LOOPS

$x \in \mathbf{N}$

$$\mathbf{N} = \{1, 2, 3, 4 \ldots n\}$$


1 one
2 two
3 three
4 four
5 five
6 six
7 seven
8 eight
9 nine
10 ten

$$S = \{ x \in \mathbf{N} \mid x > 1 \}$$

$$\sum_{i=1}^{5} i$$

The answer is 15.

$$\sum_{i=3}^{10} 2i$$

The answer is 104.

$$\sum_{i=1}^{3} i^2$$

The answer is 14.

$$x_1 + x_2 + x_3 + x_4 + x_5 = \sum_{i=1}^{5} x_i$$

$$2a_3 + 2a_4 + 2a_5 + 2a_6 = \sum_{j=3}^{6} 2a_j$$

$$1p_2 + 2p_3 + 3p_4 + 4p_5 = \sum_{j=1}^{4} jp_{j+1}$$

$$w_6^2 + w_7^2 + w_8^2 + w_9^2 = \sum_{k=6}^{9} w_k^2$$

$$
\begin{aligned}
\sum_{i=0}^{n-1} (b+id)\, a^i &= b \sum_{i=0}^{n-1} a^i + d \sum_{i=0}^{n-1} i a^i \\
&= b \left(\frac{1-a^n}{1-a} \right) + d \left(\frac{a - n a^n + (n-1) a^{n+1}}{(1-a)^2} \right) \\
&= \frac{b(1-a^n) - (n-1) d a^n}{1-a} + \frac{da(1-a^{n-1})}{(1-a)^2}
\end{aligned}
$$

```
for(int i = 0; i < 10; i++){
   print(i);
}
```

```
Console: 0 1 2 3 4 5 6 7 8 9
```

```
void setup(){

  size(400, 400);

  rect(width/2, height/2, 10, 10);

}
```

—————————————————

Console:

```
void setup(){

  size(400, 400);
  background(255, 0, 0);
  noStroke();
  fill(255);

  for(int i = 0; i < 100; i++){
    for(int j = 0; j < 100; j ++){
      rect(i * 2.5 + width/4, j * 2.5 + height/4, 2,
2);
    }
  }
}
```

—————————————————

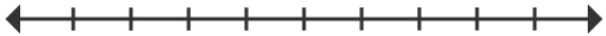
Console:

```
for(int i = 0; i < 5; i++){
    for(int j = 0; j < 5; j ++){
      print (i, j);
  }
}
```

Console:

```
0i   0j  / 0i   1j  / 0i   2j  /
0i   3j  / 0i   4j  / 1i   0j  /
1i   1j  / 1i   2j  / 1i   3j  /
1i   4j  / 2i   0j  / 2i   1j  /
2i   2j  / 2i   3j  / 2i   4j  /
3i   0j  / 3i   1j  / 3i   2j  /
3i   3j  / 3i   4j  / 4i   0j  /
4i   1j  / 4i   2j  / 4i   3j  /
4i   4j  /
```

```
for(int i = 0; i < 10; i++){ }
```




STAATLICHES BAUHAUS
AUSSTELLUNG
1923
JULI
SEPT
WEIMAR

Homework: create a grid of rectangles. Add some conditional logic to determine the fill value (color). E.g. set *i* to determine x and y coordinates of rectangles, and if statement to determine color; if(i is less than 5){fill(0,0,0);}.