Algebra Practice

30 Minutes – (Don't skip any questions)

1) A certain number consists of 2 digits whose sum is 9. If the order of digits is reversed, the new number is 9 less than the original number. The original number is:
A. 63 B. 36 C. 54 D. 45 E. 27

2) A positive number when decreased by 4 is equal to 21 times the reciprocal of the number. The number is:
A. 3 B. 5 C. 7 D. 8 E. 9

3) If x is a 3-digit number and y is a number obtained by permuting (changing) the digits of x in any manner, then $(x - y)$ is always divisible by:
A. 3 *and* 9 B. 3 *and* 6 C. 3 *and* 5 D. 3 *and* 8 E. *Only* 3

4) Four-fifth of a number is more than three-fourth of the number by 4. Find the number:
A. 60 B. 72 C. 77 D. 80 E. 84

5) A number whose fifth part increased by 5 is equal to its fourth part diminished by 5, is:
A. 160 B. 180 C. 200 D. 220 E. 240

6) A number is as much greater than 21 as it is less than 71. The number is:
A. 36 B. 39 C. 41 D. 46 E. 49

7) If a number is subtracted from the square of its half, the result is 48. The square root of the number is :
A. 3 B. 4 C. 7 D. 8 E. 9

8) On dividing 50 into two parts such that the sum of their reciprocals is $\frac{1}{12}$, we get the parts as:
A. 20 *and* 30 B. 24 *and* 26 C. 28 *and* 22 D. 36 *and* 14 E. 40 *and* 10

9) If 10 is added to 4 times a certain number, the result is 5 less than 5 times the number. The number is:
A. 10 B. 15 C. 20 D. 25 E. 30

10) If t is a positive integer, and $18t$ is the cube of an integer, then what is the least possible value of t?

A. 36 B. 24 C. 12 D. 6 E. 2

11) The denominator of a rational number is 3 more than its numerator. If the numerator is increased by 7 and the denominator is decreased by 2, we obtain 2. The rational number is:

A. $1/4$ B. $5/8$ C. $7/10$ D. $8/11$ E. $9/12$

12) The number which when added to itself 17 times gives 162 as result, is:

A. 7 B. 8 C. 9 D. 10 E. 11

13) If a two digit number is k times the sum of its digits, then the number formed by interchanging the digits is the sum of the digits multiplied by:

A. $9+k$ B. $10-k$ C. $11-k$ D. $k-1$ E. $k-2$

14) If x, y and z are real numbers such that $x < y$ and $z < 0$, then the statement which is true is:

A. $xz < yz$ B. $\frac{x}{z} < \frac{y}{z}$ C. $\frac{z}{x} > \frac{z}{y}$ D. $xz > yz$ E. None

15) If p is a prime number, then the LCM of p and $(p+1)$ is

A. p^2 B. $\frac{p(p+1)}{2}$ C. $(p+1)^2$ D. $(p-1)^2$ E. $p(p+1)$

16) $\frac{(786-157)^2+(786+157)^2}{786*786+157*157} = ?$

A. 943 B. 629 C. 4 D. 3 E. 2

17) When simplified, the product $\left(1-\frac{1}{3}\right) * \left(1-\frac{1}{4}\right) * \left(1-\frac{1}{5}\right) * \ldots . (1-\frac{1}{n})$ equals

A. $\frac{1}{n}$ B. $\frac{2(n-1)}{n}$ C. $\frac{2}{n(n+1)}$ D. $\frac{2}{n}$ E. None

18) The integers A, B, C are consecutive and $A < B < C$ and $A^2 = C$, which of the following could be the value of A ?

I. -1 II. 0 III. 2

A. $I\ only$ B. $II\ only$ C. $III\ only$ D. $I\ and\ III$ E. $II\ and\ III$

19) Each of 3 charities in Bharat Estate has 8 persons serving on its board of directors. If exactly 4 persons serve on 3 boards each and each pair of charities has 5 persons in common, how many distinct persons serve on one or more boards?

A. 11 B. 12 C. 13 D. 14 E. 15

20) If x, y and z are positive integers such that x is a factor of y and x is a multiple of z, which of the following is NOT necessarily an integer?

A. $\frac{x+z}{z}$ B. $\frac{y+z}{x}$ C. $\frac{x+y}{z}$ D. $\frac{xy}{z}$ E. $\frac{yz}{x}$