Wisconsin Forward Exam

WISCONSIN DEPARTMENT OF Public Instruction

Mathematics Item Sampler Grade 6

Answer the items below. A calculator **may not** be used to assist with calculations necessary to answer items in Session 1.

1. Pedro purchased a rectangular piece of land that is $\frac{5}{6}$ mile long and has an area of $\frac{5}{8}$ square mile.

How wide, in miles, is Pedro's piece of land?

A. $\frac{5}{24}$

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

C. $\frac{25}{48}$

D. $1\frac{11}{24}$

2. Andre used the equation shown to find the volume, V, of a cube with edge lengths of $\frac{3}{4}$ foot.

$$\left(\frac{3}{4}\right)^3 = V$$

What is the volume, in cubic feet, of the cube?

A. $\frac{27}{64}$

B. $\frac{9}{16}$

C. $\frac{9}{12}$

D. $\frac{9}{4}$

Go on to the next page.

3. It took Isabel 9 hours to complete 2 paintings. At this same rate, how much time, in hours, will it take Isabel to complete 3 paintings?

4. Emily has 24 days to read a 792-page book. To figure out how many pages, p, she should read each day, she uses the equation shown.

$$792 \div 24 = p$$

How many pages should Emily read each day to finish the book in 24 days?

A. 21

B. 30

C. 33

D. 38

Go on to the next page.

5. Steve runs a window washing business. The table shows the amounts of time, in minutes, it takes Steve to wash different numbers of windows. He washes every window in the same amount of time.

Steve's Window Washing

Windows Washed	1	2	4	6	8
Time (minutes)	?	5	10	15	20

How many minutes does it take Steve to wash 1 window?

A. 0

B. 1

C. 1.5

D. 2.5

STOP.

STOP.

Answer the items below. A calculator **may** be used to assist with calculations necessary to answer items in Session 2.

1. Terrance earned a total of $870 by mowing lawns over the summer. He charged $15 for each lawn he mowed. Which equation can be used to find the total number of lawns, L, that Terrance mowed over the summer?

A. $\frac{L}{870} = 15$

B. $15L = 870$

C. $\frac{15}{L} = 870$

D. $870L = 15$

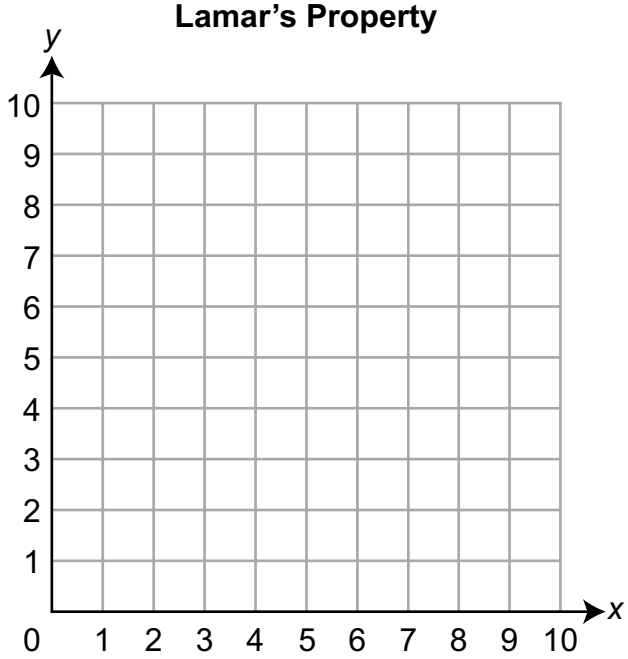
Go on to the next page.

2. On a map, the shape of Lamar's property is a quadrilateral. The locations of the corners of his property can be plotted as points on a coordinate grid using the following ordered pairs.

(1, 1), (2, 8), (8, 9), (9, 0)

Plot all the ordered pairs and connect them with line segments to create the shape of Lamar's property.

Lamar's Property



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3. What is the value of $-(-9)$?

4. Which question is a statistical question?

A. How tall is Lisa?

B. How much did John pay for his new bike?

C. How many customers visit the school store each day?

D. How many players are on the school basketball team?

Go on to the next page.

5. Ben rides his bike at an average speed of 15 miles per hour. Which equation could Ben use to find the distance, d, in miles, he has traveled after biking for t hours?

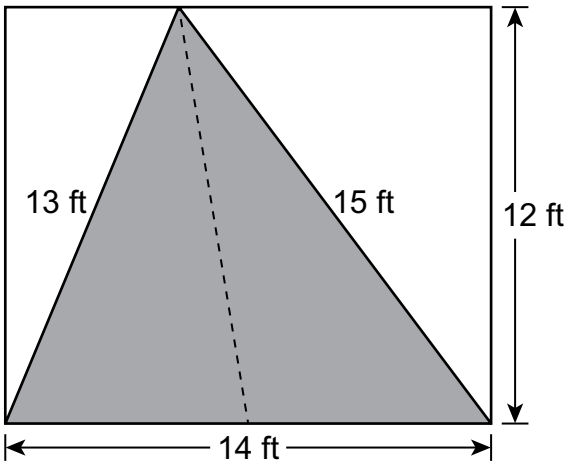
A. $d = 15t$

B. $t = 15d$

C. $d = 15 + t$

D. $t = 15 + d$

6. On a rectangular wall, Terry paints a picture of a road. A picture of Terry's painting is shown. All measurements are in feet (ft).



What is the area, in square feet, of the road in Terry's painting?

A. 42

B. 84

C. 105

D. 168

Go on to the next page.

7. Which statement is correct?

A. $^{-}5 < 0$ because $^{-}5$ is to the left of 0 on a number line

B. $^{-}5 < 0$ because $^{-}5$ is to the right of 0 on a number line

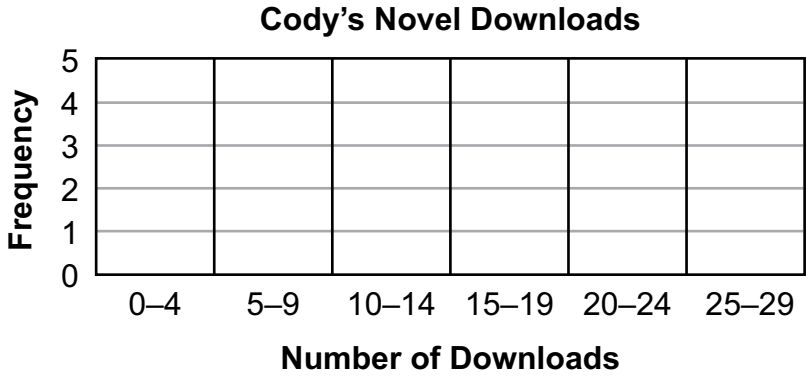
C. $^{-}5 > 0$ because $^{-}5$ is to the left of 0 on a number line

D. $^{-}5 > 0$ because $^{-}5$ is to the right of 0 on a number line

8. Cody publishes a novel online. Each day for 14 days, he records how many copies of his novel were downloaded. His data are shown.

0, 0, 2, 3, 5, 6, 8, 12, 15, 19, 20, 22, 22, 29

Make a histogram to represent Cody's data.



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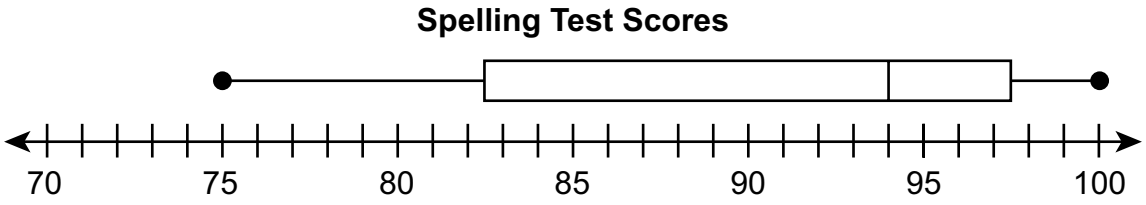
9. Amy earns $12.50 per hour at her work. She uses the equation shown to calculate the number of hours, h, she worked last week.

$$12.5h = 312.5$$

How many hours did Amy work last week?

10. The box plot shows the scores of a spelling test taken by the students in Ms. Miller's 6th-grade class.



What is the interquartile range of the spelling test scores?

A. $3\frac{1}{2}$

B. $11\frac{1}{2}$

C. 15

D. 25

STOP.

STOP.

SUMMARY DATA

Grade 6

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
Session 1 (Non-Calculator)				
1	6.NS.1	B	2	The question asks the student to determine the width of a rectangle. A. Incorrect. The student subtracts $\frac{5}{8}$ from $\frac{5}{6}$. B. Correct. The student divides $\frac{5}{8}$ by $\frac{5}{6}$. C. Incorrect. The student multiplies $\frac{5}{6}$ and $\frac{5}{8}$. D. Incorrect. The student adds $\frac{5}{6}$ and $\frac{5}{8}$.
2	6.EE.2c	A	1	The question asks the student to determine the volume of a cube. A. Correct. The student calculates $\frac{3}{4} \times \frac{3}{4} \times \frac{3}{4}$. B. Incorrect. The student calculates $\frac{3}{4} \times \frac{3}{4}$. C. Incorrect. The student multiplies the numerator, 3, and denominator, 4, by 3. D. Incorrect. The student multiplies $\frac{3}{4}$ by 3.

Grade 6

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
3	6.RP.3b	Exemplar: 13.5	2	The question asks the student to determine a unit rate. To receive full credit, the student must enter 13.5 or an equivalent value.
4	6.NS.2	C	1	The question asks the student to solve an equation. A. Incorrect. The student incorrectly starts with a 2 to answer how many times 24 goes into 79. After subtracting 48 from 79 to get 31, the student does NOT bring down the 2 and determines that 24 goes into 31 one time. B. Incorrect. The student correctly starts with a 3 to answer how many times 24 goes into 79. After subtracting 72 from 79 to get 7, the student does NOT bring down the 2 and determines that 24 goes into 7 zero times. C. Correct. The student uses the standard algorithm to calculate the quotient. D. Incorrect. The student incorrectly begins the standard algorithm by dividing 92 by 24 to get 3. After subtracting 72 from 92 to get 20, the student brings down the 0 and determines that 24 goes into 200 eight times.

Grade 6

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
5	6.RP.3a	D	2	The question asks the student to determine a unit rate. A. Incorrect. The student uses the pattern of the *y*-values in the table. B. Incorrect. The student interprets the situation to have to start at 1 minute. C. Incorrect. The student incorrectly divides 5 by 2. D. Correct. The student correctly divides 5 by 2.
Session 2 (Calculator)				
1	6.EE.7	B	2	The question asks the student to determine an equation for a given situation. A. Incorrect. The student reverses the numbers and uses division instead of multiplication. B. Correct. The student multiplies $15 by the total number of lawns, *L*. C. Incorrect. The student uses division instead of multiplication. D. Incorrect. The student reverses the numbers.
2	6.G.3	See Annotations	1	The question asks the student to plot ordered pairs on a coordinate grid. To receive full credit, the student must plot the points correctly at (1, 1), (2, 8), (8, 9), and (9, 0) and connect the points with line segments.
3	6.NS.6a	Exemplar: 9	1	The question asks the student to evaluate an expression. To receive full credit, the student must enter 9 or an equivalent value (except for $^{-}(^{-}9)$).

Grade 6

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
4	6.SP.1	C	1	The question asks the student to identify a statistical question. A. Incorrect. The student concludes a statistical question must be a form of measurement. B. Incorrect. The student concludes a statistical question must be a money value. C. Correct. The student concludes a statistical question must result in various answers. D. Incorrect. The student concludes a statistical question must be sports related.
5	6.EE.9	A	1	The question asks the student to represent a situation with an equation. A. Correct. The student multiplies the rate of change, 15 miles per hour, by the number of hours, *t*. B. Incorrect. The student multiplies the rate of change, 15 miles per hour, by the distance traveled, *d*. C. Incorrect. The student adds the rate of change, 15 miles per hour, to the number of hours, *t*. D. Incorrect. The student adds the rate of change, 15 miles per hour, to the distance traveled, *d*.

Grade 6

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
6	6.G.1	B	2	The question asks the student to determine the area of a triangle. A. Incorrect. The student calculates the perimeter of the triangle. B. Correct. The student uses the area formula of a triangle, $A=\frac{1}{2}bh$. C. Incorrect. The student uses 15 as the height of the triangle. D. Incorrect. The student calculates the area of the rectangle.
7	6.NS.7a	A	1	The question asks the student to compare two numbers using a number line. A. Correct. The student determines $^{-}5$ is less than 0 because it is farther to the left on a number line. B. Incorrect. The student places $^{-}5$ farther to the right than 0 on a number line. C. Incorrect. The student interprets a greater-than sign as a less-than sign. D. Incorrect. The student interprets a greater-than sign as a less-than sign, and places $^{-}5$ farther to the right than 0 on a number line.
8	6.SP.4	See Annotations	1	The question asks the student to create a histogram to represent data. To receive full credit, the student must choose a frequency of 4 for 0–4 downloads, 3 for 5–9 downloads, 1 for 10–14 downloads, 2 for 15–19 downloads, 3 for 20–24 downloads, and 1 for 25–29 downloads.

Grade 6

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
9	6.EE.7	Exemplar: 25	1	The question asks the student to solve an equation. To receive full credit, the student must enter 25 or an equivalent value.
10	6.SP.5c	C	2	The question asks the student to determine the interquartile range of data in a box plot. A. Incorrect. The student subtracts 94 from $97\frac{1}{2}$. B. Incorrect. The student subtracts $82\frac{1}{2}$ from 94. C. Correct. The student subtracts $82\frac{1}{2}$ from $97\frac{1}{2}$. D. Incorrect. The student uses the range as the interquartile range.