

Coding with Python Review

Answer key Final answers only. Try first, then check.

CORE SKILLS

K1 a) 2 7
 b) 14
 c) 8 8

K2 a) 5 and 3
 b) 3.0 and 32
 c) 4.0 and 0.0625

K3 a) "123", a `str`
 b) 15, an `int`
 c) 444 (n is the `str` "4")

K4 a) 0, 2, 4, 6 (one per line)
 b) 3, 7, 11 (one per line)
 c) 30

K5 a) hot
 b) mild
 c) cold

REAL WORLD

A1 a) Reaches 4.8 m: the ladder reaches 4.8 m up the wall.
 b) `base = ladder / 4`; Reaches 5.81 m
 c) Python stops with a `ValueError`: $3^2 - 4^2 = -7$, and `math.sqrt` cannot take the square root of a negative number. A 3 m ladder cannot reach a wall 4 m away.

A2 a) 13 505: Maya can buy the bike after 13 weeks, with \$505 saved (\$25 left over).
 b) 0 500: the loop never runs, so she can buy the bike today.
 c) The program: Maya adds \$35 once a week, so after 12 weeks she has \$470, which is not enough. She needs 13 whole weeks.

A3 a) 45.0 and 96.0: bills of \$45.00 and \$96.00
 b) 1100 kWh (from $60 + 0.12(k - 600) = 120$)
 c) -5.0: the family would be paid \$5, which is impossible because energy used cannot be negative. e.g. `if kwh < 0:` then print a warning instead of a bill.

THINK IT THROUGH

T1 a) 4
 b) `total = 0` runs on every pass, so the running total restarts each time. Move `total = 0` above the `for` line.
 c) 4950 (it stops at 99); use `range(1, 101)` to get 5050

T2

a) e.g.

```
m = float(input("Mass (kg): "))
if m <= 1:
    C = 8
elif m <= 3:
    C = 12
else:
    C = 20
print(C)
```

b) \$12 and \$20

c) $m = 1$: the graph gives \$8, the student's program gives \$12

BOSS LEVEL

Boss

a) 467

b) 66

c) $N = 216$

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