Euclid's algorithm

1.What is Euclid's algorithm used for?

- Finding prime numbers
- **Finding the greatest common divisor (GCD) of two numbers**
- Calculating logarithms
- Solving quadratic equations

Ans: Finding the greatest common divisor (GCD) of two numbers

2.Euclid's algorithm is based on which mathematical concept?

- **Division**
- Addition
- Multiplication
- Subtraction

Ans: Division

3.Which of the following statements about Euclid's algorithm is true?

- It works only for prime numbers.
- **It can be used to find the GCD of any two positive integers.**
- It involves complex numbers.
- It can only find the GCD of small numbers.

Ans: It can be used to find the GCD of any two positive integers.

4.If the inputs to Euclid's algorithm are 24 and 60, what is the GCD?

- 4
- **12**
- 20
- 36

Ans: 12

5. Euclid's algorithm relies on the fact that the GCD of two numbers remains the same when:

- They are multiplied by a constant.
- **They are divided by each other and the remainder is considered.**
- They are added together.
- They are raised to a power.

Ans: They are divided by each other and the remainder is considered.

6.What is the base case for Euclid's algorithm?

- When both numbers are equal.
- **When one of the numbers is zero.**
- When one of the numbers is zero.
- When the numbers are prime.

Ans: When one of the numbers is zero.

7. If the inputs to Euclid's algorithm are 7 and 13, what is the GCD?

- 1
- **-1**
- 6
- 20

Ans: -1

8.In each iteration of Euclid's algorithm, which number is replaced with the remainder?

- The larger number.
- **The smaller number.**
- The sum of the numbers.
- The difference of the numbers.

Ans: The smaller number.

9. Euclid's algorithm is an example of a:

- Sorting algorithm.
- **Recursive algorithm.**
- Matrix algorithm.
- Iterative algorithm.

Ans: Recursive algorithm.

10. What is the time complexity of Euclid's algorithm?

- O(log n)
- **O(log(min(a, b)))**
- O(n)
- O(a + b)

Ans: O(log(min(a, b)))