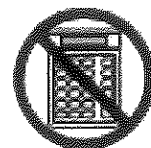


MCAS Review

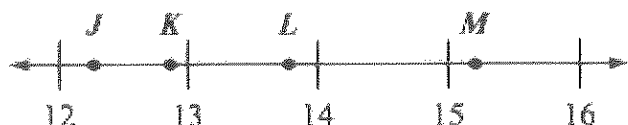
Topic #2: Number and Quantity

Session 1 Questions: No Calculator



Multiple Choice Questions:

- 2 Which point on the number line below is closest to the value of $\sqrt{152}$?



- A. point *J*
- B. point *K*
- C. point *L*
- D. point *M*

- 5 What is the value of the expression below?

$$(5 + 4)^2 - (5 + 4^2)$$

- A. 20
- B. 52
- C. 60
- D. 92

- 7 Which of the following is equivalent to the expression below?

$$(-0.4 - 2) + 1.3$$

- A. $1.3 - (0.4 - 2)$
- B. $(2 - 0.4) + 1.3$
- C. $1.3 + (-0.4 - 2)$
- D. $(-2 + 0.4) + 1.3$

- 3 What is the value of the expression below?

$$\frac{1}{3} \cdot 6(4 + 9 + \sqrt{4 \cdot 9})$$

- A. 38
- B. 62
- C. 98
- D. 114

- 8 Which of the following expressions does not equal 0?

- A. $(6 - 2) - |2 - 6|$
- B. $(2 - 6) - |6 - 2|$
- C. $6 - 2 | - |2 - 6|$
- D. $2 - 6 | - |6 - 2|$

- 9 The volume of a cube is 231 cubic inches. Which of the following is closest to the length of each edge of the cube?

- A. 16 inches
- B. 15 inches
- C. 7 inches
- D. 6 inches

- 13** Mr. Thurman's lawn is rectangular and has a width of 92 feet and a length of 147 feet. He is going to cover his entire lawn with grass seed.

One bag of grass seed costs \$53.47. The grass seed in one bag will cover an area of approximately 5000 square feet.

Which of the following estimates is closest to the total cost of the bags of grass seed Mr. Thurman will need to cover his lawn?

- A. \$100
- B. \$150
- C. \$200
- D. \$250

- 9** The first 2,450 people to attend a baseball game received a free hat. A total of 19,544 people attended the game.

Which of the following is closest to the fraction of people attending the game who received a free hat?

- A. $\frac{1}{20}$
- B. $\frac{1}{8}$
- C. $\frac{1}{5}$
- D. $\frac{1}{4}$

- 1** A farmer harvested a total of 364 pumpkins. The pumpkins had an average weight of 10.9 pounds. Which of the following is closest to the total weight, in pounds, of the pumpkins the farmer harvested?

- A. 3,000
- B. 3,300
- C. 4,000
- D. 4,400

- 2** What is the value of the expression below?

$$-5 + |9 - 11|$$

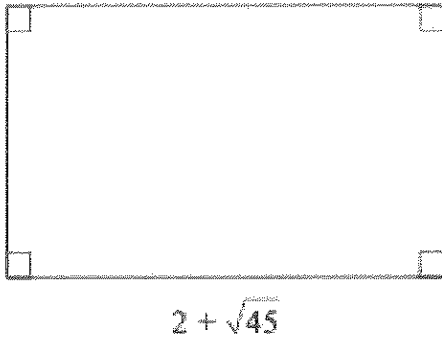
- A. -7
- B. -3
- C. 15
- D. 25

- 5** Which of the following integers is closest to the value of the expression below?

$$\sqrt{10^2 - 5^2}$$

- A. 2
- B. 5
- C. 9
- D. 11

- 3 The length, in centimeters, of a rectangle is represented by an expression, as shown in the diagram below.



Based on the diagram, which of the following is closest to the length, in centimeters, of the rectangle?

- A. 8.3
- B. 8.7
- C. 9.1
- D. 9.5

- 10 Which of the following is equivalent to the expression below?

$$4 + 36 \div 2 \cdot 5^2 - 3$$

- A. $4 + 18 \cdot 25 - 3$
- B. $4 \div 36 \div 20 - 3$
- C. $40 \div 2 \cdot 10 - 3$
- D. $40 \div 2 \cdot 25 - 3$

- 12 Which of the following is equivalent to the expression below?

$$12 \cdot \frac{1}{12}$$

- A. 0
- B. 1
- C. 24
- D. 144

- 11 If $y \neq 0$, which of the following is equivalent to the expression below?

$$\frac{15y^9}{5y^3}$$

- A. $3y^3$
- B. $3y^6$
- C. $10y^3$
- D. $10y^6$

- 13 Leah took a 5-day car trip. The table below shows the number of miles she drove on each day of her trip.

Leah's Car Trip

Day of Trip	1	2	3	4	5
Miles Driven	297	179	203	131	192

Of the total number of miles that Leah drove on her trip, which of the following is closest to the percentage she drove on day 1?

- A. 15%
- B. 20%
- C. 25%
- D. 30%

- 13** Which of the following is equivalent to the expression below?

$$-2(x - 5)$$

- A. $-2x - 5$
- B. $-2x + 5$
- C. $-2x - 10$
- D. $-2x + 10$

Short Answer Questions:

- 16** What is the value of the expression below?

$$100 - 60 \div 4 \cdot 3$$

- 18** What is the value, to the nearest tenth, of the expression below?

$$\sqrt{106}$$

- 18** What is the value of the expression below?

$$\frac{140 - 3(-2)^4}{4}$$

- 19** What is the value of the expression below?

$$4|(-2)^3 - 1|$$

- 14** Jaya is buying a new car that has a price of \$28,495. She is required to pay a sales tax that is 6.25% of the car's price.

Which of the following estimates is closest to the amount of sales tax Jaya will pay for the car?

- A. \$1,200
- B. \$1,400
- C. \$1,800
- D. \$2,100

Open Response Questions:

17

A student is approximating the locations of square roots and cube roots of integers on a number line.

a. Between which two consecutive integers on the number line is $\sqrt{55}$ located? Show or explain how you got your answer.

b. What is the value of $\sqrt{55}$ to the nearest tenth? Show or explain how you got your answer.

The value of \sqrt{m} , where m is an integer, is located between 11 and 12 on the number line.

c. What could be the value of m ? Show or explain how you got your answer.

The value of $\sqrt[3]{n}$, where n is an integer, is also located between 11 and 12 on the number line.

d. What could be the value of n ? Show or explain how you got your answer.

17

Ms. Culjak is giving her students their scores on the last math test. She provides each student with an expression that has a value equal to the number of points the student scored on the test.

Leo must score a minimum of 80 points on the test to maintain a B in the class. The expression below represents the number of points Leo scored on the test.

$$4 \cdot 6 \div 3 + 5(2 - 6)^2$$

- a. Did Leo score enough points to maintain a B in the class? Show your work or explain how you got your answer.

Gerard estimates that he scored 90 points on the test. The expression below represents the actual number of points Gerard scored on the test.

$$9 + 8[4 + 2(3 - 5)^2] - 3 \cdot 4$$

- b. What is the difference between Gerard's estimate and the actual number of points he scored on the test? Show your work or explain how you got your answer.

Tia was given the expression below to represent the number of points she scored on the test.

$$\frac{26 - 10 \cdot 10 - 8}{8 \div 4}$$

- c. Tia claims that the expression **cannot** represent the number of points she scored on the test. Explain why Tia's claim is correct.

Ms. Culjak confirms that Tia's claim is correct. She says Tia's expression is missing one set of parentheses. Ms. Culjak also says that Tia scored 76 points on the test.

- d. In your Student Answer Booklet, copy Tia's expression and insert one set of parentheses in the expression so that the value of the expression is 76.

The table below shows the numbers of tickets sold for three professional baseball games at a stadium.

Baseball Game Ticket Sales

Day	Number of Tickets Sold
Friday	31,937
Saturday	28,359
Sunday	38,031

- a. Estimate the difference in the number of tickets sold for Friday's game and the number of tickets sold for Sunday's game. Show or explain how you got your estimate.

For Saturday's game, the stadium ticket office sold 71.6% of the total number of tickets available.

- b. Estimate the total number of tickets that were available for Saturday's game. Show or explain how you got your estimate.

The table below shows the prices of tickets that the stadium ticket office sells.

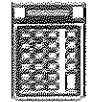
Prices of Tickets

Type of Ticket	Price
bleacher	\$11.25
pavilion	\$24.75
grandstand	\$53.75

An equal number of bleacher, pavilion, and grandstand tickets are available for each game.

- c. Estimate the average price, in dollars, of a ticket at the stadium. Show or explain how you got your estimate.
- d. Use your answer from part (c) to estimate the total amount of money, in dollars, the stadium ticket office received in ticket sales for the games on Friday, Saturday, and Sunday. Show or explain how you got your estimate.

Session 2 Questions: Calculator OK!



- 25 In the equation below, k and m represent rational numbers.

$$km = 1$$

Which of the following **must** be true?

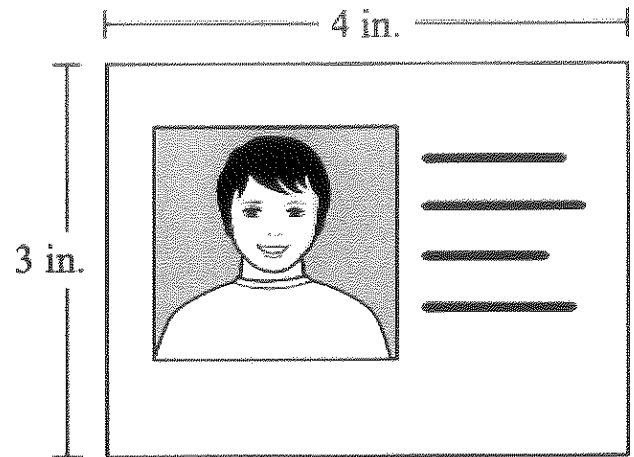
- A. either k or m is equal to 1
- B. k and m are both less than 0
- C. k is the multiplicative inverse of m
- D. k and m are both the same distance from 0 on a number line

- 22 Ethan poured orange juice into each of four glasses and estimated that each glass contained 8 ounces, rounded to the nearest ounce.

Based on Ethan's estimate, which of the following could be the actual total amount of orange juice in the four glasses?

- A. 28.0 ounces
- B. 29.6 ounces
- C. 31.6 ounces
- D. 34.0 ounces

- 31 In the diagram below, the dimensions of a student ID card are shown rounded to the nearest whole inch.



Which of the following could be the actual area, in square inches, of the front of the card?

- A. 8
- B. 8.5
- C. 15.5
- D. 16

28

Four equations are shown below.

$$e + f = f + e$$

$$e - f = f - e$$

$$e \cdot f = f \cdot e$$

$$e \div f = f \div e$$

How many of the equations are true for all real values of e and f ?

- A. 1
- B. 2
- C. 3
- D. 4

38

Which of the following equations is true for all rational number values of x , y , and z ?

- A. $x(y + z) = (y + z)x$
- B. $x(y + z) = (x + y)z$
- C. $x(y + z) = xy + z$
- D. $x(y + z) = (xy)(xz)$