Take the sum of the numbers 1-10

$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$

$= 55$

$$\sum$$

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$$\sum_{n=1}^{10}$$

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1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

= 55

$$\sum_{i=1}^{10} i$$

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$$\sum_{i=1}^{10} i$$

2 + 4 + 6 + 8 + 10 + …20

2(1) + 2(2) + 2(3) + 2(4) + 2(5) + … 2(10)

$$\sum$$

$$2^0 + 2^1 + 2^2 + 2^3 + 2^4 + 2^5$$

$$\sum$$

$$2^0 + 2^1 + 2^2 + 2^3 + 2^4 + 2^5 + \ldots . 2^n$$

$$\sum$$

$$\sum_{i=1}^{6} \frac{1}{2} i(i+1)$$

$$\frac{1}{2} \sum_{i=1}^{6} i(i+1)$$

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10
= 55

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1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10
= 55

$$\sum_{i=1}^{10} i$$

```
for(i in 1:10){

"do something"
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10
= 55

$$\sum_{i=1}^{10} i$$

```
for(i in 1:10){

"take the sum of …"
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10
= 55

$$\sum_{i=1}^{10} i$$

```
for(i in 1:10){

"take the sum of i"
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

= 55

$$\sum_{i=1}^{10} i$$

```
for(i in 1:10){

" take the sum of i"
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

= 55

$$\sum_{i=1}^{10} i$$

```
sum = 0

for(i in 1:10){
sum = sum + i
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

= 55

$$\sum_{i=1}^{10} i$$

```
sum = 0

for(i in 1:10){
sum = sum + i
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

= 55

$$\sum_{i=1}^{10} i$$

```
sum = 1

for(i in 1:10){
sum = sum + i
}
```

Take the sum of the numbers 1-10

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10

= 55

$$\sum_{i=1}^{10} i$$

```
sum = 3

for(i in 1:10){
sum = sum + i
}
```

Take the sum of the numbers 1-10

$1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10$

$= 55$

$$\sum_{i=1}^{10} i$$

```
sum = 45

for(i in 1:10){
sum = sum + i
}
```

Implement each of these using a for loop in R.

$$\sum_{i=1}^{10} 2i$$

$$\sum_{i=2}^{5} i^2$$

Similar to the sum, we can use $\prod$ To represent the ***product*** of numbers. Calculate the following using a loop in R.

HINT: you can adapt the loop from our first example.

$$\prod_{i=1}^{10} i$$

You completed several class assignments over the semester. Your grade in the class is the mean of your assignment grades. Use a for loop to compute your mean grade manually (don't use mean()). Then represent this formula in mathematical notation.

scores = 55, 67, 80, 77

Math

R

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scores = 55, 67, 80, 77

Math

R

```
s <- c(55, 67, 80, 77)
```

S[1] S[2] S[3] S[4] …S[n]

```
sum = 0

for(i in 1:length(s)
sum = sum + s[i]
}
grade <- sum / length(s)
```

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scores = 55, 67, 80, 77

Math

R

```
s <- c(55, 67, 80, 77)
```

S[1] S[2] S[3] S[4] …S[n]

```
sum = 55

for(i in 1:length(s)
sum = sum + s[i]
}
grade <- sum / length(s)
```

You completed several class assignments over the semester. Your grade in the class is the mean of your assignment grades. Use a for loop to compute your mean grade manually (don't use mean()). Then represent this formula in mathematical notation.

scores = 55, 67, 80, 77

Math

R

```
s <- c(55, 67, 80, 77)
```

S[1] S[2] S[3] S[4] …S[n]

```
sum = 279

for(i in 1:length(s)
sum = sum + s[i]
}
grade <- sum / length(s)
```

You completed several class assignments over the semester. Your grade in the class is the mean of your assignment grades. Use a for loop to compute your mean grade manually (don't use mean()). Then represent this formula in mathematical notation.

scores = 55, 67, 80, 77

Math

$S = \{55, 67, 80, 77\}$

s_1 s_2 s_3 s_4 $\ldots s_n$

$$\sum$$

R

```
s <- c(55, 67, 80, 77)
```

S[1] S[2] S[3] S[4] …S[n]

```
sum = 0

for(i in 1:length(s)
sum = sum + s[i]
}
grade <- sum / length(s)
```

Double summation

$$\sum_{i=1}^{3}\sum_{j=1}^{4}(i+j)$$

Double summation

$$\sum_{i=1}^{3}\left(\sum_{j=1}^{4}(i+j)\right)$$

$$\sum_{i=1}^{3}[\,(i+1)+(i+2)+(i+3)+(i+4)]$$

[(1+ 1) + (1 + 2) + (1 + 3) + (1 + 4)] + [(2+ 1) + (2 + 2) + (2 + 3) + (2 + 4)] + [(3+ 1) + (3 + 2) + (3 + 3) + (3 + 4)]

OR

$$\sum_{i=1}^{3}[\,(i+1)+(i+2)+(i+3)+(i+4)] = [\,4i+10]$$

$$\sum_{i=1}^{3} 4i+10$$