

Number Theory in Global Context

Number Theory · Answer Key · 25 Questions

1. The number of sovereign states in the United Nations is 193. If 193 is a prime number, which of the following is true?

- A) It has more than two divisors
- B) It is a composite number
- C) It is only divisible by 1 and itself**
- D) It is an even number

2. The total number of time zones currently used across the globe is 24. What is the sum of all positive divisors of 24?

- A) 36
- B) 60**
- C) 48
- D) 72

3. The surface area of Earth is approximately 510 million square kilometers. If 510 is expressed as a product of its prime factors, what is the largest prime factor?

- A) 13
- B) 17**
- C) 19
- D) 23

4. There are 7 continents on Earth. If we define a 'perfect number' as one equal to the sum of its proper divisors, is 7 a perfect number?

- A) Yes, because it is prime
- B) No, the sum of its divisors is 1
- C) Yes, it is a Mersenne prime
- D) No, because 7 is not equal to 1**

5. The elevation of Mount Everest is 8,848 meters. Which of the following is the largest prime factor of 8848?

- A) 7
- B) 13
- C) 37**
- D) 41

6. The distance from the Earth to the Moon is roughly 384,400 km. Is the number 384400 a perfect square?

A) Yes, 620 squared

B) No, it is a cube

C) Yes, 600 squared

D) No, it is prime

7. The Great Barrier Reef stretches over 2,300 kilometers. How many trailing zeros are in the prime factorization of 2300?

A) 1

B) 2

C) 3

D) 0

8. The atomic number of Gold (often associated with national treasuries) is 79. What is the next prime number after 79?

A) 81

B) 83

C) 85

D) 87

9. The number of independent nations that share a land border with Brazil is 10. How many distinct prime factors does the number 10 have?

A) 1

B) 2

C) 3

D) 4

10. The total number of letters in the official English name of the United Kingdom (United Kingdom of Great Britain and Northern Ireland) is 46. What is the sum of the digits of this number?

A) 8

B) 9

C) 10

D) 11

11. The year 2024 is a leap year. Is 2024 divisible by 8?

A) No, the remainder is 4

B) Yes, the result is 253

C) Yes, the result is 250

D) No, it is an odd number

12. If the population of a small territory is 144, which is 12 squared, what is the value of the square root of 144?

- A) 10
- B) 12**
- C) 14
- D) 16

13. There are 50 states in the USA. What is the value of 50 factorial (50!) divided by 49 factorial (49!)?

- A) 1
- B) 50**
- C) 25
- D) 100

14. The number of provinces in Canada is 10 and the number of territories is 3. What is the product of these two prime numbers?

- A) 30**
- B) 33
- C) 31
- D) 29

15. The Nile River is approximately 6,650 km long. Which of the following numbers is a divisor of 6650?

- A) 3
- B) 7**
- C) 9
- D) 11

16. The number of years in a century is 100. How many divisors does 100 have?

- A) 7
- B) 8
- C) 9**
- D) 10

17. The standard acceleration due to gravity is approximately 9.8 m/s^2 . If we round this to the nearest integer, 10, what is the prime factorization of 10?

- A) 2×5**
- B) $2 \times 2 \times 2$
- C) 5×5
- D) 2×3

18. The number of stripes on the flag of the United States is 13, which is a prime number. What is the value of 13 squared?

A) 156

B) 169

C) 144

D) 196

19. The total number of countries in the European Union is 27. What is the prime factorization of 27?

A) 3×3

B) $3 \times 3 \times 3$

C) 9×3

D) 3×7

20. The number of chambers in a bicameral parliament is 2. Is 2 the only even prime number?

A) Yes

B) No, 4 is prime

C) No, 8 is prime

D) No, 0 is prime

21. The number of stars on the flag of Australia is 6. How many proper divisors does 6 have?

A) 2

B) 3

C) 4

D) 6

22. The height of the Eiffel Tower is 330 meters. Is 330 divisible by 11?

A) Yes, $330/11 = 30$

B) No

C) Yes, $330/11 = 33$

D) No, it is a prime

23. The number of items in a dozen is 12. What is the greatest common divisor of 12 and 18?

A) 3

B) 4

C) 6

D) 2

24. There are 365 days in a common year. Is 365 a prime number?

A) Yes

B) No, it is divisible by 5

C) No, it is divisible by 3

D) No, it is divisible by 7

25. The number of degrees in a circle (used in navigation) is 360. How many prime factors does 360 have?

A) 2

B) 3

C) 4

D) 5