Vocabulary

June 2015

44) The table below gives experimental data values for variables *x* and *y*. Theory predicts that *y* varies directly with *x.* Based on the experimental data, which of the following values is closest to the constant of variation?

(Note: The variable *y* varies directly with the variable *x* provided that *y = kx* for some nonzero constant *k*, called the *constant of variation*.)

[PICTURE]

F. -2.61

G. 0.05

H. 3.61

J. 15.90

K. 20.00

December 2015

7) The number 0.000 000 000 087 3 is equivalent to which of the following expressions?

1. 8.73 x 10-13
2. 8.73 x 10-11
3. 8.73 x 10-10
4. 8.73 x 1011
5. 8.73 x 1013

9) When 5 4/9 is written as an improper fraction in lowest terms, the numerator of the fraction is:

1. 20
2. 29
3. 36
4. 45
5. 49

39) Let *k* be a constant of proportionality and let *w, x, y,* and *z* be positive real numbers variables. In which of the following equations does *x* vary directly with *y*, directly with the square of *w*, and inversely of *z*?

1. *x = kw2/yz*
2. *x = kw2y/z*
3. *x = ky/w2z*
4. *x = kz/w2y*
5. *x = kw2yz*

50) Let *a* be a prime number greater than 10,000 and let *x = (rad)a.*  Which of the following expressions represents a rational number?

F. *x*/2

G. (rad)*x*

H. 2*x*

J. *x*2

K. *x* + 2

April 2016

4) Which of the following numbers has the greatest value?

F. 0.3(line on top)

G. 0.3

H. 0.33

J. 0.333

K. 0.3333

27) The entire graph of the relation *R* of the ordered pairs (*x,y*) is shown in the standard (*x,y)* coordinate plane below. One of the following sets is the domain of the relation *R*. Which set is it?

[PICTURE]

1. {1, 2, 4}
2. {1, 2, 3, 4}
3. {1, 2, 3, 6}
4. {1, 2, 4, 6}
5. {1, 2, 3, 4, 5, 6}

50) Which of the following number properties is illustrated in the statement below?

3 + (5 + 4) = (5 + 4) + 3

F. Associative: *a + (b + c) = (a + b) + c*

G. Commutative: *a + b = b + a*

H. Distributive: *a(b + c) = ab + ac*

J. Identity: *a + 0 = a*

K. Inverse: *a + (-a) = 0*

December 2016

32) When it was constructed 4,500 years ago, the Great Pyramid in Egypt had a height of 147 meters and contained roughly 2.3 million stone blocks. It is estimated that 5.5 million tons of limestone, 8,000 tons of granite, and 500,000 tons of mortar were used in its construction. In the side view shown below, an ancient observer found the angle of elevation at *D* to the top of the pyramid to be 39°. The diagonals of the pyramid’s square base, shown below, intersect at *C*.

[PICTURES]

When written in scientific notation, which of the following expressions is equal to the number of blocks used to construct the pyramid?

F. 2.3 x 106

G. 7.8 x 106

H. 8.3 x 106

J. 23 x 105

K. 78 x 105

59) Which of the following data sets has the greatest standard deviation?

1. 1, 1, 1, 10, 10, 10
2. 1, 2, 3, 4, 5, 6
3. 2, 6, 6, 10, 10, 12
4. 5, 5, 5, 5, 5, 5
5. 5, 6, 7, 8, 9, 10

April 17

10) The fluctuation of water depth at a pier is shown in the figure below. One of the following values gives the positive difference, in feet, between the greatest water depth and the least water depth shown in this graph. Which value is it?

[PICTURE]

F. 3

G. 6

H. 9

J. 12

K. 19

38) Which of the following expressions, when evaluated, equals an irrational number?

F. (rad)2/(rad)8

G. (rad)8/(rad)2

H. ((rad)8)2

J. (rad)2 x (rad)8

K. (rad)2 +(rad)8

June 2017

20) The graph of y = 3 - 5 sin(x-pi) is shown in the standard (*x,y*) coordinate plane below. What is the range of *y*?

[PICTURE]

F. -5 <(equal to) *y* <(equal to) 5

G. -2 <(equal to) *y* <(equal to) 2

H. -2 <(equal to) *y* <(equal to) 8

J. 3 <(equal to) *y* <(equal to) 8

K. 3 <(equal to) *y* <(equal to) 10