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**Part A**

1. Evaluate the expression

$$\frac{1 + \frac{1}{2}}{1 - \frac{1}{3}}$$

- (A)  $\frac{2}{3}$       (B) 1      (C)  $\frac{3}{2}$       (D)  $\frac{9}{4}$       (E) None of these
- 

2. Define the operation
- $a*b = ab - a + b$
- . Evaluate
- $(3*5) + (5*7)$
- .

- (A) 30      (B) 40      (C) 50      (D) 54      (E) 56
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3. What is the sum of all the positive integers that divide 12 and do not leave a remainder?

- (A) 12      (B) 16      (C) 22      (D) 24      (E) 28
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4. The least common multiple of the numbers 2, 4, 6, 8 and 10 is

- (A) 60      (B) 80      (C) 90      (D) 120      (E) 3840
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5. A broccoli costs \$2, a cauliflower costs 50% more than a broccoli and a bunch of asparagus costs twice as much as a broccoli. What is the cost of 4 broccolis, 3 cauliflowers and 2 bunches of asparagus?

- (A) \$24      (B) \$25      (C) \$26      (D) \$27      (E) \$29
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6. A basket contains red and green candies. If one third of the green candies are removed, it is found that the number of red and green candies remaining in the basket is now the same. What was the original percentage of red candies in the basket?

- (A) 25      (B)  $33\frac{1}{3}$       (C) 40      (D) 60      (E) None of these
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7. For what number would subtracting 3 from it and then dividing that result by 9 give the same outcome as first subtracting 9 from it and then dividing the result by 3?

- (A) 6      (B) 9      (C) 12      (D) 18      (E) 24
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**Part B**

11. Canada has a population of 33 million while Russia has 144 million inhabitants. Indonesia's population is 50% greater than that of Russia while it is only 72% of the population of the United States. How many million people must be added to the United States so that the population of that country becomes 10 times that of Canada?

- (A) 3                      (B) 27                      (C) 30                      (D) 33                      (E) Not enough information
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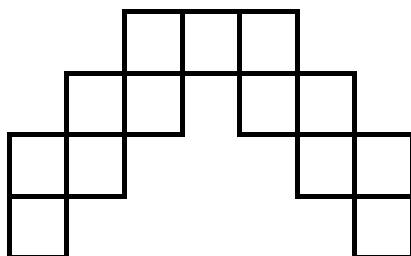
12. A triangle has the same area and base as a rectangle. If the rectangle height is 6 cm, then the triangle height is

- (A) 3 cm                      (B) 6 cm                      (C) 9 cm                      (D) 12 cm                      (E) None of these
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13. John and Charles buy red and blue certificates. John buys 10 red and 20 blue and pays \$40. Charles buys 10 blue and 20 red and pays \$50. The following day, they find out that they need more certificates and they go together to buy 3 red and 2 blue. How much did they pay for these five certificates?

- (A) \$5                      (B) \$6                      (C) \$7                      (D) \$8                      (E) \$9
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14. What is the length of the perimeter of the figure shown below? Each block is a square with sides of length 1.



- (A) 24                      (B) 28                      (C) 30                      (D) 32                      (E) None of these
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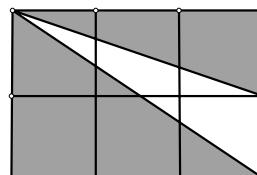
15. The largest of the numbers given below is

- (A)  $\left(1 - \frac{1}{5}\right)\left(1 + \frac{1}{5}\right)$       (B) 0.95      (C)  $1 - \frac{1}{5} + \frac{1}{10}$       (D)  $\frac{12}{13}$       (E) All are equal
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16. Alice eats  $\frac{1}{4}$  of a pizza. Bob then eats  $\frac{1}{3}$  of what is left. Finally, Christine eats  $\frac{1}{2}$  of the remaining pizza. What proportion of the pizza did they not eat?

(A)  $\frac{1}{24}$       (B)  $\frac{1}{12}$       (C)  $\frac{1}{4}$       (D)  $\frac{1}{3}$       (E) None of these

17. The figure shown is constructed of 6 squares each having side length 1. What is the area of the shaded portion?



(A) 3      (B)  $2\sqrt{3}$       (C) 4      (D)  $3\sqrt{2}$       (E) 4.5

18. The numbers from 1 to 5 are written in a 5 x 5 array so that each number appears exactly once in each row and each column. Some of the numbers have already been entered. What number goes in the place marked by the X?

	2		5	
	3		2	
1				4
			4	3
5		X		

(A) 1      (B) 2      (C) 3      (D) 4      (E) Not enough information

19. On the first day Juanita receives 1 dollar. On each succeeding day, she receives 1 dollar more than the total received in all preceding days. On which day will she first receive an amount greater than one hundred dollars?

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

20. The sum of 9 consecutive integers is 369. The middle integer is

(A) 35      (B) 38      (C) 40      (D) 41      (E) None of these

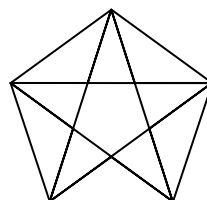
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**Part C**

21. How many three digit numbers can be made using only the digits 1 to 9 so that at least two of the digits are the same? For example, 112 and 737 are two such numbers.

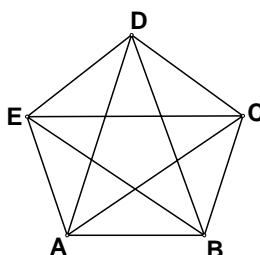
- (A) 100      (B) 200      (C) 216      (D) 225      (E) None of these
- 

22. How many different triangles are contained in the figure shown?



- (A) 10      (B) 15      (C) 20      (D) 25      (E) More than 25
- 

23. How many different ways can one travel from A to E in the figure shown? A path must travel in a straight line turning only at the points A, B, C, D, E and must go through every lettered point exactly once.



- (A) 6      (B) 7      (C) 8      (D) 10      (E) 15
- 

24. Bob and Nabil have some sheep and hens in a yard. Bob counts the heads and finds 18 while Nabil counts the legs and finds 44. How many sheep are there in this yard?

- (A) 2      (B) 4      (C) 6      (D) 8      (E) 11
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25. Which digit appears most often when writing the integers from 1 to 100?

- (A) 0      (B) 1      (C) 3      (D) 9      (E) All appear equally often
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26. If  $2^5 = 32$ , then  $2^{100}$  is closest to

- (A)  $10^{10}$       (B)  $10^{15}$       (C)  $10^{20}$       (D)  $10^{25}$       (E)  $10^{30}$
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