https://www.education.pa.gov/Documents/K-12/Assessment%20and%20Accountability/PSSA/Item%20and%20Scoring%20Samples/2022%20PSSA%20ISS%20Math%20Grade%205.pdf

2022-2023 Item and Scoring Samplers

General Description of Scoring Guidelines for Mathematics Open-Ended Items

4—The response demonstrates a *thorough* understanding of the mathematical concepts and procedures required by the task.

The response provides correct answer(s) with clear and complete mathematical procedures shown and a correct explanation, as required by the task. The response may contain a minor "blemish" or omission in work or explanation that does not detract from demonstrating a *thorough* understanding.

3—The response demonstrates a *general* understanding of the mathematical concepts and procedures required by the task.

The response and explanation (as required by the task) are mostly complete and correct. The response may have minor errors or omissions that do not detract from demonstrating a *general* understanding.

2—The response demonstrates a *partial* understanding of the mathematical concepts and procedures required by the task.

The response is somewhat correct with *partial* understanding of the required mathematical concepts and/or procedures demonstrated and/or explained. The response may contain some work that is incomplete or unclear.

1—The response demonstrates a *minimal* understanding of the mathematical concepts and procedures required by the task.

0—The response has no correct answer and *insufficient* evidence to demonstrate any understanding of the mathematical concepts and procedures required by the task for that grade level.

The response may show only information copied from the question.

Special Categories within zero reported separately:

BLK (blank).....Is blank, is entirely erased, or gives a written refusal to respond

OT.....Is off-task

LOE.....Is in a language other than English

IL.....Is illegible

Grade 5 Formula Sheet

Formulas and conversions that you may need on this test are found below.
You may refer back to this page at any time during the mathematics test.

2022
Grade 5

Standard Conversions

1 mile (mi) = 1,760 yards (yd)
1 mile = 5,280 feet (ft)
1 yard (yd) = 3 feet (ft)
1 foot = 12 inches (in.)

1 ton (T) = 2,000 pounds (lb)
1 pound = 16 ounces (oz.)

1 gallon (gal) = 4 quarts (qt)
1 quart = 2 pints (pt)
1 pint = 2 cups (c)
1 cup = 8 fluid ounces (fl oz.)

Metric Conversions

1 kilometer (km) = 1,000 meters (m)
1 meter = 100 centimeters (cm)
1 centimeter = 10 millimeters (mm)

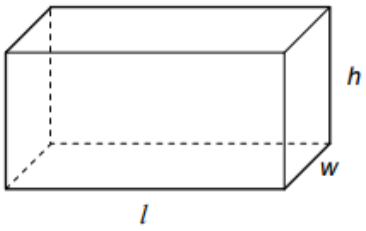
1 kilogram (kg) = 1,000 grams (g)

1 liter (L) = 1,000 milliliters (mL)

Time Conversions

1 century = 10 decades
1 decade = 10 years (yr)
1 year (yr) = 12 months (mo)
1 year = 52 weeks (wk)
1 year = 365 days
1 week = 7 days
1 day = 24 hours (hr)
1 hour = 60 minutes (min)
1 minute = 60 seconds (sec)

Rectangular Prism



Volume = length × width × height
$V = l \times w \times h$

Volume = area of the base × height
$V = B \times h$

Volume = area of the base × width
$V = B \times w$

Volume = area of the base × length
$V = B \times l$

Question 1 in this sampler is to be solved without the use of a calculator.

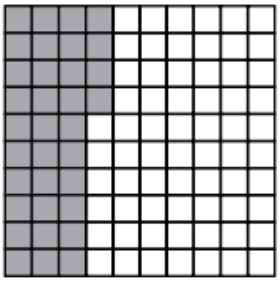
MULTIPLE-CHOICE ITEMS

1. Multiply: 372×108

A. 6,696
B. 39,666
C. 40,176
D. 282,816

A calculator is permitted for use in solving questions 2–16 in this sampler.

2. The 10-by-10 grid shown below represents one whole.



The decimal number q is represented by the shaded part of the grid. Which statement correctly compares the value of q with two other numbers?

A. The value of q is greater than 0.1 and less than 0.305.
B. The value of q is greater than 0.305 and less than 0.35.
C. The value of q is greater than 0.35 and less than 0.675.
D. The value of q is greater than 0.675 and less than 3.5.

3. Four number sentences are shown below, some of which are not true.

$$436.04 = 444.03$$

$$236.76 = 235.84$$

$$505.64 > 505.55$$

$$325.64 > 325.54$$

Each number is rounded to the nearest tenth. The comparison symbol in each number sentence remains the same. Which number sentence is rounded correctly and is true?

A. The number sentence $436.04 = 444.03$ becomes $440 = 440$.

B. The number sentence $236.76 = 235.84$ becomes $236.8 = 235.8$.

C. The number sentence $505.64 > 505.55$ becomes $505.6 > 505.5$.

D. The number sentence $325.64 > 325.54$ becomes $325.6 > 325.5$.

4. Serena has one large and one small beehive. Information about the hives and the bees living in each hive is listed below.

- There are 1,050 bees living in the large hive.
- The number of bees living in the small hive is 0.7 times the number of bees living in the large hive.
- The bees living in the small hive visit 2,500 flowers each day.
- The bees living in the large hive visit 0.8 times the number of flowers visited each day by the bees living in the small hive.

Which statement about the bees is true?

A. There are 8,400 bees living in the two hives.

B. There are 1,057 bees living in the small hive.

C. The bees living in the two hives visit 2,508 flowers each day.

D. The bees living in the large hive visit 2,000 flowers each day.

5. Which step should be performed first when subtracting $\frac{1}{5}$ from $\frac{5}{7}$?

A. Subtract 1 from 5.

B. Invert the fraction $\frac{1}{5}$.

C. Find a common denominator by adding 5 and 7.

D. Find a common denominator by multiplying 5 and 7.

6. Aaron's fish bowl contains $2\frac{3}{5}$ gallons of water. Bryan's fish bowl contains $1\frac{7}{8}$ gallons of water. How many more gallons of water does Aaron's fish bowl contain than Bryan's fish bowl?

A. $\frac{11}{40}$

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

C. $\frac{29}{40}$

D. $\frac{4}{3}$

7. Which story matches the expression $(18 - 3 \times 4) \div 2$?

A. Ed had $18. He bought a pen for $3 and 4 pencils for $2 each.

B. Ed had $18. He bought 3 pens for $4 each and gave $2 to his sister.

C. Ed had $18. He gave half the money away and then bought 3 pens for $4 each.

D. Ed had $18. He bought 3 pens for $4 each and then shared the rest of the money equally with his sister.

8. When finding the value of the expression $81 - (24 \div 3 \times 2) + 18$, which operation should be completed first?

A. $81 - 24$

B. $24 \div 3$

C. 3×2

D. $2 + 18$

9. Andrew has $3\frac{1}{2}$ liters of juice. For a party, he needs $1\frac{1}{2}$ times the amount of juice he has already. The expression shown below represents the total amount of juice, in liters, Andrew needs, but one number is missing.

$$\left(3+\frac{1}{2}\right)\left(\square+\frac{1}{2}\right)$$

What number should go into the box so the expression represents the total amount of juice, in liters, Andrew needs?

A. $\frac{1}{4}$

B. 1

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

D. 3

10. The first five values in a number pattern are represented by the expressions below.

$$4 \times 1 \qquad 4 \times 2 \qquad 4 \times 3 \qquad 4 \times 4 \qquad 4 \times 5$$

The pattern continues. How many values in the pattern are **less** than 100?

A. 19

B. 24

C. 25

D. 99

11. Julian has 4 videos. Each video is the same length. The total time for all of the videos is 300 **seconds**. How many **minutes** long is each video?

A. 0.8 minute

B. 1.25 minutes

C. 20 minutes

D. 75 minutes

12. A runner drinks $\frac{1}{2}$ **pint** of water during a race. How many **gallons** of water does the runner drink during the race?

A. $\frac{1}{16}$ gallon

B. $\frac{1}{10}$ gallon

C. $\frac{1}{8}$ gallon

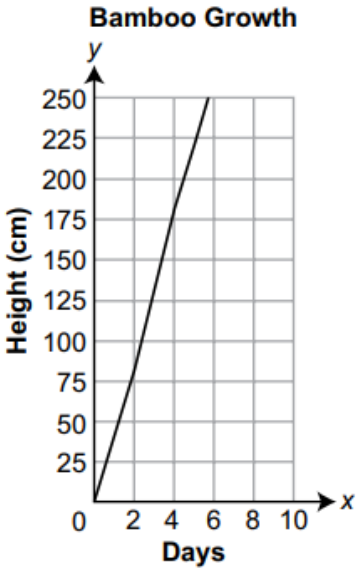
D. $\frac{1}{4}$ gallon

13. The table below shows the recorded height of a bamboo plant after several days of growth.

Bamboo Growth

Days	2	4	6	8	10
Height (cm)	82	181	264	318	348

The line graph below was made to display the data from the table, but not all the data fit on the graph.



Which change would allow all the data from the table to fit on the graph without changing the size of the grid?

A. for the *x*-axis, using a scale of 1 instead of a scale of 2

B. for the *x*-axis, using a scale of 3 instead of a scale of 2

C. for the *y*-axis, using a scale of 15 instead of a scale of 25

D. for the *y*-axis, using a scale of 35 instead of a scale of 25

14. The table below shows the number of pizzas served during lunch at a school cafeteria over three days.

Pizzas Served in Cafeteria

Day	Number of Pizzas Served
Wednesday	$2\frac{1}{2}$
Thursday	3
Friday	6

Which pictograph represents the data shown in the table?

A.

Pizzas Served in Cafeteria

Day	Number of Pizzas Served
Wednesday	
Thursday	
Friday	

Key: = 2 pizzas

B.

Pizzas Served in Cafeteria

Day	Number of Pizzas Served
Wednesday	
Thursday	
Friday	

Key: = 2 pizzas

C.

Pizzas Served in Cafeteria

Day	Number of Pizzas Served
Wednesday	
Thursday	
Friday	

Key: = 2 pizzas

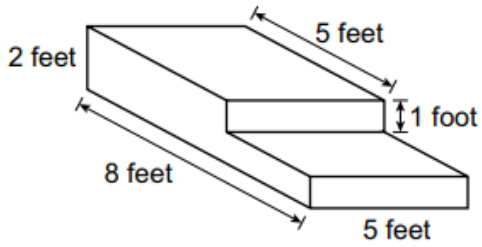
D.

Pizzas Served in Cafeteria

Day	Number of Pizzas Served
Wednesday	
Thursday	
Friday	

Key: = 2 pizzas

15. A set of stairs is being made from concrete. A picture of the stairs is shown below.



What is the volume, in cubic feet, of the set of stairs?

A. 21

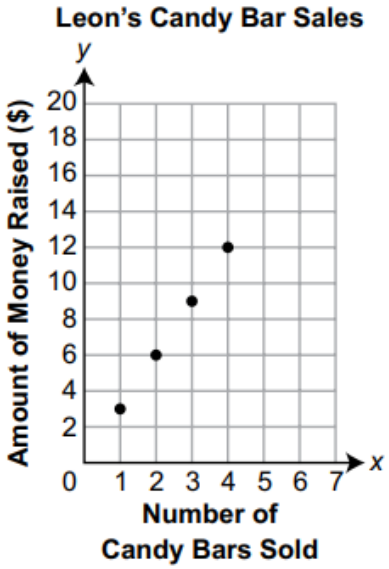
B. 65

C. 80

D. 120

OPEN-ENDED QUESTION

16. Leon is selling candy bars for a school fundraiser. He raises $3.00 for each candy bar he sells. The graph shown below represents the total amount of money, in dollars, Leon has raised based on the number of candy bars he has sold.



The pattern continues.

A. Which axis represents the number of candy bars sold?

B. Write the ordered pair that represents the amount of money Leon raises for selling 6 candy bars.

(_____, _____)

16. ***Continued.*** Please refer to the previous page for task explanation.

C. Explain why it is **not** possible for any of the points on the graph to have a *y*-coordinate of 77.

Last year, Leon raised a total of $240 from his candy bar sales. This year, his goal is to raise at least 2.5 times that amount.

D. What is the **fewest** candy bars Leon needs to sell to reach his goal for this year? Show or explain all your work.