

MSA Review
Grade 8

1

Look at the sequence below.

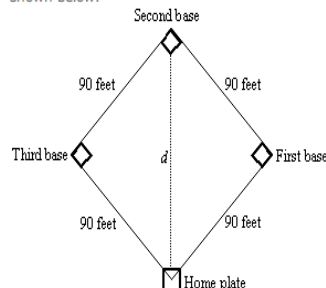
2,6,18,_,_,_,_,4374,...

What is the sixth number in the sequence?

- A. 54
- B. 162
- C. 486
- D. 1458

3

The distance between the bases on a baseball diamond is 90 feet, as shown below.



What is the distance(d), in feet, between home plate and second base? Round your answer to the nearest whole number.

- A. 90
- B. 127
- C. 135
- D. 180

2

This problem is solved without a calculator.

Look at the expression below.

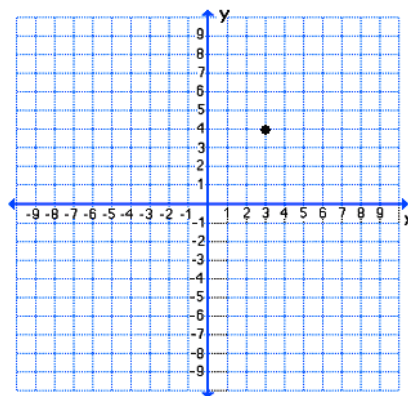
$$8 * n - 18 + 6 - 5 * n$$

Which expression is equivalent to the given expression?

- A. $3(n-12)$
- B. $3(n+4)$
- C. $3(n-4)$
- D. $3(n-8)$

4

The point (3,4) is plotted on the coordinate plane below.



What are the coordinates of the point after a 90 degree counterclockwise rotation about the origin followed by a translation 5 units to the left.

- A. (-9,3)
- B. (-4, 3)
- C. (-1, -3)
- D. (1,3)

5

President Abraham Lincoln was 6 feet 4 inches tall. An artist wants to make a larger-than-life statue of Lincoln using a scale of 1 inch = 2 feet. How tall will the statue be?

- A. 12 feet 8 inches
- B. 25 feet 4 inches
- C. 76 feet
- D. 152 feet

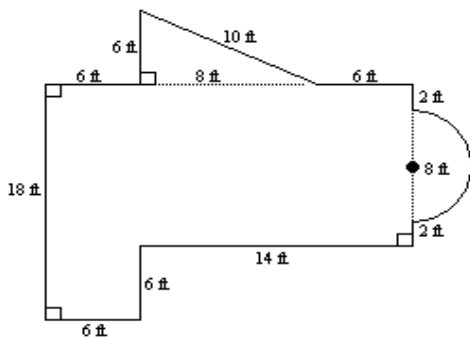
7

The earth is approximately 93,000,000 miles from the sun. What is the distance written in scientific notation?

- A. 9.3×10^6
- B. 93×10^6
- C. 93×10^7
- D. 9.3×10^7

6

Carol is re-finishing her kitchen floor. The dimensions of her kitchen floor are shown below.



Note: The figure is not drawn to scale.

What is the area, in square feet, of Carol's kitchen floor? Round your answer to the nearest whole number. Use $\pi = 3.14$.

- A. 89 square feet
- B. 325 square feet
- C. 349 square feet
- D. 350 square feet

8

Taylor was earning an income of \$1,000 a week. Then his income was reduced by 10%. Two months later, his income increases by 10%. How much is Taylor earning, in dollars, after his income increases?

- A. \$990
- B. \$999
- C. \$1,000
- D. \$1,100

9

The outcomes for the sum of rolling two number cubes are shown below.

+	1	2	3	4	5	6
1	2	3	4	5	6	7
2	3	4	5	6	7	8
3	4	5	6	7	8	9
4	5	6	7	8	9	10
5	6	7	8	9	10	11
6	7	8	9	10	11	12

What is the probability of getting a sum of 9 when rolling two number cubes?

- A. $1/36$
- B. $2/36$
- C. $4/36$
- D. $6/36$

10

Alexandra conducted a survey of 50 candles made by several different workers at a candle factory. She determined that 4% of the candles had mistakes. Based on the results of Alexandra's survey, what prediction can she make about the next 500 candles made by these workers at the factory?

- A. 4 candles will have mistakes
- B. 20 candles will have mistakes
- C. 40 candles will have mistakes
- D. 200 candles will have mistakes

11

Joey wants to make a circle graph that displays the data in the table below.

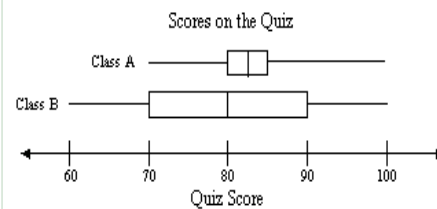
Type of Vehicle	Percent
Van	25
Sedan	17
SUV	31
Station Wagon	15
Sports Car	12

What will be the angle measure, in whole degrees, for the section that represents Station Wagon?

- A. 18°
- B. 54°
- C. 65°
- D. 72°

12

Ms. Smith gave a quiz last week. The results for two of her classes are shown on the box-and-whisker plots below.

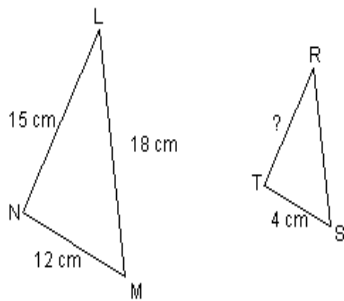


Which sentence best describes the quiz results?

- A. The medians for the two classes are the same.
- B. Class A has a smaller range of scores in the upper quartile than Class B.
- C. Class A performed better than Class B.
- D. The lower extreme of Class B is greater than the lower extreme of Class A.

13

Triangles LMN and RST, shown below, are similar.



Note: the figures are not drawn to scale

What is the length of \overline{RT} ?

- A. 4 cm
- B. 5 cm
- C. 6 cm
- D. 15 cm

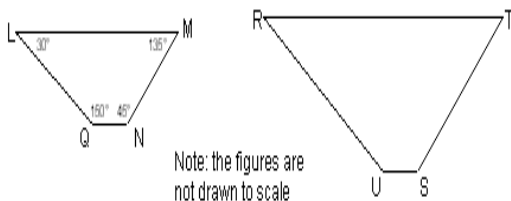
15

George has a bag of marbles. Inside the bag are 5 red marbles, 3 green marbles, and 2 blue marbles. What is the probability of him drawing out 2 red marbles in a row without replacement?

- A. $\frac{1}{4}$
- B. $\frac{2}{9}$
- C. $\frac{1}{2}$
- D. $\frac{1}{5}$

14

Trapezoid LMNQ and trapezoid RTSU, shown below, are similar.



Note: the figures are not drawn to scale

What is the measure, in degrees, of $\angle R$?

- A. 30°
- B. 45°
- C. 135°
- D. 150°

16

George has a bag of marbles. Inside the bag are 5 red marbles, 3 green marbles, and 2 blue marbles. What is the probability of him drawing out a green marble, replacing it and then a blue marble?

- A. $\frac{3}{50}$
- B. $\frac{1}{15}$
- C. $\frac{1}{2}$
- D. $\frac{1}{20}$

17

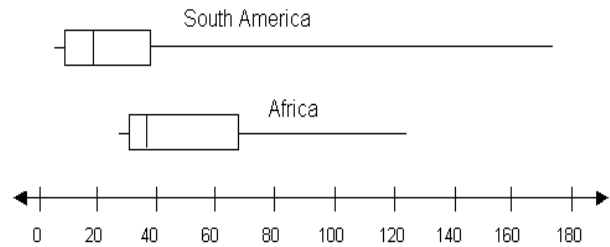
A suitcase measures 24 inches long and 18 inches high. What is the diagonal length of the suitcase to the nearest tenth of a foot?

- A. 2.5
- B. 2.9
- C. 26.5
- D. 30.0

19

Look at the box-and-whisker plots below.

Populations of Countries in South America and Africa
(in millions of people)



(source: www.aneki.com)

What is the approximate difference between the lower and upper quartiles for South America?

- A. 170
- B. 100
- C. 35
- D. 30

18

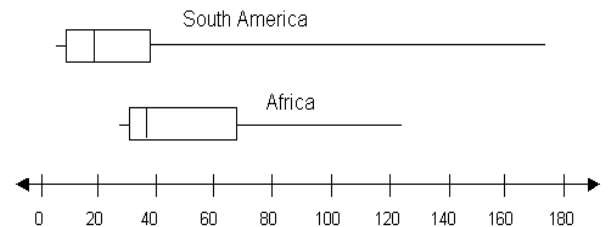
At Oakland Mills Middle School, there are 9 math classes. If two math classes are selected for a school competition, what is the number of possible outcomes?

- A. 8
- B. 9
- C. 72
- D. 81

20

Look at the box-and-whisker plots below.

Populations of Countries in South America and Africa
(in millions of people)



(source: www.aneki.com)

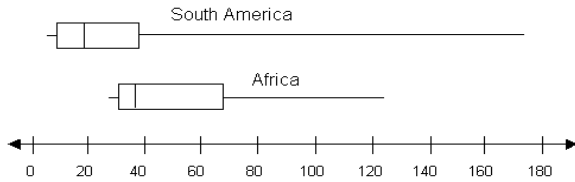
Which statement is accurate based on the box-and-whisker plots?

- A. The median population of the countries in Africa is less than the median population of the countries in South America.
- B. The country with the greatest population in Africa has a greater population than the country with the greatest population in South America.
- C. There are more people in Africa than in South America.
- D. The lower quartile population of countries in Africa is greater than the median population of countries in South America. (correct answer)

25

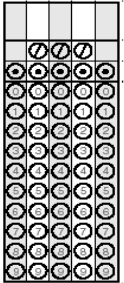
Look at the box-and-whisker plots below.

Populations of Countries in South America and Africa
(in millions of people)



(source: www.aneki.com)

What is the difference in the medians of the two data sets? (Note: 19 ± 2 should be acceptable.)



27

Manny has 5 action DVD's, 4 comedy DVD's, and 7 drama DVD's. A friend borrows one of the drama DVD's. Manny decides to watch one of his remaining DVD's. He randomly picks one to watch.

Step A

What is the probability that Manny chooses an action DVD?

Step B

Use what you know about probability to explain how you determined the probability that Manny will randomly select an action DVD. Use words, numbers, and/or symbols in your explanation.

26

Justine has 6 blue shirts, 2 red shirts, and 5 green shirts in her closet. On Monday, she randomly chooses a blue shirt. She does not put the blue shirt back in the closet.

Step A

What is the probability that Justine will randomly select a green shirt on Tuesday?

Step B

Use what you know about probability to explain how you determined the probability that Justine will randomly select a green shirt on Tuesday. Use words, numbers, and/or symbols in your explanation.

28

Ms. Green tells you that a right triangle has a hypotenuse of 13 and a leg of 5. She asks you to find the other leg of the triangle.

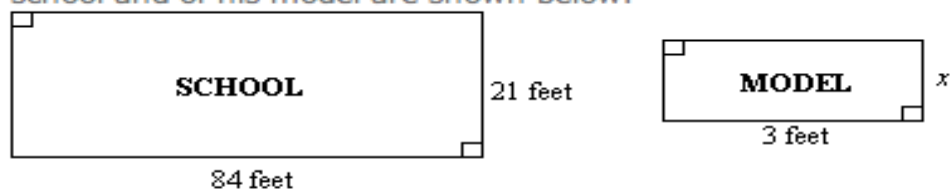
Step A

What is the length of the other leg?

Step B

Use what you know about the Pythagorean Theorem to explain how you determined your answer. Use words, numbers and/or symbols in your explanation.

Cedric is making a scale model of his school. The dimensions of his school and of his model are shown below.



Note: The figures are not drawn to scale.

Step A

What is the length, in feet, of side x of the model?

Step B

- Use what you know about similar polygons to justify why your value of side x is correct. Use words, numbers, and/or symbols in your justification.
- If Cedric changes the length of his model from 3 feet to 6 feet, explain how this change will affect the value of side x . Use words, numbers, and/or symbols in your explanation.