

Definitions:

- A. There are many problems on the number sense tests that can be solved by simply knowing its definition.

Mean - The mean of a list of numbers is simply the average of all the numbers.

Ex [1] Find the mean of 12, 13, 14, 15, and 16.

- a. On problems like this, you can add up all the numbers and divide by the number of terms like:

$$(12 + 13 + 14 + 15 + 16) \div 5 \quad \text{or}$$

- b. If each number is being added by a fixed number, you can simply write the middle number (if the list has an odd number of terms) or you can take the average of the middle two numbers (if the list has an even number of terms).
- c. For this example, there are 5 terms, so the mean is 14.
- d. The answer is 14.

Ex [2] Find the mean of 3, 7, 11, 15, 19, and 23.

- a. In this example we can take the average of the middle two numbers: 11 and 15.
- b. $(11 + 15) \div 2$ is $26 \div 2$ or 13.
- c. The answer is 13.

*NOTE: Many times there is no shortcut and you must add all the terms and divide by the number of terms.

Median - The median of a set of numbers is simply the middle number. If a set has an even number of terms, then the median is the average of those two terms.

*NOTE: The numbers in the set MUST be in sequential order.

Ex [3] Find the median of 2, 5, 6, 9, 12.

- a. Since there are an odd number of terms, the median is the middle number or 6.
- b. The answer is 6.

Ex [4] Find the median of 2, 2, 4, 4, 1, 2.

- a. First, change this set to be {1, 2, 2, 2, 4, 4} mentally.
- b. Since there is an even number of terms we take the average to the middle terms: 2 and 2.
- c. The answer is 2.

Mode - The mode of a set of numbers is simply the number that repeats itself the most.

Ex [5] Find the mode of 2, 3, 7, 3, 7, 1, 3.

- a. In this example there are more 3's than there are of other numbers so the mode is 3.
- b. The answer is 3.

Range - The range of a set of numbers is simply the largest value minus the smallest value.

Ex [6] The range of 1, 7, -1, 8, 4, and 3 is _____.

- a. The largest value is 8 and the smallest value is -1.
- b. $8 - (-1) = 9$.
- c. The answer is 9.

Additive Inverse - The additive inverse of a number is the number that you would add to make the original number equal to 0.

Ex [7] The additive inverse of $-1\frac{4}{5}$ is _____.

- a. The number that you would add to make this 0 is $1\frac{4}{5}$.
- b. The answer is $1\frac{4}{5}$.

Multiplicative Inverse - The multiplicative inverse of a number is the number that you would multiply to make the original number equal 1.

Ex [8] The multiplicative inverse of $-\frac{4}{5}$ is _____.

- a. The number that you would multiply to make this 1 is $-\frac{5}{4}$.
- b. The answer is $-\frac{5}{4}$.

Negative Reciprocal - The negative reciprocal of a number is $-1/n$. If the number is a fraction simply flip the fraction and change the sign.

Ex [9] The negative reciprocal of $\frac{4}{5}$ is _____.

- a. Flipping the fraction and changing the sign we get $-\frac{5}{4}$.
 - b. The answer is $-\frac{5}{4}$.
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B. The following definitions are more advanced and therefore, probably will not be seen on an elementary test.

Geometric Mean - The geometric mean is equated by the following:

$$(a_i \times a_j \times \dots \times a_n)^{\frac{1}{n}}$$

1. In other words it is the n^{th} root of the product of all the numbers in the set.
2. On a number sense test, most of the time you will be dealing with 2 numbers. If you are dealing with 3 or more, each value will have an even n^{th} root.

Ex [10] Find the geometric mean of 6 and 8.

- a. According to the definition, the geometric mean is the square root of 6×8 .
- b. $6 \times 8 = 48$.
- c. $\sqrt{48} = \sqrt{16} \times \sqrt{3} = 4\sqrt{3}$
- d. The answer is $4\sqrt{3}$

Ex [11] Find the geometric mean of 64, 27, and 8.

- a. In this example, we are going to have to find the cube root of the product of these numbers.
- b. However, each number is a perfect cube. So take the cube root of each individual number and multiply them together.
- c. $\sqrt[3]{64} = 4$; $\sqrt[3]{27} = 3$; $\sqrt[3]{8} = 2$. So $4 \times 3 \times 2 = 24$.
- d. The answer is 24.

Palindrome - A palindrome is a number (or a word) that is the same frontward and backward.

Ex [12] The smallest palindrome greater than 768 is _____.

- a. The answer is 777. Since this is the next number that is a palindrome.

Ex [13] The largest palindrome less than 1024 is _____.

- a. The answer is 1001.