Test Sheet 3: If and Logic

Use the test sheet to:

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

1. What are the values of the following Python expressions, given the values of the variables x and y:

Boolean Expression	**Given Values of Variables**		**Value**
	x =	**y =**	
`x > 10`	9	11	True / False
`x < 10 or y > 3`	6	2	True / False
`x <= 7 and y > 5`	7	7	True / False
`x == y`	2	3	True / False
`x == y or x + 3 < y`	2	3	True / False
`not (x + 4 > y - 5)`	3	6	True / False

2. Complete a truth table to discover if the following Python condition is always true, assuming A and B are Boolean variables:

```
(A and B) or not B == (A or not B)
```

A	B	A and B	or	not B	==	A or not B

3. Students have taken two tests with marks 'mark1' and 'mark2'. An exam board sets the following rules for achieving grades A, B, C or D, with other students ungraded:
   a. The student gets an A grade if both marks are at least 90
   b. To get a B, one mark must be at least 80 and the average greater than 70.
   c. The pass mark for both tests is 60. To get a C grade, both tests must be passed.
   d. A D grade is awarded provided one test is passed and the average reaches 50.

   Are the rules clear? Write a program to input the marks and print the grade.

4. Use one of de-Morgan's laws to decide which 2 of these 3 Python conditions are the same, assuming x and y are integers:

```
a. not ((x > 3) and y <= 2)
b. y > 2 or x <= 3
c. x < 3 or not(y <= 2)
```