

Solutions

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

2.1

- the inner body runs 2 times for each of 3 outer passes: $3 \times 2 = 6$

2.2

- $25 > 20$ is already true at the first test: **0** times

2.3

- a goes 4, 8, 16
- displayed: **16**

2.4 one correct answer:

```
n ← 5
REPEAT 5 TIMES
{
    DISPLAY(n)
    n ← n - 1
}
```

- a loop that runs 5 times or stops after 1
- the value displayed then decreased by 1 each pass, starting at 5

3.1 B

- sum** adds 1, 2, 3, 4; the test $5 > 4$ stops the loop: $1 + 2 + 3 + 4 = 10$

3.2 B

- n goes 0, 2, 4, 6, 8, 10, ... and is never 9

3.3 B

- x goes 25, 12.5, 6.25; then $6.25 < 10$ is true: 3 passes

3.4

(a)

- REPEAT UNTIL(balance $\geq$ 150)
- balance $\leftarrow$ balance * 1.1
- years $\leftarrow$ years + 1

(b)

- balance after each year: 110, 121, 133.1, 146.41, 161.051
- $161.051 \geq 150$ ends the loop: **5**

(c)

- 0**
- $200 \geq 150$ is true at the **first** test, so the body never runs