

# K-12

## CC-G7-Math

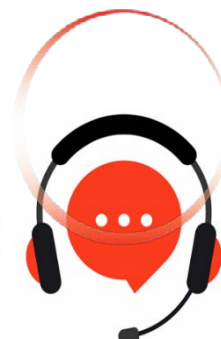
### Common Core Grade 7 Mathematics

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## Question: 1

Which of the following is the largest number?

$$\frac{14}{4}, 3.41, \pi, 3\frac{3}{8}$$

- A.  $\frac{14}{4}$
- B. 5
- C. 6
- D. 9

**Answer: A**

Explanation:

First you will want to convert all of the numbers to a decimal so they will be easier to compare.  $\frac{14}{4} = 3.5$ ,  $3.41$ ,  $\pi = 3.14$ ,  $3\frac{3}{8} = 3.375$ . Once they are all in decimal form you can see that 3.5 or  $\frac{14}{4}$  is the biggest.

## Question: 2

A plane takes off from Dallas and lands in New York 3 hours and 20 minutes later. The distance from Dallas to New York is 1510 miles. Approximately how fast was the plane traveling?

- A. 445 mph
- B. 453 mph
- C. 456 mph
- D. 449 mph

**Answer: B**

Explanation:

To find miles per hour just divide the number of miles by the number of hours. In this case 3 hours and 20 minutes is equal to  $3\frac{1}{3}$  hours. 1510 divided by  $3\frac{1}{3}$  is approximately 453 mph.

## Question: 3

According to the order of operations, which of the following steps should be completed immediately following the evaluation of the squared number when evaluating the expression  $9 - 18^2 \times 2 + 12 \div 4$ ?

- A. Subtract  $18^2$  from 9
- B. Multiply the squared value by 2
- C. Divide 12 by 4
- D. Add 2 and 12

**Answer: B**

Explanation:

The order of operations states that multiplication and division, as they appear from left to right in the expression, should be completed following the evaluation of exponents. Therefore, after evaluating the squared number, that value should be multiplied by 2.

### Question: 4

A parcel of land has 35 mature trees for every 3 acres. How many mature trees can be found on 18 of the acres?

- A. 206
- B. 212
- C. 210
- D. 214

**Answer: C**

Explanation:

The following proportion can be used to solve the problem:  $\frac{35}{3} = \frac{x}{18}$ , where  $x$  represents the number of mature trees. Solving for  $x$  gives  $3x = 630$ , which simplifies to  $x = 210$ .

### Question: 5

Which of the following is equivalent to  $-8^2 + (17 - 9) \times 4 + 7$ ?

- A. -217
- B. 24
- C. -64
- D. -25

**Answer: D**

Explanation:

The order of operations requires evaluation of the expression inside the parentheses as a first step. Thus, the expression can be re-written as  $-8^2 + 8 \times 4 + 7$ . Next, the integer with the exponent must be evaluated. Doing so gives  $-64 + 8 \times 4 + 7$ . The order of operations next requires all multiplications and divisions to be computed as they appear from left to right. Thus, the expression can be written as  $-64 + 32 + 7$ . Finally, the addition may be computed as it appears from left to right. The expression simplifies to  $-32 + 7$ , or  $-25$ .

### Question: 6

Jason chooses a number that is the square root of four less than two times Amy's number. If Amy's number is 20, what is Jason's number?

- A. 6
- B. 7
- C. 8
- D. 9

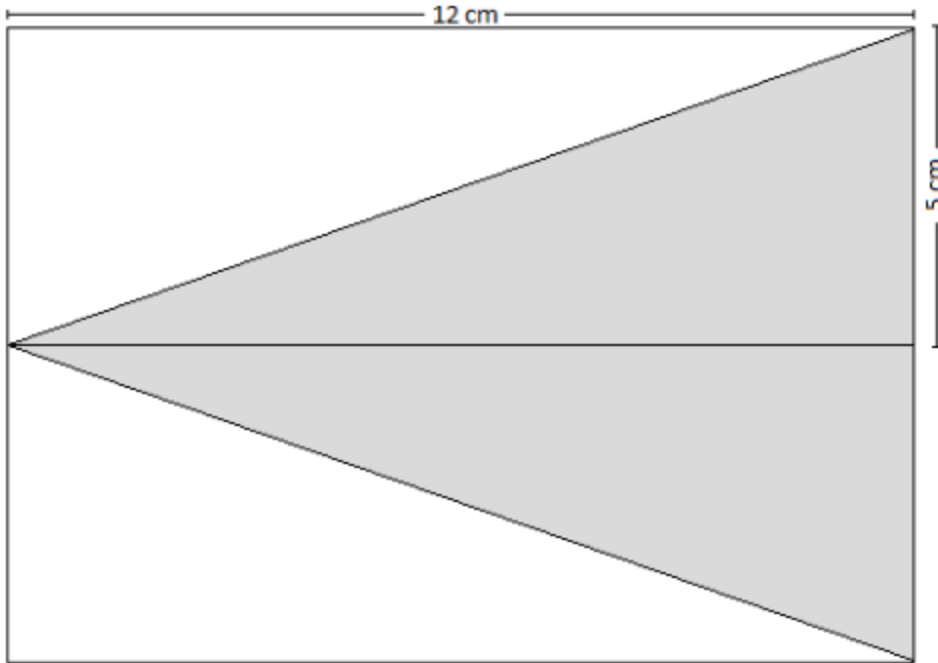
**Answer: A**

Explanation:

Jason's number can be determined by writing the following expression:  $\sqrt{2x - 4}$ , where  $x$  represents Amy's number. Substitution of 20 for  $x$  gives  $\sqrt{2(20) - 4}$ , which simplifies to  $\sqrt{36}$ , or 6. Thus, Jason's number is 6. Jason's number can also be determined by working backwards. If Jason's number is the square root of 4 less than 2 times Amy's number, Amy's number should first be multiplied by 2 with 4 subtracted from that product and the square root taken of the resulting difference.

### Question: 7

Part A: What is the area of the shaded region below?



A. For see answer below is Explanation

**Answer: A**

Explanation:

Since the line that divides the shaded and non shaded region runs from corner to corner it cuts the rectangle in half. This means you can just find the area of the rectangle and divide by 2. However there are two smaller rectangles like this. So, if you take half of each that is the same as one whole rectangle. The area of the rectangle is 5 cm times 12 cm which is 60 cm. Since you would divide by 2 to get the area of one but then multiply back by 2 to get the area of both there is no need to do either. The area of the shaded region is 60 sq cm.

Part B: How does the shaded region compare to the non shaded region?

- 1) The shaded region is bigger than the non shaded region
- 2) Both the shaded and non shaded region are the same size
- 3) The non shaded region is bigger than the shaded region
- 4) The area of the non shaded region cannot be determined

**Answer: 2**

Explanation:

As mentioned in Part A, since the line that divides them cuts the rectangle in half they are the same size.

**Question: 8**

Given the table below what would  $y$  be if  $x=5$ ?

$x$	-2	0	3	4
$y$	2	-2	7	14

- A. 21
- B. 23
- C. 19
- D. 24

**Answer: B**

Explanation:

First find the relationship between  $x$  and  $y$ . When  $x=0$  then  $y=-2$ , so this means that the equation is will have a -2 in it. If you add 2 back to all of the  $y$  numbers then you can see that they are the squares of the  $x$ 's. So the relationship is  $y = x^2 - 2$ . Then you can just plug in to find the when  $x=5$ ,  $y=23$ .

### Question: 9

Given the following equation what is  $x$  equal to if  $y$  equals 8?  $6x + 4 = 2y - 7$ .

- A. 10
- B. 20
- C. 30
- D.  $\frac{5}{6}$

**Answer: D**

Explanation:

First plug 8 in for  $y$  to get  $6x + 4 = 2(8) - 7$ . Then solve for  $x$ .  $6x + 4 = 16 - 7$ ,  $6x = 5$ ,  $x = \frac{5}{6}$ .

### Question: 10

A landscaping company charges \$25 per  $\frac{1}{2}$ -acre to mow a yard. The company is offering a 20% discount for the month of May. If Douglas has a two-acre yard, how much will the company charge?

- A. \$65
- B. \$80
- C. \$70
- D. \$75

**Answer: B**

Explanation:

Based on the company's charge per half of an acre, the original charge is equal to  $\$25 \times 4$ , or  $\$100$ , since there are 4 half-acres in 2 acres. With the discount of 20%, the following expression can be used to determine the final charge:  $x - 0.20x$ , where  $x$  represents the original charge.

Substitution of 100 for  $x$  gives  $100 - 0.20(100)$ , which equals  $100 - 20$ , or 80. Thus, the company will charge  $\$80$ .

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