GMAT Club Diagnostic Test

This diagnostic test was put together by dedicated members of the GMAT Club. This is our contribution to the next generation of GMAT Test takers – and in return we only ask for your feedback - let us know how we did and what we can do better. Visit http://gmatclub.com/diagnostic to cast your vote or provide a suggestion.

ARITHMETIC

ROOTS

1. $\sqrt{324}+\sqrt{289}=?$

   A. 32
   B. 33
   C. 34
   D. 35
   E. 36

2. $\sqrt{36+64+5^2}+\sqrt{20}=?$

   A. $19+\sqrt{20}$
   B. $19\sqrt{20}$
   C. $\sqrt{145}$
   D. $5\sqrt{100}+\sqrt{20}$
   E. $7\sqrt{5}$

3. If x is an integer and $\sqrt{x}\times x-x=a$, which of the following must be true?
   I. a is Even
   II. a is Positive
   III. a is an Integer

   A. I only
   B. II only
   C. III only
   D. I and II
   E. None of the above

POWERS

4. Is X a prime integer?

   (1) $|X| = 2$
   (2) $X^2 = 4$

   A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
   B. Statement (2) ALONE is sufficient, but Statement (1) ALONE is not sufficient
   C. BOTH statements TOGETHER are sufficient, but NEITHER statement ALONE is sufficient
   D. EACH statement ALONE is sufficient
   E. Statements (1) and (2) TOGETHER are NOT sufficient

5. Which of the following expressions has the greatest value?

   A. 999^{12}
   B. 10^{30}
   C. 777^{10}
   D. $(-20)^{24}$
   E. $\left(\sqrt{15}\right)^{40}$

6. What is the value of $\frac{\left(\frac{1}{8}\right)\times\left(\frac{1}{16}\right)^{2}\times 4^{4}}{\left(\frac{1}{64}\right)^{\frac{1}{2}}\times 2^{-4}}$?

   A. 16
   B. 4
   C. 2
   D. $\frac{1}{2}$
   E. $\frac{1}{16}$

NUMBER PROPERTIES

7. Which of the following numbers is the greatest?

   A. $\frac{1876452}{1876455}$
   B. $\frac{1883446}{1883449}$
   C. $\frac{1883453}{1883456}$
   D. $\frac{1883456}{1883459}$
   E. $\frac{1883491}{1883494}$

8. What is the smallest possible value of integer m if $\frac{m}{n} = 0.3636363636...$?

   A. 3
   B. 4
   C. 7
   D. 13
   E. 22

9. Which of the following is a factor of 18! + 1?

   A. 15
   B. 17
   C. 19
   D. 33
   E. 39

10. Is x greater than 1?

   (1) $\frac{1}{x} > -1$
   (2) $\frac{1}{x^{5}} > \frac{1}{x^{3}}$

   A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
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SPECIAL CHARACTERS

11. If S is the sum of the digits of a given number, T is the sum of digits of S and G is the sum of digits in T. For example S of 987 is 9+8+7= 24, T of S is 2+4=6 and G of 6 is 6. Therefore G of 987 is 6.Which of the following has the greatest G?
    A. 94123
    B. 91964
    C. 64678
    D. 62355
    E. 45689

12. If *N* = 1234@ and @ represents the units digit, is N a multiple of 5?

    (1) @! is not divisible by 5
    (2) @ is divisible by 9

    A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
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13. $x=\sqrt[4]{x^3+6x^2}$, then the sum of all possible solutions for X?

    A. -2
    B. 0
    C. 1
    D. 3
    E. 5

MODULES

14. If -1<x<5 then which of the following must be true?

    A. |3 – x| < -3
    B. |x| < 4
    C. |x| - 2 > 2
    D. |2 + x| > 3
    E. |x – 2| < 3

15. Is *K* a positive number?

    (1) $|K^3| + 1 > K$
    (2) $K + 1 > |K^3|$

    A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
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16. If $(|p|!)^p = |p|!$, which of the following could be true?
    I. P = -1
    II. P = 0
    III. P = 1

    A. I only.
    B. II only.
    C. III only.
    D. II & III only.
    E. I, II & III.

STATISTICS

17. Set T contains more than one element. Is the median of set T greater than its mean?

(1) Set T has positive range.
(2) The elements of the set are not consecutive integers

A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
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D. EACH statement ALONE is sufficient
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18. Set *S* consists of N elements. If N>2, what is the standard deviation of *S*?

(1) The mean and median of the set are equal
(2) The difference between any two elements of the set is equal

A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
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19. Is the mean of set *S* greater than its median?

(1) All members of *S* are consecutive multiples of 3
(2) The sum of all members of *S* equals 75

A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
B. Statement (2) ALONE is sufficient, but Statement (1) ALONE is not sufficient
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20. If a, b & c are integers and $a < b < c$. Are a, b, c consecutive integers?

(1) The median of {a!, b!, c!} is an odd number.
(2) c! is a prime number.

A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
B. Statement (2) ALONE is sufficient, but Statement (1) ALONE is not sufficient
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WORD PROBLEMS

MIN/MAX

21. A set of 11 different integers has a median of 25 and a range of 50.What is the greatest possible integer that could be in this set?

    A. 65
    B. 70
    C. 75
    D. 80
    E. 85

OVERLAPPING SETS

22. Out of 100 people surveyed, 60 were women. If 10 were smoking women and 20 were smoking men, what percentage of men surveyed were non-smokers?

    A. 10
    B. 20
    C. 30
    D. 40
    E. 50

23. Set A consists of 10 terms, each of which is a reciprocal of a prime number. Is the median of the set less than $\frac{1}{5}$?
    1) Reciprocal of the median is a prime number.
    2) The product of any two terms of the set is a terminating decimal.

    A. Statement (1) ALONE is sufficient, but Statement (2) ALONE is not sufficient
    B. Statement (2) ALONE is sufficient, but Statement (1) ALONE is not sufficient
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RATE

24. A bus from city M is traveling to city N at a constant speed while another bus is making the same journey in the opposite direction at the same constant speed. They meet in point P after driving for 2 hours. The following day one bus is delayed 24 minutes and the other leaves 36 minutes earlier. If they meet 24 miles from point P, what is the distance between the two cities?

    A. 48
    B. 72
    C. 96
    D. 120
    E. 192

25. A train is traveling at a constant speed and after making three one-hour stops reaches its destination. After waiting an hour it makes a return journey stopping a total of ten times, thirty minutes each but traveling at twice the speed. If both trips took the same amount of time, how many hours was the roundtrip?

    A. 14
    B. 15
    C. 16
    D. 17
    E. 18

26. A cook went to a market to buy some eggs and paid $12. But since the eggs were quite small, he talked the seller into adding two more eggs, free of charge. As the two eggs were added, the price per dozen went down by a dollar. How many eggs did the cook bring home from the market?

A. 8
B. 12
C. 15
D. 16
E. 18

WORK

27. It takes computer A 6 hours and 40 minutes to finish a job. If computer B can process the same job in 10 hours, how long will it take, for both computers working together, to finish the job?

A. 6 hours and 20 minutes
B. 5 hours and 10 minutes
C. 4 hours and 40 minutes
D. 4 hours
E. 3 hours and 20 minutes

28. Three workers, A, B, and C, can complete a certain task in 10, 5 and x hours respectively. A starts working alone and 2 hours later B joins. After another 2 hours joins C. After that A, B, and C together complete the task in 15 minutes. What is the value of x?

A. 1
B. 1.25
C. 2
D. 2.5
E. 4

29. Mac can finish a job in M days and Jack can finish the same job in J days. After working together for T days, Mac left and Jack alone worked to complete the remaining work in R days. If Mac and Jack completed an equal amount of work, how many days would have it taken Jack to complete the entire job working alone?

(1) M = 20 days
(2) R = 10 days

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30. Painters A and B can paint a house working alone in 20 and 30 days respectively. They started painting a house together but then A left after a number of days but then rejoined B before the job was completed. If B worked alone for 5 days and then A and B together completed the work in 4 days, after how many days of working together, did A leave B?

A. 4
B. 5
C. 6
D. 7
E. 8

MIXTURE

31. How many liters of pure alcohol must be added to a 40-liter solution that is 10% alcohol in order to double the alcohol proportion?

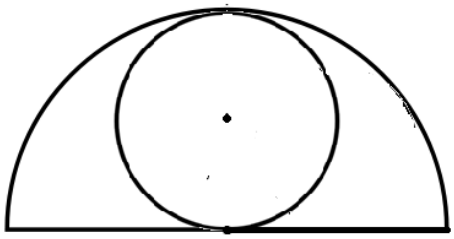
    A. 4
    B. 5
    C. 10
    D. 20
    E. 40

32. A Food and Drug lab has two new samples: a 240 gram cup of drip coffee, which contains 124 mg of caffeine, and a 60 gram cup of espresso, containing160 mg of caffeine. If a technician were to combine the two drinks so that the new mixture contained 50% coffee and 50% espresso, how many mg of caffeine would the new drink contain?

    A. 111
    B. 121
    C. 144
    D. 191
    E. 382

GEOMETRY

33. A circle is inscribed in a half circle whose diameter is π. What is the ratio of the area of the half circle to the area not covered by the inscribed circle?



    A. 1: 1
    B. 1: 2
    C. 1: 3
    D. 3: 4
    E. 4: 3

34. If vertexes of a triangle are A (5, 0), B (*x*, *y*) and C (25, 0), what is its area?

    (1) |x| = y = 10
    (2) x = |y| = 10

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35. What is the approximate minimum length of a rope required to enclose an area of 154 square meters?

A. 154
B. 60
C. 57
D. 50
E. 44

PROBABILITY

36. A jar contains B blue balls, 6B + 10 yellow balls and 2B+5 green balls. What is the probability of getting a green or a blue ball if one ball is picked at a random from the jar?

A. $\frac{1}{5}$
B. $\frac{1}{4}$
C. $\frac{1}{3}$
D. $\frac{1}{2}$
E. $\frac{2}{3}$

37. A box contains 11 hats, out of which 6 are red hats and 5 are green hats. If two hats are to be selected at random without replacement, what is the probability that at least one green hat will be selected?

A. $\frac{10}{11}$
B. $\frac{8}{11}$
C. $\frac{7}{12}$
D. $\frac{5}{13}$
E. $\frac{2}{7}$

38. At a blind taste competition a contestant is offered 3 cups each of 3 samples of tea in a random arrangement of 9 marked cups. If each contestant tastes 4 different cups of tea, what is the probability that a contestant does not taste all of the samples?

A. $\frac{1}{12}$
B. $\frac{5}{14}$
C. $\frac{4}{9}$
D. $\frac{1}{2}$
E. $\frac{2}{3}$

COMBINATIONS

39. Romi has a collection of 10 distinct books (8 small and 2 large). In how many ways can he select 5 books to take with him on a trip if he has room for only 1 large book?

A. 56
B. 126
C. 152
D. 196
E. 252

40. How many triangles and quadrilaterals altogether can be formed from the vertices of a regular polygon with 7 sides?

A. 35
B. 40
C. 50
D. 65
E. 70

ALGEBRA

41. The equation $x^2 + ax - b = 0$ has equal roots and one of the roots of the equation x^2 + ax + 15=0 is 3. What is the value of b?

A. -64
B. -16
C. -15
D. $-\frac{1}{16}$
E. $-\frac{1}{64}$

42. If x is an integer and $9 < x^2 < 99$, then what is the value of maximum possible value of x minus the minimum possible value of x?

A. 5
B. 6
C. 7
D. 18
E. 20

43. If 5x = y + 7, is (x – y)> 0?

(1) xy = 6
(2) *x* and *y* are consecutive integers with same sign.

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44. If $x^2 + y^2 = 100$, All of the following can be true except

A. |x| + |y| = 10
B. |x| > |y|
C. |x| > |y| + 10
D. |x| = |y|
E. |x| - |y| = 5

45. If $x = (\sqrt{5} - \sqrt{7})^2$, then the best approximation of x is

A. 0
B. 1
C. 2
D. 3
E. 4

Answers

For explanations and detailed analysis, visit here:

http://gmatclub.com/forum/gmat-diagnostic-test-quest-for-best-gmat-diagnostic-test-79502.html

#	Your Answer	Official Answer
1		D
2		E
3		E
4		E
5		A
6		A
7		E
8		B
9		C
10		B
11		E
12		C
13		D
14		E
15		E
16		E
17		E
18		B
19		A
20		C
21		B
22		E
23		B
24		E
25		B
26		E
27		D
28		C
29		C
30		C
31		B
32		D
33		E
34		D
35		E
36		C
37		B
38		B
39		D
40		E
41		D
42		D
43		B
44		C
45		A