

Maine Through Year Assessment

Item Type Sampler Mathematics Grade 5

Student's Name:

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Directions:

On the following pages of your booklet are questions for the Grade 5 *Maine Through Year Assessment Mathematics* 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 5 Mathematics Item Type Sampler.

MATHEMATICS — ITEM TYPE SAMPLER

1. Which expression represents the value of 4 in 240?

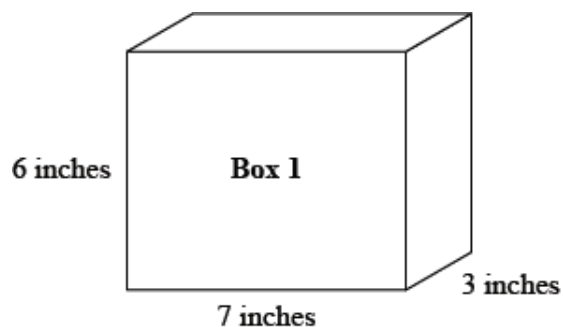
A. $\frac{1}{10} \times 400$

B. $\frac{1}{10} \times 40$

C. $\frac{1}{10} \times 4$

D. $\frac{1}{10} \times 0.4$

2. A student is making two boxes in the shape of rectangular prisms. The diagram shows Box 1.



(Volume = length \times width \times height)

The second box the student made, Box 2, has the same volume as Box 1. Which could be the dimensions of Box 2?

A. 6 inches by 7 inches by 2 inches

B. 10 inches by 6 inches by 1 inch

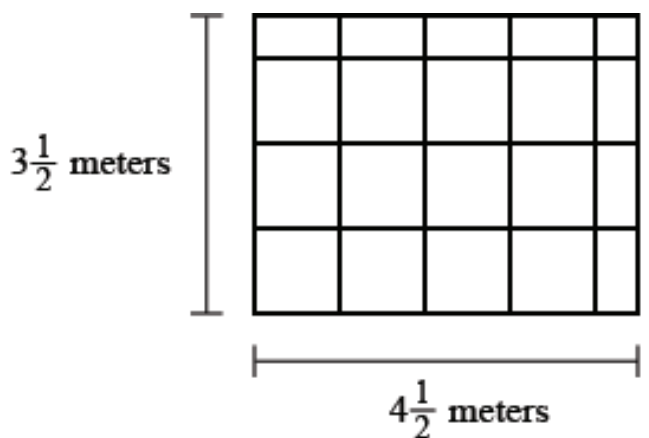
C. 3 inches by 6 inches by 7 inches

D. 2 inches by 2 inches by 14 inches

3. Which expression has a value that is twice as great as 3×5 ?

- A. 2×10
- B. 6×10
- C. $2 \times (3 \times 5)$
- D. $(2 \times 3) \times (2 \times 5)$

4. A student painted the entire area of a rectangular wall that measures $3\frac{1}{2}$ meters by $4\frac{1}{2}$ meters. The model shows the wall.



(Area = length \times width)

What is the area, in square meters, of the wall?

- A. 12 square meters
- B. $12\frac{1}{4}$ square meters
- C. $15\frac{3}{4}$ square meters
- D. 16 square meters

MATHEMATICS — ITEM TYPE SAMPLER

5. Use the statement to answer the question.

the difference between the quotient of 9 and 3 and the sum of 2 and 1

Which expression represents the statement?

A. $(9 \div 3) - (2 + 1)$

B. $(9 \div 3) - 2 + 1$

C. $9 \div (3 - 2) + 1$

D. $9 \div (3 - 2 + 1)$

6. **Part A**

Which fractions are equivalent to $\frac{10}{18}$? Select **two** fractions.

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

B. $\frac{5}{9}$

C. $\frac{9}{17}$

D. $\frac{15}{27}$

E. $\frac{21}{36}$

Part B

What is a common denominator of $\frac{10}{18}$ and $\frac{4}{12}$?

A. 30

B. 32

C. 36

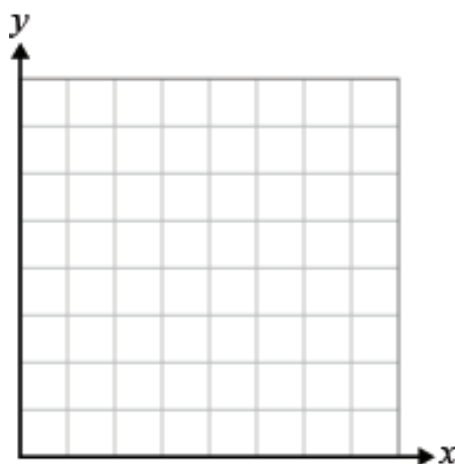
D. 40

7. The table shows the number of hours a student fished and the total number of fish the student caught.

Fish Caught

Hours	Total Number of Fish
1	2
2	4
3	5
5	6

The student will use this graph to represent the data.

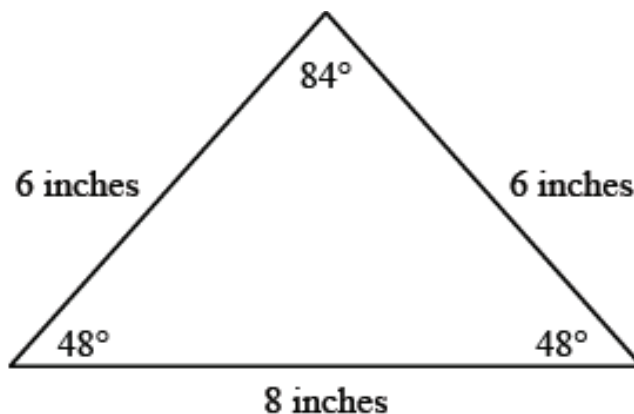


Which **three** statements describe how the student could correctly label the graph?

- A. Label the x-axis “Hours.”
- B. Label the y-axis “Number of Fish.”
- C. Title the graph “Number of Fish Sold.”
- D. Label the origin on the x-axis and on the y-axis “1.”
- E. Use a scale of 1 to label each coordinate on the x-axis and on the y-axis.
- F. Use a scale of 6 to label each coordinate on the x-axis and on the y-axis.

MATHEMATICS — ITEM TYPE SAMPLER

8. A student draws this triangle.



The student says, “The triangle is an acute isosceles triangle.” Which statement explains if the student is correct or incorrect?

- A. The student is correct because exactly two sides are the same length and one angle is greater than 80° .
- B. The student is correct because exactly two sides are the same length and all angles are less than 90° .
- C. The student is incorrect because only two sides are the same length and one angle is greater than 80° .
- D. The student is incorrect because only two sides are the same length and all angles are less than 90° .

9. Use the conversions to answer the question.

(1 cup = 8 fluid ounces)

(1 pint = 2 cups)

What is the volume of 1 pint in fluid ounces?

A. 4

B. 6

C. 10

D. 16

10. Which expressions have a remainder? Select **three** expressions.

A. $160 \div 32$

B. $220 \div 11$

C. $855 \div 25$

D. $1,475 \div 75$

E. $3,635 \div 57$

F. $4,005 \div 45$

MATHEMATICS — ITEM TYPE SAMPLER

11. Which statement explains why ALL squares are rectangles but not ALL rectangles are squares?
- A. A rectangle can have only two right angles, but a square must have all right angles.
 - B. A square can have only two right angles, but a rectangle must have all right angles.
 - C. A rectangle can have two pairs of equal sides, but a square must have all equal sides.
 - D. A square can have two pairs of equal sides, but a rectangle must have all equal sides.
12. What is $[(16 - 6) \div 2] + (3 \times 3)$?
- A. 14
 - B. 22
 - C. 24
 - D. 48
13. Which statements are true about a unit cube? Select **three** statements.
- A. The edge length of a unit cube is 1 unit.
 - B. The edge length of a unit cube is 4 units.
 - C. The volume of a unit cube is 1 cubic unit.
 - D. The volume of a unit cube is 3 cubic units.
 - E. The base area of a unit cube is 1 square unit.
 - F. The base area of a unit cube is 4 square units.

14. What is the value of 488×65 ?
- A. 3,640
 - B. 5,368
 - C. 26,880
 - D. 31,720
15. A recipe calls for $\frac{1}{4}$ pound of nuts, $\frac{1}{8}$ pound of candy pieces, and $\frac{1}{3}$ pound of dried fruit. What is the total weight, in pounds, of nuts, candy pieces, and dried fruit the recipe calls for?
- A. $\frac{1}{15}$ pound
 - B. $\frac{3}{15}$ pound
 - C. $\frac{17}{24}$ pound
 - D. $\frac{17}{8}$ pounds

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 $A = bh \text{ or } A = lw$

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 $V = lwh \text{ or } V = Bh$

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

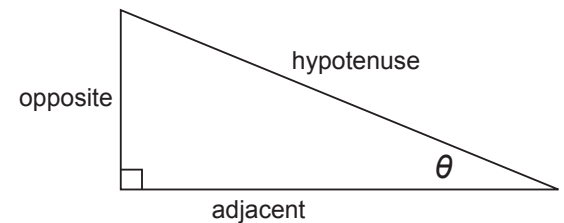
$$y = mx + b$$

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

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

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