15th Annual

MATHLETES CHALLENGE

2020

ROUND ONE

TEST 2

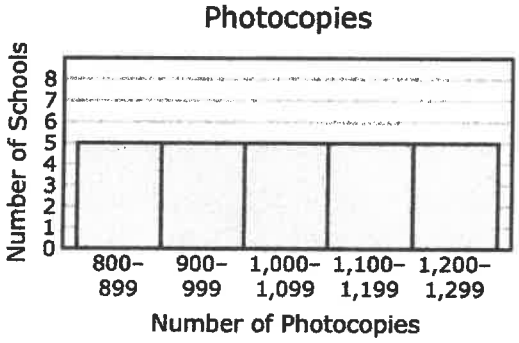
1 The table shows the number of photocopies made during one day at each of the 25 schools in a school district.

Photocopies

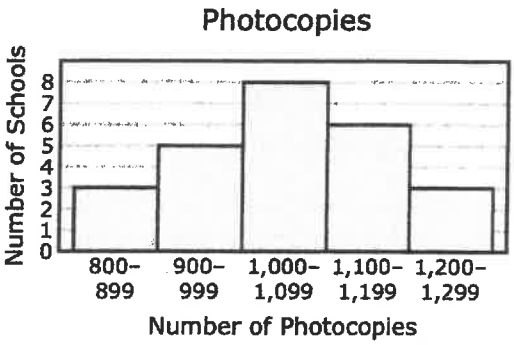
805	805	872	910	919
923	950	989	1,004	1,010
1,020	1,051	1,056	1,085	1,094
1,098	1,108	1,128	1,133	1,150
1,150	1,187	1,209	1,220	1,298

Which histogram displays all the data in the table correctly?

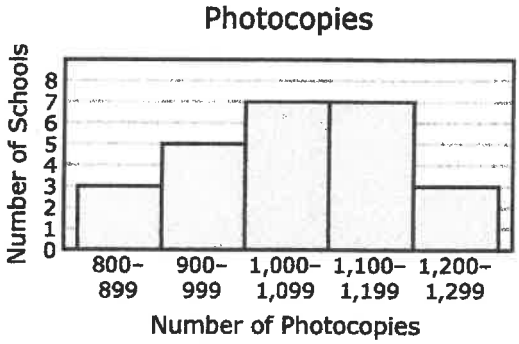
A



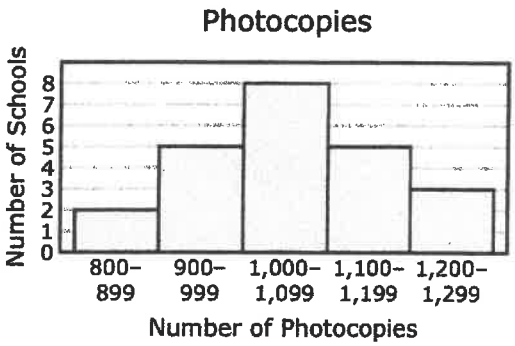
C



B



D



2. This expression represents the number of bacteria in a petri dish.

$$5(2^3)^2$$

What is the number of bacteria in the petri dish?

Ⓐ 60

Ⓑ 160

Ⓒ 320

Ⓓ 800

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3 The expression shown can be used to calculate the amount of money in dollars a grocery store customer should receive in change when paying with $50.

$$50 - (14 + 12 + 2(5) + 2(2) + 3)$$

What amount of change in dollars should the customer receive?

A $4

B $26

C $29

D $7

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4 Which expression is equivalent to $(6 \cdot p) + 3$?

A $3 - (6 \cdot p)$

B $3 + (p \cdot 6)$

C $6 + 3 \cdot p$

D $6 \cdot (p + 3)$

5 A scientist used 786 milliliters of a liquid for an experiment. How many liters of the liquid did the scientist use for this experiment?

A 786,000 L

B 7.86 L

C 0.786 L

D 0.0786 L

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6 Which inequality is true if $p = 3.4$?

A $3p < 10.2$

B $13.6 \leq 3.9p$

C $5p > 17.1$

D $8.5 \geq 2.5p$

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7 Carlos walked to school on 14 of the 20 school days in February. Which value is equivalent to the fraction of the school days in February that Carlos walked to school?

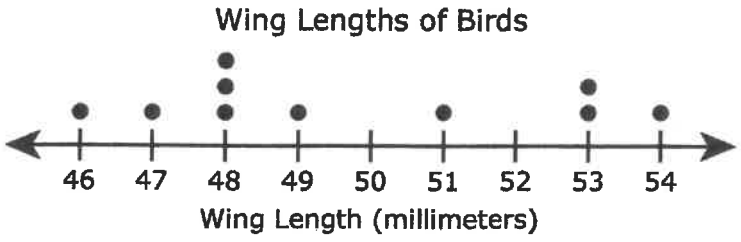
A 70%

B 0.07

C 0.142

D 56%

8 The dot plot shows the wing lengths in millimeters for ten birds.



Which statement is supported by the data in the dot plot?

A More than half of the birds have wing lengths of less than 50 millimeters.

B There are more birds that have a wing length of 54 millimeters than birds that have a wing length of 46 millimeters.

C Fewer than half of the birds have wing lengths greater than 48 millimeters.

D There are more birds that have a wing length of 52 millimeters than birds that have a wing length of 51 millimeters.

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9 After 4 new students joined a class, the class had 32 students.

Which equation can be used to find n, the number of students in the class before the 4 new students joined?

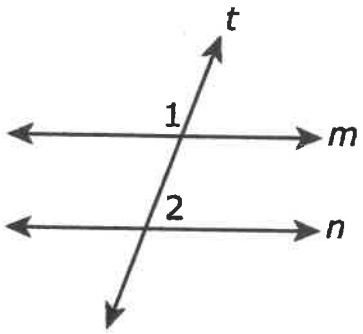
A $\frac{n}{4} = 32$

B $n - 4 = 32$

C $4n = 32$

D $n + 4 = 32$

10 Lines m and n are parallel lines cut by transversal line t, as shown.



The measure of $\angle 1$ is 120°. What is the measure of $\angle 2$?

Ⓐ 30°

Ⓑ 60°

Ⓒ 90°

Ⓓ 120°

11 Which situation can be represented by the equation $y = 12x$?

A Victoria went to school for x years.
This is 12 times y, the number of years her brother went to school.

B Victoria spent x dollars to buy a gift for her brother.
She gave the cashier y dollars and received \$12 in change.

C Victoria has y dollars.
This amount is 12 times x, the amount of money in dollars Victoria's brother has.

D Victoria is y years old.
Her age is 12 years greater than x, her brother's age in years.

12 The weights of four puppies are shown in pounds.

$$9.5 \quad 9\frac{3}{8} \quad 9.125 \quad 9\frac{3}{4}$$

Which list shows these weights in order from greatest to least?

A ● $9\frac{3}{4}$ 9.5 $9\frac{3}{8}$ 9.125

B ● 9.5 $9\frac{3}{8}$ $9\frac{3}{4}$ 9.125

C ● 9.125 $9\frac{3}{8}$ 9.5 $9\frac{3}{4}$

D ● $9\frac{3}{4}$ $9\frac{3}{8}$ 9.5 9.125

13 The ratio of the number of boys to the number of girls in a choir is 5 to 4. There are 60 girls in the choir.

How many boys are in the choir?

A 75

B 61

C 48

D 80

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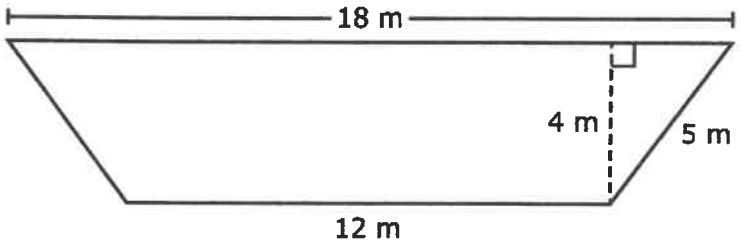
14 The dimensions of a lawn shaped like a trapezoid are given in meters.



What is the area of the lawn in square meters?

A ● 108 m^2

B ● 60 m^2

C ● 72 m^2

D ● 120 m^2

15 The tables show the relationships between x and y for two data sets.

Data Set I

x	y
1	5.5
2	11.0
3	16.5
4	22.0
5	27.5

Data Set II

x	y
1	5
2	10
3	15
4	20
5	25

Which statements describe the relationships between x and y in Data Set I and Data Set II?

A Both data sets show additive relationships.
In Data Set I, y is 5.5 more than x, and in Data Set II, y is 5 more than x.

B Data Set I shows a multiplicative relationship in which y is 5.5 times x.
Data Set II shows an additive relationship in which y is 20 more than x.

C Both data sets show multiplicative relationships.
In Data Set I, y is 5.5 times x, and in Data Set II, y is 5 times x.

D Data Set I shows an additive relationship in which y is 4.5 more than x.
Data Set II shows a multiplicative relationship in which y is 5 times x.

16 Four points are labeled on the number line.

Which point best represents $\frac{1}{3}$?

A Point *K*

B Point *L*

C Point *M*

D Point *N*

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17 Ms. Gallegos burns 236 calories riding her bike each hour. She wants to burn more than 590 calories riding her bike at the same rate.

Which inequality represents all possible values for t, the number of hours Ms. Gallegos must ride her bike to burn more than 590 calories?

A $t > 2.5$

B $t < 2.5$

C $t > 0.4$

D $t < 0.4$

18 Regina writes the expression $y + 9 \cdot \frac{3}{4}$. Which expression is equivalent to the one Regina writes?

A $(9 \cdot 3 \div 4) + y$

B $9 + y \cdot (3 \div 4)$

C $(y + 9)(3 \div 4)$

D None of these

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19. Which situation could be represented by the equation $10.75 = 5.5n$?

A Ricardo ran 5.5 miles.
He ran each mile in 10.75 minutes.
What is n, the total number of minutes it took Ricardo to run 5.5 miles?

B Ricardo ran a total of 10.75 miles on Monday.
He ran 5.5 miles in the morning and the rest of the miles in the evening.
What is n, the number of miles Ricardo ran in the evening?

C Ricardo ran a total of 10.75 miles.
He ran 5.5 miles each hour.
What is n, the number of hours Ricardo ran?

D Ricardo ran 10.75 hours one week and 5.5 hours the next week.
What is n, the total number of hours Ricardo ran during these weeks?

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20. What value of w makes this equation true?

$$\frac{2}{3}(w + 3) = 7$$

Ⓐ $3\frac{1}{3}$

Ⓑ 4

Ⓒ 6

Ⓓ $7\frac{1}{2}$

2020 Mathletes Challenge Answer Key
Round 1

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