

# Maine Through Year Assessment

## Item Type Sampler Mathematics Grade 4

Student's Name:

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**Directions:**

On the following pages of your booklet are questions for the Grade 4 *Maine Through Year Assessment Mathematics* Item Type Sampler.

Read these directions carefully before beginning this item type sampler.

This item type sampler will include several different types of questions. Multiple Choice questions will ask you to select a single answer. Multiple Select questions will ask you to select multiple correct answers from among five or more answer choices. For some questions, there may be two parts, Part A and Part B, where each part has a Multiple Choice or Multiple Select question.

For all questions:

- Read each question carefully and choose the best answer.
- You may use scratch paper to solve the problems.
- The Mathematics Reference Sheet is provided in the back of the Mathematics section. You may refer to this page at any time during the sampler.
- You may not use a calculator on this sampler.
- Be sure to answer ALL the questions.

When you come to the word STOP, you have finished the Grade 4 Mathematics Item Type Sampler.

## MATHEMATICS — ITEM TYPE SAMPLER

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1. Mrs. Jenkins walks 2 laps around the school track every morning. She walks 6 times as many laps every afternoon as she does every morning. Which equation could be used to find  $n$ , the number of laps Mrs. Jenkins walks every afternoon?

A.  $6 + 2 = n$

B.  $6 - 2 = n$

C.  $6 \div 2 = n$

D.  $6 \times 2 = n$

2. Use a protractor to measure the angle below.



What is the measure of the angle?

A.  $35^\circ$

B.  $40^\circ$

C.  $45^\circ$

D.  $50^\circ$

3. A student used circles to make a pattern that starts with 2 circles and follows the rule “add 4 circles.” Which figure shows the first four steps in the pattern?



4. Which fraction is equivalent to 0.18?

A.  $\frac{100}{18}$

B.  $\frac{18}{100}$

C.  $\frac{10}{18}$

D.  $\frac{18}{10}$

## MATHEMATICS — ITEM TYPE SAMPLER

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5. What is the quotient of  $54 \div 5$ ?

A. 10 R4

B. 10 R5

C. 14

D. 18

6. Which **two** comparisons are true?

A.  $\frac{1}{10} = \frac{10}{100}$

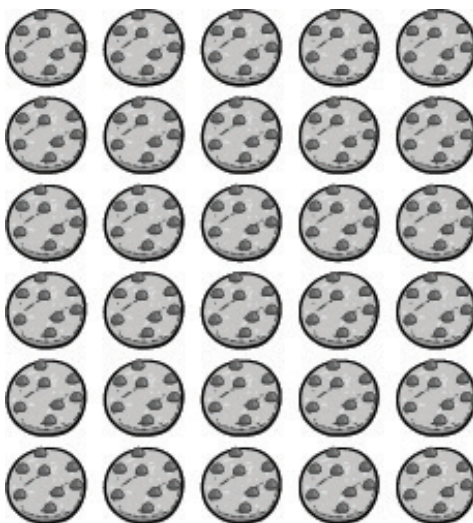
B.  $\frac{5}{10} = \frac{10}{15}$

C.  $\frac{30}{100} = \frac{3}{10}$

D.  $\frac{90}{100} = \frac{40}{50}$

E.  $\frac{60}{100} = \frac{6}{1}$

7. Oliver baked these 30 cookies.



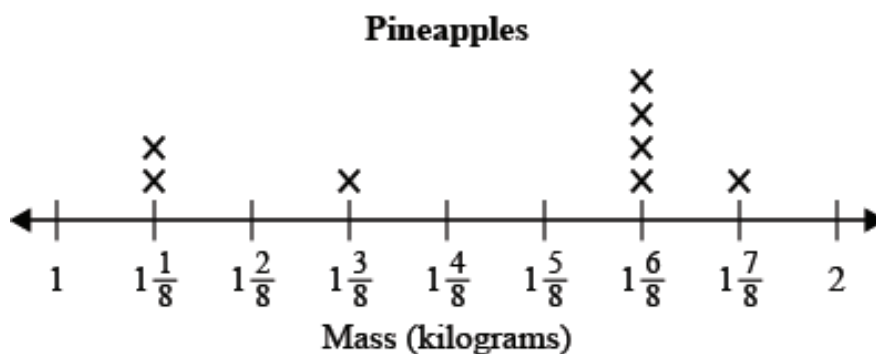
- Oliver gave  $\frac{2}{6}$  of the 30 cookies to his teacher. How many cookies did he give to his teacher?
- A. 5  
 B. 7  
 C. 10  
 D. 12
8. The measure of angle J is  $40^\circ$ , and the measure of angle K is  $140^\circ$ . Which statement is true?
- A. Angle J is acute, and angle K is obtuse.  
 B. Angle J is obtuse, and angle K is acute.  
 C. Angle J and angle K are both obtuse.  
 D. Angle J and angle K are both acute.

## MATHEMATICS — ITEM TYPE SAMPLER

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9. Which **two** statements can be represented by the expression  $3 \times 6$ ?
- A. Teddy has 6 baseball cards. He gives 3 to his friend William.
  - B. Teddy has 6 baseball cards. He shares them with 3 of his friends.
  - C. Teddy has 6 baseball cards. William has 3 times as many cards as Teddy.
  - D. William has 3 baseball cards. Teddy has 6 more cards than William.
  - E. William has 3 baseball cards. Teddy has 6 times as many cards as William.

10. The line plot shows the mass, in kilograms, of all the pineapples for sale at a store.



What is the difference, in kilograms, between the total mass of the three pineapples with the least mass and the one pineapple with the greatest mass?

- A.  $1\frac{3}{8}$  kilograms
- B.  $1\frac{6}{8}$  kilograms
- C.  $2\frac{1}{8}$  kilograms
- D.  $2\frac{2}{8}$  kilograms



11. A square has a side length of 7 inches.

**Part A**

What is the area, in square inches, of the square?

- A. 11
- B. 14
- C. 28
- D. 49

**Part B**

What is the perimeter, in inches, of the square?

- A. 11
- B. 14
- C. 28
- D. 49

12. Which number has a digit whose value can be represented by  $3,000 \div 10$ ?

- A. 930
- B. 9,300
- C. 93,000
- D. 930,000

## MATHEMATICS — ITEM TYPE SAMPLER

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13. A student wrote this equation to represent  $\frac{3}{6}$ .

$$\frac{3}{6} = \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$$

Which statement explains why the equation is correct or incorrect?

- A. The equation is correct because the denominators in  $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$  equal 6.
- B. The equation is correct because the numerators in  $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$  should represent thirds.
- C. The equation is incorrect because the numerators in  $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$  equal 1.
- D. The equation is incorrect because the denominators in  $\frac{1}{2} + \frac{1}{2} + \frac{1}{2}$  were added.
14. Which number is a multiple of 4?
- A. 30
- B. 38
- C. 42
- D. 48
15. Which shapes ALWAYS have two pairs of parallel sides? Select **three** shapes.
- A. square
- B. rhombus
- C. trapezoid
- D. rectangle
- E. quadrilateral

### Perimeter

The perimeter of a polygon is equal to the sum of the lengths of its sides.

### Circumference of a Circle

$$C = \pi d \text{ or } C = 2\pi r$$

$$\pi \approx 3.14$$

### Area

Triangle  $A = \frac{1}{2}bh$

Rectangle  $A = bh$  or  $A = lw$

Circle  $A = \pi r^2$

### Surface Area

The total area of the 2-dimensional surfaces that make up a 3-dimensional object.

### Volume

Right Rectangular Prism  $V = lwh$  or  $V = Bh$

Right Prism  $V = Bh$

Cylinder  $V = \pi r^2 h$

Cone  $V = \frac{1}{3}\pi r^2 h$

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

Pyramid  $V = \frac{1}{3}Bh$

### Slope Formula

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

### Linear Equation

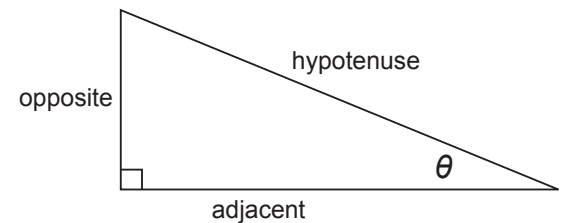
$$y = mx + b$$

### Pythagorean Theorem

$$a^2 + b^2 = c^2$$

### Definition of Trigonometric Functions

For  $0^\circ < \theta < 90^\circ$ ,



$$\sin \theta = \frac{\text{opposite}}{\text{hypotenuse}}$$

$$\cos \theta = \frac{\text{adjacent}}{\text{hypotenuse}}$$

$$\tan \theta = \frac{\text{opposite}}{\text{adjacent}}$$

### Mean

$$\bar{x} = \frac{x_1 + x_2 + x_3 + \dots + x_n}{n}$$

### Interquartile Range

$$IQR = Q_3 - Q_1$$

The difference between the third quartile and first quartile of a set of data.

### Standard Deviation

$$\sigma = \sqrt{\frac{(x_1 - \bar{x})^2 + (x_2 - \bar{x})^2 + \dots + (x_n - \bar{x})^2}{n}}$$

