STONECOLD'S MATH CHALLENGE - PS AND DS QUESTION COLLECTION.

1)If z is divisible by all the integers from 1 to 5 inclusive,what is the smallest value of z?

2)**Data Sufficiency-> Is the positive integer z divisible by 12?**
A)z is divisible by 3.
B)z is not divisible by 2.

3)Data Sufficiency-> Is integer z divisible by 21?
A)z is divisible by 7.
B)z is divisible by 3.

4)Data Sufficiency-> Is integer z divisible by 48?
A)z is divisible by 12.
B)z is divisible by 4.

5)Data Sufficiency-> Is integer z divisible by 12?
A)z is divisible by 8.
B)z is divisible by 6.

6)Data Sufficiency-> Is integer z divisible by 24?

A)z is divisible by 6.
B)z is divisible by 4.

7)How many prime numbers between 1 and 100 are factors of 168?

8)How many Prime factors does 2180 have?

9)What is the greatest prime factor of 4919−735
A)2
B)3
C)7
D)13
E)19

10)If n is the product of integers from 1 to 12 exclusive,how many prime factors does n have?

11)If 2,3,5 are the prime factors of N,what is the value of N?
A)2
B)3
C)5
D)2*3*5
E)cannot be determined.

12)If 2,3,5 are the "ONLY" prime factors of K,what is the value of K?
A)2
B)3
C)5
D)2*3*5
E)cannot be determined.

13)Data Sufficiency -> What is the value of positive integer K?
A)2,5,7 are prime factors of K.
B)K<100

14)If p is a positive integer and 200 multiplies by p is square of an integer,what is the value of p?
A)2
B)3
C)5
D)10
E)Cannot be determined.

15)Data Sufficiency->What is the value of positive integer p?
A)200 multiplied by p is square of an integer.
B)p is an even number less than 15.

16)Data Sufficiency->What is the value of positive integer p?
A)300 multiplied by p is square of an integer.
B)p is an even number less than 15.

17)10^25 – 560 is divisible by all of the following EXCEPT:-

A)11
B)8
C)5
D)4
E)3

18)Data Sufficiency->What is the value of positive integer p?
A)300 multiplied by p is square of an integer.
B)p is a factor of 75

19)Data Sufficiency->What is the value of positive integer p?
A)200 multiplied by p is square of an integer.
B)p is a factor of 60.

20)Data sufficiency-> If a and b are prime numbers,what is the value of a*b?
A)a-b=1
B)a=3

21)If x and y are prime numbers, each greater than 2, which of the following must be true?

I. x+y is an even integer

II. xy is an odd integer

III. (x/y) is not an integer

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

22)Which of the following statements must be true->
A)zero is neither prime nor composite.
B)one is neither prime nor composite.
C)-3 and 3 are both primes.

23)Which of the following statements must be true->
1)A prime number must be positive.
2)For any prime number p,there is no x such that 1<x<p and x is a divisor of p.
3)The product of first ten primes is even.
4)All prime numbers greater than 71 are odd.
5)2 and 3 are the only consecutive integers that are also prime numbers.
6)p is a prime number and x and y are positive integers.If p=x*y then one out of x or y must be one.
7)All the prime numbers greater than 3 can be written as either 4n+1 or 4n-1.
8)All the prime numbers greater than 3 can be written as either 6+1 or 6n-1.

24)Data Sufficiency->If p is a prime number,what is the value of p?

A)11<p<17
B)p is divisible by 13.

25)Data Sufficiency->If A and B are positive integers, is A/B an integer?

(1) Every factor of B is also a factor of A.
(2) Every prime factor of B is also a prime factor of A.

26)Data Sufficiency->Is n14 an integer?

(1) n is divisible by 28.
(2) n is divisible by 70.

27)If x is a prime number, what is the value of x?

(1) There are a total of 50 prime numbers between 71 and x, inclusive.
(2) There is no integer n such that x is divisible by n and 1 < n < x.

28)Data Sufficiency->If p = (n)(5^x)(3^k), is p divisible by 10?

(1) n, x, and k are even.
(2) x > n > k > 0

29)Data Sufficiency->If x is a prime number,what is the value of x?

1)There are 3 prime numbers between 11 and x
2)x+1 is a prime number

30)If A is positive integer,then A , A3and A7 will have the exact same prime factors.
A)True
B)False

31)Data Sufficiency->If y and x are positive integers, is y divisible by 3?
(1) y=x(x+1)
(2) y^2 is divisible by 9.

32)Data Sufficiency->If y and x are positive integers, is y divisible by x?

(1) y = x^2 + x
(2) x has the same prime factors as y.

33)Data Sufficiency->If z is a positive integer,is (z^31+7)^2 divisible by 4?
A)√z has five prime factors.
B)All prime factors of z^3 are greater than 7.

34)If x is a positive odd integer and y is a negative even integer, which of the following must be true?

A. x^3 + y is a positive odd integer
B. x^2 + y^2 is a negative odd integer
C. x^0 + y^11 is a negative odd integer
D. x + y is a positive odd integer
E. x + y is a negative odd integer

35)Data Sufficiency->How many positive prime numbers are less than the integer n?

(1) 14 < n < 20
(2) 13 < n < 17

36)Data Sufficiency->If x and y are positive integers, is x divisible by y?

1) x is divisible by 5.
2) y is divisible by 5.

37)Data Sufficiency->How many prime factors does x37 have?

(1) The number of prime factors of 16x is one more than the number of prime factors of x4

(2) 2x16 has 2 prime factors

38)If a positive integer x has 3 prime factors,how many prime factors does x^3 have?
A)27
B)6
C)3
D)1
E)cannot be determined

39)Data Sufficiency->If k is a positive integer, how many unique prime factors does 14k have ?

(1) k^4 is divisible by 100
(2) 50*k has 2 prime factors

40)Data Sufficiency->If x is an integer, is x^3 divisible by 9?

(1) x^2 is divisible by 9.
(2) x^4 is divisible by 9.

41)Data sufficiency->How many different prime numbers are factors of positive integer n?

(1) 4 different prime numbers are factors of 2n
(2) 4 different prime numbers are factors of n^2

42)If x and y are positive integers, are they consecutive?

1) x+y=3

2) x-y=1

43)Data Sufficiency->Is the integer r divisible by 3?

(1) r is the product of 4 consecutive integers.
(2) r < 25

44)Data Sufficiency->Is x^2*y^4 an integer divisible by 9 ?

(1) x is an integer divisible by 3.
(2) xy is an integer divisible by 9.

45)Data Sufficiency->For positive integers x and y, x^2 = 350y. Is y divisible by 28?
(1) x is divisible by 4.
(2) x^2 is divisible by 28.

46)Data Sufficiency-> How many Prime factors does positive integer n have ?
A)n3 has 7 prime factors.
B)√n has 7 prime factors.

47)If x and y represent the number of factors of 90 and 147 respectively.What is the value of x-y?

48)If n is the product of all the integers from 1 to 10 exclusive,how many factors does n have?

49)How many even factors does 21600 have?

A)32

B)42

C)60

D)25

E)52

50)How many positive odd divisors does 540 have?

A)6

B)8

C)12

D)15

E)24

51)How many of the factors of 72 are divisible by 2?

A)4

B)5

C)6

D)8

E)9

52)The number 100^2 has how many factors?

A) 28

B) 25

C) 24

D) 20

E) 16

53)How many factors of 330 are odd numbers greater than 1?

A)8

B)7

C)6

D)5

E)4

54)If N=27∗35∗56∗78. How many factors of N are divisible by 50 but NOT by 100?
A)240
B)345
C)270
D)120
E)None of these

55)Data Sufficiency->How many positive factors does the positive integer x have?

(1) x is the product of 3 distinct prime numbers.

(2) x and 37 have the same number of positive factors.

56)Data Sufficiency->How many factors does x have, if x is a positive integer?

(1) x=pn, where p is a prime number

(2) nn=n+n, where n is a positive integer

57)Data Sufficiency->If 2,3,5 are the only prime factors of a positive integer p,what is the value of p?
A)p>100
B)p has exactly 12 factors including 1 and 12.

58)Data Sufficiency->Is the positive integer P prime?
(1) 61<P<67
(2) P is not divisible by 2.

59)Which of the following statements is/are true?
A)A perfect square always has an odd number of factors.
B)If a given integer has an odd number of factors then that integer must be a perfect square.

60)How many factors does 64 have?
A)8
B)6
C)7
D)6
E)4
61)Data Sufficiency->Is the positive integer n divisible by 6?
(1) n2180 is an integer.

(2) 144n2 is an integer

62)If a positive integer x has 5 prime factors, how many prime factors does 3x have?
A) 5
B) 6
C) 8
D) 15
E) cannot be determined

63)How many positive distinct prime factors does 5^20 + 5^17 have?
A) One
B) Two
C) Three
D) Four
E) Five

64)How many prime numbers exist between 200 and 220?

(A) None
(B) One
(C) Two
(D) Three
(E) Four

65)Data Sufficiency->If y is a positive odd integer less than 33,does y have a factor p such that 1<p<y?
A)y+2 is divisible by 3.
B)Units digit of y is 7.

66)If x is a positive integer less than 100, for how many values of x is x/6 a prime number?
A)2
B)6
C)8
D)13
E)17

67)Data Sufficiency->If n is an integer between 10 and 99, is n < 80?
(1) The sum of the two digits of n is a prime number.
(2) Each of the two digits of n is a prime number.

68)If n is a positive integer, which of the following statements are correct?
A)All the prime numbers greater than 3 can be represented in the form 4n +1 or 4n + 3.
B)All numbers of the form 4n + 1 and 4n + 3 are prime numbers.
C)All the prime numbers greater than 3 can be represented in the form 6n – 1 or 6n + 1.
D)All numbers of the form 6n + 1 and 6n - 1 are prime numbers.

69)Data Sufficiency->If p is an integer, is p + 4 a prime number less than 50?

(1) p + 1 is a prime number.
(2) p is a prime number.

70)How many odd factors does the number 2100 have?
A)36
B)24
C)12
D)8
E)cannot be determined.

71)Data Sufficiency->If p is an integer greater than 1, is p a prime number?
(1) p is a factor of 13.
(2) p is a factor of 78.

72)If the number 13 completely divides x, and x=a2∗b, where a and b are distinct prime numbers, which of these numbers must be divisible by 169?
A)a2
B)b2
C)a∗b
D)a2∗b2
E)a3∗b

73)Data sufficiency->If p is an integer and p>1,is p a prime number?
A)p has p factors.
B)p is a factor of 26.

74)Data Sufficiency->Is the number of distinct prime factors of the positive integer N more than 4?
(1) N is a multiple of 42.
(2) N is a multiple of 98

75)Data Sufficiency->If k is a positive integer, how many different prime factors does k have?
(1) k/30 is an integer
(2) k < 100

76)Data Sufficiency->If k is a positive integer, how many different prime factors does k have?
(1) k/60 is an integer
(2) k < 100

77)Data Sufficiency->If A and B are positive integers, does A have more prime factors than B?
(1) B is the square root of A
(2) A ÷ B is an integer

78)What is the greatest prime factor of 123–96 ?
A)2
B)3
C)7
D)17
E)19

79)What is the greatest prime factor of 4^17 - 2^28?
A)2
B)3
C)5
D)7
E)11

80)What is the total number of distinct prime factors of 28980?
A)2
B)3
C)4
D)5

E)6

81)What is the greatest prime factor of 3^6 - 1 ?
A. 2
B. 3
C. 7
D. 13
E. 17

82)Find the number of factors of 180 that are in the form (4*k + 2), where k is a non-negative integer?
A)1
B)2
C)3
D)4
E)6

83)Data Sufficiency->If A and B are positive integers, does B have more prime factors than A?
(1) B is the square root of A
(2) A ÷ B is an integer

84)If N = 10! then what is the minimum number which should be multiplied with N to make it a perfect square?
A)7
B)14
C)21
D)28
E)36

85)If N = 22∗33∗55, find the total number of odd and even factors of N.
A)24,96

B)15,30
C)24,48
D)15,96
E)15,48

86)Which of the following numbers is a prime number?
A)2343
B)3457
C)4689
D)7731
E)9861

87)The product of all the prime numbers less than 20 is closest to which of the following powers of 10 ?
(A) 109
(B) 108
(C) 107
(D) 106
(E) 105

88)If n is the product of the integers from 1 to 8, inclusive, how many different prime factors greater than 1 does n have?
(A) four
(B) five
(C) six
(D) seven
(E) eight

89)Find the number of factors of 240 that are in the form (4*p + 2), where p is a non-negative integer?
A)1
B)2
C)3
D)4

E)5

90)Data Sufficiency->What is the value of the integer p ?
(1) Each of the integers 2, 3, and 5 is a factor of p.
(2) Each of the integers 2, 5, and 7 is a factor of p.

91)Data Sufficiency->Does the integer k have at least three different positive prime factors?
(1) k/15 is an integer.
(2) k/10 is an integer.

92)If p is the product of the integers from 1 to 30, inclusive, what is the greatest integer k for which 3^k is a factor of p?
A. 10
B. 12
C. 14
D. 16
E. 18

93)If n = 20! + 17, then n is divisible by which of the following?

I. 15
II. 17
III. 19

(A) None
(B) I only
(C) II only
(D) I and II
(E) II and II

94)If 3 < x < 100, for how many values of x is x/3 the square of a prime number?
(A) Two

(B) Three
(C) Four
(D) Five
(E) Nine

95)How many integer values are there for x such that $1 < 3x + 5 < 17$?
A)Two
B)Three
C)Four
D)Five
E)Six

96)For any positive integer n, the sum of the first n positive integers equals n(n+1)/2. What is the sum of all the even integers between 99 and 301?
A. 10,100
B. 20,200
C. 22,650
D. 40,200
E. 45,150

97)If the sum of the first n positive integers is S, what is the sum of the first n positive even integers, in terms of S ?
(A) S/2
(B) S
(C) 2S
(D) 2S + 2
(E) 4S

98)How many prime numbers between 1 and 100 are factors of 7,150 ?
(A) One

(B) Two
(C) Three
(D) Four
(E) Five

99)If n is a prime number between 0 and 100, how many positive divisors does n^3 have?
A)1
B)2
C)3
D)4
E)5

100)If y is the smallest positive integer such that 3,150 multiplied by y is the square of an integer, then y must be
A)2
B)5
C)6
D)7
E)14