

WISCONSIN DEPARTMENT OF
Public Instruction

Mathematics Item Sampler Grade 7

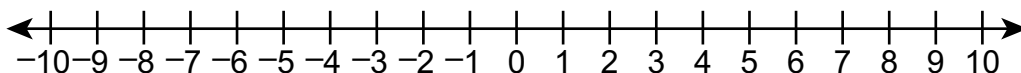




Answer the items below. A calculator **may not** be used to assist with calculations necessary to answer items in Session 1.

1. Jorge writes the expression $0.88x$ to represent the final cost of a shirt. Which statement about the original cost of the shirt, x , is true?
 - A. To get the final cost of the shirt, the original cost of the shirt is decreased by 12%.
 - B. To get the final cost of the shirt, the original cost of the shirt is decreased by 88%.
 - C. To get the final cost of the shirt, the original cost of the shirt is increased by 12%.
 - D. To get the final cost of the shirt, the original cost of the shirt is increased by 88%.

2. Jeremy is plotting points on a number line. The first point he plots is at -5 . The absolute value of the difference between the first point and the second point is 3. On the number line shown, plot a point at all of the possible locations of Jeremy's second point.



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3. Use the distributive property to write an expression that is equivalent to $x(\frac{1}{3} - y)$.

4. Which number is equivalent to $\frac{8}{9}$?

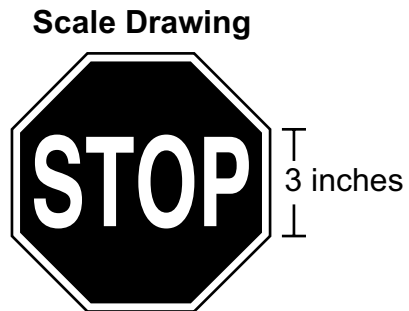
- A. $0.\overline{8}$
- B. 0.89
- C. 0.98
- D. $0.\overline{9}$





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

1. A scale drawing of a stop sign is shown.



The scale of the drawing is 1 inch represents $\frac{1}{3}$ foot. All the sides of the stop sign are the same length.
How long, in **inches**, is each side of the actual stop sign?

- A. 4
- B. 7
- C. 9
- D. 12

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2. Ana is having dinner at a restaurant. Her bill before adding sales tax and tip is \$23.20. The restaurant adds the sales tax of 7% to her bill, and then Ana leaves a tip of 18% based on the new total. What is Ana's total cost?
- A. \$23.20
- B. \$24.82
- C. \$27.38
- D. \$29.29
3. Cindy is rolling two six-sided number cubes one at a time. The table below shows all the possible combinations of Cindy's two rolls.

	1	2	3	4	5	6
1	1, 1	1, 2	1, 3	1, 4	1, 5	1, 6
2	2, 1	2, 2	2, 3	2, 4	2, 5	2, 6
3	3, 1	3, 2	3, 3	3, 4	3, 5	3, 6
4	4, 1	4, 2	4, 3	4, 4	4, 5	4, 6
5	5, 1	5, 2	5, 3	5, 4	5, 5	5, 6
6	6, 1	6, 2	6, 3	6, 4	6, 5	6, 6

What is the probability that Cindy rolls an even number first and an odd number second?

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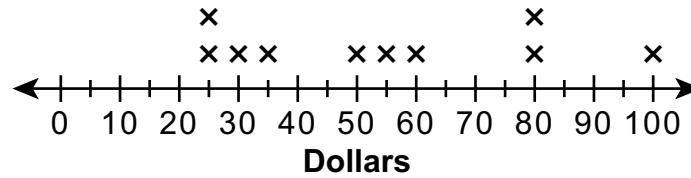
4. A logo is placed on a T-shirt. The logo is in the shape of a circle with a diameter of 7.6 centimeters. What is the approximate area, in square centimeters, of the logo?
- A. 11.9
B. 23.9
C. 45.4
D. 181.5
5. Susan can complete $\frac{1}{3}$ of a homework assignment in $\frac{1}{4}$ of an hour. How many homework assignments can she complete in 1 hour?
- A. $\frac{1}{12}$
B. $\frac{1}{3}$
C. $\frac{7}{12}$
D. $\frac{4}{3}$

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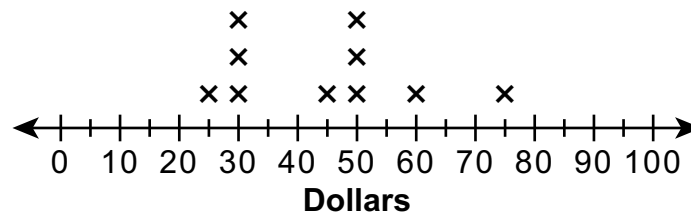


6. A middle school had a fundraiser. The two line plots below show how much money, in dollars, was raised by a random sample of 10 students in each of the 7th and 8th grades.

7th Grade Fundraiser



8th Grade Fundraiser



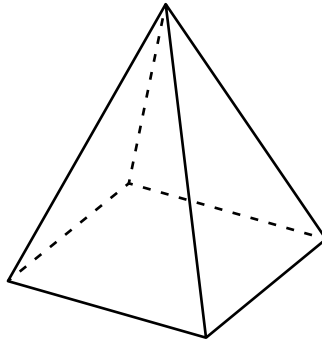
Which statement correctly compares the data in the two line plots?

- A. The 7th grade students did a better job with the fundraiser because the interquartile range of the 7th grade data is greater than the interquartile range of the 8th grade data.
- B. The 8th grade students did a better job with the fundraiser because the interquartile range of the 8th grade data is smaller than the interquartile range of the 7th grade data.
- C. The 7th grade students did a better job with the fundraiser because the mean and the median amounts raised by the 7th grade students are more than the mean and the median amounts raised by the 8th grade students.
- D. The 8th grade students did a better job with the fundraiser because the mean and the median amounts raised by the 8th grade students are more than the mean and the median amounts raised by the 7th grade students.

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7. A square pyramid is shown.



The pyramid is sliced with a single straight cut. The cut does **not** intersect the base of the pyramid. The exposed cross section is painted. Determine whether each shape in the table could be the painted cross section of the square pyramid.

	Could Be Painted Cross Section	Could Not Be Painted Cross Section
square		
triangle		
trapezoid		
non-square rectangle		

8. Fernando is playing basketball. He has made 18 free throws out of 30 attempts. At this rate, how many of Fernando's next 50 free throws should he expect to make?
- A. 18
- B. 30
- C. 38
- D. 50

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9. There are 15 blue marbles, 8 green marbles, and 7 red marbles in a bag. Hanna randomly draws a marble from the bag. What is the probability that Hanna draws a blue marble?
- A. $\frac{1}{30}$
- B. $\frac{7}{30}$
- C. $\frac{10}{30}$
- D. $\frac{15}{30}$
10. A trapezoid has an area of 88 square inches. The length of one of the bases of the trapezoid is 10 inches. The height of the trapezoid is 8 inches. The equation shown can be used to find the length, in inches, of the unknown base, b .

$$88 = (0.5)(8)(10 + b)$$

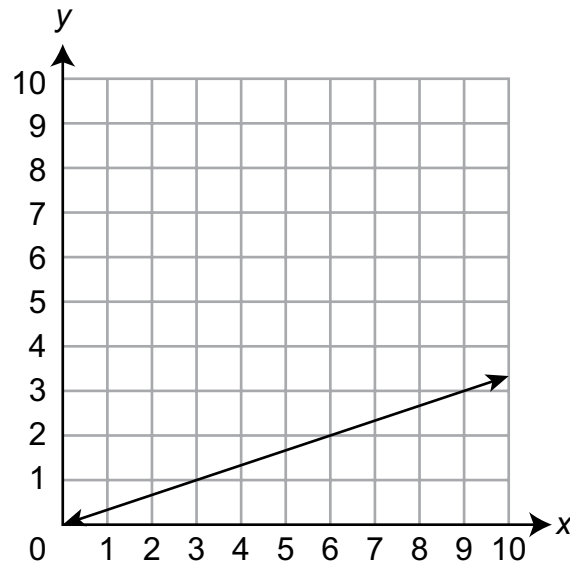
What is the length, in inches, of the unknown base of the trapezoid?

- A. 12
- B. 26
- C. 32
- D. 48

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11. A line representing a proportional relationship is shown on the coordinate grid.



What is the constant of proportionality of the relationship?

STOP.



STOP.

SUMMARY DATA

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
Session 1 (Non-Calculator)				
1	7.EE.2	A	2	<p>The question asks the student to determine a percent increase or decrease.</p> <p>A. Correct. The student subtracts 0.88 from 1 and multiplies by 100.</p> <p>B. Incorrect. The student multiplies 0.88 by 100.</p> <p>C. Incorrect. The student subtracts 0.88 from 1 and multiplies by 100, but uses the value as a percent increase.</p> <p>D. Incorrect. The student multiplies 0.88 by 100 and uses the value as a percent increase.</p>
2	7.NS.1c	See Annotations	2	<p>The question asks the student to determine the missing numbers that make the situation true.</p> <p>To receive full credit, the student must plot a point at -8 and a point at -2.</p>
3	7.EE.1	Exemplar: $\frac{1}{3}x - xy$	1	<p>The question asks the student to use the distributive property to create an equivalent expression.</p> <p>To receive full credit, the student must enter $\frac{1}{3}x - xy$ or an equivalent expression.</p>

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
4	7.NS.2d	A	1	<p>The question asks the student to convert a fraction to a decimal.</p> <p>A. Correct. The student divides the numerator, 8, by the denominator, 9.</p> <p>B. Incorrect. The student uses the numerator, 8, and the denominator, 9, as the two numbers after the decimal point.</p> <p>C. Incorrect. The student uses the denominator, 9, and the numerator, 8, as the two numbers after the decimal point.</p> <p>D. Incorrect. The student uses the denominator, 9, as the number after the decimal point.</p>
Session 2 (Calculator)				
1	7.G.1	D	2	<p>The question asks the student to determine the actual size of each side of a stop sign using a scale drawing.</p> <p>A. Incorrect. The student multiplies 12 inches by $\frac{1}{3}$.</p> <p>B. Incorrect. The student multiplies 12 inches by $\frac{1}{3}$ and adds the product to 3 inches.</p> <p>C. Incorrect. The student multiplies 3 inches by 3.</p> <p>D. Correct. The student multiplies 12 inches by $\frac{1}{3}$ and multiplies the product by 3.</p>

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
2	7.RP.3	D	2	<p>The question asks the student to determine the total cost of Ana's dinner.</p> <p>A. Incorrect. The student uses the cost before adding sales tax and tip as the total cost.</p> <p>B. Incorrect. The student multiplies \$23.20 by 0.07 and adds the product to \$23.20.</p> <p>C. Incorrect. The student multiplies \$23.20 by 0.18 and adds the product to \$23.20.</p> <p>D. Correct. The student multiplies \$23.20 by 0.07 and adds the product to \$23.20 to get \$24.82. Then, the student multiplies \$24.82 by 0.18 and adds the product to \$24.84.</p>
3	7.SP.8a	Exemplar: $\frac{1}{4}$	2	<p>The question asks the student to determine the probability of an event.</p> <p>To receive full credit, the student must enter $\frac{1}{4}$ or an equivalent value.</p>

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
4	7.G.4	C	1	<p>The question asks the student to determine the area of a circle.</p> <p>A. Incorrect. The student determines the area of the circle by multiplying the radius by 3.14.</p> <p>B. Incorrect. The student determines the circumference of the circle by multiplying 7.6 by 3.14.</p> <p>C. Correct. The student determines the area of the circle by squaring the radius and multiplying by 3.14.</p> <p>D. Incorrect. The student determines the area of the circle by squaring the diameter and multiplying by 3.14.</p>
5	7.RP.1	D	1	<p>The question asks the student to determine the unit rate of the number of homework assignments Susan can complete in 1 hour.</p> <p>A. Incorrect. The student multiplies the denominator 3 by the denominator 4.</p> <p>B. Incorrect. The student uses the fraction of a homework assignment as the number of homework assignments in 1 hour.</p> <p>C. Incorrect. The student adds the fractions $\frac{1}{3}$ and $\frac{1}{4}$.</p> <p>D. Correct. The student multiplies the fractions $\frac{1}{3}$ and $\frac{4}{1}$.</p>

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
6	7.SP.4	C	3	<p>The question asks the student to compare two line plots.</p> <p>A. Incorrect. The student compares the interquartile ranges of the 7th grade fundraiser and the 8th grade fundraiser.</p> <p>B. Incorrect. The student compares the interquartile ranges of the 7th grade fundraiser and the 8th grade fundraiser.</p> <p>C. Correct. The student compares the measures of center between the 7th grade fundraiser and the 8th grade fundraiser.</p> <p>D. Incorrect. The student reverses the comparison of the measures of center between the 7th grade fundraiser and the 8th grade fundraiser.</p>
7	7.G.3	See Annotations	2	<p>The question asks the student to determine the possible cross sections of a square pyramid.</p> <p>To receive full credit, the student must indicate that a square and trapezoid can be the painted cross section and the triangle and non-square rectangle cannot be the painted cross section.</p>

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
8	7.RP.3	B	2	<p>The question asks the student to determine the unit rate and use it to make a prediction.</p> <p>A. Incorrect. The student uses the unit rate $\frac{3}{5}$ and multiplies it by 30.</p> <p>B. Correct. The student uses the unit rate $\frac{3}{5}$ and multiplies it by 50.</p> <p>C. Incorrect. The student adds 18 and 20.</p> <p>D. Incorrect. The student uses the total number of attempts as the expected number to make.</p>
9	7.SP.7a	D	1	<p>The question asks the student to determine the probability of Hanna drawing a blue marble.</p> <p>A. Incorrect. The student represents the probability as 1 marble out of the 30 possible.</p> <p>B. Incorrect. The student determines the probability of drawing a red marble.</p> <p>C. Incorrect. The student uses a probability that represents each color as equally likely.</p> <p>D. Correct. The student determines the probability as 15 blue marbles out of the 30 total marbles.</p>

Grade 7

Sample Number	Alignment	Answer Key	Depth of Knowledge	Annotations
10	7.EE.4a	A	2	<p>The question asks the student to determine the length of the base of a trapezoid.</p> <p>A. Correct. The student divides 88 by 4 and subtracts 10 from the quotient.</p> <p>B. Incorrect. The student divides 88 by 2, subtracts 8 from the quotient, and subtracts 10 more from the difference.</p> <p>C. Incorrect. The student divides 88 by 4 and adds 10 to the quotient.</p> <p>D. Incorrect. The student subtracts the product of 0.5, 8, and 10 from 88.</p>
11	7.RP.2b	Exemplar: $\frac{1}{3}$	1	<p>The question asks the student to determine the constant of proportionality.</p> <p>To receive full credit, the student must enter $\frac{1}{3}$ or an equivalent fraction.</p>