



THIRD SPACE
LEARNING

6th Grade Michigan State Practice Math Test

Michigan Practice Test Grade 6

Grade 6

Questions

Name:

Class:

Date:

Score:

1 A bakery has 35 chocolate cupcakes and 48 vanilla cupcakes. What is the ratio of vanilla cupcakes to the total number of cupcakes?

- A. 35:48
- B. 48:83
- C. 83:48
- D. 48:35

2 What is the value of b ?

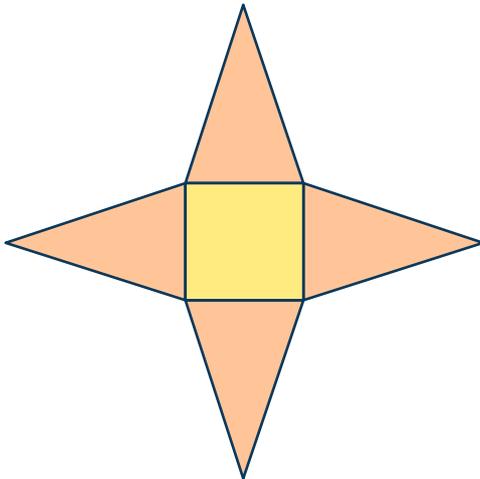


- A. -0.4
- B. -0.1
- C. -0.3
- D. 0

3 Which expression is equivalent to $4x + 24$?

- A. $3(x + 8) + x$
 - B. $4(x + 20)$
 - C. $4(x + 6) + 4$
 - D. $3(x + 6) + x$
-

4



Which shape is formed by the net above?

- A. Triangular pyramid
- B. Triangular prism
- C. Square pyramid
- D. Isosceles triangle

5 Maya makes 10 bracelets using 4 yards of string. How many yards of string does she need to make 15 bracelets?

A. 60 yards of string

B. $2\frac{1}{2}$ yards of string

C. $6\frac{1}{2}$ yards of string

D. 6 yards of string

6 How many $\frac{2}{5}$ -cup servings are in $\frac{3}{2}$ cups of milk?
Which expression can be used to solve the problem?

A. $\frac{2}{5} \times \frac{3}{2}$

B. $\frac{3}{2} \div \frac{2}{5}$

C. $\frac{5}{2} \times \frac{2}{5}$

D. $\frac{2}{5} \div \frac{3}{2}$

7 Wade wants to collect at least 20 more books for the library fundraiser. If b represents the number of books he has collected, which inequality shows how many more books he needs?

- A. $b > 20$
 - B. $b \leq 20$
 - C. $b < 20$
 - D. $b \geq 20$
-

8 Below are the total scores for the first 5 games Xander's baseball team played.

Total score: 6, 9, 4, 3, 5.

What is the mean of the total scores?

- A. 5.2
 - B. 5
 - C. 5.4
 - D. 5.1
-

9 A jacket was on sale for 30% off. After the discount, Henley paid \$56 for the jacket. What was the original price?

- A. \$80
- B. \$70
- C. \$86
- D. \$73

10 Solve $648.28 \div 7.6$.

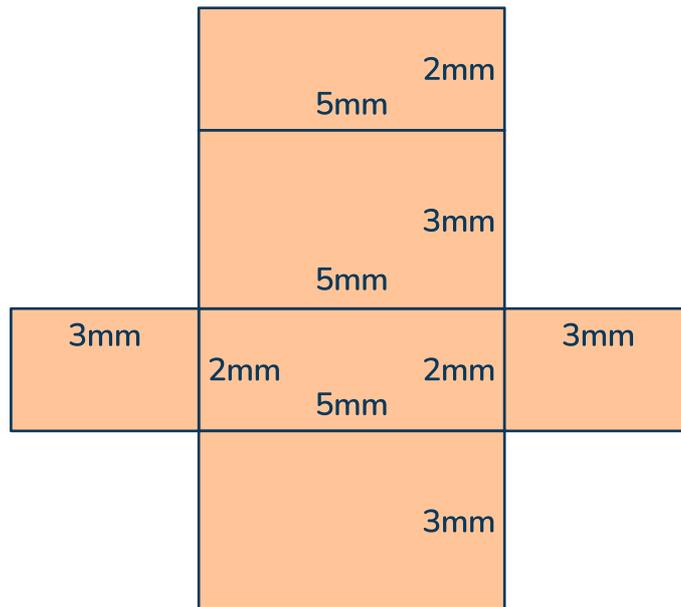
- A. 86.4
- B. 95.3
- C. 85.325
- D. 85.3

11 $\frac{n}{2} = 8$

Which value for n makes the equation true?

- A. 4
- B. $\frac{1}{4}$
- C. 16
- D. 10

12 The net of a rectangular prism is shown below.

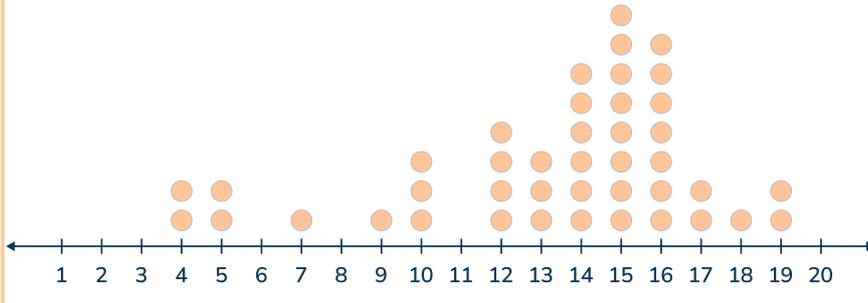


What is the surface area of the rectangular prism?

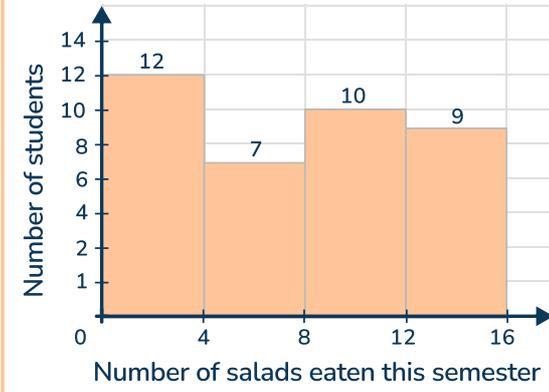
- A. 33 mm^2
- B. 62 mm^2
- C. 44 mm^2
- D. 63 mm^2

13 Which graph supports the conclusion that “most 6th graders ate 8 salads or less from the cafeteria this semester.”

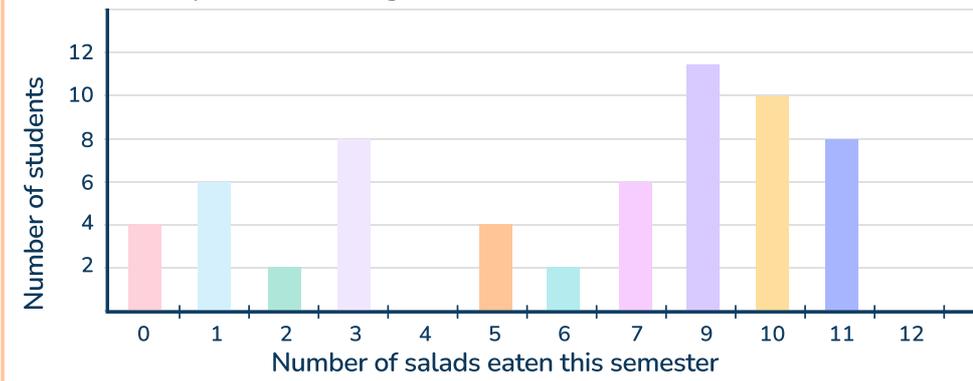
A. How many salads did 6th graders eat from the cafeteria this semester?



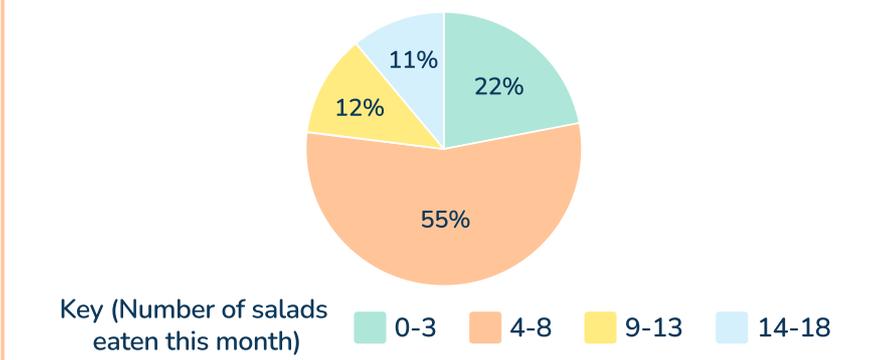
B. How many salads did 6th graders eat from the cafeteria this semester?



C. How many salads did 6th graders eat from the cafeteria this semester?



D. How many salads did 6th graders eat from the cafeteria this semester?



14 Which statement is true?

A. $-15 > -19$

B. $-9.6 > 9\frac{2}{3}$

C. $-8 > -7$

D. $6.04 < 6.004$

15 Logan is collecting data on two water filters.

Water Filter A	
Time (minutes)	Ounces filtered
3	54
4	72
7	126

Water Filter B	
Time (minutes)	Ounces filtered
2	38
5	95
6	114

Which filter is faster and by how many ounces per minute?

- A. Filter A is faster by 1 ounce per minute
- B. Filter B is faster by 1 ounce per minute
- C. Filter A is faster by 18 ounces per minute
- D. Filter B is faster by 1 minute.

- 16 Pete solved $774 \div 36$ using the standard algorithm. What mistake did he make?

	2	1	5	.	0
36)	7	7	4	.0
-		7	2		
		0	5	4	
		-	3	6	
			1	8	0
		-	1	8	0
					0

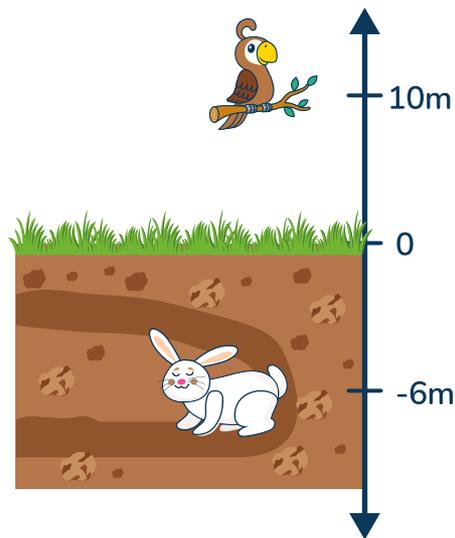
- A. He made a subtraction error.
- B. He did not write the remainder as a fraction.
- C. The decimal point in his answer is in the wrong place.
- D. He did not make a mistake.
-
- 17 Olivia is three times as old as her sister Mia. Which equation(s) correctly represents the relationship between Olivia's age, o , and Mia's age, m ? Select all correct answers.

- A. $o = 3m$
- B. $m = 3o$
- C. $o - m = 3$
- D. $o \div 3 = m$
- e. $o + m = 3$

18 Which of the following is a statistical question?

- A. How many laps did Kenya run in PE today?
- B. What is the average height of the trees in the schoolyard?
- C. How many trees in the schoolyard are taller than 10 feet?
- D. What is the height of the tree in the schoolyard?

19 The diagram below shows a hawk perched on a tree branch 10 meters above the ground and a rabbit in a burrow 6 meters below ground level.



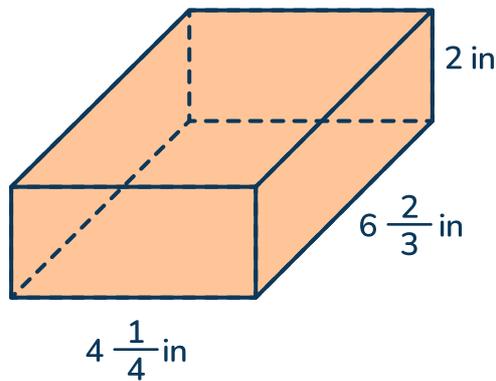
Which statement is true?

- A. The hawk is 10m higher than the rabbit.
- B. The temperature underground is -6 degrees.
- C. The rabbit is 16m below the hawk.
- D. The ground level is at 0, with the rabbit above and the hawk below.

20 Solve $4(3^2 - 5 + 6) \div \frac{1}{2}$.

- A. 20
 - B. 9
 - C. 10
 - D. 80
-

21 Calculate the volume of the rectangular prism.



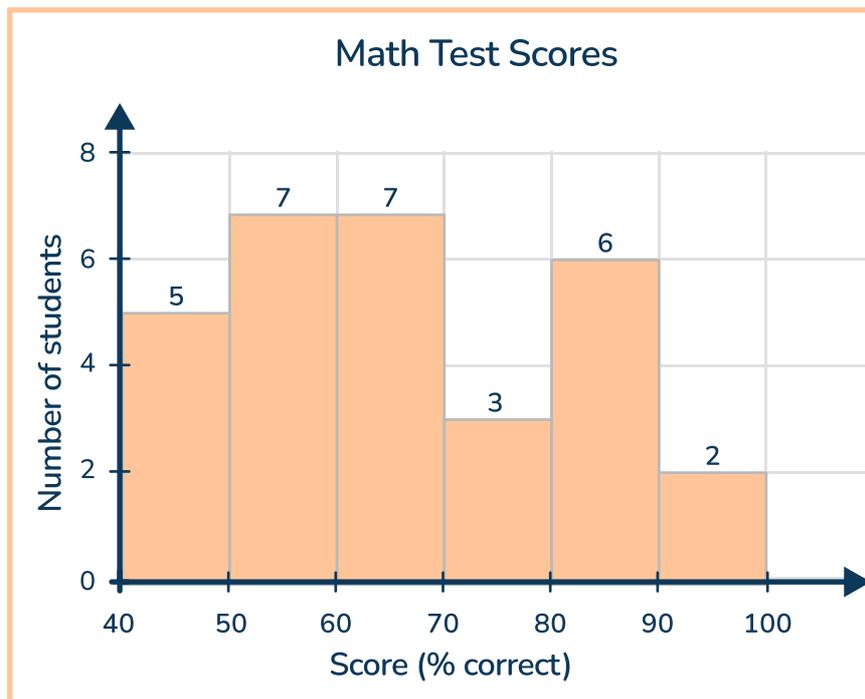
- A. $56\frac{2}{3}$ in³
- B. $28\frac{1}{3}$ in³
- C. $12\frac{11}{12}$ in³
- D. $51\frac{2}{3}$ in³

- 22 The local bookstore is selling notebooks for \$3 each. Emma wrote the following equation: $3n = t$.

Which statements correctly describe Emma's equation within the context?
Select all the correct answers.

- A. t is the total dollars for n notebooks sold.
- B. n is the price of one notebook.
- C. $3n$ is the notebook price multiplied by the notebooks sold.
- D. 3 is the total number of notebooks sold so far.
- E. t has only one correct solution.

23



In the histogram above, which bin has the median data point?

- A. 50-60
- B. 60-70
- C. 70-80
- D. 80-90

24 Are the two expressions equivalent? Why or why not?

$$3x + 4y \quad \text{and} \quad 4y + 3x$$

- A. No, because $3x$ is not the same as $4y$.
 - B. Yes, because they both contain the terms $3x$ and $4y$.
 - C. No, because equivalent expressions cannot have different variables.
 - D. Yes, because they are both adding the same amounts, just in a different order.
-

25 In a bakery, for every 4 cups of flour used, there are 3 eggs needed to make a specific type of cake batter. Which statement about this ratio is true?

- A. For every 5 cups of flour used, there are 4 eggs needed.
 - B. There is $\frac{3}{4}$ of a cup of flour for every egg used.
 - C. For every 8 cups of flour used, there are 6 eggs needed.
 - D. There are 2 cups of flour for every 3 eggs used.
-

26 Trey is solving the two expressions below. He says, "I can just solve expression X, because expression Y will have the same answer." Do you agree? Why or why not?

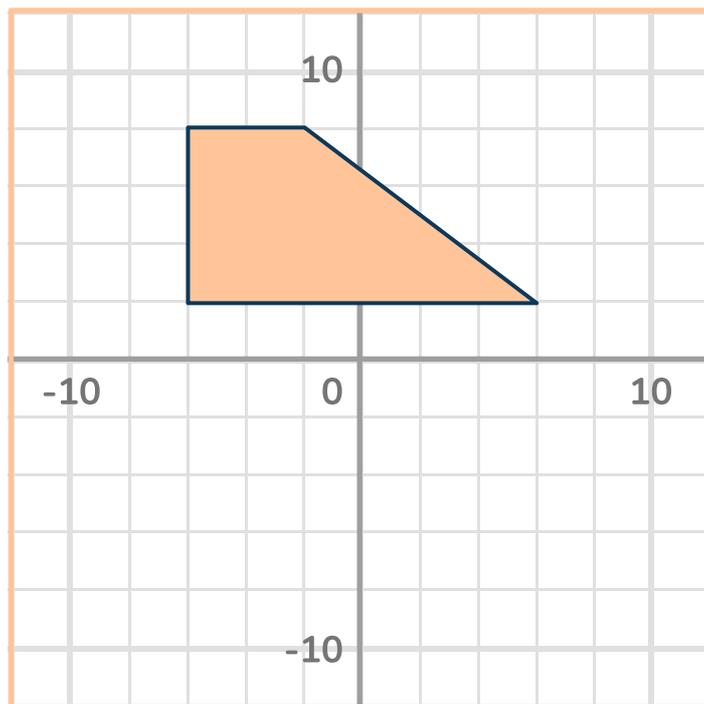
- Expression X: $(4 + 8)^2$
- Expression Y: $4 + 8^2$

- A. No, because expression X will add first and expression Y will not.
- B. Yes, because the order of operations is the same.
- C. No, because expression Y will multiply by 2 first and expression X will not.
- D. Yes, because the expressions have the same operations.

27 Which expression is equivalent to $56 + 168$?

- A. $8(56 + 168)$
- B. $8 \times 7 + 12$
- C. $8(7 + 21)$
- D. $8 \times (35 + 119)$

28 What is the area of the shape shown?

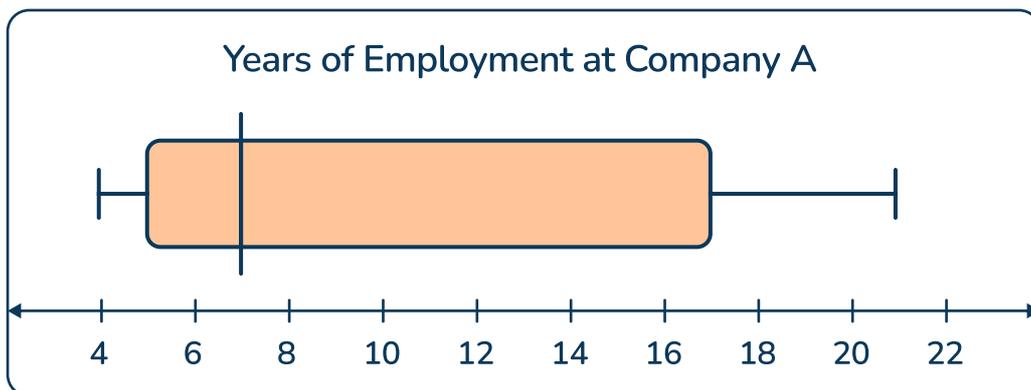


- A. 12 units²
- B. 18 units²
- C. 24 units²
- D. 48 units²

29 Which numbers are solutions for $p \geq -5$.

- A. $\frac{3}{4}$
- B. -5
- C. -6
- D. $-\frac{1}{4}$
- E. -10

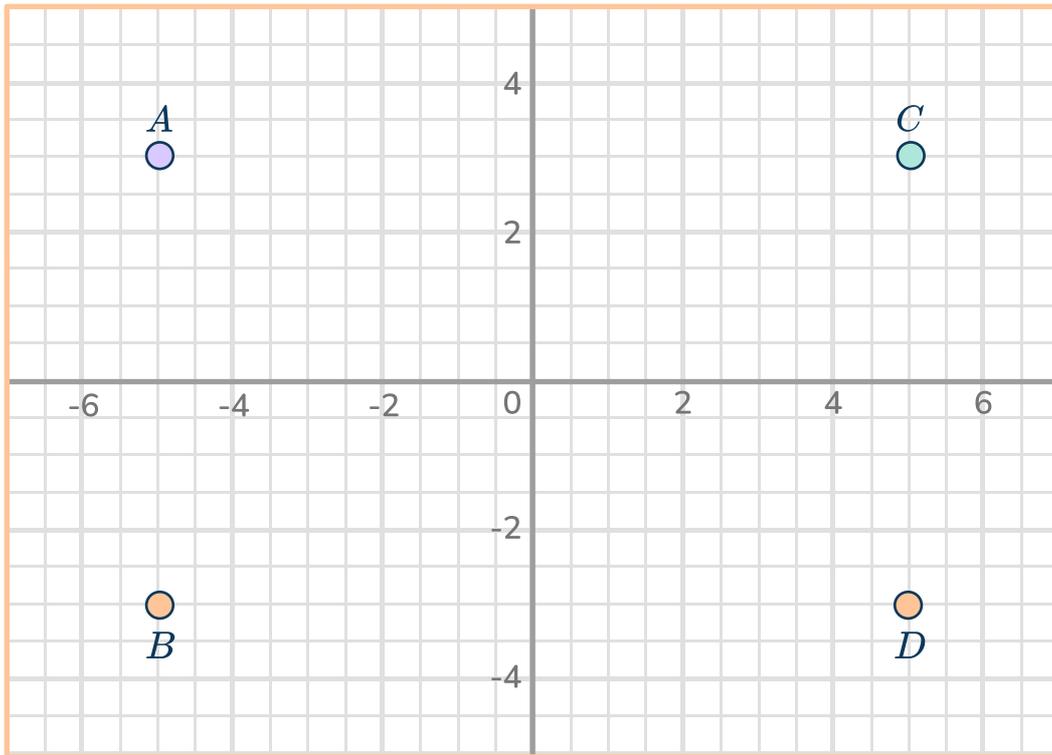
30 Which statement about the data shown in the box plot below is true?



Select all correct answers.

- A. The range is 15 years.
- B. The second half of the data has more variability than the first half.
- C. The median length of employment is 11 years.
- D. At least half the employees have 6 years of employment or less.
- E. The IQR is 12.

31 Which point shows the coordinates $(-5, 3)$?

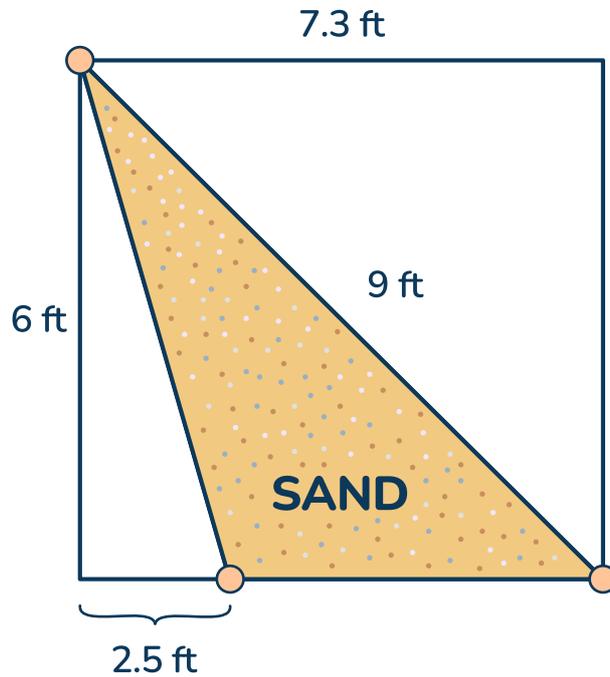


- A. Point A
- B. Point B
- C. Point C
- D. Point D

32 Which expression shows “5 less than the quotient of k and 4”?

- A. $\frac{k}{4} - 5$
- B. $5 - k \div 4$
- C. $4k - 5$
- D. $5 - 4k$

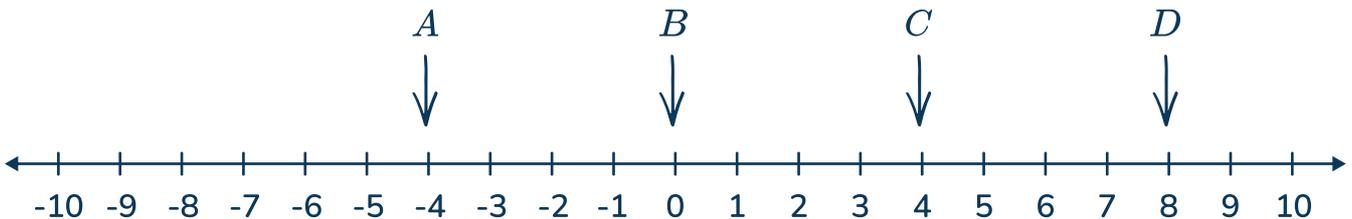
- 33 Tia is covering a triangular part of her garden with sand. The diagram below shows where Tia will place the sand.



How many square feet will Tia cover with sand?

- A. 7.5 ft^2
- B. 14.4 ft^2
- C. 28.8 ft^2
- D. 21.6 ft^2

- 34 Where is $-(-4)$ on the number line?

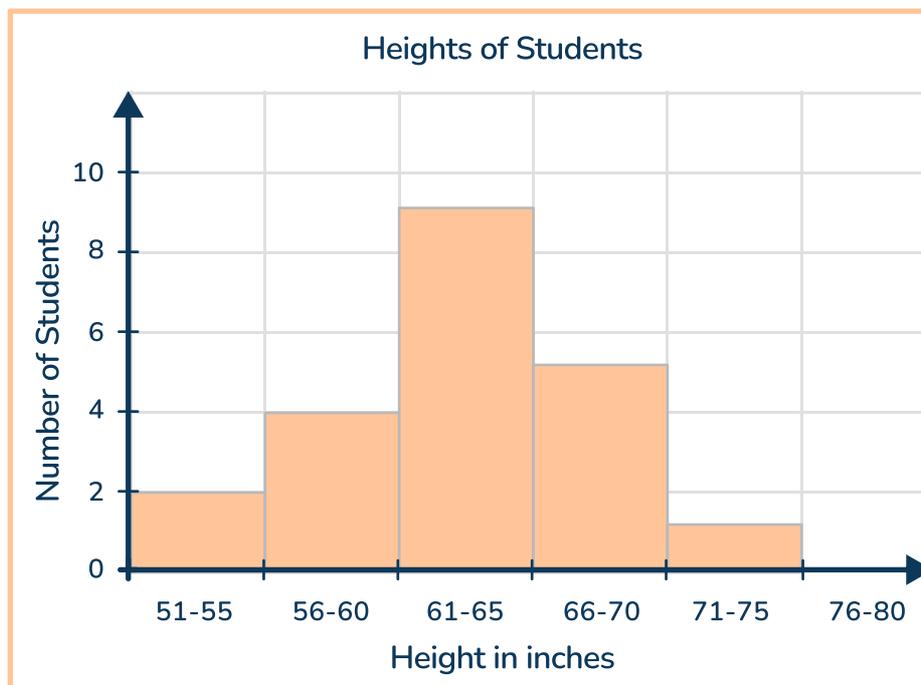


- A. A
- B. B
- C. C
- D. D

35 Maria buys \$45 worth of ingredients to bake cookies. She sells each cookie for \$3. Which equation shows Maria's profit, p , after selling c cookies?

- A. $p = 3c - 45$
- B. $45 + 3c = p$
- C. $c = 3p - 45$
- D. $45 + 3p = c$

36



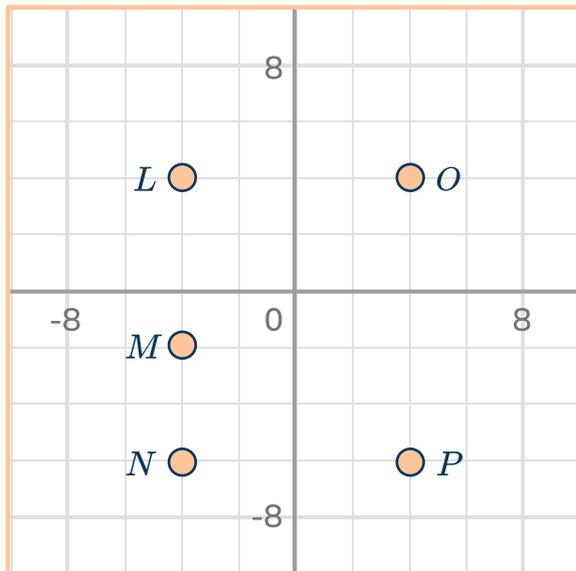
Which statements are true about the data shown in the histogram above? Select all correct answers.

- A. Each bar shows 1 height with 5 heights shown in total.
- B. The graph includes data points for 21 people.
- C. The tallest height is 80 inches.
- D. Only whole number heights were collected.
- E. The data is centered around the bin with the median.

37 There are $5\frac{3}{4}$ cups of flour in the pantry. If Mia needs $\frac{3}{5}$ of a cup of flour to make one loaf of bread, how many complete loaves can she make using all the flour?

- A. $9\frac{7}{12}$ loaves
- B. $8\frac{9}{20}$ loaves
- C. 9 loaves
- D. 10 loaves

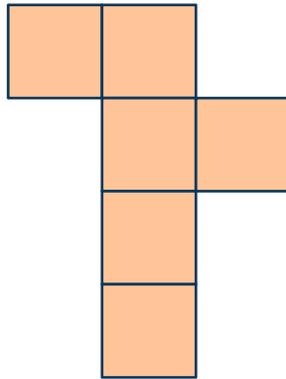
38



What is the distance between point O and point P?

- A. -5 units
- B. 5 units
- C. -10 units
- D. 10 units

- 39 A cube has a side length of 2.8 inches. The net of the cube is shown below.



Ivy folds the cube up and fills it with water. How many cubic inches of water are in the cube?

- A. 47.04 inches³
 - B. 8.4 inches³
 - C. 21.952 inches³
 - D. 7.84 inches³
-
- 40 For the paint color lavender, the ratio of ounces of purple paint to white paint is 5:3. What is a possible mixture that will create lavender?

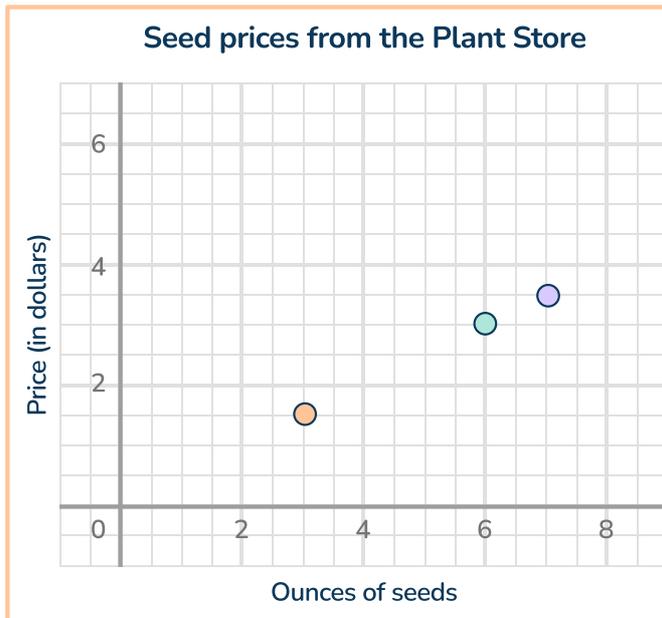
- A. 50 ounces of white and 30 ounces of purple
- B. 25 ounces of purple and 15 ounces of white
- C. 3 ounces of white and 15 ounces of purple
- D. 45 ounces of purple and 15 ounces of white

Standard: 6.EE.9, 6.RP.3, 6.EE.7

DOK 3

Short Answer Response - 6 points

- 41 The graph and table below show information about seeds being sold by a grocery store and by a farmer.



Seed prices from the farmer	
Ounces of seeds	Price
4	\$1.80
5	\$2.25
8	\$3.60

Part A: Which seeds are cheaper per ounce? Explain how you solved.

A Hardware store sells seeds in packages of 3 ounces. They use the equation $1.20p = t$, where p is the number of packages and t is the total price.

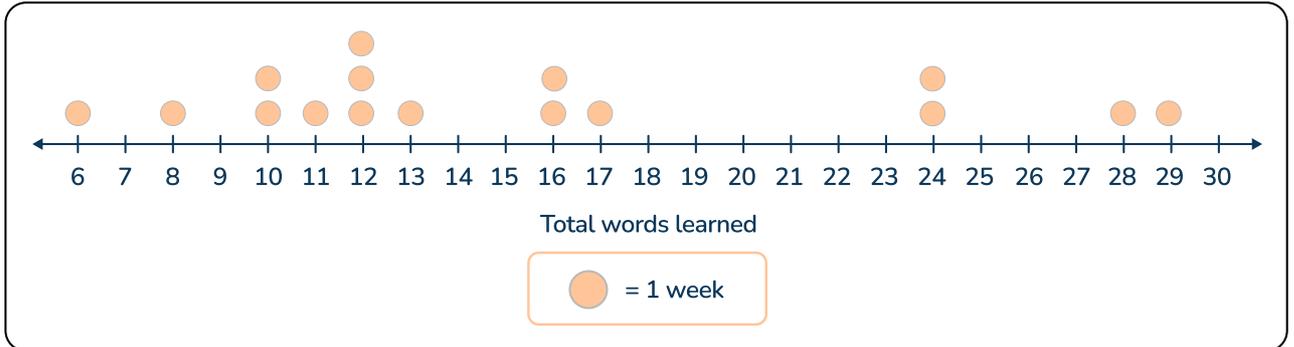
Part B: Compare the price of seeds per ounce at the Hardware store to the seeds from Part A? Explain how you solved.

Extended response - 6 points

Standard: 6.SP.2, 6.SP.3, 6.SP.5, 6.NS.3

DOK 3

- 42 Olive is learning new words in Spanish. Each week she records how many words she has learned.



Part A:

Calculate the following measures of center and spread of the data set.

Mean: _____ Median: _____ Mode: _____ Range: _____

Part B: When Olive started, her goal was to learn 14 words a week on average. Is she meeting her goal? Why or why not?

Michigan State Practice Math Test | Grade 6 | Answers

Item	KEY	Rationale
41	6 points	<p>Student correctly calculates the unit seed prices:</p> <ul style="list-style-type: none"> • Plant store - \$0.50 per ounce • Farmer - \$0.45 per ounce • Hardware store - \$0.40 per ounce <p>Student clearly explains how they found the unit price from the graph, table and equation.</p>
	5 points	<p>The student correctly calculates the unit seed prices:</p> <ul style="list-style-type: none"> • Plant store - \$0.50 per ounce • Farmer - \$0.45 per ounce • Hardware store - \$0.40 per ounce <p>Student explains how they found the unit price from the graph, table and equation, but some parts of the explanation are incomplete or unclear.</p>
	4 points	<p>Student correctly calculates 2 out of 3 the unit seed prices:</p> <ul style="list-style-type: none"> • Plant store - \$0.50 per ounce • Farmer - \$0.45 per ounce • Hardware store - \$0.40 per ounce <p>Student explains how they found the unit price from the graph, table and equation.</p>
	3 points	<p>The student correctly calculates 2 out of 3 the unit seed prices:</p> <ul style="list-style-type: none"> • Plant store - \$0.75 per ounce • Farmer - \$0.70 per ounce • Hardware store - \$0.65 per ounce <p>Student explains how they found the unit price from the graph, table and equation, but some parts of the explanation are incomplete or unclear.</p>
	2 point	<p>The student correctly calculates 1 out of 3 the unit seed prices:</p> <ul style="list-style-type: none"> • Plant store - \$0.50 per ounce • Farmer - \$0.45 per ounce • Hardware store - \$0.40 per ounce <p>Student explains how they found the unit price from the graph, table and equation, but some parts of the explanation are incomplete or unclear.</p>

Michigan State Practice Math Test | Grade 6 | Answers

Item	KEY	Rationale
	1 point	<p>Student miscalculates all of the unit seed prices:</p> <ul style="list-style-type: none">• Plant store - \$0.50 per ounce• Farmer - \$0.45 per ounce• Hardware store - \$0.40 per ounce <p>The student explains how they attempted to find the unit price from the graph, table and equation, but some parts of the explanation are incomplete or unclear.</p>
	0 points	<p>The response is blank or does not include any correct calculations or explanations.</p>

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Item	KEY	Rationale
42	6 points	<p>The student correctly calculates:</p> <ul style="list-style-type: none"> • Mean - 15.5 • Median - 12.5 • Mode - 12 • Range - 23 <p>Student correctly describes the overall spread, connecting both the center and spread to Olive’s goal.</p> <p>For example, “Olive’s mean is meeting the goal, but the median is not. The value of the mean is larger because it was affected by the few weeks on the right with a large amount of words learned. The median is lower than Olive’s goal, since most of her weeks are between 6 and 15.”</p> <p>*Response may vary, but should clearly explain the connection between the measures of center and spread.</p>
	5 point	<p>The student correctly calculates:</p> <ul style="list-style-type: none"> • Mean - 15.5 • Median - 12.5 • Mode - 12 • Range - 23 <p>Student describes the overall spread, connecting both the center and spread to Olive’s goal, but some parts may be incomplete or unclear.</p>
	4 points	<p>The student correctly calculates 3 out of 4:</p> <ul style="list-style-type: none"> • Mean - 15.5 • Median - 12.5 • Mode - 12 • Range - 23 <p>Student correctly describes the overall spread, connecting both the center and spread to Olive’s goal.</p>

Michigan State Practice Math Test | Grade 6 | Answers

Item	KEY	Rationale
	3 points	<p>The student correctly calculates 3 out of 4:</p> <ul style="list-style-type: none"> • Mean - 15.5 • Median - 12.5 • Mode - 12 • Range - 23 <p>Student describes the overall spread, connecting both the center and spread to Olive’s goal, but some parts may be incomplete or unclear.</p>
	2 points	<p>The student correctly calculates 2 out of 4:</p> <ul style="list-style-type: none"> • Mean - 15.5 • Median - 12.5 • Mode - 12 • Range - 23 <p>Student attempts to describe the overall spread, connecting both the center and spread to Olive’s goal, but most parts are incomplete or unclear.</p>
	1 points	<p>Student correctly calculates 1 out of 4:</p> <ul style="list-style-type: none"> • Mean - 15.5 • Median - 12.5 • Mode - 12 • Range - 23 <p>Student describes the overall spread, connecting both the center and spread to Olive’s goal, but some parts may be incomplete or unclear.</p>
	0 points	<p>Response is blank or does not include any correct calculations or explanations.</p>

Answer Key - Multiple Choice

Item number	Correct answer	Standard(s)	DOK
1	B	6.RP.1	DOK 1
2	B	6.NS.6c	DOK 1
3	A	6.EE.3	DOK 2
4	C	6.G.4	DOK 1
5	D	6.RP.3b	DOK 2
6	B	6.NS.1	DOK 3
7	D	6.EE.8	DOK 2
8	C	6.SP.5.b	DOK 1
9	A	6.RP.3c	DOK 2
10	D	6.NS.3	DOK 1
11	C	6.EE.5	DOK 1
12	B	6.G.4	DOK 2
13	D	6.SP.4, 6.SP.5c	DOK 2
14	A	6.NS.7	DOK 1
15	B	6.RP.3a, 6.RP.3b	DOK 2
16	C	6.NS.2	DOK 3
17	A, D	6.EE.6, 6.EE.7	DOK 2
18	B	6.SP.1	DOK 1
19	C	6.NS.5	DOK 2

Michigan State Practice Math Test | Grade 6 | Answers

Item number	Correct answer	Standard(s)	DOK
20	D	6.EE.1	DOK 1
21	A	6.G.2	DOK 1
22	A, C	6.EE.9	DOK 2
23	B	6.SP.3, 6.SP.5c	DOK 1
24	D	6.EE.4	DOK 3
25	C	6.RP.1, 6.RP.2, 6.RP.3	DOK 2
26	A	6.EE.1	DOK 2
27	C	6.NS.4	DOK 1
28	D	6.G.1, 6.G.3	DOK 2
29	A, B, D	6.EE.8, 6.NS.7a	DOK 1
30	B, E	6.SP.4, 6.SP.5c, 6.SP.5d	DOK 2
31	B	6.NS.8	DOK 1
32	A	6.EE.2	DOK 1
33	B	6.G.1	DOK 2
34	C	6.NS.6a	DOK 1
35	A	6.EE.9	DOK 2
36	B, E	6.SP.2, 6.SP.4, 6.SP.5b	DOK 2
37	C	6.NS.1	DOK 2
38	D	6.NS.8	DOK 2
39	C	6.G.2	DOK 2
40	B	6.RP.1, 6.RP.3	DOK 1

ANSWERS SORTED BY CCSS STRAND

RP (4 - 9)			
1	B	6.RP.1	DOK 1
5	D	6.RP.3b	DOK 2
9	A	6.RP.3c	DOK 2
15	B	6.RP.3a, 6.RP.3b	DOK 2
25	C	6.RP.1, 6.RP.2, 6.RP.3	DOK 2
40	B	6.RP.1, 6.RP.3	DOK 1

NS (9 - 11)			
2	B	6.NS.6c	DOK 1
6	B	6.NS.1	DOK 3
10	D	6.NS.3	DOK 1
14	A	6.NS.7	DOK 1
16	C	6.NS.2	DOK 3
19	C	6.NS.5	DOK 2
27	C	6.NS.4	DOK 1
31	B	6.NS.8	DOK 1
34	C	6.NS.6a	DOK 1
37	C	6.NS.1	DOK 2
38	D	6.NS.8	DOK 2

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EE (11 - 16)			
3	A	6.EE.3	DOK 2
7	D	6.EE.8	DOK 2
11	C	6.EE.5	DOK 1
17	A, D	6.EE.6, 6.EE.7	DOK 2
20	D	6.EE.1	DOK 1
22	A, C	6.EE.9	DOK 2
24	D	6.EE.4	DOK 3
26	A	6.EE.1	DOK 2
29	A, B, D	6.EE.8, 6.NS.7a	DOK 1
32	A	6.EE.2	DOK 1
35	A	6.EE.9	DOK 2
41	Short Answer Response	6.EE.9, 6.RP.3, 6.EE.7	DOK 3

G (5 - 7)			
4	C	6.G.4	DOK 1
12	B	6.G.4	DOK 2
21	A	6.G.2	DOK 1
28	D	6.G.1, 6.G.3	DOK 2
33	B	6.G.1	DOK 2
39	C	6.G.2	DOK 2

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SP (7 - 11)			
8	C	6.SP.5.b	DOK 1
13	D	6.SP.4, 6.SP.5c	DOK 2
18	B	6.SP.1	DOK 1
23	B	6.SP.3, 6.SP.5c	DOK 1
30	B, E	6.SP.4, 6.SP.5c, 6.SP.5d	DOK 2
36	B, E	6.SP.2, 6.SP.4, 6.SP.5b	DOK 2
42	Short Answer Response	6.SP.2, 6.SP.3, 6.SP.5, 6.NS.3	DOK 3

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