Grade 8 Computing

Unit 4 · Functions: Building Blocks of Programs

WORKSHEET

Full marks 30

Name _____ Class _____ Roll no. ____ Date _____ Marks _____ / 30

1 Key words [4]

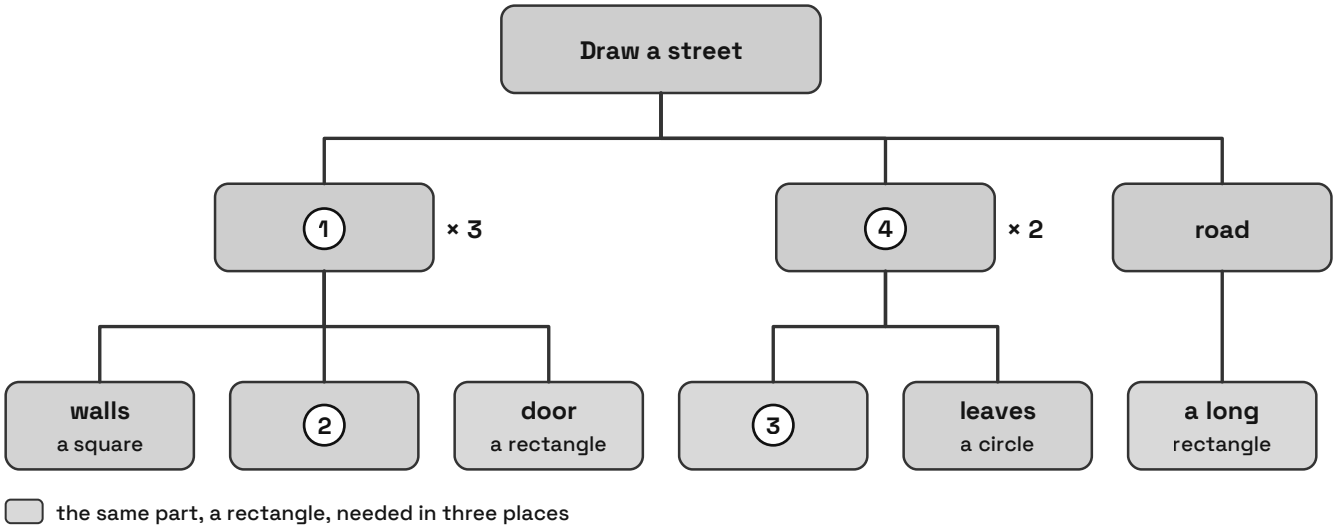
Fill in the blanks with words from the box. Two words in the box are not needed. Each blank carries 0.5 mark.

arguments	**call**	**decomposition**	**default**	**definition**	**docstring**	**function**	**module**
None	**parameters**						

Breaking a big job into smaller parts, and those into smaller parts, is _____. A named set of lines that does one job is a _____. `def` starts its _____, and a _____, such as `chorus()`, makes it run. In `def area(length, width):`, **length** and **width** are _____; in `area(5, 8)`, 5 and 8 are _____. A function with no `return` gives back _____. A string in triple quotes on the first line of a function's body is its _____.

2 Label the diagram [2]

The diagram shows how "draw a street" is broken into parts. Write the part that belongs in place of 1 to 4. Each carries 0.5 mark.



1. _____ 2. _____

3. _____ 4. _____

3 Multiple choice [5]

Choose the correct option for each of the following questions.

i. Which line starts the definition of a function? [1]

a. `function square(size):` **b.** `def square(size):`

c. `square(size)` **d.** `define square:`

ii. `def bill(cups, samosas):` is called as `bill(3)`. What happens? **[1]**

a. **samosas** is set to 0.

b. Python stops with a TypeError: one argument is missing.

c. **cups** is 0 and **samosas** is 3.

d. It runs with **samosas** set to `None`.

iii. A bug is found in a function that a program calls in 20 places. How many places must be fixed? **[1]**

a. one, the function

b. 20, every call

c. 21

d. none: the bug can't be fixed

iv. A program calls `linear_search(names, "Hari")` and gets 0. What does that mean? **[1]**

a. Hari is the first name in the list.

b. Hari isn't in the list.

c. The list is empty.

d. The search failed.

v. What does a docstring do? **[1]**

a. It makes a function run faster.

b. It is printed every time the function is called.

c. It documents the function: `help()` shows it.

d. It names the function's parameters.

4 What does it print? [3]

Write exactly what each program prints, in the box under it.

```
1  def double(n):
2      return n * 2
3
4  def show(n):
5      print(n * 3)
6
7  a = double(4) + 1
8  print(a)
9  b = show(2)
10 print(b)
```

```
OUTPUT
```

5 Trace the program [4]

Fill in the trace table: one row for each call, then what the program prints.

```
1  def total_cost(cups, samosas):
2      total = cups * 30 + samosas * 25
3      return total
4
5  bill = 0
6  bill = bill + total_cost(2, 1)
7  bill = bill + total_cost(1, 3)
8  print(bill)
```

Call on line	`cups`	`samosas`	`total` returned	`bill` after the line	Output
6					
7					
8					

6 Find and fix the bug [3]

Read the program, then answer.

This program should print the area of a rectangle plus 10, but it prints 40 and then stops with a TypeError.

```
1  def area(length, width):
2      print(length * width)
3
4  a = area(5, 8)
5  print(a + 10)
```

i. Why does it print 40?
ii. Why does line 5 stop with an error?
iii. Write line 2 correctly. What does the program print then?

7 Reading documentation [3]

Read the documentation, then answer.

Here is the documentation of a function in a module for drawing Nepal's flag (a made-up example): `draw_flag(height, x=0, y=0, outline=True)`. "Draws Nepal's flag, height units tall, with the bottom of its pole at (x, y). If outline is False, the blue border is left out. Returns the flag's width." Answer:

i. Which parameters must be given, and which are optional?
ii. Write a call that draws a flag 200 units tall at (−100, −50).
iii. Write a call that draws one 100 tall at (0, 0) without the border, and keeps its width in a variable.

8 Write a program [4]

Write the program in Python on the lines. Any program that gives the right result gets the marks.

> Write a function `highest(marks)` that returns the highest number in a list, using a "highest so far" variable, not Python's `max()`. Then call it to print the highest of `[52, 38, 71, 45]`.

9 Think [2]

Think, then answer.

> A shop's program prints a receipt line in seven places, each time with the same four lines of code but a different item and price. Explain how a function would make the program better. Give two reasons.

10 Activity: Look it up, then use it (not marked)

At a computer, find `dot` and `write` in Python's turtle documentation (docs.python.org) and fill in the table. Then draw a sun: a big yellow dot with Sun under it.

Function	What it does	Needs	Optional (default)
`t.dot()`			
`t.write()`			