Steps and decisions in algorithms

6 questions | 11 marks

Equivalent correct methods earn the corresponding marks.

1. Start at 5. Multiply by 3, then add 2. [2 marks]

5 × 3 = 15.

15 + 2 = 17.

Answer: 17

2. Start at 5. Add 2, then multiply by 3. [2 marks]

5 + 2 = 7.

7 × 3 = 21.

Answer: 21

3. Start at 4. Repeat add 3 exactly three times. [1 mark]

4 → 7 → 10 → 13.

Answer: 13

4. If the input is greater than 20, subtract 5; otherwise add 5. Find the outputs for 25 and 20. [2 marks]

25 is greater than 20, so 25 − 5 = 20.

20 is not greater than 20, so 20 + 5 = 25.

Answer: 20 and 25

5. Start at 6. Add 2 until the result is greater than 10, then stop. Write every number reached. [2 marks]

10 equals 10; it is not greater.

The first number greater than 10 is 12.

Answer: 6, 8, 10, 12

6. An instruction says: start at 1 and keep adding 1. What is needed to make it finish? [2 marks]

Without a stopping condition the additions continue.

Any clear reachable stopping condition is acceptable.

Answer: A stopping instruction, such as stop when you reach 10.