
Question 1

Let

$$A = 12 - 3 + 4 \times 4 - 1(7)$$

$$B = 7.3 - 8.9 + 4.7 - 2.1$$

$$C = \left(\frac{1}{2} - \frac{1}{4}\right) \left(\frac{2}{3}\right)$$

$$D = \frac{1 + 2 + 3 + 4 + 5 + 7 + 8 + 9 + 10 + 11}{12}$$

Find $ABCD$.

Question 2

Let $f(x) = x^2 + 3x - 8$ and $g(x) = 5x$.

$$A = \text{the degree of } f(4x^2)$$

$$B = f(4) - g(4)$$

$$C = f(g(x))$$

$$D = g(f(x))$$

Find $A + B + C + D$

Question 3

Tommy is bored and is sitting on a curb in a parking lot counting cars. When he arrives, he notices that there are 3^{2+1} cars parked at that exact moment. He then falls asleep immediately, and when he wakes up 15 minutes later, he notices there are 2^{3+2} cars parked then. Dozing off again, he wakes up 15 minutes later to count that there are $2^3 + 3^2$ cars. He leaves the parking lot immediately after waking up, and as he leaves, 3^3 cars arrive and 2^4 cars leave simultaneously.

A = the number of cars at the time of his arrival

B = the number of cars 15 minutes after he arrived

C = the number of cars 30 minutes after he arrived

D = the number of cars as he was leaving

Find $A + B + C + D$

Question 4

I was going to the grocery store to buy ingredients, but I don't know how much I can buy. I brought \$5, and oranges cost 35¢, and bananas cost 45¢. Find

A = the maximum number of oranges I can purchase

B = the maximum number of bananas I can purchase

C = the maximum number of oranges I can purchase if I must also buy 3 bananas

D = the maximum number of bananas I can purchase if I must also buy 5 oranges

Find $A + B + C + D$

Question 5

I enjoy finding patterns in numbers, so I'm going to test you if you can see what I noticed, and find the next number in each series.

$$A = 1, 2, 5, 10, 17, \dots$$

$$B = 1, 1, 2, 3, 5, \dots$$

$$C = 1, 4, 9, 16, \dots$$

$$D = 11, 121, 1331, \dots$$

Find $A + B + C + D$

Question 6

I am building a spaceship, but I want some help to build it faster. It takes me 10 days to build a spaceship by myself, it takes Alex 5 days to build it by himself, and it takes Brian 10 days to make it by himself. Find the time it takes to build a spaceship if

A = Alex helps me from start to finish

B = Brian helps me once I have done half the work and he helps until we finish

Find $A + B$ to the nearest integer.

Question 7

Let

A = the sum of the integral solutions of $x^2 + 7x + 6 = 0$

B = the sum of the integral solutions of $|x - 1| < 5$

C = the sum of the integral solutions of $x^2 - 3x < 4$

D = the sum of the integral solutions of $3x^2 - 9x - 30 = 0$

Find $A + B + C + D$

Question 8

Given the following table

Table 1: Key: $1|1 = 11$

5	1 8
6	2 3 6 6 9
7	1 4 6
8	0

Let

A = mean, rounded to the nearest integer

B = median

C = mode

D = range

Find the average of A , B , C , and D

Question 9

How many of the following statements are true?

- 0 is a whole number
- If x is an even number, then $3(x - 1)$ is always odd
- There are more positive integers than negative integers
- If $x > 0$, then $x^2 - 2x + 1$ is always positive
- $x^{5^2} = x^{2^5}$
- 10% of $x\%$ of 1000 = x

Question 10

Let

A = the number of positive integer factors of 2012

B = the smallest positive integer n such that $n^2 > 2012$

C = the largest integer x , such that $x^3 < 2012$

D = $A + B + C$

Find the remainder when 2012 is divided by D .

Question 11

I walked to the fair with an unknown amount of money, and I do not remember how much I spent at each stop, but I do know what percent of my money I spent at each stop. I began the day with A dollars, spend 50% of my money at point B (the entrance fee), then 20% of my remaining money at point C (concession stand). Later, I spend 75% of my remaining money at point D (souvenir stand) and finally leave the fair with 5 dollars, without having found or lost any extra money at any other place or time.

Find A (the amount of money I started with) - B (the cost of the entrance fee) - C (the amount I spent at the concessions) - D (the amount I spent on souvenirs)

Question 12

Albert, Bradley, Chico, and Daniel are running a 20 meter long race. Albert runs at 5 m/s , Bradley runs at 4 m/s but has a 3 meter head start, Chico runs at 3 m/s but has a 6 meter head start, and Daniel runs at 2.5 m/s but has a 9 meter head start. Assuming everyone runs at a constant rate, who wins the race?

Question 13

The owner of a local supermarket wants to find out how much money he is making on some products. The price for a pound of almonds is \$6, the price of a pound of coconuts is \$4, the price for a pound of nutmeg is \$7, and the price for a pound of ginger is \$9, all from the supplier. The owner buys 2 pounds of each product, and then sells all of them at a price of \$2 per ounce.

What is her total profit in dollars? (Note: there are 16 ounces in a pound.)

Question 14

Let

A = the slope of a line perpendicular to $3x + 7y = 3$

B = the slope of a line parallel to $3x + 7y = 3$

C = the value of a , where the axis of symmetry of $y = x^2 + 9x + 98989$ has the form $x = a$

Find ABC