# Descriptive Statistics With R Software

## Calculations with R Software

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## Calculations with Data Vectors

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# R as a calculator

**How R behaves with data vectors?**

**What happens when a scalar is added/subtracted/multiplied/divided in a data vector?**

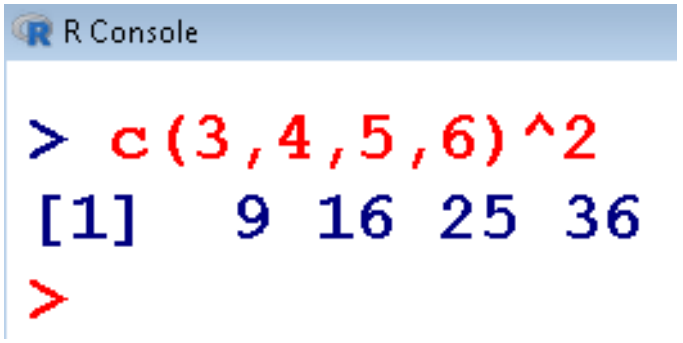
**What happens when a data vector is added/subtracted/multiplied/ divided in a data vector?**

# R as a calculator

## Power operators with vector versus scalar

```
> c(3,4,5,6)^2      # command: application to a
                      vector
[1] 9 16 25 36       # output
```

$3^2,\ 4^2,\ 5^2,\ 6^2$

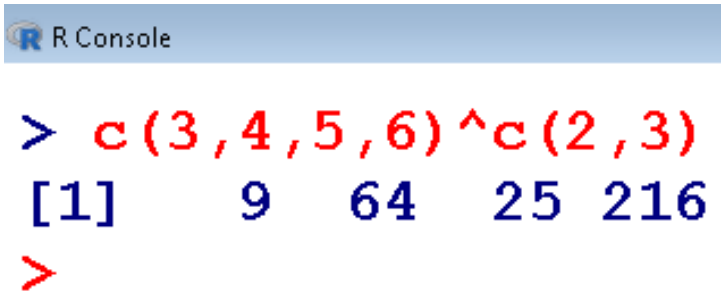


# R as a calculator

## Power operators with vector versus vector

```
> c(3,4,5,6)^c(2,3)   # !!ATTENTION! Observe the
                        operation
[1]  9 64 25 216       # output
```

$3^2,\ 4^3,\ 5^2,\ 6^3$

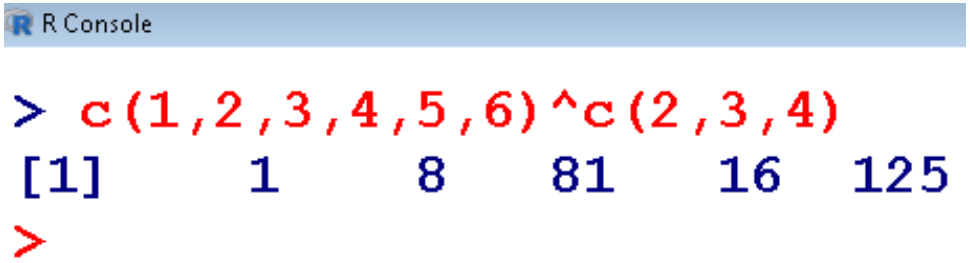


# R as a calculator

## Power operators with vector versus vector

```
> c(1,2,3,4,5,6)^c(2,3,4) # command: application
                          to a vector with vector
[1]  1 8 81 16 125 1296   # output
```

$1^2,\ 2^3,\ 3^4,\ 4^2,\ 5^3,\ 6^4$



# R as a calculator

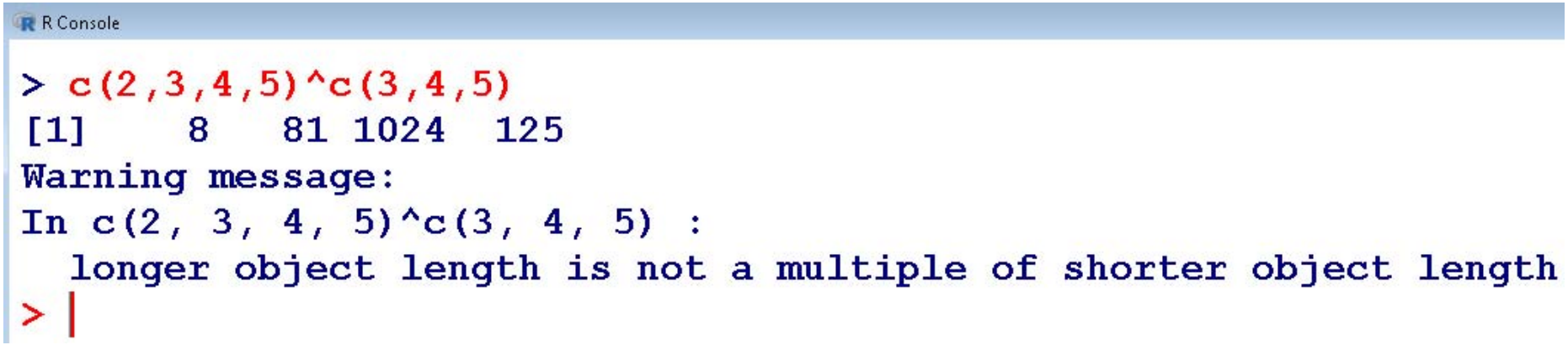
## Power operators with vector versus vector

```
> c(2,3,4,5)^c(3,4,5)      #error message
[1] 8 81 1024 125          # output
Warning message:
In c(2,3,4,5)^c(3,4,5) :longer object length is
not a multiple of shorter object length
```

$2^3,\ 3^4,\ 4^5,\ 5^3$

# R as a calculator

## Power operators with vector versus vector

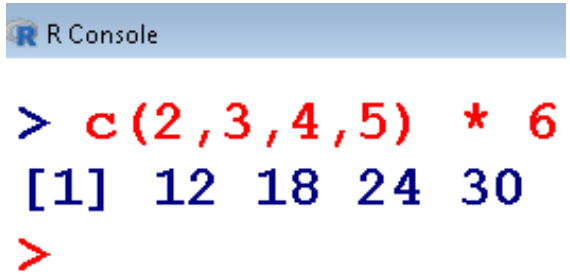


# R as a calculator

## Multiplication with vector versus scalar

```
> c(2,3,4,5) * 6
[1] 12 18 24 30
```

$$2\times 6,\quad 3\times 6,\quad 4\times 6,\quad 5\times 6$$

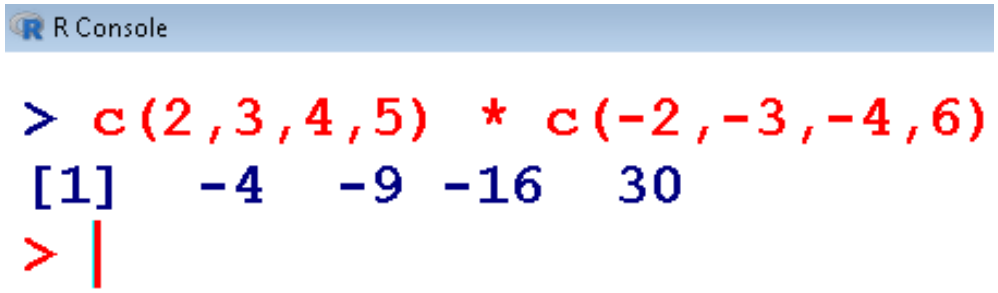


# R as a calculator

## Multiplication with vector versus vector

```
> c(2,3,4,5) * c(-2,-3,-4,6)
[1] -4  -9 -16  30
```

$$2\times(-2),\quad 3\times(-3),\quad 4\times(-4),\quad 5\times 6$$

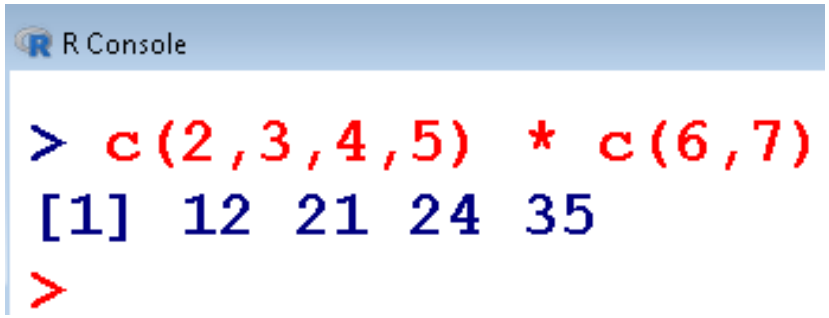


# R as a calculator

## Multiplication with vector versus vector

```
> c(2,3,4,5) * c(6,7)
[1] 12 21 24 35
```

$$2\times 6,\quad 3\times 7,\quad 4\times 6,\quad 5\times 7$$



# R as a calculator

## Multiplication with vector versus vector

```
> c(2,3,4,5) * c(6,7,8) # error message
[1] 12 21 32 30
 Warning message:
In c(2,3,4,5) * c(6,7,8) :longer object length
is not a multiple of shorter object length
```

$$2\times 6,\quad 3\times 7,\quad 4\times 8,\quad 5\times 6$$

# R as a calculator

## Multiplication with vector versus vector

R Console

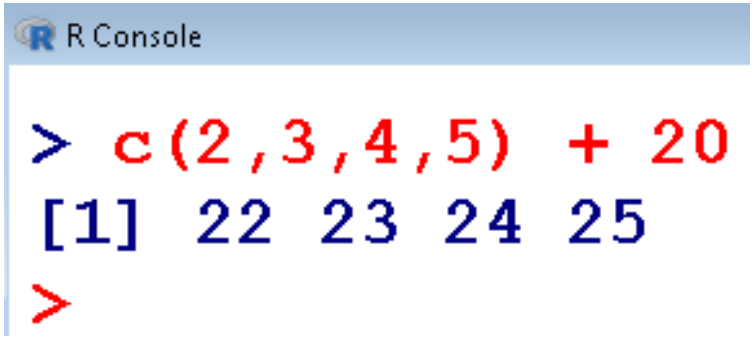
```
> c(2,3,4,5) * c(6,7,8)
[1] 12 21 32 30
Warning message:
In c(2, 3, 4, 5) * c(6, 7, 8) :
  longer object length is not a multiple of shorter object length
```

# R as a calculator

## Addition with vector versus scalar

```
> c(2,3,4,5) + 20
[1] 22 23 24 25
```

$$2+20,\quad 3+20,\quad 4+20,\quad 5+20$$



# R as a calculator

## Addition with vector versus vector

```
> c(2,3,4,5) + c(6,7,8) # error message
[1] 8 10 12 11
Warning message:
In c(2, 3, 4, 5) + c(6, 7, 8) :
  longer object length is not a multiple of
shorter object length
```

$$2+6,\quad 3+7,\quad 4+8,\quad 5+6$$

# R as a calculator

## Addition with vector versus vector

R Console

```
> c(2,3,4,5) + c(6,7,8)
[1]  8 10 12 11
Warning message:
In c(2, 3, 4, 5) + c(6, 7, 8) :
  longer object length is not a multiple of shorter object length
```