Sequences

**April 2015**

24) Observation of a certain bacteria colony has shown that its population of cells double every 3 hours. Given that the initial population of cells in this colony is about 8 million, which of the following values, in millions, would be closest to the number of cells in the bacteria colony after 15 hours?

**F.** 32

**G.** 40

**H.** 120

**J.** 128

**K.** 256

50) What is the sixth term of the geometric sequence whose second term is -4 and whose fifth term is 32?

**F.** -128

**G.** -64

**H.** 44

**J.** 128

**K.** 256

**June 2015**

57) A finite arithmetic sequence has 7 terms, and the first term is 3/4. What is the difference between the mean and the median of the 7 terms?

**A.** 0

**B.**

**C.**

**D.** 3

**E.** 4

**June 2016**

27) The first 2 rectangles of a sequence of rectangles are shown below. The 1st rectangle is 4 inches long and 1 inch wide. The dimensions of the 2nd rectangle, and of each successive rectangle after the 2nd, are determined by containing the following pattern: the length is 3 inches longer that the length of the previous rectangle, and the width is 1 inch longer than the width of the previous rectangle. What is the perimeter, in inches, of the 6th rectangle in the sequence?

(picture)

**A.** 24

**B.** 40

**C.** 50

**D.** 56

**E.** 60

41) Which of the following is the decimal equivalent to 2/7?

(Note: A bar indicates a digit pattern that is repeated.)

1. 0.(bar)285714
2. 0.28571428
3. 0.285714(bar)28
4. 0.2857142857
5. 0.285714(bar)2857

**December 2016**

#17. The first 5 terms of a sequence are given in the table below. The sequence is defined by setting a1 = 9 and an = an-1 + (n - 1) for n ≥ 2. What is the sixth term, a6 , of this sequence?

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| a1 | a2 | a3 | a4 | a5 | a6 |
| 9 | 10 | 14 | 23 | 39 | ? |

1. 62
2. 64
3. 76
4. 78
5. 95

41) The figure below shows the top view of the Santana family’s house and ard. The Santana’s rectangular house is 40 feet wide and 30 feet long, and their rectangular yard is 75 feet wide and 100 feet long. The Santanas have a rectangular garden in the back corner of their yard that is 30 feet wide and 25 feet long. The garden currently contains 48 flower bulbs: 10 tulip bulbs, 18 daffodil bulbs, and 20 crocus bulbs.

(picture)

Beginning next year, Mr. Santana will increase the number of bulbs in the garden each year so that the numbers from a geometric sequence. In 3 years, there will be 162 bulbs in the garden. By what factor will the number of bulbs be multiplied each year?

**A.** 1.125

**B.** 1.5

**C.** 3.375

**D.** 4.85

**E.** 38

50) The fraction 2/7 is equivalent to 0.. What is the digit in the 1,001st decimal place of 0.?

(Note: The digit in the 4th decimal place of 0. is 4.)

**F.** 1

**G.** 2

**H.** 4

**J.** 5

**K.** 7

**June 2017**

45) Given today is Tuesday, what day of the week was it 200 days ago?

**A.** Monday

**B.** Tuesday

**C.** Wednesday

**D.** Friday

**E.** Saturday

**April 2017**

53) The third and 4th terms of an arithmetic sequence are 13 and 18, respectively. What is the 50th term of the sequence?

**A.** 248

**B.** 250

**C.** 253

**D.** 258

**E.** 263