Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

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

2.1

`5 10`

`x = x * 2` makes the local name `x` point at a new value; the caller's `a` still points at 5

2.2

it prints `5`

`add` has no `return`, so it returns `None`

`None + 1` raises `TypeError`

2.3

`"Hello, Ada!"`: the default is used

`"Hi, Bo!"`

`"Yo, Cy!"`: keyword arguments match by name

2.4

`UnboundLocalError`

the assignment makes `count` local to `bump`, so `count + 1` reads the local before it has a value

3.1

(a) `def bmi(mass_kg, height_m): return round(mass_kg / height_m ** 2, 1)`: the formula; `return` with `round(…, 1)`

(b) $70/1.75^2 = 22.857$: `22.9`

(c)

```
def category(b):
    if b < 18.5:
        return "under"
    elif b < 25:
        return "healthy"
    return "over"
```

the 18.5 test first; the 25 test; returns, not prints

(d) `"healthy"`

3.2

(a) `13`

(b) main program at the bottom, then `f` with `x = 4`, then `g` with `y = 4` on top

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(c) `g` returns `12` and its frame is removed; then `f` returns `13` and its frame is removed

3.3

(a) `p3` uses `1.02` instead of `1.20`: it gives `10.2`; it should be `12.0`

(b) `def with_vat(net, rate=0.20): return round(net * (1 + rate), 2)`: the formula with the rate; the default and the `return`

(c) `p1, p2, p3 = with_vat(8.00), with_vat(4.50), with_vat(10.00)`

(d) the rate is written once, so there is no copy to mistype; a change of rate is one edit; e.g. `assert with_vat(10.00) == 12.0`