

## Test Sheet 8

Use the test sheet to:

- Check your own progress
- Practice giving and receiving feedback by working with our course members.

1. Three lengths can form a triangle if none of them is greater than the sum of the other two. Consider a Python file contain two function definitions:

```
def isTriangle(a, b, c):
    if a < b + c and b < a + c \
        and c < a + b :
        return True
    else:
        return False

def isShape(ss):
    if len(ss) == 3:
        print("Three sides", end="")
        if isTriangle(ss[0],ss[1],ss[2]):
            print(" making a triangle")
        else:
            print(", but NOT a triangle")
    else:
        print("Has", len(ss), " sides")
```

Answer the following questions:

| Question                                                                                                                                                                   | True or False? |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------|
| Nothing happens when this program is run.                                                                                                                                  |                |
| An error occurs if the order of the functions is swapped.                                                                                                                  |                |
| These functions are not using global variables.                                                                                                                            |                |
| Adding the following program line at the end of the file<br><code>isShape([4,5,10])</code><br>gives output "Three sides, but NOT a triangle".                              |                |
| Adding the following program line at the end of the file<br><code>print(isTriangle([3,4,5]))</code><br>will give an error as 'isTriangle' can only be called by 'isShape'. |                |

2. The following program works. Can you explain why? Is it acceptably clear?

```
def area():
    return side * side

side = 10
print("Square of side", side, "has area", area())
```

3. Discuss the following issues of teaching functions with another course delegate:
  - Is it necessary to teach functions at GCSE?
  - Should functions with and without parameters be introduced at the same time (or in close succession) or can parameters be postponed?
  - Is it necessary to explain global variables or can they be ignored? How likely it is that pupils will come across this feature anyway?
  - Is turtle graphics a good way to introduce i) Python programming ii) functions?