

Solutions

Each answer shows the steps, then the **result**.

2.1

- $1 + 2 + 3 + 4 + 5 = 15$

2.2

- 7; the second 7 is not greater than 7, so **max** does not change

2.3

- start with $\text{min} \leftarrow \text{values}[1]$
- change the test to $v < \text{min}$

2.4

```
count ← 0
FOR EACH v IN values
{
    IF(v > 10)
    {
        count ← count + 1
    }
}
```

- $\text{count} \leftarrow 0$ before the loop
- loop over every element with the test $v > 10$
- $\text{count} \leftarrow \text{count} + 1$ inside the IF

3.1 A

- the total adds every element; dividing by $\text{LENGTH}(\text{nums})$ gives the average

3.2 D

- Algorithm 1 gives $2x + 3$; Algorithm 2 gives $2x + 6$; they always differ by 3

3.3 C

- each pass **overwrites** **allPass**, so only the **last** score decides it; [40, 70, 80] displays **true** although 40 fails

3.4

(a)

```
best ← times[1]
FOR EACH t IN times
{
    IF(t < best)
    {
        best ← t
    }
}
```

- start from $\text{times}[1]$ (not 0)
- loop with the test $t < \text{best}$
- $\text{best} \leftarrow t$ inside the IF

(b)

```
near ← 0
FOR EACH t IN times
{
    IF(t ≤ best + 2)
    {
        near ← near + 1
    }
}
```

- $\text{near} \leftarrow 0$ before the loop
- test $t \leq \text{best} + 2$
- $\text{near} \leftarrow \text{near} + 1$ inside the IF

(c)

- **best** is **11.1**
- limit $11.1 + 2 = 13.1$: 12.4, 11.1 and 12.9 are within it, so **near** is **3**