2023 MATHLETES CHALLENGE

CHAMPIONSHIP

TEST 1

2023 Mathletes Challenge Championship

Test 1 - You will have 20 minutes to complete this 20 question test. Good luck!

* Required

1. **What is your team name?** Example: Terry Team 2 *

Championship Test - 1 of 2

2. Question 1 * 1 point

Based on a weather report, the probability that it will rain tomorrow is 0.13. Which word describes the likelihood that it will rain tomorrow?

A certain

B impossible

C likely

D unlikely

Mark only one oval.

- ◯ A
- ◯ B
- ◯ C
- ◯ D

3. Question 2 * 1 point

Two stores each advertise a discount on the same type of watch. At both stores, the original price of the watch was $35.00.

- Store A discounts the price of the watch by 20%.
- Store B discounts the price of the watch by 15%.

How much less is the discounted price of the watch at Store A than the discounted price of the watch at Store B?

A $1.75

B $5.00

C $5.25

D $7.00

Mark only one oval.

- ◯ A
- ◯ B
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- ◯ D

4. Question 3 * 1 point

A spinner has five equal-sized sections colored blue, red, orange, yellow, and green. The arrow on the spinner was spun 50 times during an experiment. The results are shown in the table below.

RESULTS OF EXPERIMENT

Color	Frequency
Blue	12
Red	15
Orange	6
Yellow	10
Green	7

Based on the results, what is the experimental probability that on any one spin, the arrow will land on the red section?

A $\frac{1}{15}$

B $\frac{1}{5}$

C $\frac{3}{7}$

D $\frac{3}{10}$

Mark only one oval.

- ◯ A
- ◯ B
- ◯ C
- ◯ D

5. Question 4 * 1 point

The data set shown below represents the distribution of daily high temperatures in a city for 8 days.

79, 73, 72, 70, 72, 66, 81, 75

What is the median daily high temperature, in degrees Fahrenheit, in the city?

A 71

B 72.5

C 73

D 73.5

Mark only one oval.

- A
- B
- C
- D

6. Question 5 * 1 point

The menu at an ice cream store is shown below.

ICE CREAM MENU

Size	Flavor	Topping
Small	Vanilla	Dip
Medium	Chocolate	Sprinkles
Large	Strawberry	Crunch Coat

How many different choices of one size, one flavor, and one topping can be made from the menu?

A 3

B 9

C 18

D 27

Mark only one oval.

- A
- B
- C
- D

7. Question 6 *

1 point

The cost for 10 ounces of organic blueberries is $2.70. Which equation can be used to determine x, the cost, in dollars, for 30 ounces of organic blueberries?

A $\frac{10}{2.7} = \frac{x}{30}$

B $\frac{2.7}{10} = \frac{30}{x}$

C $\frac{10}{2.7} = \frac{30}{x}$

D $\frac{2.7}{30} = \frac{x}{10}$

Mark only one oval.

- A
- B
- C
- D

8. Question 7 *

1 point

A chef made 150 cups of chili and sold 60% of it. A serving size of the chili is $1\frac{2}{3}$ cups. How many servings of chili were sold?

A 36

B 54

C 90

D 100

Mark only one oval.

- A
- B
- C
- D

9. Question 8 * 1 point

At sunset, a thermometer had a reading of 4°F. During the night, the temperature decreased 15°F. After the decrease, what is the total number of degrees that the temperature must change for the thermometer to read 0°F ?

A 4°F

B 11°F

C 15°F

D 19°F

Mark only one oval.

- A
- B
- C
- D

10. Question 9 * 1 point

A machine in a factory makes $2\frac{1}{4}$ pounds of nails in $1\frac{1}{2}$ hours. At what rate, in pounds per hour, does the machine make nails?

A $\frac{2}{3}$

B $\frac{3}{4}$

C $1\frac{1}{2}$

D $3\frac{3}{4}$

Mark only one oval.

- A
- B
- C
- D

11. Question 10 * 1 point

On a map, two cities are 2.8 inches apart. The map has a scale of 1 inch to 25 miles. How far apart, in inches, would the same two cities be on a map that has a scale of 1 inch to 40 miles?

A 1.20

B 1.60

C 1.75

D 1.80

Mark only one oval.

- A
- B
- C
- D

12. Question 11 * 1 point

A coach compared the heights of the players on two different teams. The data set is shown in the table below.

HEIGHTS OF PLAYERS ON TWO TEAMS

Team A Player Heights (inches)	76	68	73	65	60	63	69	76
Team B Player Heights (inches)	63	73	64	70	70	67	75	62

Based on these data, which statement is true?

A The mean height of the players on Team B is greater than the mean height of the players on Team A.

B The mean height of the players on Team A is greater than the mean height of the players on Team B.

C The median height of the players on Team B is greater than the median height of the players on Team A.

D The median height of the players on Team A is greater than the median height of the players on Team B.

Mark only one oval.

- ◯ A
- ◯ B
- ◯ C
- ◯ D

13. Question 12 *

1 point

The expression $48y - 16$ represents the perimeter, in feet, of a square. Which expression represents the length, in feet, of each side of the square?

A $12y - 4$

B $12y - 16$

C $24y - 8$

D $48y - 4$

Mark only one oval.

- A
- B
- C
- D

14. Question 13 * 1 point

There are two boxes of cereal in the shape of rectangular prisms on a shelf. The dimensions of each box of cereal are listed below.

- Box A has a height of 25 centimeters, a length of 20 centimeters, and a width of 9 centimeters.
- Box B has a height of 25 centimeters, a length of 19 centimeters, and a width of 6 centimeters.

What is the difference in volume, in cubic centimeters, between the two boxes of cereal?

A 1,650

B 3,900

C 4,500

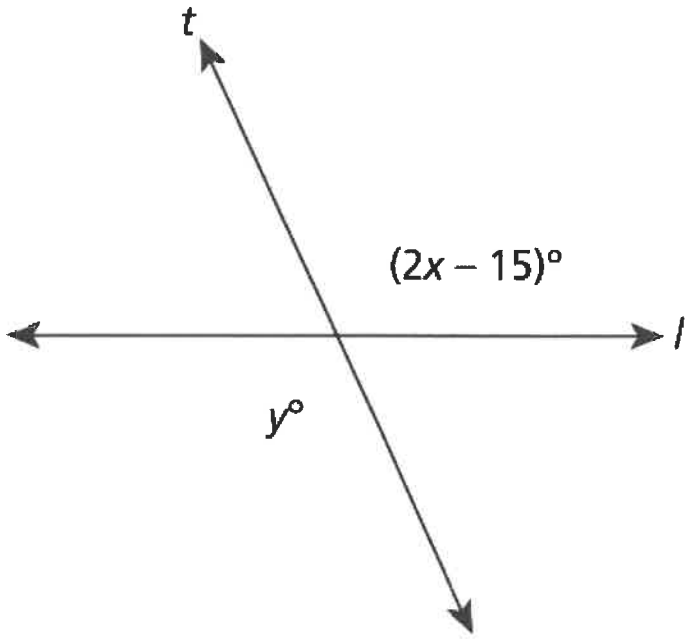
D 7,350

Mark only one oval.

- ◯ A
- ◯ B
- ◯ C
- ◯ D

15. Question 14 * 1 point

Two intersecting lines, l and t, are shown in the diagram below.



If $y = 115$, what is the value of x?

A 40

B 50

C 65

D 115

Mark only one oval.

- A
- B
- C
- D

16. Question 15 * 1 point

What is the solution, if any, to the equation $3(x-2)+4=3x+6$?

A $x = 0$

B $x = 8$

C There is no solution.

D There are an infinite number of solutions.

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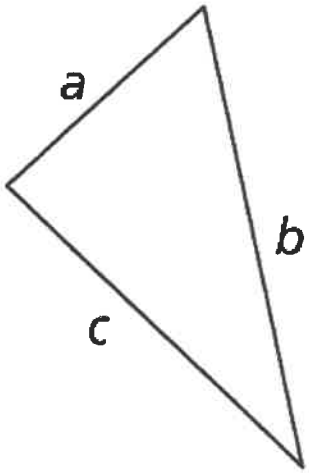
17. Question 16 * 1 point

A triangle with side lengths a, b, and c is shown below.



Which statement about the side lengths must be true?

A $a + b > c$

B $b + c < a$

C $a + b < c$

D $a + c < b$

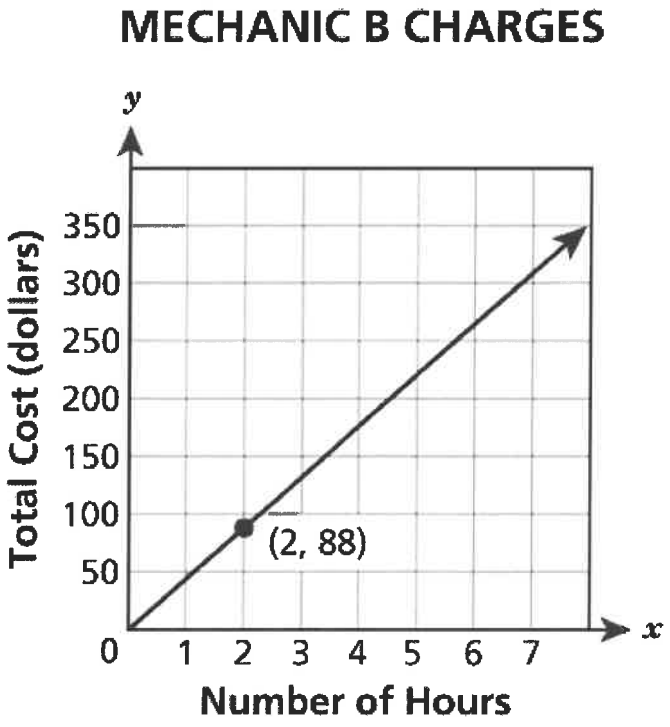
Mark only one oval.

- A
- B
- C
- D

18. Question 17 * 1 point

There are two mechanics who work on cars. For each mechanic, the relationship between x, the number of hours worked, and y, the total cost, in dollars, is described below.

- The equation $y = 36x$ represents the total cost charged by Mechanic A for the number of hours worked.
- The graph shown below represents the total cost charged by Mechanic B for the number of hours worked.



Based on the information, which statement is true?

A Mechanic A charges $8.00 more per hour than Mechanic B.

B Mechanic B charges $8.00 more per hour than Mechanic A.

C Mechanic A charges $52.00 more per hour than Mechanic B.

D Mechanic B charges $52.00 more per hour than Mechanic A.

Mark only one oval.

- ◯ A
- ◯ B
- ◯ C
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19. Question 18 * 1 point

Cory drinks water from a bottle during a bike ride. The average amount of water, in ounces, in his water bottle can be represented by the equation $y = -8x + 32$, where y is the amount of water remaining after x hours. Based on the equation, what amount of water, in ounces, will remain in the bottle after Cory rides for $2\frac{1}{2}$ hours?

A 8

B 12

C 20

D 32

Mark only one oval.

- A
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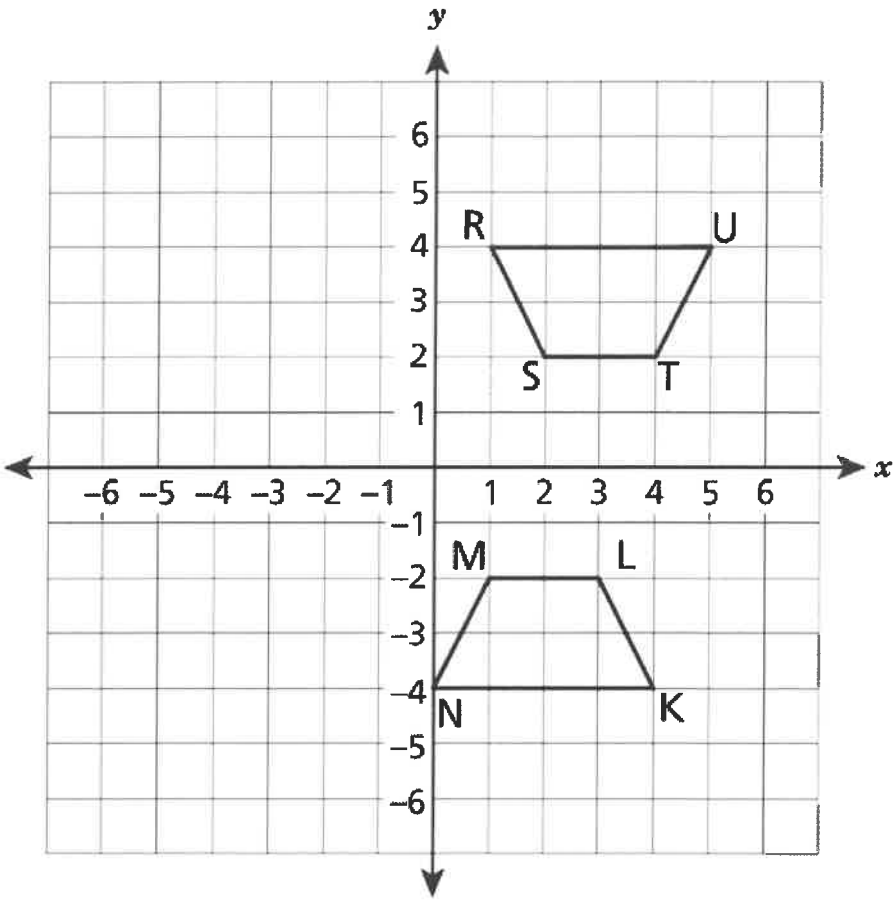
- D

20. Question 19 * 1 point

Trapezoid RSTU and trapezoid NMLK shown on the coordinate plane are congruent.



Which sequence of transformations will map trapezoid RSTU onto trapezoid NMLK?

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C a reflection over the y-axis, then a translation 1 unit down

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Mark only one oval.

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- B
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- D

21. Question 20 * 1 point

Add: $7\frac{5}{6} + 4\frac{1}{3} + 1\frac{3}{5}$

A. $12\frac{3}{10}$

B. $12\frac{9}{14}$

C. $13\frac{23}{30}$

D. $13\frac{5}{6}$

Mark only one oval.

- A
- B
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Based on a weather report, the probability that it will rain tomorrow is 0.13. Which word describes the likelihood that it will rain tomorrow?

A certain

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Mark only one oval.

- ( ) A
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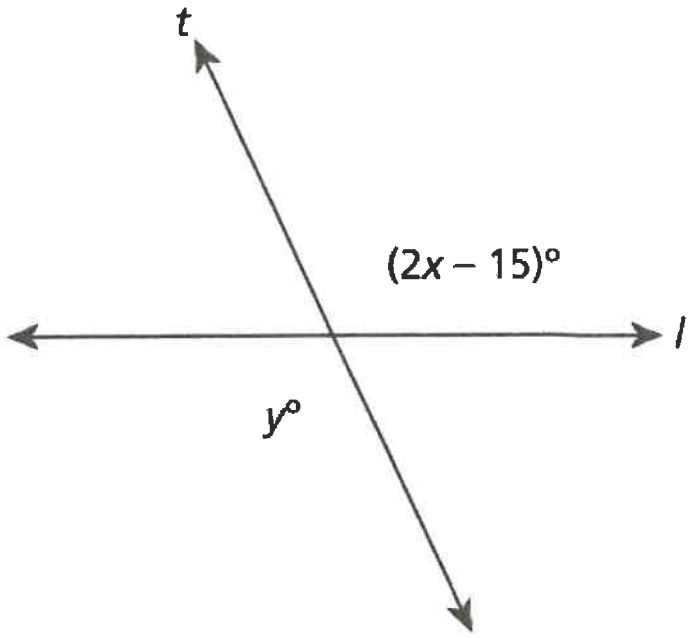

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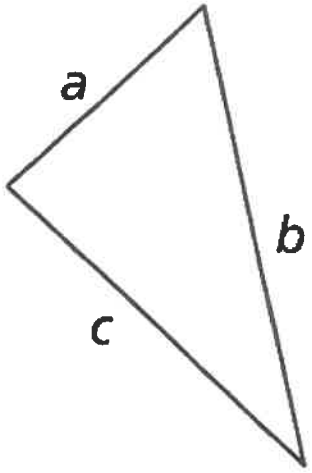

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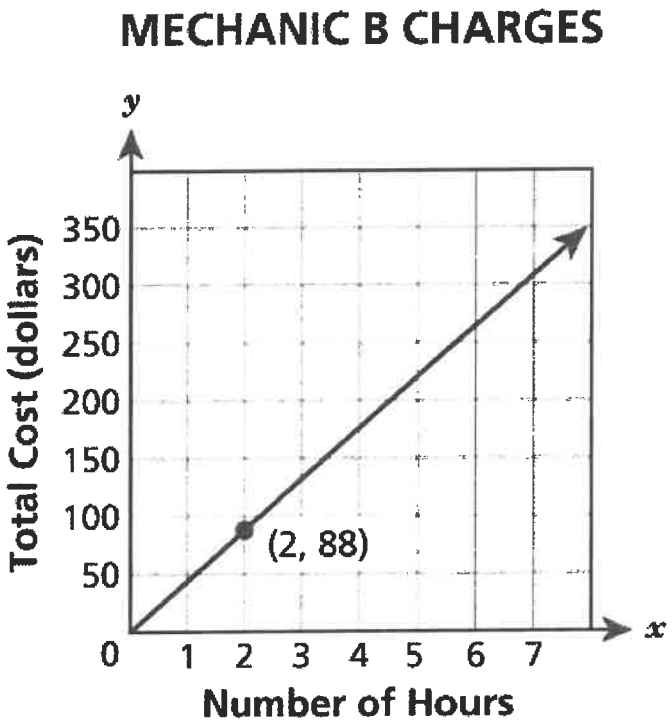

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C Mechanic A charges $52.00 more per hour than Mechanic B.

D Mechanic B charges $52.00 more per hour than Mechanic A.

Mark only one oval.

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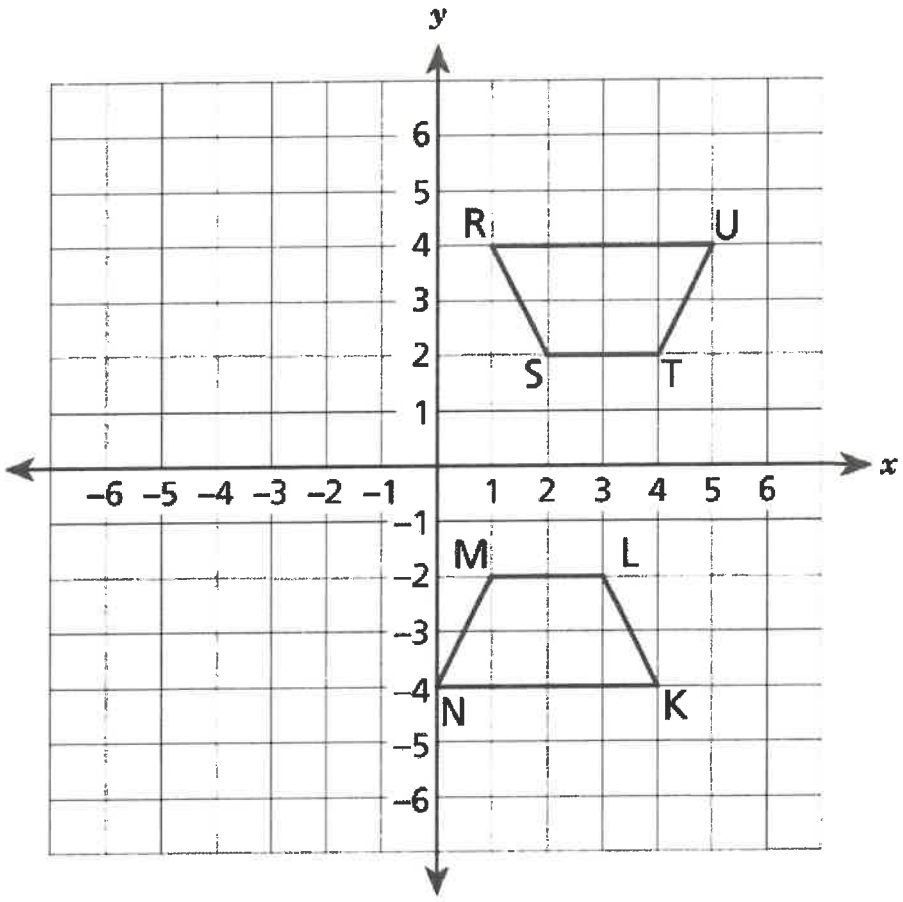

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D a reflection over the x-axis, then a translation 1 unit up

Mark only one oval.

- ◯ A
- ● B
- ◯ C
- ◯ D

21. Question 20 * 1 point

Add: $7\frac{5}{6} + 4\frac{1}{3} + 1\frac{3}{5}$

A. $12\frac{3}{10}$

B. $12\frac{9}{14}$

C. $13\frac{23}{30}$

D. $13\frac{5}{6}$

Mark only one oval.

- A
- B
- C
- D