DATA SUFFICIENCY

QUESTION: 1

If P and Q are positive integers, is P divisible by 12?

(1) 17P + 24Q = 543
(2) P is eight more than seven times Q and Q is odd.

QUESTION: 2

If 3a∗4b=c3a∗4b=c, what is the value of b?

(1) 5a=255a=25

(2) c=36

QUESTION: 3

What is the sum of the squares of the three consecutive terms of a geometric progression??

(1) The sum of three terms is 13
(2) The product of the three terms is 27

QUESTION: 4

If (x−6)(x−m)=x2+rx+k(x−6)(x−m)=x2+rx+k. What is the value of m?

(1) k=18k=18

(2) r=−9

QUESTION: 5

Given that x ≠ 5, is x>{1/(x-5)^2}

Statement #1: x > 0

Statement #2: x > 10

QUESTION: 6

ab and ba are two-digit numbers. Find these numbers.

(1) ab/ba = 1.75
(2) ab*a = 3.5*ba

QUESTION: 7

Does a = b ?

(1) a^5 - b^5 = 0
(2) a^2 + b^2 = 0

QUESTION: 8

John is paid x dollars per hour for the first 8 hours that he works in a given day, 1.5x dollars per hour for the next 4 hours that he works on that same day and 2x dollars per hour for any time over 12 hours that he works on that same day, where x is an integer. How many hours did John work on Monday?

1) John was paid a total of $280 for his work on Monday.

2) If John had worked 2 additional hours, then he would have made an additional 80 dollars.

QUESTION: 9

If a < b < c < d and a, b, c, and d all are powers of 2 and all are positive integers. What is the value of d?

(1) a+b+c+d=170a+b+c+d=170

(2) a∗b∗c∗d=216

QUESTION: 10

If x^2 + 5y = 49. Is y an integer?

(1) 1 < x < 4
(2) x^2 is an integer

QUESTION: 11

Is xy ≥ 0?

(1) y = x + 1

(2) x is an odd number

QUESTION: 12

If $(x+y)2=(x+y2)2(x+y)2=(x+y2)2$, what is the value of y?

(1) $x=y2x=y2$

(2) $xy2=0$

QUESTION: 13

Are the roots of the quadratic equation $ax2+bx+c=0ax2+bx+c=0$ equal? This quadratic equation has real roots.

1) 2a, b, and 2c are in arithmetic progression.
2) a, b/2, and c are in geometric progression.

QUESTION: 14

If xy≠0, what is the value of $(2x + y)/(x - 2y)$?

(1) $x/(x + y) = 2$
(2) $x - 2y = 4$

QUESTION: 15

At how many points does the graph $y=ax2+bx+cy=ax2+bx+c$ intersect X-axis?
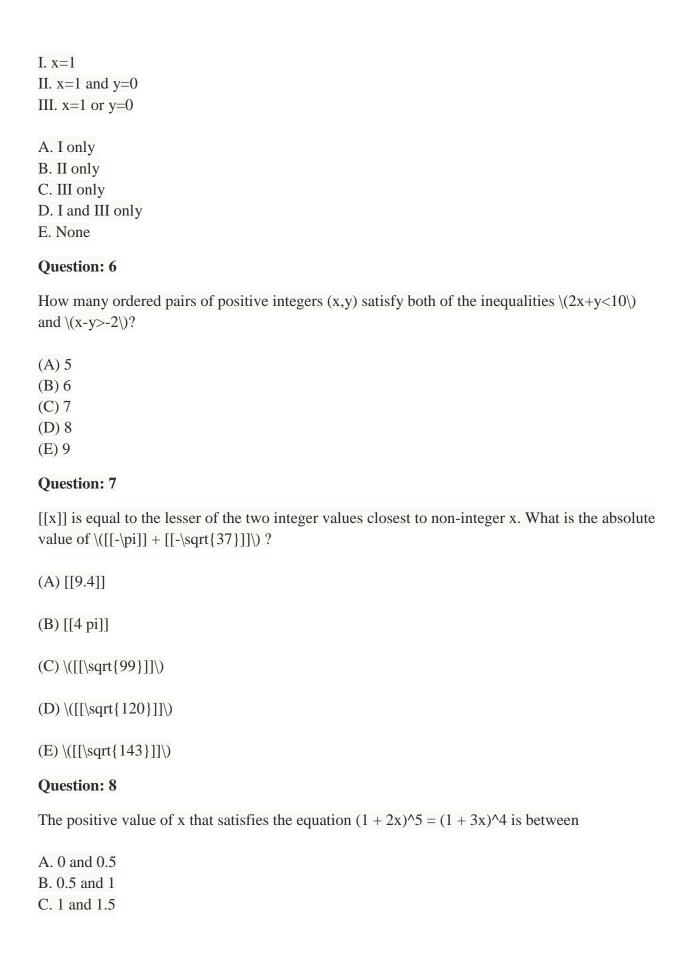1) $a+b = 0$
2) $a*b = 0$ and $c \neq 0$

PROBLEM-SOLVING

Question: 1

Set X consists of ten consecutive integers. Set Y consists of all the distinct integers that result from adding 2 to each of the integers in set X and all the integers that result from subtracting 2 from each of the integers in set X. How many more integers are there in set Y than in set X ?

A. 0
B. 4
C. 10
D. 14
E. 20

Question: 2

What is the sum of all solutions to the equation $x^{\frac{2}{3}} - x^{\frac{1}{3}} - 2 = 4$?

A) -35
B) -19
C) 7
D) 19
E) 35

Question: 3

If $a < b$ and $\sqrt{1 + 2\sqrt{1 + 3\sqrt{\cdots}}} = a + b$, then what is the value of a?

A. 1
B. 2
C. 3
D. 4
E. 5

Question: 4

The sum of the first n positive perfect squares, where n is a positive integer, is given by the formula $\frac{n^3}{3} + c*n^2 + \frac{n}{6}$, where c is a constant. What is the sum of the first 15 positive perfect squares?

(A) 1,010
(B) 1,164
(C) 1,240
(D) 1,316
(E) 1,476

Question: 5

If x is not equal to 0 and x^y=1, then which of the following must be true?

I. x=1
II. x=1 and y=0
III. x=1 or y=0

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

Question: 6

How many ordered pairs of positive integers (x,y) satisfy both of the inequalities $2x+y<10$ and $x-y>-2$?

(A) 5
(B) 6
(C) 7
(D) 8
(E) 9

Question: 7

[[x]] is equal to the lesser of the two integer values closest to non-integer x. What is the absolute value of $[[-\pi]] + [[-\sqrt{37}]]$?

(A) [[9.4]]

(B) [[4 pi]]

(C) $[[\sqrt{99}]]$

(D) $[[\sqrt{120}]]$

(E) $[[\sqrt{143}]]$

Question: 8

The positive value of x that satisfies the equation (1 + 2x)^5 = (1 + 3x)^4 is between

A. 0 and 0.5
B. 0.5 and 1
C. 1 and 1.5

D. 1.5 and 2
E. 2 and 2.5

Question: 9

For x < 0. Simplify $\sqrt{-(x + 1)*|x-1| + 1}$?

A. x
B. x - 1
C. x + 1
D. − x
E. − x + 1

Question: 10

If x is negative and y is positive, what is the value of x given that $x^2-8xy+16y2=49$?

A. $4y - 49$
B. $49 - 4y$
C. $-7 - 4y$
D. $7 + 4y$
E. $4y - 7$

Question: 11

What
is 11*2+12*3+13*4+14*5+15*6+16*7+17*8+18*9+19*1011*2+12*3+13*4+14*5+15*6+16*7
+17*8+18*9+19*10 ?

A. 2/5
B. 3/5
C. 7/10
D. 46/55
E. 9/10

Question: 12

If $P(x)P(x)$ be a polynomial satisfying the
identity P(x2)+2x2+10x=2x P(x+1)+3P(x2)+2x2+10x=2x P(x+1)+3, then $P(x)P(x)$ is
A) 2x+32x+3
B) 3x−43x−4
C) 3x+23x+2

D) 2x–32x–3
E) 3x–3

Question: 13

Two train of equal length running in opposite direction, pass a pole in 18 and 12 seconds. The trains will cross each other in ?
a. 12.6 seconds
b. 13.5 seconds
c. 14.4 seconds
d. 15.3 seconds
e. 16 seconds

Question: 14

The roots of $x^2 - px + 12 = 0$, where p is a negative constant and x is a variable, are a and b. If $|a - b| \geq 12,$ what is the greatest possible integer value of p?

A. -7
B. -8
C. -13
D. -14
E. -15

Question: 15

If $x2+9x2=31$ x2+9x2=31, what is the value of x_3x x−3x?

A. 36
B. 25
C. 9
D. 5
E. 3