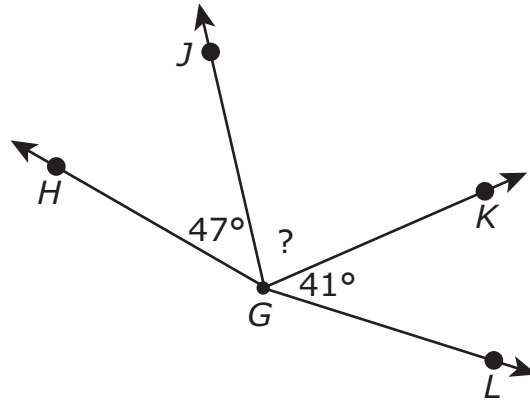
Angle *HGL* has a measure of 167°.

What is the measure of angle *JGK*?

Ⓐ 43°

Ⓑ 79°

Ⓒ 88°

Ⓓ 90°

15 Abe has 16 pins in one box and 17 pins in another box. He is hanging posters with the pins. Abe uses 4 pins to hang each poster.

What is the total number of posters Abe can hang with the pins?

Ⓐ $\frac{23}{4}$ posters

Ⓑ $\frac{33}{4}$ posters

Ⓒ 8 posters

Ⓓ 9 posters

16 Which of these statements are true?

Select the **three** correct answers.

Ⓐ 32,974 rounded to the nearest ten is 32,970

Ⓑ 32,974 rounded to the nearest ten is 33,000

Ⓒ 32,974 rounded to the nearest hundred is 32,900

Ⓓ 32,974 rounded to the nearest hundred is 33,000

Ⓔ 32,974 rounded to the nearest thousand is 33,000

Ⓕ 32,974 rounded to the nearest thousand is 34,000

17   Two protractors are used to measure angle *A* and angle *B*, as shown.
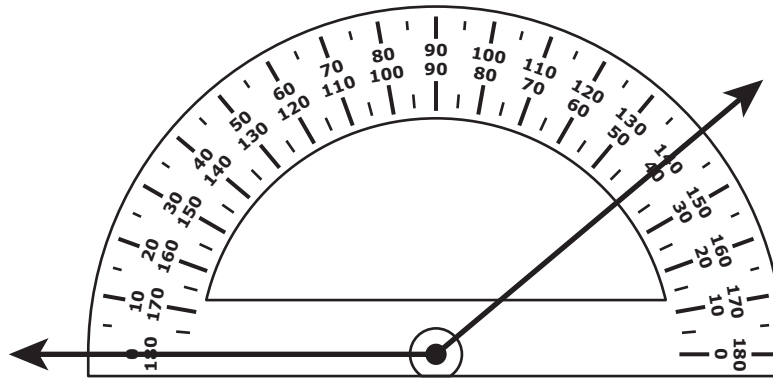
Angle *A*
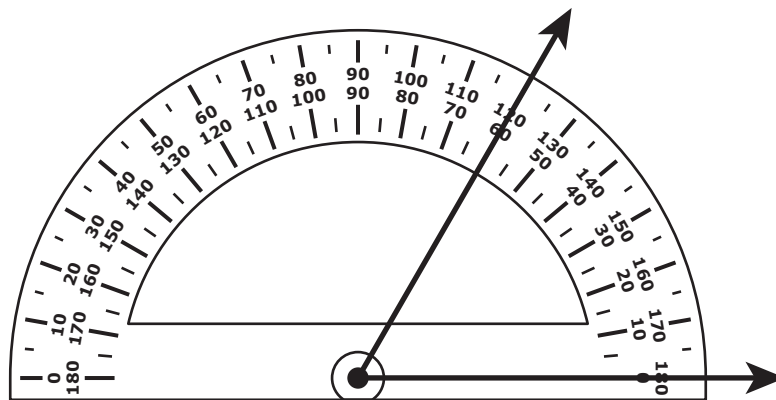
Angle *B*

Which of these shows the measures of both angles?

Ⓐ   angle *A* = 40°
     angle *B* = 120°
	Ⓑ angle *A* = 140°
	     angle *B* = 120°

Ⓒ   angle *A* = 40°
     angle *B* = 60°
	Ⓓ angle *A* = 140°
	     angle *B* = 60°

18 Meghan is making 5 loaves of banana bread. She needs $\frac{2}{3}$ cup of sugar for each loaf. How many cups of sugar does Meghan need altogether to make the 5 loaves?

Ⓐ $\frac{10}{15}$

Ⓑ $\frac{10}{3}$

Ⓒ $4\frac{1}{3}$

Ⓓ $5\frac{2}{3}$

19 A student wrote this subtraction problem in his notebook.

$$25{,}000 - 13{,}476 = \boxed{?}$$

What number belongs in the $\boxed{?}$ to make the student's subtraction problem true?

Ⓐ 11,524

Ⓑ 11,636

Ⓒ 12,476

Ⓓ 12,634

20   Anna made a diagram of her room and labeled the length and width, as shown.

What is the area of Anna's room?

Ⓐ 44 square feet

Ⓑ 100 square feet

Ⓒ 120 square feet

Ⓓ 144 square feet

Grade 4 Mathematics
Spring 2019 Released Operational Items

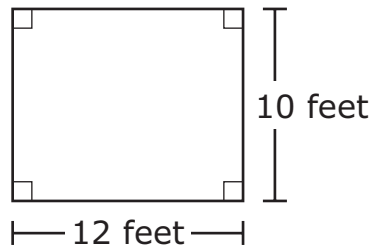| PBT Item No.	Page No.	Reporting Category	Standard	Item Type*	Item Description	Correct Answer**
1	216	*Operations and Algebraic Thinking*	4.OA.B.4	SR	Given a set of multiples of a number, determine the number.	B
2	217	*Number and Operations-Fractions*	4.NF.C.5	SR	Add fractions with denominators of 10 and 100.	A
3	218	*Number and Operations-Fractions*	4.NF.C.7	CR	Compare decimals given in tenths and hundredths in a list, order decimals from least to greatest, and determine which decimal from the list is closest in value to a given decimal.	
4	220	*Number and Operations-Fractions*	4.NF.B.3	SR	Determine which expression has a value that is not equivalent to a given expression.	B
5	221	*Number and Operations-Fractions*	4.NF.C.6	SR	Determine the location of a given decimal on a number line.	C
6	222	*Operations and Algebraic Thinking*	4.OA.A.2	CR	Write an equation with a symbol for the unknown number to represent a word problem involving multiplicative comparison and then multiply to solve problems.	
7	224	*Number and Operations-Fractions*	4.NF.A.2	SR	Identify the correct comparisons of two fractions that are represented by visual fraction models.	B,E
8	225	*Measurement and Data*	4.MD.B.4	SR	Solve a word problem with addition of fractions by using data from a dot plot.	D
9	226–227	*Geometry*	4.G.A.2	SR	Identify shapes that have at least one obtuse angle and identify a right triangle.	A,D;B
10	228	*Measurement and Data*	4.MD.A.1	SR	Convert dimensions measured in yards to feet.	B
11	228	*Number and Operations in Base Ten*	4.NBT.A.1	SA	In a given multi-digit number, recognize that the value of a digit is 10 times the value of the digit to its right.	10
12	231	*Number and Operations in Base Ten*	4.NBT.A.2	SA	Write the standard form of a number given in word form.	14205
13	232	*Geometry*	4.G.A.3	SR	Recognize a line of symmetry for a two-dimensional figure and identify how many lines of symmetry can be drawn on the figure.	A,E
14	233	*Measurement and Data*	4.MD.C.7	SR	Determine an angle measure given the measures of two adjacent angles and the sum of all three angle measures.	B
15	234	*Operations and Algebraic Thinking*	4.OA.A.3	SR	Solve a multi-step word problem involving addition and division of whole numbers.	C
16	234	*Number and Operations in Base Ten*	4.NBT.A.3	SR	Round multi-digit whole numbers to the nearest ten, hundred, and thousand.	A,D,E
17	235	*Measurement and Data*	4.MD.C.6	SR	Determine measures of given angles shown on protractors.	D
18	236	*Number and Operations-Fractions*	4.NF.B.4	SR	Solve a word problem by multiplying a fraction by a whole number.	B
19	236	*Number and Operations in Base Ten*	4.NBT.B.4	SR	Determine the difference of two five-digit numbers.	A
20	237	*Measurement and Data*	4.MD.A.3	SR	Given the length and the width of a rectangle, determine its area.	C

* Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).

** Answers are provided here for selected-response and short-answer items only. Sample responses and scoring guidelines for any constructed-response items will be posted to the Department's website later this year.

Grade 4 Mathematics
Spring 2019 Unreleased Operational Items

PBT Item No.	Reporting Category	Standard	Item Type*	Item Description
21	*Number and Operations-Fractions*	4.NF.B.3	SR	Solve a word problem involving subtraction of a given fraction from one whole.
22	*Geometry*	4.G.A.1	SR	Identify an acute angle.
23	*Geometry*	4.G.A.3	SR	Determine the figure that has three or more lines of symmetry.
24	*Operations and Algebraic Thinking*	4.OA.C.5	SR	Choose the statement that correctly identifies a feature of a given shape pattern.
25	*Number and Operations in Base Ten*	4.NBT.A.2	SR	Compare multi-digit whole numbers given in word form and in number form.
26	*Number and Operations in Base Ten*	4.NBT.B.4	SA	Determine the sum of a five-digit number and a four-digit number.
27	*Measurement and Data*	4.MD.C.5	SR	Determine the measure of an angle that turns through a portion of a circle.
28	*Number and Operations in Base Ten*	4.NBT.B.6	SA	Solve a word problem by dividing a four-digit number by a one-digit number.
29	*Number and Operations-Fractions*	4.NF.B.4	SR	Determine the fraction model that represents the product of a whole number and a unit fraction.
30	*Operations and Algebraic Thinking*	4.OA.B.4	SR	Identify multiples of a given number.
31	*Number and Operations-Fractions*	4.NF.A.1	SR	Identify a pair of equivalent fractions represented by a picture.
32	*Number and Operations in Base Ten*	4.NBT.B.5	CR	Solve word problems by multiplying whole numbers: two digits by one digit, two digits by two digits, and four digits by one digit.
33	*Number and Operations-Fractions*	4.NF.B.3	SR	Determine which expression has a value that is equivalent to a given fraction.
34	*Number and Operations-Fractions*	4.NF.C.6	SA	Write a fraction with a denominator of 100 as a decimal.
35	*Measurement and Data*	4.MD.A.2	CR	Use a ruler to measure given objects to the nearest centimeter and solve word problems involving multiplication and addition of measurements and the conversion of meters to centimeters.
36	*Number and Operations-Fractions*	4.NF.A.1	SR	Determine which fraction is equivalent to a given fraction using a picture.
37	*Number and Operations-Fractions*	4.NF.C.7	SR	Determine which decimal is greater than a number shown on a visual model and is less than 1.
38	*Operations and Algebraic Thinking*	4.OA.A.1	SR	Determine which multiplication equation represents a given word comparison and which word comparison represents a given multiplication equation.
39	*Operations and Algebraic Thinking*	4.OA.C.5	SR	Solve a word problem by determining additional terms of a given pattern.
40	*Geometry*	4.G.A.1	SR	Identify whether specified line segments and angles can be found in a given figure.

* Mathematics item types are: selected-response (SR), short-answer (SA), and constructed-response (CR).