

1. Which of the choices satisfies inequality $(x - 2023)^2 \leq 0$?

A) 2022
B) 2023
C) 2024
D) 2025

(Correct +3, Wrong 0, Blank 0)

2. Among the choices, choose the largest area that can be completely encircled by a fence with a length of 6 meters.

A) $3 m^2$
B) $2 m^2$
C) $4 m^2$
D) $1 m^2$

(Correct +3, Wrong 0, Blank 0)

3. What is the remainder of $3 \cdot (9^9 + 1) + 1$ divided by 4?

A) 1
B) 0
C) 3
D) 2

(Correct +3, Wrong 0, Blank 0)

4. Ben loves birds. He has sparrows and pigeons. He wants to give a riddle to his brother Jack. Here are the clues; when 10 sparrows are released, the number of pigeons is twice the number of remaining sparrows. When 15 pigeons are released, the number of sparrows is three times the number of remaining pigeons.



The difference between the number of pigeons and sparrows is ____.

A) 2
B) 4
C) 1
D) 3

(Correct +3, Wrong 0, Blank 0)

5. A function f has the following properties:

1. $f(0) = 1$

2. $f(1) = 2$

3. $f(2) = 3$

Then $f^3(0) = \underline{\hspace{2cm}}$.

- A) 6
B) 4
C) 7
D) 3

(Correct +3, Wrong 0, Blank 0)

6. Which of the options is the best for continuing the following sequence?

1, 1, 1, 3, 5, 9, 17, 31, 57, , ,

- A) 121
B) 133
C) 105
D) 151

(Correct +3, Wrong 0, Blank 0)

7. Which of the following expression is equivalent to

$$\frac{abc}{a+b+c}?$$

A) $\frac{a+b+c}{ab+bc+ca}$

B) $\frac{a+b+c}{abc}$

C) $\frac{1}{\frac{1}{ab} + \frac{1}{bc} + \frac{1}{ca}}$

D) $\frac{1}{ab+bc+ca}$

(Correct +3, Wrong 0, Blank 0)

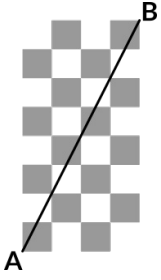
8. At the beginning of the year, Ben had 1000 dollars saved in his bank account. Every month, his savings earn interest of 2 percent.

If he neither withdraws nor deposits additional dollars, how many months does he need to wait to get at least 100 dollars of interest?

- A) 5
B) 6
C) 4
D) 3

(Correct +3, Wrong 0, Blank 0)

9. In the figure below the area of one square is 1 unit squared.



The total of shaded area below the line AB is ____ unit squared.

- A) 9
- B) 8
- C) 7
- D) 6

(Correct +3, Wrong 0, Blank 0)

10. A teacher made one question of the exam a bonus so that all of his 20 students' points increased by 10.

If the initial average class point is 70 then the average after the increase is ____.

- A) 72
- B) 70
- C) 75
- D) 80

(Correct +3, Wrong 0, Blank 0)

11. In how many ways can three non-identical crates measuring 2 by 4 by 2 meters be fitted into a container with dimensions of 4 by 6 by 2 meters if all the crates must be inside the container?

- A) 4
- B) 6
- C) 18
- D) 12

(Correct +3, Wrong 0, Blank 0)

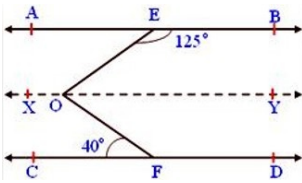
12. There are eight people in the room. Assume that being born on a particular day is equally likely.

What is the probability that no one in the room was born on Sunday?

- A) $\frac{6!}{7!}$
- B) $\frac{6^8}{7^8}$
- C) $\frac{6!}{7^8}$
- D) $1 - \frac{6!}{7^8}$

(Correct +3, Wrong 0, Blank 0)

13. In the given figure $AB \parallel CD$, $\angle BEO = 125^\circ$, $\angle CFO = 40^\circ$.



Find the measure of $\angle EOF$.

- A) 15°
- B) 100°
- C) 95°
- D) 85°

(Correct +3, Wrong 0, Blank 0)

14. Which of the following functions always returns a positive value?

- A) $f(x) = x^2 - x$
- B) $f(x) = x^2 - x^4$
- C) $f(x) = x^2 + x^3$
- D) $f(x) = x^2 + x^4$

(Correct +3, Wrong 0, Blank 0)

15. What is the sum of first 10 prime numbers?

- A) 143
- B) 129
- C) 131
- D) 101

(Correct +3, Wrong 0, Blank 0)

16. Two-digit number is multiplied by 101, and then all the digits of the result are summed together. The result of the summation is 10.

What is the sum of the two digits of initial number?

- A) 2
- B) 5
- C) 4
- D) 3

(Correct +3, Wrong 0, Blank 0)

17. The number $\overline{100X}$ is the smallest four-digit number divisible by 6.

Then $X = \underline{\hspace{1cm}}$.

- A) 2
- B) 1
- C) 5
- D) 3

(Correct +3, Wrong 0, Blank 0)

18. Andy throws three identical dice.

What is the probability that exactly two of the numbers are the same?

- A) $\frac{10}{36}$
- B) $\frac{12}{36}$
- C) $\frac{6}{36}$
- D) $\frac{5}{36}$

(Correct +3, Wrong 0, Blank 0)

19. Which of the following three-dimensional shapes has three faces?

- 1. Cube
- 2. Cylinder
- 3. Pyramid
- 4. Tetrahedron

- A) 3
- B) 2
- C) 1
- D) 4

(Correct +3, Wrong 0, Blank 0)

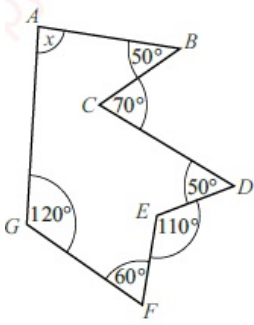
20. In a theater in Central Java Province, there are 13 rows of seats. The first row contains 10 seats, the second row contains 13 seats, the third row contains 18 seats, the fourth row contains 21 seats, the fifth row contains 26 seats, and so on follows the same pattern.

Based on this information, the number of seats on the third row from the back is ____ chairs.

- A) 53
- B) 50
- C) 58
- D) 47

(Correct +3, Wrong 0, Blank 0)

21. Consider the following figure.



The value of x is ____ degrees. (Write your answer only in numbers.)

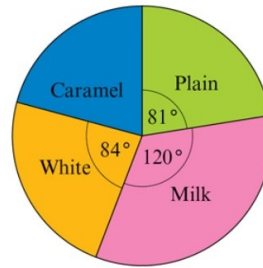
(Correct +4, Wrong 0, Blank 0)

22. A weather forecaster predicted a 70% chance of rain on Saturday. If it rained on Saturday, there would be a 60% chance it would also rain on Sunday. If it didn't rain on Saturday, there was a 50% chance of rain on Sunday.

The probability of no rain on both days is ____%. (Write your answer only in numbers.)

(Correct +4, Wrong 0, Blank 0)

23. The pie chart shows the results of a survey of 600 people about the types of chocolate they prefer.



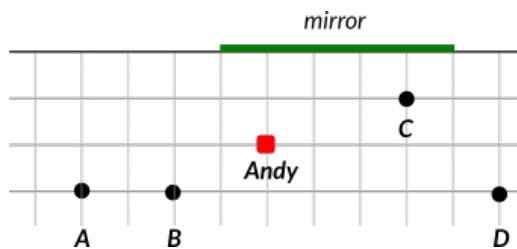
How many people in the survey like white chocolate? (Write your answer only in numbers.)

(Correct +4, Wrong 0, Blank 0)

24. What is the greatest positive integer that can always divide any sum of 5 consecutive natural numbers? (Only write the number.)

(Correct +4, Wrong 0, Blank 0)

25. Andy stands in front of a mirror, as shown below. There are also 4 objects in the room called A, B, C, and D.



From his position, how many object images can Andy see through the mirror? Don't count Andy's own image. (write your answer only in numbers.)

(Correct +4, Wrong 0, Blank 0)

26. Two single-digit positive numbers x and y satisfy equation $x \cdot 123 + y = 987$.

Then $x - y =$ _____. (Write your answer only in numbers.)

(Correct +4, Wrong 0, Blank 0)

27. ABCD is a trapezoid with a height of 6 **cm**. The length of line DC is twice the height of the trapezoid ABCD and 4 times the length of AB.

The area of this trapezoid is ____ cm^2 . (Write your answer only in numbers.)

(Correct +4, Wrong 0, Blank 0)

28. Four positive integers, a , b , c , and d are in increasing order and are different from each other. It's known that $c = a + 2$ and $d = b + 3$.
If $a + b + c + d = 19$, then $a =$ ____. (Write your answer only in numbers.)
(Correct +4, Wrong 0, Blank 0)

29. Find the remainder when 7^{100} is divided by 12. (Write your answer only in numbers.)
(Correct +4, Wrong 0, Blank 0)

30. How many positive integers can divide 2023? (Write your answer only in numbers.)
(Correct +4, Wrong 0, Blank 0)

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Answer Keys

No	Key	Code
1	B	KMF/2737/CKWAN
2	B	KMF/2652/GHJZG
3	C	KMF/2647/C7TXU
4	C	KMF/2604/P3VLF
5	D	KMF/2697/JLW7G
6	C	KMF/2698/S3PGJ
7	C	KMF/2699/9IUJD
8	A	KMF/2586/YZKGO
9	B	KMF/2696/KSQ4I
10	D	KMF/2645/NMU0Q
11	C	KMF/2655/MZILC
12	B	KMF/2695/CJQVJ
13	C	KMF/2568/FJL5C
14	D	KMF/2588/UA35O
15	B	KMF/2566/XDWTN
16	B	KMF/2646/ZLIUO
17	A	KMF/2565/UQGX2
18	D	KMF/2644/QLG9
19	B	KMF/2738/6CXOR
20	B	KMF/2603/OL80G