Part A

1. If $4x - 13 =$	= 43 then the value	e of x is		
(A) 8	(B) 10	(C) 12	(D) 14	(E) 16
2. Calculate th	e sum $1.2 + 2.3 +$	3.4 + 4.5 + 5.6 + 6	6.7 + 7.8 + 8.9 + 9	9.1
(A) 49.5	(B) 50	(C) 50.5	(D) 51	(E) 51.5
3. Which is the	e largest fraction?			
(A) $\frac{1}{2}$	(B) $\frac{3}{5}$	(C) $\frac{4}{7}$	(D) $\frac{5}{9}$	(E) $\frac{6}{11}$
4. If 333 cats earling a week?	at 666 mice in thre	ee days, how many	mice will be eate	en by 111 cats
(A) 222	(B) 444	(C) 518	(D) 555	(E) 592
visited five u books than counted and	s to buy books fr used book stores. A he had bought at found that he had e fifth book store	At each store, afte the previous store l bought 50 books	r the first, he bou e. When he retur	ight two more ned home, he

- (A) 9 (B) 11 (C) 12 (D) 13 (E) 14
- 6. Fred's birthday is the same day as the millionth second of the year. What day is Fred's birthday?

(A) $Jan.2^{nd}$ (B) $Jan.10^{th}$ (C) $Jan.12^{th}$ (D) $Jan.15^{th}$ (E) $Feb.1^{st}$

- 7. If $a \times b = n$, then a and b are said to be factors of n. The positive factors of 6 are 1, 2, 3 and 6. What is the product of all the positive factors of 100?
 - (A) 10^5 (B) 10^6 (C) 10^7 (D) 10^8 (E) 10^9
- 8. Martine has a bag of marbles. When she counts them two at a time, three at a time or four at a time, there is always one marble left. Which of the following numbers **can not** be the number of Martine's marbles?
 - (A) 23 (B) 25 (C) 37 (D) 61 (E) 73
- 9. What is the value of the following expression?

10. Grandpa Jules welcomes his three grand-daughters to his house. The product of the ages of the girls is 48 while the sum of their ages is 15. What is the age of the oldest girl?

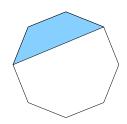
(A) 4 years	(B) 6 years	(C) 8 years	(D) 10 years	(E) 12 years
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Part B

- 11. A group of students went to a movie. Fifteen students bought popcorn and twelve students bought a drink. Ten students bought both popcorn and a drink, but three students bought neither popcorn nor a drink. How many students went to the movie?
 - (A) 18 (B) 20 (C) 30 (D) 35 (E) 40
- 12. How many of the integers 1, 2, 3..., 40 can be obtained by adding distinct powers of 3? For instance, $31 = 3^0 + 3^1 + 3^3$ is such a number but $6 = 3^1 + 3^1$ is not.
 - (A) 12 (B) 13 (C) 14 (D) 15 (E) 16
- 13. The number 2013 is the product of three prime numbers. The sum of these prime numbers is
 - (A) 75 (B) 81 (C) 83 (D) 85 (E) 91
- 14. A museum has five exhibits. It costs \$1.00 to visit the first exhibit. In order to visit each subsequent exhibit, it costs \$1.00 more than twice the cost of the previous exhibit. What is the cost to visit all five exhibits?

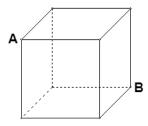
15. How many integers n (including negative integers) are such that $\frac{15-n}{3-n}$ is an integer?

(A) 8 (B) 10 (C) 12 (D) 14 (E) 16

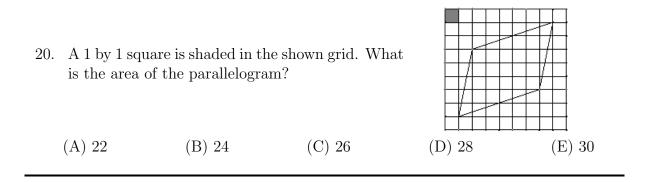


- 16. The diagram shows a regular octagon with side length one. Regular means that all sides have the same length and all angles have the same measure. What is the area of the shaded region?
 - (A) $\frac{1+\sqrt{2}}{2}$ (B) $\frac{3}{2}$ (C) $\frac{2+\sqrt{2}}{2}$ (D) $1+\sqrt{2}$ (E) 3
- 17. The last digit of 2^{2013} is
 - (A) 0 (B) 2 (C) 4 (D) 6 (E) 8
- 18. Nabil is in room 1401. He calls Martin and says "what room are you in". Martin replies: "the number of the room I'm in less the number of the room you're in is 100 times the nth prime number, where n is the smallest number with six positive factors". What room is Martin in? (If $n = a \times b$, then a and b are said to be factors of n. The positive factors of 6 are 1, 2, 3, 6).
 - (A) 2701 (B) 3301 (C) 4501 (D) 5101 (E) 5501

19. In the shown cube, A and B are on opposite corners and each edge of the cube has length one. An ant walks from A to B along the edges of the cube. What is the length of the longest path the ant can walk, without using any edge more than once nor passing twice by the same corner?



(A) 6 (B) 7 (C) 8 (D) 9 (E) 10



Part C

- 21. John numbers his photos using the numbers between 1 and 199 that are multiple of exactly one of the numbers among 3, 5 or 7. For example 9 is such a number but 15 is not. How many photos does he have?
 - (A) 66 (B) 79 (C) 82 (D) 104 (E) 107
- 22. Three red fish, eight blue fish and thirteen green fish weigh 67 kg. Two red fish, five blue fish and eight green fish weigh 43 kg. How much do one red fish, one blue fish and one green fish weigh?
 - (A) 10 kg (B) 11 kg (C) 12 kg (D) 13 kg (E) 14 kg

23. You throw a six-sided dice four times. There are 21 possible sums (from 4 to 24) but there are 1296 different ways, in all, to obtain those sums because the order in which the results are obtained counts. (For example 2-2-6-4 is different than 2-2-4-6). In how many different ways can we obtain a sum equal to 12?

(A) 105	(B) 125	(C) 145	(D) 165	(E) 185

24. Carole, David and Julie are planting tomato plants. When Carole works with Julie, they plant one row of tomatoes in one hour. When Carole works with David, they plant one row of tomatoes in 75 minutes. When David works with Julie, they plant one row of tomatoes in 100 minutes. How long does it take, in minutes, for the three of them, working together, to plant a row of tomatoes? All the rows have the same number of tomato plants.

	(A) 40	(B) 42	(C) 45	(D) 48	(E) 50
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25. A magic square is a square of numbers in which the sum of the numbers in each row, in each column and in each diagonal is always the same. Hichem wants to fill a magic square using the numbers 1 to 16 once each. He has filled some of the boxes as shown in the diagram. Which number must he put in the shaded box?

14	1		
11			2
	10	3	

(A) 4 (B) 5 (C) 6 (D) 7 (E) 8

