Maine Department of
Education

Maine Through Year Assessment

Item Type Sampler
Mathematics
Grade 3

Student's Name:

Maine Department of Education

Directions:

On the following pages of your booklet are questions for the Grade 3 *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 3 Mathematics Item Type Sampler.

STOP.

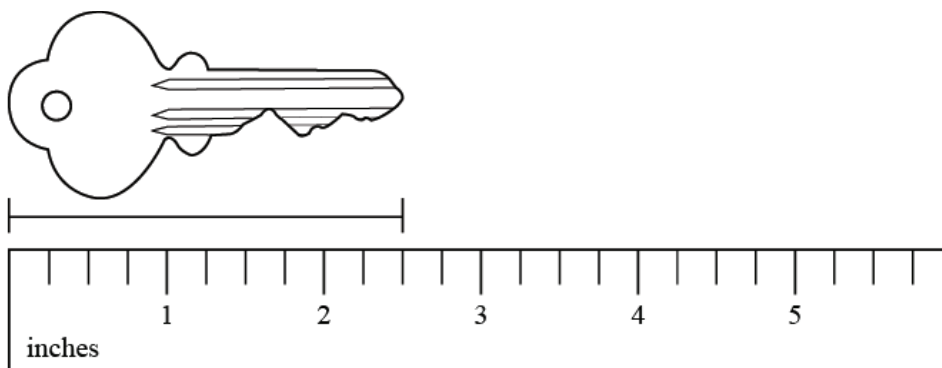1. **Use the number line to answer the question.**

0 $\frac{6}{6}$
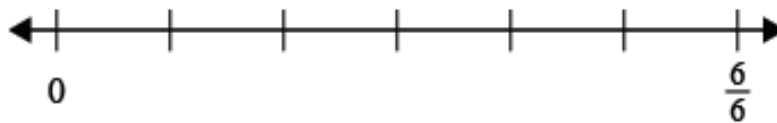
Which comparison is true?

A. $\frac{3}{6} < \frac{2}{6}$

B. $\frac{2}{6} > \frac{6}{6}$

C. $\frac{5}{6} < \frac{4}{6}$

D. $\frac{4}{6} > \frac{2}{6}$

Go on to the next page.

2. **Use the diagram below to answer the question.**

What is the length of the key to the nearest quarter inch?

A. 2 inches

B. $2\frac{1}{4}$ inches

C. $2\frac{1}{2}$ inches

D. 3 inches

3. What is the difference?

$$643 - 297$$

A. 346

B. 366

C. 454

D. 940

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4. Which **three** equations are true?

    A. $60 \div 10 = 6$
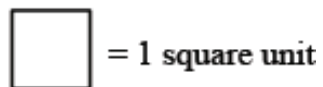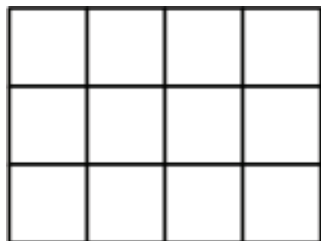
    B. $42 \div 7 = 7$

    C. $48 \div 8 = 7$

    D. $56 \div 7 = 8$

    E. $70 \div 10 = 8$

    F. $54 \div 6 = 9$

5. A student used unit squares to make this figure.

    = 1 square unit

    Which expression could be used to find the area of the figure in square units?

    A. $3 + 4$

    B. $3 + 3 + 3$

    C. $4 + 4 + 4$

    D. $4 + 3 + 4 + 3$

Go on to the next page.

6. A student partitions a square into 8 equal parts. Which statements must be true? Select **two** statements.

   A. The area of each part is $\frac{1}{8}$ square unit.

   B. The area of the square is $\frac{1}{8}$ square unit.

   C. The area of the square is 8 square units.

   D. The area of each part is $\frac{1}{8}$ the area of the square.

   E. The area of the square is 8 times the area of each part.

7. A student shaded this shape to model 1.
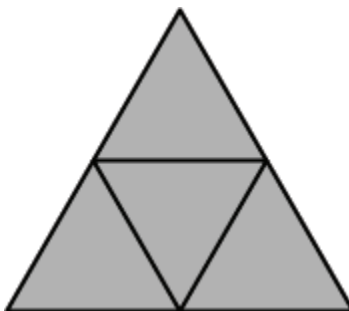
   Which fraction is equivalent to 1?

   A. $\frac{1}{3}$

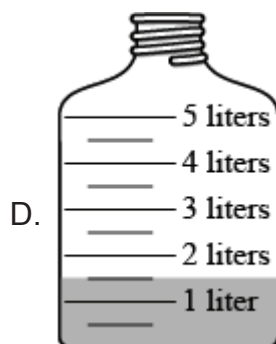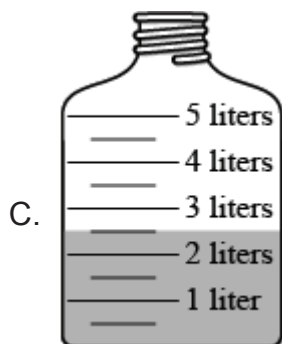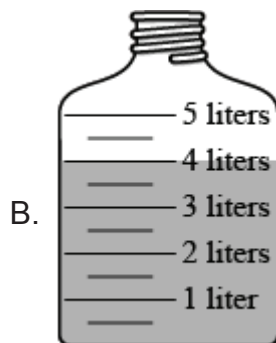   B. $\frac{3}{1}$

   C. $\frac{4}{4}$

   D. $\frac{4}{1}$
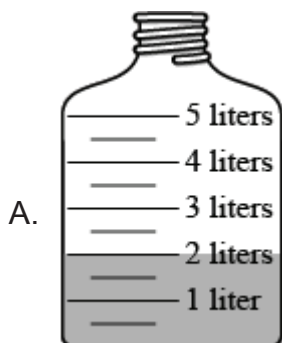
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8. Which problem could be represented by 8 × 2?

    A. A student placed 8 pencils in each of 2 boxes. How many pencils are there in all?

    B. There are 8 pencils and 2 markers in a box. How many pencils and markers are in the box?

    C. There are 8 pencils and 2 markers in a box. How many more pencils than markers are in the box?

    D. A student placed 8 pencils in 2 boxes. There is an equal number of pencils in each box. How many pencils are in each box?

9. Which statements are true of rectangles, rhombuses, and squares? Select **four** statements.

    A. The lengths of any side of a square are the same.

    B. The lengths of any side of a rhombus are the same.

    C. The lengths of any side of a rectangle are the same.

    D. The measures of any angle of a square are the same.

    E. The measures of any angle of a rhombus are the same.

    F. The measures of any angle of a rectangle are the same.

Go on to the next page.

10. Which water bottle has exactly 2 liters of water?

A.
5 liters
4 liters
3 liters
2 liters
1 liter

B.
5 liters
4 liters
3 liters
2 liters
1 liter

C.
5 liters
4 liters
3 liters
2 liters
1 liter

D.
5 liters
4 liters
3 liters
2 liters
1 liter

11. A point on a number line represents the fraction $\frac{1}{6}$. Which statement is true?

A. The point is 6 units from 0 on the number line.

B. The point is 1 unit from 0 on the number line.

C. The point is $\frac{5}{6}$ unit from 0 on the number line.

D. The point is $\frac{1}{6}$ unit from 0 on the number line.

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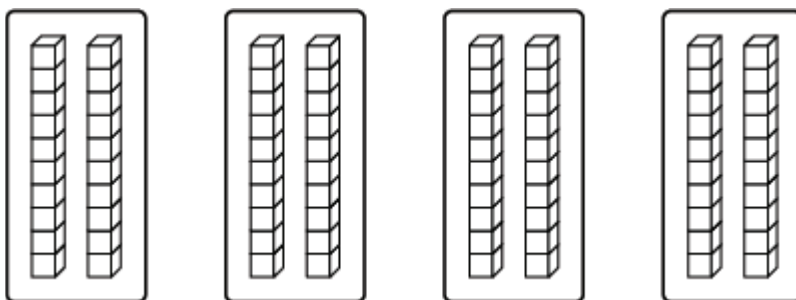
12. **Use the numbers below to answer the question.**

    800, 775, 750, 725, 700, 675, 650

    Beginning with 800, what is the pattern?

    A. add 25

    B. subtract 25

    C. add 50

    D. subtract 50

13. A student made this model to find the product of 4 and 20.

    Which statement explains whether the model can be used to find the product of 4 and 20?

    A. It can be used because there are 4 groups of 2 ones.

    B. It can be used because all the tens can be added to find the product.

    C. It cannot be used because the model needs to include a multiplication symbol.

    D. It cannot be used because the model should show one group of 4 and one group of 20.

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14. Devin works after school on Tuesdays and Wednesdays.

    Part A

    Devin worked after school from 5:40 p.m. to 7:10 p.m. on Tuesday. How much time did Devin spend working after school on Tuesday?

    A. 1 hour and 30 minutes

    B. 2 hours and 30 minutes

    C. 2 hours and 50 minutes

    D. 3 hours and 30 minutes

    Part B

    On Wednesday, Devin started work at 5:45 p.m. and stopped working 2 hours and 20 minutes later. At what time did Devin stop working on Wednesday?

    A. 7:05 p.m.

    B. 7:25 p.m.

    C. 7:45 p.m.

    D. 8:05 p.m.

15. A large horse has a mass of 907 kilograms. A smaller horse has a mass of 544 kilograms. What is the difference in mass between the large horse and the smaller horse?

    A. 343 kilograms

    B. 363 kilograms

    C. 443 kilograms

    D. 463 kilograms

STOP.

Perimeter

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

Circumference of a Circle

$C = \pi d$ or $C = 2\pi r$

$\pi \approx 3.14$

Area

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

Rectangle $\qquad\quad A = bh$ or $A = lw$

Circle $\qquad\qquad\; A = \pi r^2$

Surface Area

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

Volume

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

Right Prism $\qquad\qquad\quad V = Bh$

Cylinder $\qquad\qquad\qquad V = \pi r^2 h$

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

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

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

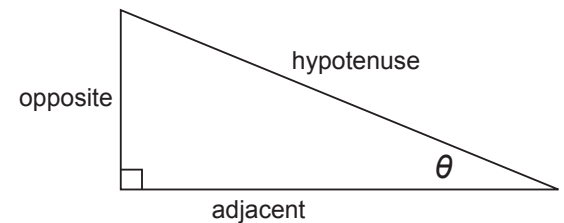## Slope Formula

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

Linear Equation

$y = mx + b$

Pythagorean Theorem

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

Definition of Trigonometric Functions

For $0° < \theta < 90°$,

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

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

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

Mean

$\overline{x} = \dfrac{x_1 + x_2 + x_3 + \dots + x_n}{n}$

Interquartile Range

$IQR = Q_3 - Q_1$

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

Standard Deviation

$\sigma = \sqrt{\dfrac{\left(x_1 - \overline{x}\right)^2 + \left(x_2 - \overline{x}\right)^2 + \dots + \left(x_n - \overline{x}\right)^2}{n}}$

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