

**15th Annual**

**MATHLETES CHALLENGE**

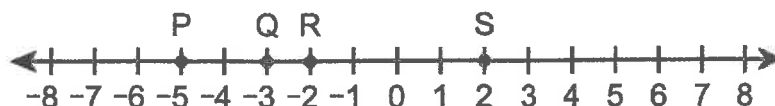
**2020**

**CHAMPIONSHIP ROUND**

**TEST 2**

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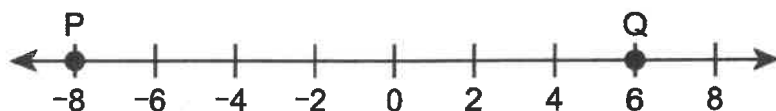
1. The number line shows the locations of points P, Q, R, and S.



Which points have a distance of 5 units between them?

- A. point P and point S
  - B. point Q and point R
  - C. point Q and point S
  - D. point R and point S
- 

2. Points P and Q are plotted on the number line.



Which expression represents the distance between points P and Q?

- A.  $|-8 - (-6)|$
- B.  $|-8 - 6|$
- C.  $|8 - 6|$
- D.  $|6 - 8|$

3. What is the value of  $\frac{1}{5}(6 + 8.5)$ ?

- A. 2.9
  - B. 7.7
  - C. 9.7
  - D. 14.9
- 

4. Last year, Ted's salary was \$42,000. He donated  $\frac{1}{25}$  of last year's salary to charity. How much did Ted earn last year after his donation?

- A. \$31,500
- B. \$40,320
- C. \$43,680
- D. \$52,500

5. A grocery store charges \$0.75 per donut. Which equation can be used to find  $c$ , the total cost, in dollars, to buy  $d$  donuts?

- A.  $c = 0.75 + d$
  - B.  $c = 0.75d$
  - C.  $d = 0.75 + c$
  - D.  $d = 0.75c$
- 

6. Harrison reads 15 minutes per day for a project. The total number of minutes Harrison reads for the project is proportional to the number of days since he started the project. The equation shown represents the total number of minutes Harrison has read since he started the project.

$$y = 15x$$

What does  $x$  represent in the equation?

- A. The number of days Harrison has read since he started the project.
  - B. The number of minutes Harrison reads per day for the project.
  - C. The total number of pages Harrison has read since he started the project.
  - D. The total number of minutes Harrison reads for a certain number of days for the project.
-

7. Taj has 3 ounces of salt to make different recipes. He puts  $\frac{1}{4}$  ounce of the salt in each recipe. If Taj uses all of the salt, how many recipes can he make?

A.  $\frac{1}{12}$

B.  $\frac{3}{4}$

C.  $3\frac{1}{4}$

D. 12

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8. A teacher uses  $\frac{1}{5}$  of the students in a class to make 3 equal groups. What fraction of the students in the class is in each group the teacher made?

A.  $\frac{1}{15}$

B.  $\frac{1}{8}$

C.  $\frac{3}{5}$

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

9. Nell writes the expression  $(3.6x + 6) - 4$ . She rewrites the expression using the associative property. Which expression could Nell have written using the associative property?
- A.  $5.6x$
  - B.  $9.6x - 4$
  - C.  $3.6x + (6 - 4)$
  - D.  $3.6(x + 6) - 4$
- 

10. Richard and Sebastian each make a number pattern. The table shows the first four numbers in Richard's and Sebastian's number patterns.

**Two Number Patterns**

Term	Richard's Pattern	Sebastian's Pattern
1	7	1
2	10	6
3	13	11
4	16	16

Which two sets of ordered pairs correctly show Richard's and Sebastian's number patterns?

- A. Richard's number pattern: (1, 7) (2, 10) (3, 13) (4, 16)  
Sebastian's number pattern: (1, 1) (2, 6) (3, 11) (4, 16)
- B. Richard's number pattern: (7, 1) (10, 6) (13, 11) (16, 16)  
Sebastian's number pattern: (1, 7) (6, 10) (11, 13) (16, 16)
- C. Richard's number pattern: (7, 3) (10, 3) (13, 3) (16, 3)  
Sebastian's number pattern: (1, 5) (6, 5) (11, 5) (16, 5)
- D. Richard's number pattern: (1, 7) (2, 17) (3, 30) (4, 46)  
Sebastian's number pattern: (1, 1) (2, 7) (3, 18) (4, 34)

11. Dominic plots a point on a coordinate grid.

- The  $x$ -coordinate is 6.
- The  $y$ -coordinate is less than the  $x$ -coordinate.

Which ordered pair could be Dominic's point on the coordinate grid?

- A. (5, 6)
  - B. (6, 5)
  - C. (6, 7)
  - D. (7, 6)
- 

12. Becker and Kayla are members of the school chess team. They record the number of games they each play for 10 days. The data are shown.

Becker: 5, 2, 4, 1, 1, 4, 5, 3, 2, 1

Kayla: 2, 3, 1, 1, 4, 1, 5, 3, 5, 5

Based on the data, which estimate represents the mean number of games chess team members play per day?

- A. 1
- B. 3
- C. 4
- D. 10

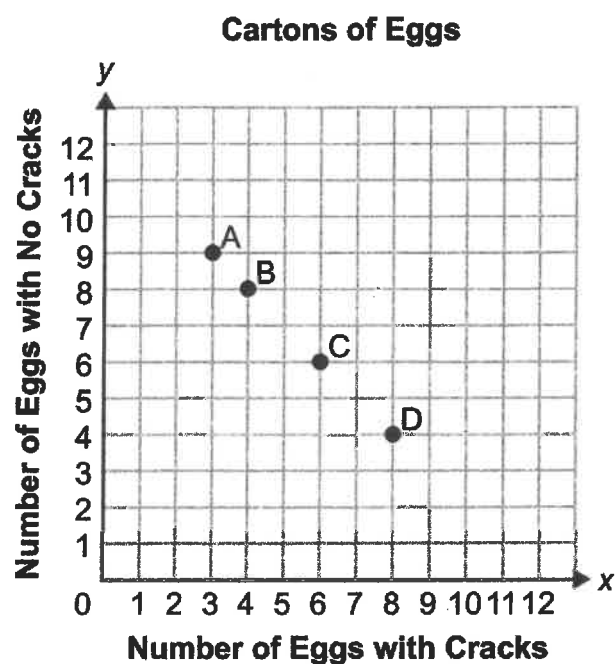
13. Emily and Tyson each surveyed 10 people in a community. The people were asked how many years they have lived in their current homes. The table shows the mean, median, and range for the data from each survey.

	Emily's Survey Results	Tyson's Survey Results
Mean	8.6 years	9.2 years
Median	12.5 years	10.5 years
Range	27.0 years	21.0 years

Based on the data, what conclusion can be made about the range number of years people in the community have lived in their current homes?

- A. It is less than 20 years.
- B. It is greater than 20 years.
- C. It is exactly 24 years.
- D. It cannot be determined.

14. The coordinate grid shows four points that represent egg cartons at a grocery store.



Which point represents the egg carton with the highest number of eggs with cracks?

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

15. Aubrey is running for student council president. She estimates her chances of winning to be  $\frac{1}{5}$  chance. Which likelihood describes Aubrey's estimated chances of winning?

- A. impossible
- B. unlikely
- C. likely
- D. certain

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16. ●

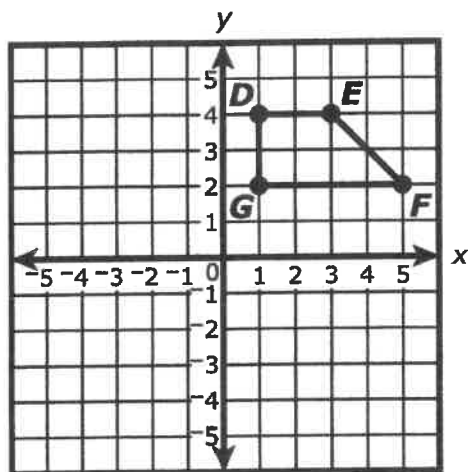
A fruit stand sells apples, oranges, and bananas. The cost of 1 apple is \$0.50, and the cost of 1 orange is \$0.60.

- Ronald bought 4 apples and 1 banana.
- Madison bought 2 oranges and 3 bananas.
- The total cost of the fruit Ronald bought was the same as the total cost of the fruit Madison bought.

What is the cost of 1 banana at the fruit stand?

- Ⓐ \$0.20
- Ⓑ \$0.40
- Ⓒ \$0.55
- Ⓓ \$0.80

17. Trapezoid  $DEFG$  is shown on this coordinate plane.



Trapezoid  $DEFG$  will be reflected over the  $x$ -axis. What will be the coordinates of the image of point  $E$ ?

- Ⓐ  $(3, -4)$
- Ⓑ  $(4, -3)$
- Ⓒ  $(-3, -4)$
- Ⓓ  $(-4, -3)$


18. The list shows the numbers of employees in the nine departments at a company.


14, 23, 6, 54, 30, 26, 17, 3, 26

What is the range of the numbers of employees in these departments?

- A 23
- B 51
- C 26
- D 18

- 
19. The lengths of two line segments are shown.

  
 $1\frac{1}{2}$  in.

  
 $2\frac{1}{2}$  in.

Use the ruler provided to measure the length of a third line segment to the nearest  $\frac{1}{2}$  inch.



Which statement is true about these three line segments?

- A These line segments can form a triangle, because each side of the triangle can be a different length.
- B These line segments can form a triangle, because the longest side of the triangle can be exactly 4 inches long.
- C These line segments cannot form a triangle, because at least two sides of the triangle must be the same length.
- D These line segments cannot form a triangle, because the longest side of the triangle must be shorter than 4 inches.

20 ● Mari used a thermometer to record temperatures of  $-3.4^{\circ}$  Celsius and  $1.6^{\circ}$  Celsius. Which temperature in degrees Celsius is less than both of the temperatures Mari recorded?

A ●  $-2.6^{\circ}\text{C}$

B ●  $3.9^{\circ}\text{C}$

C ●  $-5.4^{\circ}\text{C}$

D ●  $0^{\circ}\text{C}$

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# **2020 Mathletes Challenge Answer Key** **Championship Round 3**

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