Team Name_____

MATHLETES CHALLENGE 2018

ROUND 2

TEST 1

1. A bakery sells 5 apple muffins for every 2 bran muffins sold. Which table shows this ratio?

A

Apple	Bran
5	2
10	12
20	22

C

Apple	Bran
5	2
18	8
20	10

B

Apple	Bran
10	4
15	6
35	14

D

Apple	Bran
20	4
30	6
40	8

2. In which set do all of the values make the inequality $2x - 1 < 10$ true?
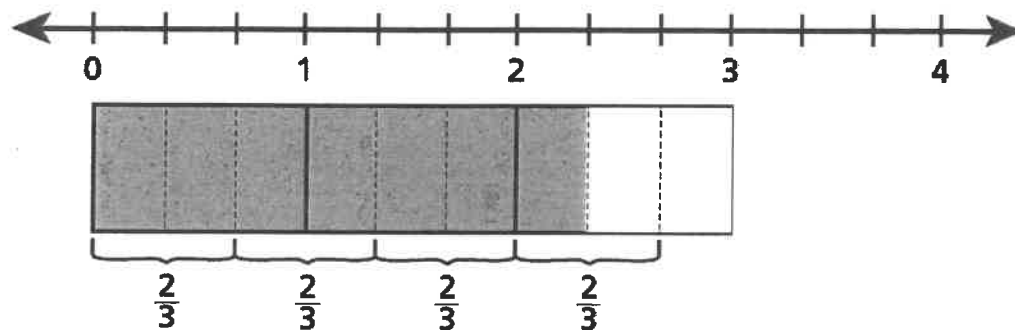
A {10, 15, 20}

B {5, 7, 9}

C {4, 6, 8}

D {2, 3, 4}

3 The model below represents a division problem.

Which equation is represented by the model?

A $2\dfrac{1}{3} \div \dfrac{2}{3} = 3\dfrac{1}{2}$

B $2\dfrac{1}{3} \div \dfrac{2}{3} = 3\dfrac{1}{3}$

C $\dfrac{7}{1} \div \dfrac{1}{3} = 2\dfrac{1}{3}$

D $\dfrac{2}{3} \div 3\dfrac{1}{2} = 2\dfrac{1}{3}$

4 What is the value of the expression below?

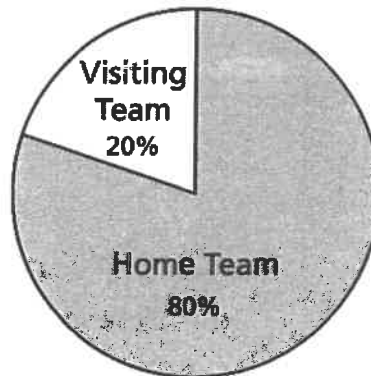$$2[3(4^2 + 1)] - 2^3$$

A 156

B 110

C 94

D 48

5. Which expression is equivalent to $5(6x + 3y)$?

A $11x + 3y$

B $11x + 8y$

C $30x + 3y$

D $30x + 15y$

6. The diagram below shows the percentages of people attending a football game who were supporters of either the home team or the visiting team.

SUPPORTERS AT FOOTBALL GAME

If the total number of people attending the game was 64,000, how many people were supporters of the home team?

A   12,800

B   38,400

C   48,000

D   51,200

7. Which pair of expressions is equivalent for any variable value greater than zero?

A $3(x + 2)$ and $3x + 2$

B $4d + 2e$ and $8d + e$

C $f + f + f + g$ and $3fg$

D $b + b + 3c$ and $2b + 3c$

8. What is the greatest common factor of 42 and 84?

A 7

B 21

C 42

D 84

9. Rosa has a goal of running a total of 100 miles this month. Each day that she ran, she ran 5 miles. Which expression could Rosa use to determine how many miles she has left to run after running for d days?
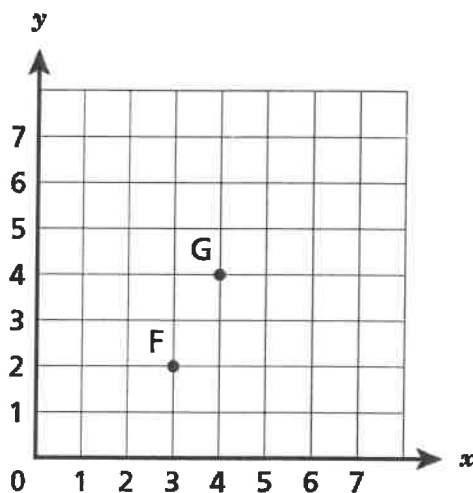
A $100 - 5d$

B $5d + 100$

C $\dfrac{100}{5d}$

D $5d$

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10 Points F and G have been plotted on the coordinate plane below.

Point G and point H are the same distance from point F. Which coordinates could be the location of point H?

A $(1, 2)$

B $(4, 2)$

C $(5, 1)$

D $(2, 5)$

11. Kira studied data collected on the school basketball team for one season. She noticed that a player on the team had 13 successful free throws out of a total of 20 attempted free throws. To find the percentage of the total free throws attempted by this player that were successful, Kira set up the equivalent ratios below.

$$\frac{13}{20} = \frac{m}{n}$$

What are the values for m and n in Kira's equation?

A $m = 65$
   $n = 1$

C $m = 93$
   $n = 100$

B $m = 100$
   $n = 65$

D $m = 65$
   $n = 100$

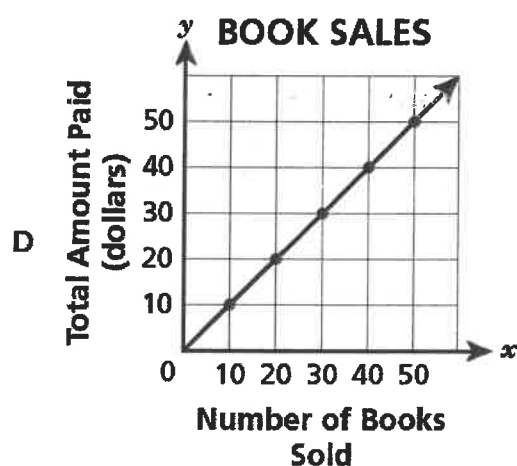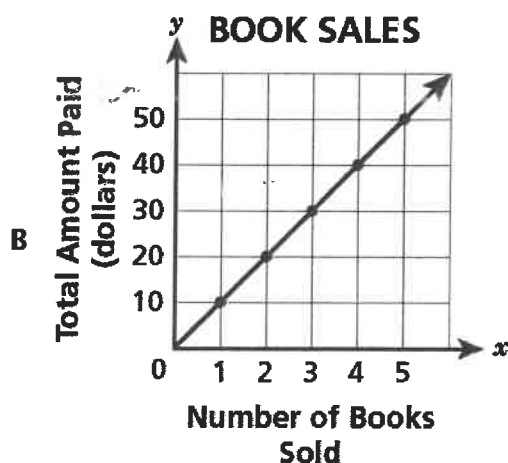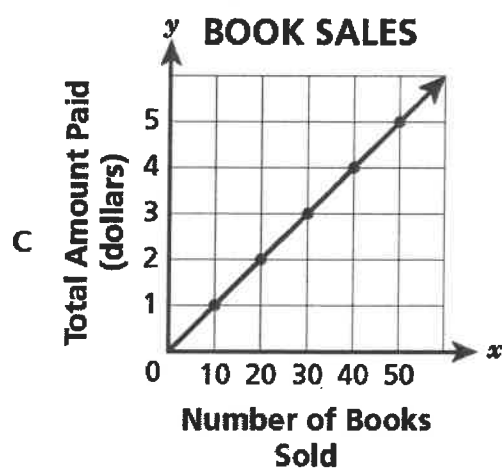**12.** What is the least common multiple of 4 and 10?

A 14

B 20

C 40

D 60

13 A bookstore is selling books for $10 each. Which graph shows the relationship between the number of books, x, the store sold and the total amount of money, y, paid from the book sales?

A

y **BOOK SALES**

Total Amount Paid (dollars)

5
4
3
2
1
0   1   2   3   4   5 x

Number of Books Sold

C

y **BOOK SALES**

Total Amount Paid (dollars)

5
4
3
2
1
0   10 20 30 40 50 x

Number of Books Sold

B

y **BOOK SALES**

Total Amount Paid (dollars)

50
40
30
20
10
0   1   2   3   4   5 x

Number of Books Sold

D

y **BOOK SALES**

Total Amount Paid (dollars)

50
40
30
20
10
0   10 20 30 40 50 x

Number of Books Sold
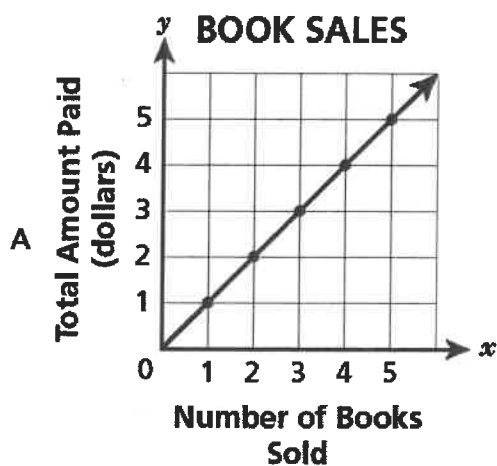
14 The ratio of students to adults on a field trip is 8 to 1. Which table correctly shows this ratio for each grade?

A

Grade	Number of Students	Number of Adults
6	96	88
7	120	112
8	136	128

C

Grade	Number of Students	Number of Adults
6	96	12
7	120	15
8	136	17

B

Grade	Number of Students	Number of Adults
6	96	104
7	120	128
8	136	144

D

| Grade	Number of Students	Number of Adults
6	96	11
7	120	13
8	136	15

15 Which phrase is a description of $2m + 7$?

A 7 more than 2 times m

B 2 more than 7 times m

C 2 times the sum of 7 and m

D 7 times the sum of 2 and m

16 George has $23 to spend on art supplies. He wants to buy markers, paper, and glue. If the total cost of the markers and paper is more than $14, which inequality represents the dollar amount, p, George can spend on glue?

A $p < 9$

B $p > 9$

C $p < 37$

D $p > 37$

17 The net of a rectangular prism is shown below. The surface area of each face is labeled.

		12 sq. cm	
24 sq. cm	18 sq. cm	24 sq. cm	18 sq. cm
		12 sq. cm	
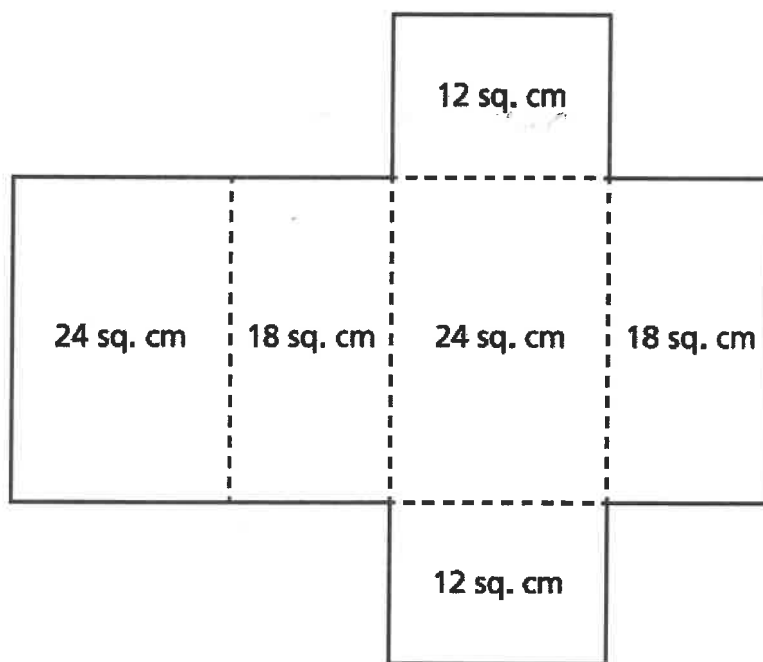
Which values represent the dimensions, in centimeters, of the rectangular prism?

A 12, 18, 24

B 3, 4, 8

C 3, 4, 6

D 2, 9, 12

18 A salesperson had $240,000 in sales last year, which is 60% of the sales she had this year. Which equation could be used to determine x, the salesperson's total amount of sales, in dollars, for this year?

A $\dfrac{240,000}{x} = \dfrac{60}{100}$

B $\dfrac{240,000}{100} = \dfrac{x}{60}$

C $\dfrac{60}{240,000} = \dfrac{x}{100}$

D $\dfrac{60}{100} = \dfrac{x}{240,000}$

19 A student formed a pattern in which each term is represented by a sum. The first four terms of the pattern are shown below.

n	Sum
1	1
2	$1 + 3$
3	$1 + 3 + 5$
4	$1 + 3 + 5 + 7$

Which expression can be used to determine the value of the sum in any term, n?

A n^2

B $4n$

C $n + 3$

D 2^n

20 Jason will use a $\frac{1}{3}$-gallon pitcher to fill an empty $\frac{3}{4}$-gallon water jug. How much water will he need in order to completely fill the water jug?

A between 1 and 2 full pitchers

B between 2 and 3 full pitchers

C about $\frac{1}{2}$ of a full pitcher

D about $\frac{1}{4}$ of a full pitcher

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