

# Released Items

Published January 2019

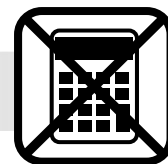
## Grade 6 Mathematics North Carolina End-of-Grade Assessment



**Public Schools of North Carolina**

Department of Public Instruction | State Board of Education

Division of Accountability Services/North Carolina Testing Program



## Sample Questions

S1 Kerry walks 3 miles each day. How far will she walk in 7 days?

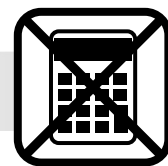
- A 10 miles
- B 14 miles
- C 21 miles
- D 24 miles

S2 What number is represented by point  $P$  on the number line below?

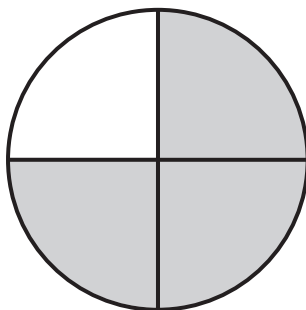


Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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S3 What fraction of the circle is shaded?

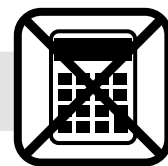


Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer. Answers that are mixed numbers must be entered as an improper fraction or decimal.

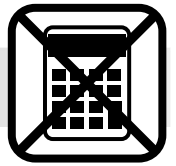
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- 1 What is the value of  $(5^2 - 10) \div 5 \times 2^3$ ?  
A 0  
B 18  
C 24  
D 40
  
- 2 Paul had a job during his summer vacation. He earned \$8.75 per hour. He worked 20 hours per week for 8 weeks. How much money did Paul earn?  
A \$1,200  
B \$1,400  
C \$1,600  
D \$1,800
  
- 3 Which expression is equivalent to  $25x - 10y$ ?  
A  $5(5x - 2y)$   
B  $5(5x - 10y)$   
C  $5(20x - 5y)$   
D  $5(20x - 10y)$



4 Jim and Ed are debating the answer to the equation  $\frac{2}{3}m = \frac{1}{4}$ .

- Jim states that  $m$  is equal to  $2\frac{2}{3}$ .
- Ed states that  $m$  is equal to  $\frac{3}{8}$ .

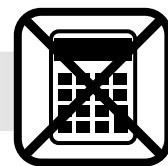
Which statement is true?

- A Jim's answer of  $2\frac{2}{3}$  is correct because he divided  $\frac{2}{3}$  by  $\frac{1}{4}$  to get his answer.
- B Jim's answer of  $2\frac{2}{3}$  is correct because he divided  $\frac{1}{4}$  by  $\frac{2}{3}$  to get his answer.
- C Ed's answer of  $\frac{3}{8}$  is correct because he multiplied  $\frac{1}{4}$  by  $\frac{2}{3}$  to get his answer.
- D Ed's answer of  $\frac{3}{8}$  is correct because he divided  $\frac{1}{4}$  by  $\frac{2}{3}$  to get his answer.

5 Jamal will cut a piece of wood that is  $2\frac{1}{2}$  feet long into  $\frac{1}{4}$ -foot sections. How many sections will result?

- A 5
- B 8
- C 10
- D 12

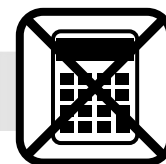




- 6 Tonya pays \$300 each month to rent an office where she earns \$25 per hour tutoring students. Which equation represents Tonya's profit,  $y$ , for working  $x$  hours?

- A  $y = 25 + 300x$
- B  $y = 25x + 300$
- C  $y = 25 - 300x$
- D  $y = 25x - 300$

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- 7 The table represents the number of runs scored by several baseball teams during a season.

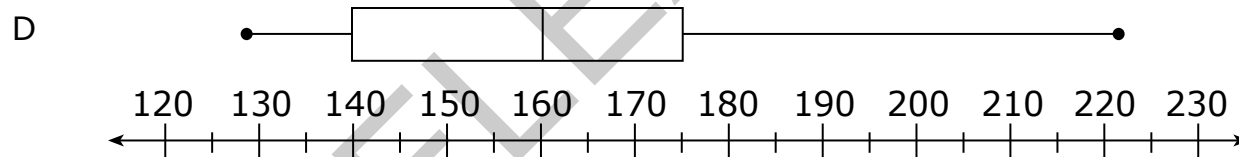
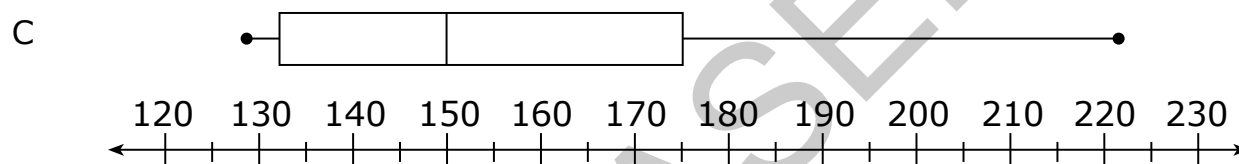
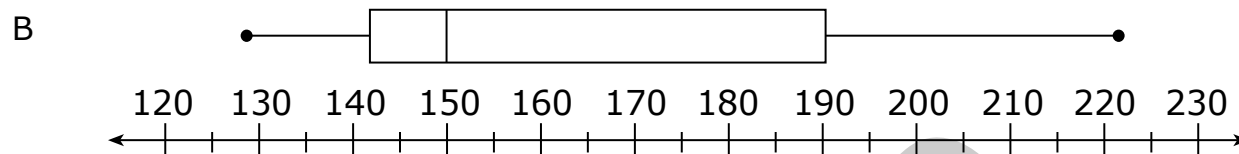
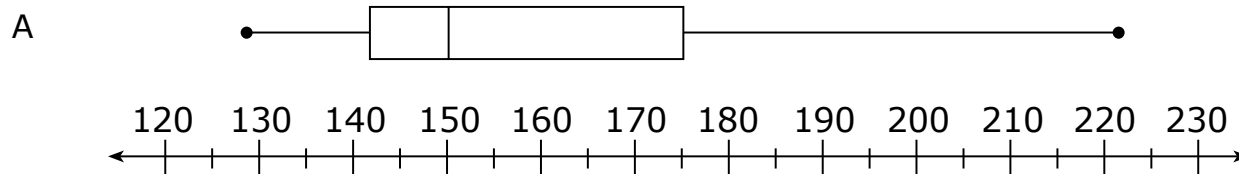
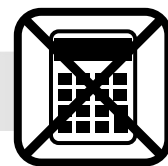
Team	Total Runs
Cleveland	221
Atlanta	197
Pittsburgh	191
Chicago	175
Oakland	153
Los Angeles	150
Milwaukee	150
Detroit	150
Kansas City	148
Boston	147
St. Louis	142
Toronto	138
Philadelphia	132
New York	129

Which box plot correctly represents the data from the table?

Answer choices A, B, C, and D are on the following page.



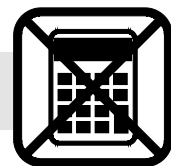
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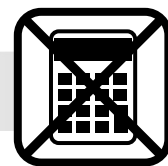
8 Which ordered pair represents a reflection of the point  $(-3, 5)$  across the  $y$ -axis?

- A  $(-3, 5)$
- B  $(-3, -5)$
- C  $(3, -5)$
- D  $(3, 5)$





- 9 Which statement is true?
- A  $0.04 < 0.004$
  - B  $8.2 < 8.02$
  - C  $7.\overline{6} < 7.67$
  - D  $0.0\overline{3} < 0.003$
- 10 Andy runs the same number of miles,  $x$ , every week. His total distance run each week is less than 60 miles. Which inequality represents how many miles Andy runs each week?
- A  $x \geq 60$
  - B  $x \leq 60$
  - C  $x > 60$
  - D  $x < 60$



Questions 11 through 15 require you to write your answers in the boxes provided on your answer sheet. A sample grid is shown below each question, but your answer must be properly entered on the answer sheet to be scored. Write only one number or symbol in each box and fill in the circle in each column that matches what you have printed. Fill in only one circle in each column.

- 11 What is the value of  $\left(5r + \frac{1}{5}\right)^2$  when  $r = 0$ ?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer. Answers that are mixed numbers must be entered as an improper fraction or decimal.

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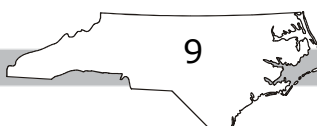
- 12 During a weekend, the manager of a mall gave away gift cards to every 80th person who visited the mall.

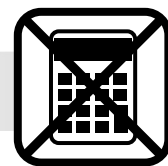
- On Saturday, 1,210 people visited the mall.
- On Sunday, 1,814 people visited the mall.

How many people received a gift card?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer. Answers that are mixed numbers must be entered as an improper fraction or decimal.

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13 Jenny bought gas for her car.

- Gas cost \$3.45 per gallon.
- Jenny bought 12.2 gallons.

What was the total cost for Jenny's gas?

Express the answer as dollars.cents.

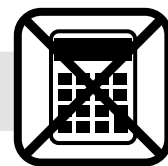
Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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14 What is the value of  $1,608 \div 10^3$ ?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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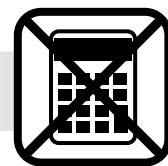


- 15 Steve has  $2\frac{1}{2}$  cups of flour. One of his recipes requires  $\frac{1}{8}$  cup of flour. What is the maximum number of times Steve can complete the recipe?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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**This is the end of the calculator inactive test questions.**

**Directions:**

- 1. Look back over your answers for the calculator inactive questions. You will not be able to go back and work on these questions once you are given a calculator.**
- 2. Raise your hand to let your teacher know you are ready to begin the calculator active test questions.**
- 3. Do not begin work on the calculator active test questions until your teacher has given you a calculator.**

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Questions 16 through 20 require you to write your answers in the boxes provided on your answer sheet. A sample grid is shown below each question, but your answer must be properly entered on the answer sheet to be scored. Write only one number or symbol in each box and fill in the circle in each column that matches what you have printed. Fill in only one circle in each column.

- 16 An airplane travels at a constant speed of 320 miles per hour. How far, in miles, will the airplane travel in 15 minutes?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer. Answers that are mixed numbers must be entered as an improper fraction or decimal.

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- 17 Ryan is building a tree house. It will take  $85\frac{1}{4}$  hours to complete. He can work on the tree house  $15\frac{1}{2}$  hours each week. To the nearest tenth, how many weeks will it take Ryan to complete the tree house?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer. Answers that are mixed numbers must be entered as an improper fraction or decimal.

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- 18 What is the value of  $x$  when  $\frac{1}{3}x = 9\frac{1}{3}$ ?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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- 19 Jenny has finished 12 of the 20 lessons in her piano book. Liam has finished the same percent of lessons from his piano book. His book contains 30 lessons. How many lessons has Liam finished?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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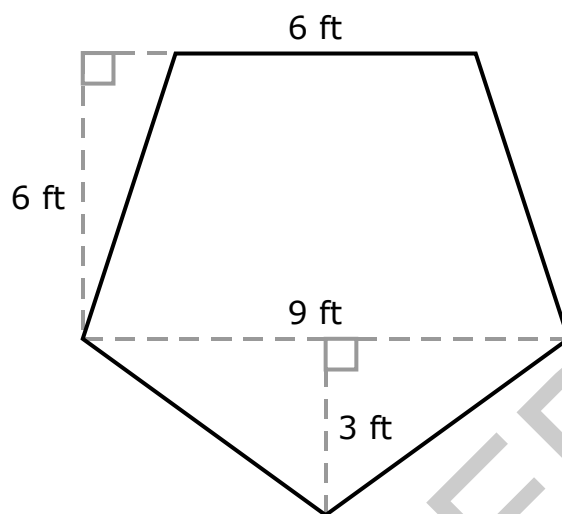
- 20 Sam is using the expression  $\frac{m}{8n}$  in class. What is the value of the expression when  $m = 4$  and  $n = \frac{1}{2}$ ?

Only 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, ., -, and / are allowed in your answer.  
Answers that are mixed numbers must be entered as an improper fraction or decimal.

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- 21 What is the area of the pentagon shown below?



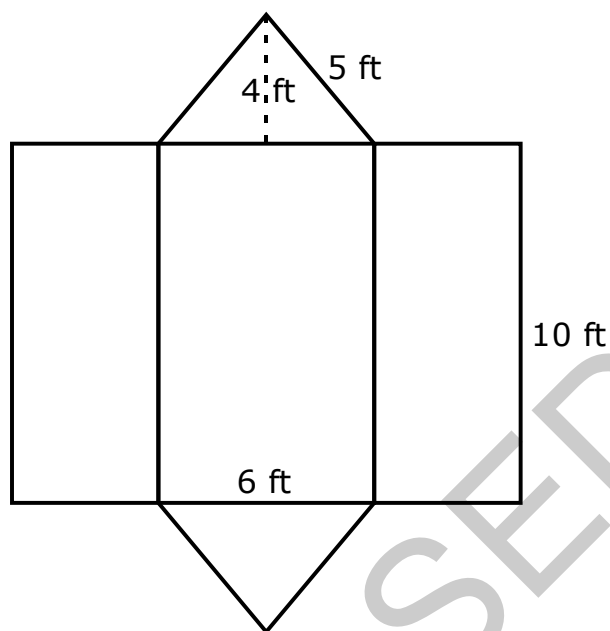
- A 27 square feet
- B 58.5 square feet
- C 85.5 square feet
- D 117 square feet

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- 22 A net of a three-dimensional figure is shown.

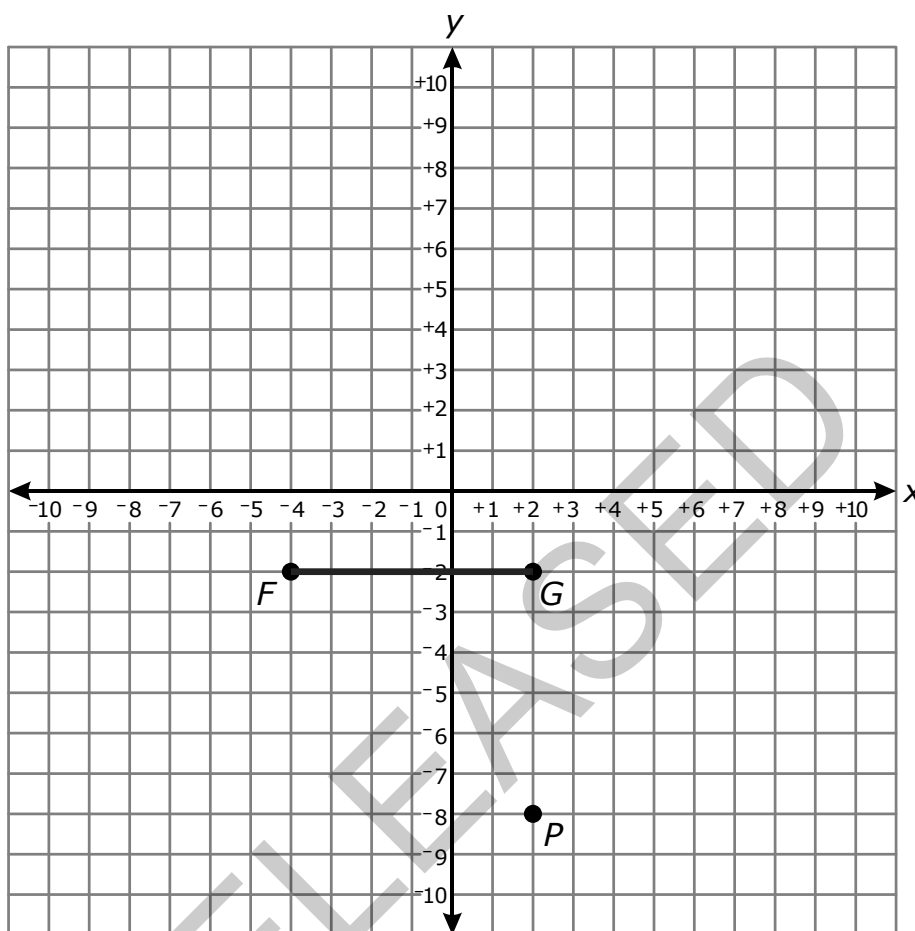


What is the surface area of the three-dimensional figure?

- A 184 ft<sup>2</sup>
- B 180 ft<sup>2</sup>
- C 150 ft<sup>2</sup>
- D 125 ft<sup>2</sup>



- 23 The graph shows segment  $FG$  and point  $P$ .



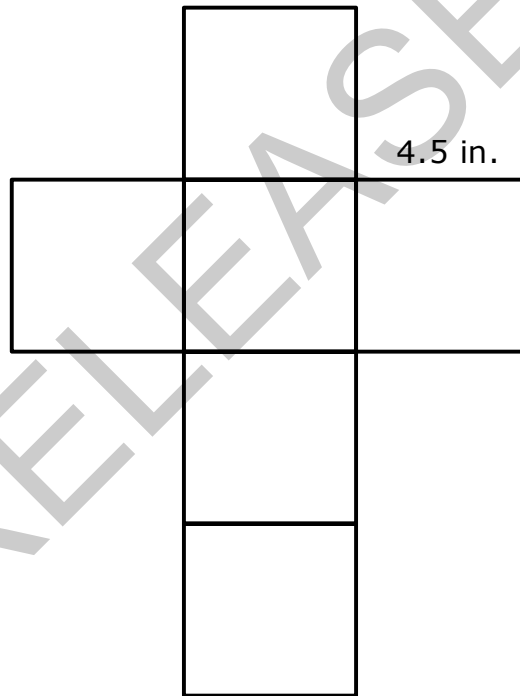
- Point  $M$  is located in the third quadrant.
- The distance between point  $M$  and point  $P$  is half the distance between point  $F$  and point  $G$ .
- Segment  $MP$  is parallel to segment  $FG$ .

What is the first coordinate of point  $M$ ?

- A -10
- B -8
- C -2
- D -1

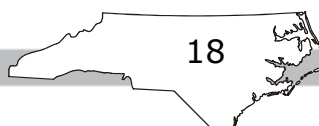


- 24 There are 4 trucks for every 5 cars in a parking lot. How many trucks and cars could be in the parking lot?
- A 64 trucks and 80 cars
  - B 72 trucks and 73 cars
  - C 84 trucks and 100 cars
  - D 96 trucks and 110 cars
- 25 Suzy is wrapping a cube-shaped box and wants to make sure she has enough wrapping paper. The net for the box is shown.



What is the area she needs to cover?

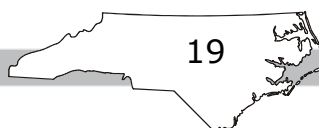
- A  $20.25 \text{ in.}^2$
- B  $96 \text{ in.}^2$
- C  $121.5 \text{ in.}^2$
- D  $150 \text{ in.}^2$





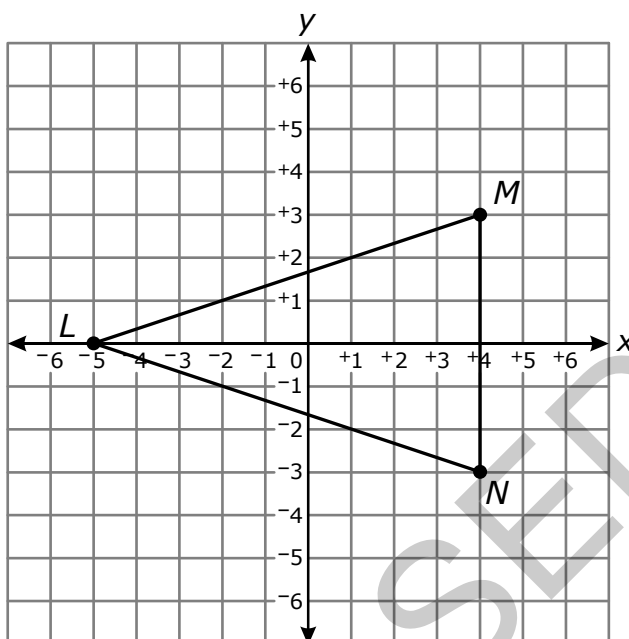
- 26 Jamal scored 62, 75, 76, and 90 on four tests. What does he need to score on the fifth test in order to have a mean of exactly 80?
- A 80
  - B 100
  - C 93
  - D 97
- 27 Seventy-five 6th-grade students chose to watch a movie on the last day of school. This is 25% of the 6th-grade class. How many total students are in the 6th grade?
- A 100
  - B 200
  - C 300
  - D 400

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- 28 Ashley drew the triangle  $LMN$  on the grid below.



What is the area of triangle  $LMN$ ?

- A 24 square units
- B 27 square units
- C 48 square units
- D 54 square units



- 29 This table shows the number of minutes Carol and Anna walked each day for 5 days.

	Carol	Anna
Monday	60	45
Tuesday	30	35
Wednesday	20	60
Thursday	70	65
Friday	45	30

Which statement is true?

- A Carol's mean for the number of minutes she walked is equal to her median.
- B Carol's mean for the number of minutes she walked is greater than Anna's mean.
- C Anna's median for the number of minutes she walked is greater than her mean.
- D Anna's mean for the number of minutes she walked is equal to Carol's mean.
- 30 A restaurant orders corn tortillas and flour tortillas. The ratio of the number of corn tortillas to the number of flour tortillas is 2 : 3. What is the ratio of the number of flour tortillas to the total number of tortillas?
- A 3 : 8
- B 3 : 5
- C 2 : 8
- D 2 : 5





- 31 In the table, the ratio of  $y$  to  $x$  is constant.

$x$	$y$
2	5
4	10
10	?
18	45

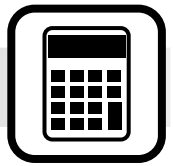
What is the value of the missing number?

- A 15  
B 20  
C 25  
D 30
- 32 The table shows the daily amount that Trevor spent on snacks.

Week	Monday	Tuesday	Wednesday	Thursday	Friday
1	\$0.75	\$0.50	\$1.00	\$1.25	\$0.50
2	\$1.25	\$0.75	\$0.25	\$1.00	\$1.00
3	\$0.50	\$0.75	\$0.25	\$0.25	\$1.25
4	\$1.25	\$0.25	\$0.75	\$1.00	\$0.50

During which week did Trevor spend a mean amount of \$0.85 per day on snacks?

- A Week 1  
B Week 2  
C Week 3  
D Week 4



- 33 A set of stickers contains 4 hearts for every 6 stars. Which choice contains an equivalent ratio of hearts to stars?

A 6 hearts to 9 stars  
 B 2 hearts to 4 stars  
 C 1 heart to 3 stars  
 D 8 hearts to 10 stars

- 34 A list of numbers is shown.

7, 14, 15, 9, 11, 14, 11, 10, 17

What is the mean of the list of numbers?

A 10  
 B 11  
 C 12  
 D 13

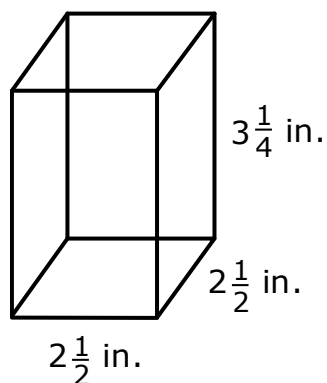
- 35 Which value from the set  $\left\{\frac{1}{2}, \frac{2}{3}, \frac{4}{3}, \frac{5}{2}\right\}$  is a value of  $x$  that will make the equation  $\frac{3}{4} \div x = \frac{9}{8}$  true?

A  $\frac{1}{2}$   
 B  $\frac{2}{3}$   
 C  $\frac{4}{3}$   
 D  $\frac{5}{2}$





- 36 A right rectangular prism is shown.



What is the volume of the prism?

- A  $8\frac{1}{4}$  in.<sup>3</sup>
- B  $13\frac{1}{4}$  in.<sup>3</sup>
- C  $16\frac{1}{4}$  in.<sup>3</sup>
- D  $20\frac{5}{16}$  in.<sup>3</sup>

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37 Jason owns a party supply store.

- He sells balloons for \$0.50 each and party hats for \$1.25 each.
- Jason buys each balloon for \$0.10 and each party hat for \$0.20.

Which expression represents how much money Jason gains from selling  $n$  balloons and  $h$  party hats?

- A  $0.40n + 1.05h$
- B  $0.60n + 1.45h$
- C  $1.75nh$
- D  $1.45h - 0.60n$

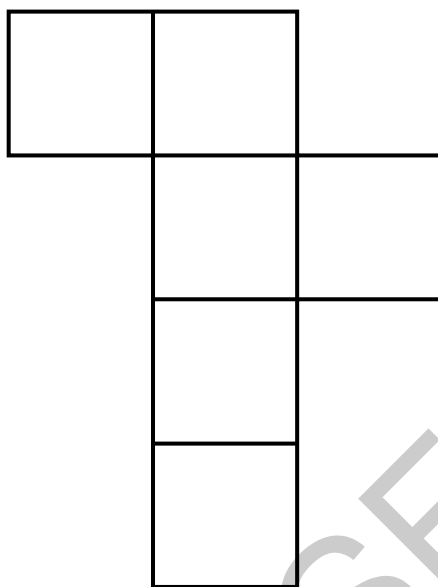
38 Sarah earns \$400 per week and spends 15% of her earnings on transportation. How much does Sarah spend on transportation every week?

- A \$80
- B \$75
- C \$60
- D \$55

RELEASED



- 39 Karen has a cube that has a side length of 6 in. The net of the cube is shown.



What is the surface area of the cube?

- A 36 square inches  
 B 144 square inches  
 C 180 square inches  
 D 216 square inches
- 40 Which expression is equal to  $48 + 72$ ?
- A  $24(2 + 3)$   
 B  $8(6 + 12)$   
 C  $3(14 + 24)$   
 D  $2(24 + 38)$



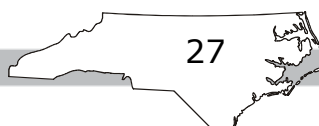
- 41 A store sells cans of tomatoes priced as shown.

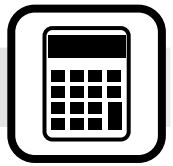
**Canned Tomatoes**

Size	Cost
10 ounces	\$0.89
15 ounces	\$1.29
18 ounces	\$2.26
32 ounces	\$3.39

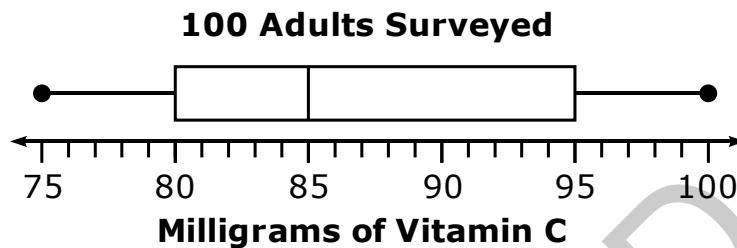
Which size can of tomatoes has the lowest cost per ounce?

- A 10 ounces  
 B 15 ounces  
 C 18 ounces  
 D 32 ounces
- 42 If 45% of a number,  $n$ , is 225, what is 74% of  $n$ ?
- A 185  
 B 298  
 C 370  
 D 406





- 43 A researcher was interested in how much Vitamin C adults had in their daily diets.
- The researcher surveyed 100 random adults.
  - She made a box plot based on the amounts of Vitamin C in the diets of the 100 adults.



What percent of those in the survey get at least 90 milligrams of Vitamin C?

- A between 25% and 50%
- B between 50% and 75%
- C less than 25%
- D more than 75%
- 44 At a middle school, 74 students have freckles. There are 258 students in the school. To the nearest tenth of a percent, what percent of the students have freckles?
- A 18.4%
- B 28.7%
- C 34.6%
- D 40.2%



- 45 A motorcycle can go 50 miles using one gallon of gas. **About** how many gallons of gas will be used to go 150 kilometers?

(Note: 1 mile is approximately 1.6 kilometers.)

- A 5 gallons
- B 3 gallons
- C 2 gallons
- D 1 gallon

RELEASED

**Directions:**

**This is the end of the mathematics test.**

- 1. Put all of your papers inside your test book and close your test book.**
- 2. Place your calculator on top of the test book.**
- 3. Stay quietly in your seat until your teacher tells you that testing is finished.**

RELEASED



**Grade 6 Mathematics  
RELEASED Form  
2018–2019  
Answer Key**

Item Number	Type	Key	DOK*	Domain
S1	MC	C		
S2	GR	-7		
S3	GR	3/4		

**Calculator Inactive**



Item Number	Type	Key	DOK	Domain
1	MC	C	1	NC.6.EE.1
2	MC	B	1	NC.6.NS.3
3	MC	A	1	NC.6.EE.3
4	MC	D	3	NC.6.EE.7
5	MC	C	1	NC.6.NS.1
6	MC	D	2	NC.6.EE.9
7	MC	A	2	NC.6.SP.4
8	MC	D	2	NC.6.NS.6.b
9	MC	C	1	NC.6.NS.7.a
10	MC	D	2	NC.6.EE.8
11	GR	1/25	1	NC.6.EE.2
12	GR	37	3	NC.6.NS.2
13	GR	42.09	1	NC.6.NS.3
14	GR	1.608	1	NC.6.EE.1
15	GR	20	2	NC.6.NS.1



**Calculator Active**



Item Number	Type	Key	DOK	Domain
16	GR	80	2	NC.6.RP.3
17	GR	5.5	2	NC.6.NS.1
18	GR	28	1	NC.6.EE.7
19	GR	18	2	NC.6.RP.4
20	GR	1	1	NC.6.EE.2
21	MC	B	2	NC.6.G.1
22	MC	A	2	NC.6.G.4
23	MC	D	3	NC.6.NS.8
24	MC	A	2	NC.6.RP.1
25	MC	C	2	NC.6.G.4
26	MC	D	2	NC.6.SP.5.b
27	MC	C	2	NC.6.RP.4
28	MC	B	1	NC.6.G.3
29	MC	A	2	NC.6.SP.3.a
30	MC	B	2	NC.6.RP.1
31	MC	C	2	NC.6.RP.3
32	MC	B	1	NC.6.SP.3.a
33	MC	A	2	NC.6.RP.1
34	MC	C	2	NC.6.SP.5.b
35	MC	B	2	NC.6.EE.5
36	MC	D	1	NC.6.G.2
37	MC	A	3	NC.6.EE.6
38	MC	C	2	NC.6.RP.4
39	MC	D	2	NC.6.G.4
40	MC	A	1	NC.6.NS.4

## GRADE 6 MATHEMATICS — RELEASED FORM

Item Number	Type	Key	DOK	Domain
41	MC	B	1	NC.6.RP.3
42	MC	C	2	NC.6.RP.4
43	MC	A	2	NC.6.SP.4
44	MC	B	2	NC.6.RP.4
45	MC	C	2	NC.6.RP.3

**\*DOK:**

**1 = Recall**

**2 = Skill/Concept**

**3 = Strategic Thinking**

RELEASED