

Solutions 1

Jumping Rivers

Question 1

This question contains some maths equations, in particular two summations. If you're unsure about summations either ask your presenter or skip this question. We're not bothered about your maths theory skills, just your python skills!

```
total = 0
for i in range(1,6):
    total = total + i
total
```

The for loop above calculates

$$\sum_{i=1}^5 i = 1 + 2 + 3 + 4 + 5$$

1. What is the final value of `total` in the above piece of code?

```
print(total)
```

```
## 15
```

2. Change the above loop to calculate the following summations:

$$(i) \sum_{i=1}^{20} (i + 1)$$

```
total = 0
for i in range(1,21):
    total = total + (i + 1)
total
```

```
## 230
```

$$(ii) \sum_{j=-5}^{15} j$$

```
total = 0
for j in range(-5,16):
    total = total + j
total
```

```
## 105
```

3. Rewrite the two loops using the `sum()` function from the **numpy** library and the `range()` function. For example, the for loop in the first example can be written as `np.sum(range(1,6))`

```
import numpy as np
```

```
np.sum(range(2,22))
```

```
## 230
```

```
np.sum(range(-5,16))
```

```
## 105
```