

1) If  $4x^2 - 7 = 9$ , what is the value of  $x^3 + 2x$ ?

- 4
- 8
- 12
- 16
- 20

**Answer :: C**

**Explanation of Answer:**

To solve this, you must first solve for  $x$ .

1. Add 7 to both sides:

$$4x^2 = 16$$

2. Divide the 4 off:

$$x^2 = 4$$

3. Square root both sides:

$$x = 2$$

Now we need to solve for the other equation using the value of 2 for  $x$

$$2^3 + 2(2) = 12$$

2) Which expression represents 0.0000008 in scientific notation?

- $8 \times 10^8$
- $8 \times 10^7$
- $8 \times 10^9$
- $8 \times 10^{-8}$
- $8 \times 10^{-7}$

**Answer :: E**

**Explanation of Answer:**

Just move the decimal to the right 7 times so that it is just past the principal number, which is 8 in this case. Because we moved it to the right we use a negative number in the notation.

3) Leonard is travelling from New York to Nevada. The drive is 2,700 miles. He drove 300 miles the first day. 225 miles the second day. 375 miles on the third day. Based on his average speed, how many more days will he need to get to Nevada?

- 3 Days
- 6 Days
- 9 Days
- 12 Days
- 15 Days

**Answer :: B**

**Explanation of Answer:**

Leonard is travelling at a speed of 300 miles per day. He has already travelled 900 miles leaving only 1,800 left to go. At this rate it will take him 6 more days of travelling.

4) After working 3 hours, Mary has made 31 cogs. At the same rate, how many cogs can she make in a 40 hours?

- $40(3) / 31$
- $3(31) / 40$
- $40(31)$
- $40(31) / 3$
- $(3)(31)$

**Answer :: D**

**Explanation of Answer:**

Let  $x$  = number of cogs Mary can make in 3 hr.

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Set up a proportion:

$$3 / 31 = 40 / x$$

$$3x = 40(31)$$

$$x = 40(31) / 3$$

Answer :: B

**Explanation of Answer:**

The question is only asking you to compute the interest amount so simply multiply:  $\$4,000 \times 0.16 \times 5 = \$3,200$ .

Do not concern yourself with the principal amount.

6) What is the average of the first 50 positive integers?

- 25
- 25.5
- 26
- 26.5
- 27

Answer :: B

**Explanation of Answer:**

Whenever you need the average of a group of evenly spaced numbers, you just have to take the average of the smallest number and the largest number and divide by two. Here this would be  $\frac{1+50}{2} = \frac{51}{2} = 25.5$ .

### 7) Cups of Lemonade Sold

Hours Spent	Cups Sold
12	10
9	15
8	20
8	20
9	27

What is the median number of cups of lemonade sold per hour?

- 8
- 10
- 12
- 15
- 20

Answer :: E

#### Explanation of Answer:

The median is the number in the middle of a set of numbers; that is, half the numbers have values that are greater than the median, and half have values that are less. Here, the number of cups of lemonade sold per hour are 10, 15, 20, 20, & 27. Thus, there are 2 values after 20 and two values before 20.

### 8) Cups of Lemonade Sold

Hours Spent	Cups Sold
12	10
9	15
8	20
8	20
9	27

The group's goal was to sell 115 cups of lemonade. What percent of this goal did the group achieve?

- .80%
- 80%
- .60
- 60%
- 92%

Answer :: B

**Explanation of Answer:**

The total amount of cups sold by the group was 92 cups of lemonade. The goal was to sell 115 cups, so we need to figure out what percent 92 is of 115.  $\frac{92}{115} = .80$ . Next, multiply by 100 to find the percentage which is 80%.

9) If  $q \neq 0$  and  $q = q^{-4}$ , what is the value of  $q$ ?

- 1
- 0
- 1
- 2
- 4

Answer :: C

**Explanation of Answer:**

The easiest way to solve this one is to plug the answers into the equation. When you do this, you will see the only time  $q = q^{-4}$  is when  $q = 1$  or  $0$ . Because the question says  $q \neq 0$ ,  $q = 1$ .

10) In a certain set of numbers, the ratio of integers to nonintegers is 1:4. What percent of the numbers in the set are integers?

- 20%

- 25%
- 40%
- 75%
- 80%

Answer :: A

**Explanation of Answer:**

When you know that the given parts add up to the whole, then you can turn a part-to-part ratio into two part-to-whole ratios — put each term of the ratio over the sum of the terms. In this case, since all the numbers in the set must be either integers or nonintegers, the parts do add up to the whole. The sum of the terms in the ratio 1:4 is 5, so the two part-to-whole ratios are 1:5 and 4:5.