Team Name_____

MATHLETES CHALLENGE 2018

ROUND 2

TEST 2

1. The surface area, S, of a right rectangular prism with length l, width w, and height h can be found using the formula below.

$$S = 2(lw + wh + hl)$$

What is the surface area, in square inches, of a prism with a length of 12 inches, a width of 9 inches, and a height of 2 inches?

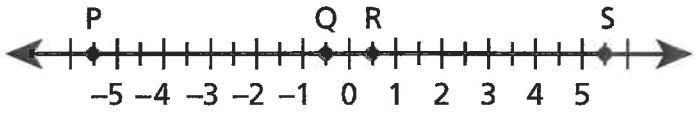
A 300

B 258

C 150

D 92

2. Which point on the number line below represents the number opposite the number $-5\frac{1}{2}$?



A point P

B point Q

C point R

D point S

3. In 2010, Kim-Ly earned $17.50 for 2 hours of work. Which table shows the relationship between the number of hours worked and Kim-Ly's total earnings, if her rate per hour is constant?

A

Number of Hours	Total Earnings
1	$17.50
2	$35.00
3	$52.50
4	$70.00

C

Number of Hours	Total Earnings
1	$16.50
2	$17.50
3	$18.50
4	$19.50

B

Number of Hours	Total Earnings
1	$17.50
2	$17.50
3	$17.50
4	$17.50

D

Number of Hours	Total Earnings
1	$8.75
2	$17.50
3	$26.25
4	$35.00

4. Susan reads a book at a rate of 1 page every 3 minutes. If her reading rate remains the same, which method could be used to determine the number of minutes for her to read 18 pages?

A add 18 and 3

B divide 18 by 3

C multiply 3 by 18

D subtract 3 from 18

5. Which value or values for the variable c from the set below will make $5.6 + 0.4c \leq 6c$ true?

{0, 0.875, 1, 2.5}

A only 2.5

B 1 and 2.5

C 0.875, 1, and 2.5

D all values in the set

6. Steve ordered plastic cases for storing his baseball cards. Each case has a length of 12 centimeters, a width of 6.5 centimeters, and a height of 1.25 centimeters. What is the volume, in cubic centimeters, of one baseball card case?

A 39.5

B 97.5

C 118.5

D 202.25

7. Kim rode her bicycle 135 miles in 9 weeks, riding the same distance each week. Eric rode his bicycle 102 miles in 6 weeks, riding the same distance each week. Which statement correctly compares the number of miles per week they rode?

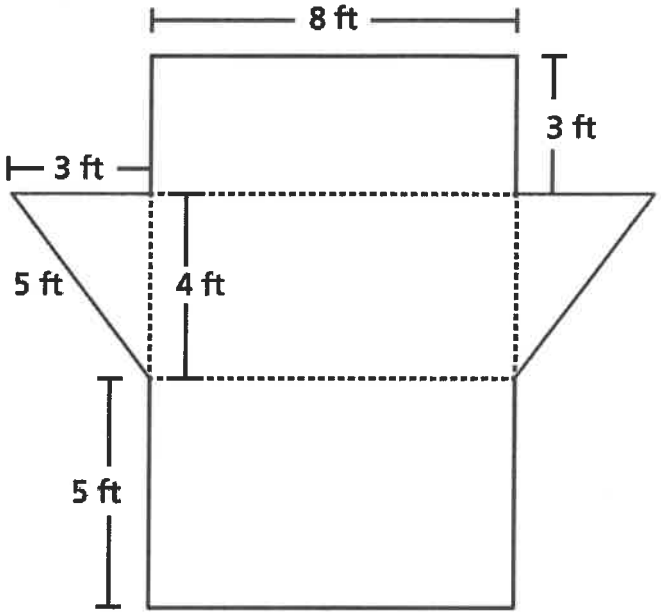
A Eric rode 2 more miles per week than Kim rode.

B Kim rode 3 more miles per week than Eric rode.

C Kim rode 11 more miles per week than Eric rode.

D Eric rode 17 more miles per week than Kim rode.

8. A net of a triangular prism is shown below.



What is the surface area, in square feet, of the triangular prism?

A 44

B 96

C 108

D 120

9. The two expressions below are equivalent.

$$y(2.5 + 7) + y - 2$$

$$10.5y - 2$$

Which statement **best** explains why the expressions are equivalent?

A The expressions have the same value for any value of y.

B The expressions have the same value for only whole number values of y.

C The expressions have the same value only when y is an odd number.

D The expressions have the same value only when y is an even number.

10. Two whole numbers have a least common multiple of 60.

- Each number is less than or equal to 12.
- The greatest common factor of the two numbers is 2.

What are the two numbers?

A 6 and 10

B 5 and 12

C 10 and 12

D 12 and 15

11. Which quantity could go in the blank to make the equation below true?

$$x + 2x + \_\_ = 5x$$

A 2

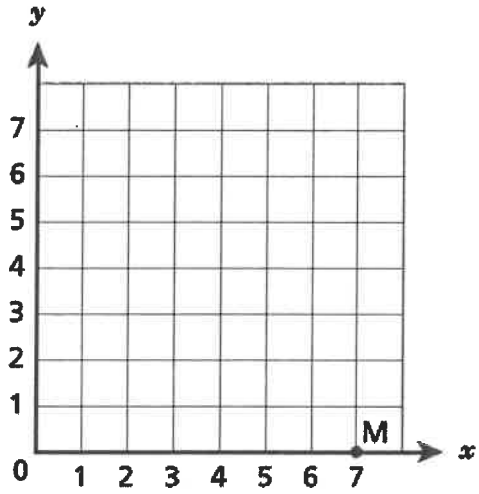
B 3

C $2x$

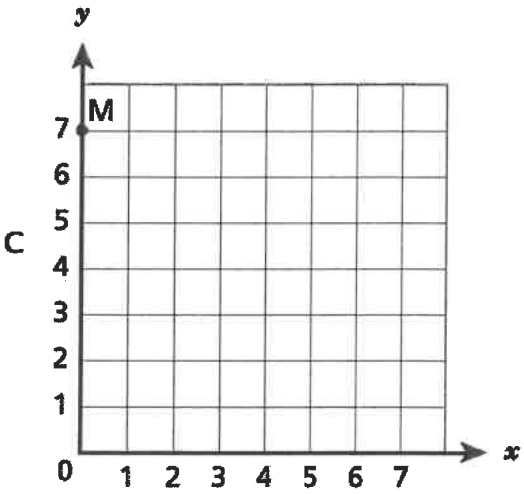
D $3x$

12. Which coordinate grid shows point M plotted at (4, 3)?

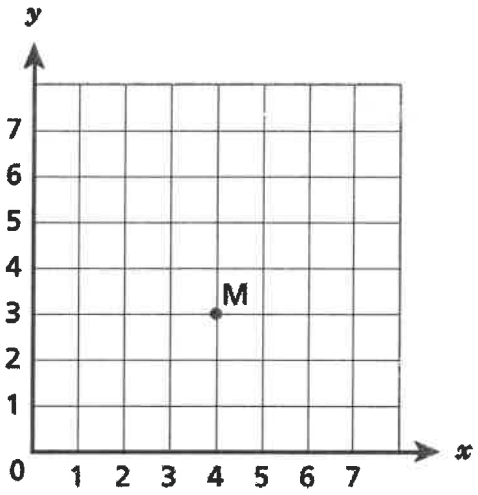
A



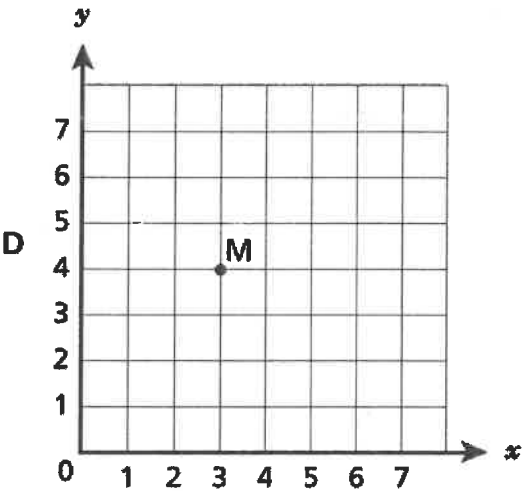
C



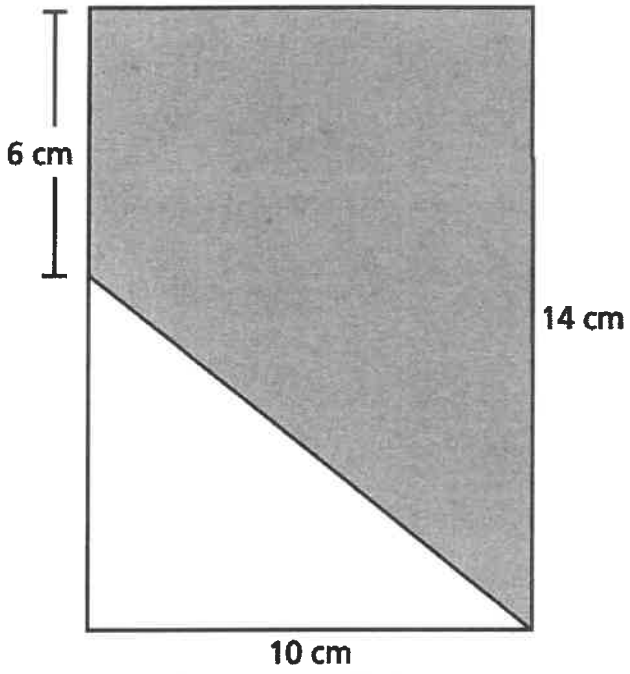
B



D



13. What is the area, in square centimeters, of the shaded part of the rectangle shown below?



A 20

B 60

C 100

D 140

14. A sandwich shop sells sandwiches for $5.95 each, including tax. The shop received a total of $71.40 from the sales of sandwiches one afternoon. Which equation can be used to determine the number of sandwiches, x, sold by the sandwich shop that afternoon?

A $5.95 + x = 71.40$

B $5.95 \div 71.40 = x$

C $5.95x = 71.40$

D $5.95 \div x = 71.40$

15. Leanne collects data throughout the basketball season and uses these data to determine the probabilities of different teams playing in the league championship game. The probabilities for her four favorite teams playing in the championship game are shown below.

- Tigers: $P = \frac{2}{3}$
- Redbirds: $P = \frac{4}{5}$
- Bulldogs: $P = \frac{3}{8}$
- Titans: $P = \frac{1}{2}$

Which of these teams is **least likely** to play in the championship game?

A Tigers

B Redbirds

C Bulldogs

D Titans

16. The initial balance of a savings account was $275. After which transactions will the balance of the savings account be the same as the initial balance?

A a withdrawal of $232 followed by a deposit of $132

B a deposit of $278 followed by a withdrawal of $278

C a withdrawal of $115 followed by a deposit of $312

D a deposit of $205 followed by a withdrawal of $317

17. A researcher surveyed five randomly selected employees from each of four different companies about their daily commutes to work. The table shows the commute times for the surveyed employees.

COMMUTE TIMES FOR SELECTED EMPLOYEES

Amount of Time for Company 1 (minutes)	Amount of Time for Company 2 (minutes)	Amount of Time for Company 3 (minutes)	Amount of Time for Company 4 (minutes)
24	6	15	13
26	32	15	10
28	9	15	45
23	31	15	12
21	21	15	15

Based on the data, which company **most likely** has the longest average commute time per employee?

A Company 1

B Company 2

C Company 3

D Company 4

18. In a scale drawing of an apartment, 1 centimeter represents $2\frac{3}{4}$ feet. If the length of the kitchen is $4\frac{1}{2}$ cm on the scale drawing, what is the actual length, in feet, of the kitchen?

A $6\frac{2}{3}$

B $7\frac{1}{4}$

C $8\frac{3}{8}$

D $12\frac{3}{8}$

19. A passenger train has tickets available for 12 window seats and 8 aisle seats. The next person to buy a ticket will be randomly assigned to one of those seats. What is the probability that the next person will be assigned to an aisle seat?

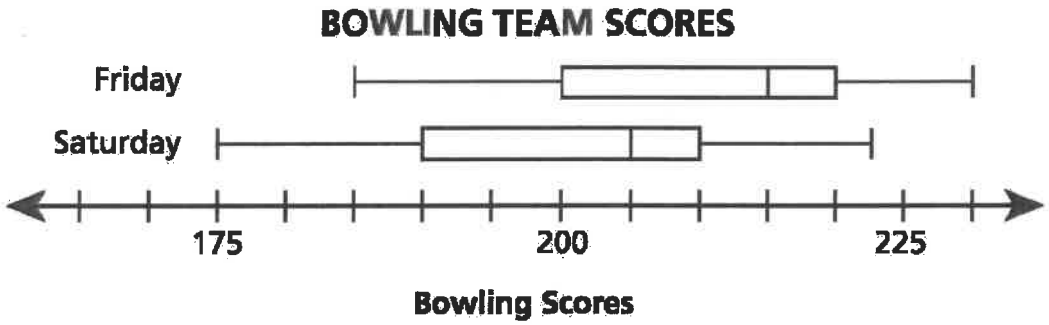
A $\frac{1}{8}$

B $\frac{2}{5}$

C $\frac{1}{2}$

D $\frac{2}{3}$

20. A bowling team participates in a two-day tournament and records the scores for each team member on both days. The scores for both days are represented by the box plots below.



Which conclusion can be drawn from the box plots?

A The scores on Friday and the scores on Saturday have the same median and interquartile range.

B The scores on Friday have a greater median and a greater interquartile range than the scores on Saturday.

C The scores on Friday have a greater interquartile range than the scores on Saturday, but both data sets have the same median.

D The scores on Friday have a greater median than the scores on Saturday, but both data sets have the same interquartile range.

Mathletes 2018 – Round 2 Test 1 – Answer Key

1.B	11. D
2. D	12. B
3. A	13. B
4. C	14. C
5. D	15. A
6. D	16. A
7. D	17. C
8. C	18. A
9. A	19. A
10. C	20. B

Mathletes 2018 – Round 2 Test 2 – Answer Key

1. A	11. C
2. D	12. B
3. D	13. C
4. C	14. C
5. B	15. C
6. B	16. B
7. A	17. A
8. C	18. D
9. A	19. B
10. C	20. D