

ICA 1.1 Console calculations

Task - Arithmetic

1. Consider the patient weights (in pounds) below.
2. Converting pounds to kilograms is given by $\text{weight}_{\text{kg}} = \text{weight}_{\text{lbs}} \times 0.454$. Supplement the code below to convert the patient weights to kg.
3. There are 16 ounces in one pound. What are the patient weights in ounces?
4. Consider several freezer temperature readings below. What are their values in Kelvins?

```
# patient weights in lbs:  
c(264, 356, 155, 280, 175)
```

```
[1] 264 356 155 280 175
```

```
# freezer temps in deg. C:  
c(-23.22, -22.90, -23.19, -22.87, -22.94, -23.19)
```

```
[1] -23.22 -22.90 -23.19 -22.87 -22.94 -23.19
```

Solution - Arithmetic

```
# 2  
c(264, 356, 155, 280, 175) * 0.454  
# 3  
c(264, 356, 155, 280, 175) * 16  
# 4  
c(-23.22, -22.90, -23.19, -22.87, -22.94, -23.19) + 273.15
```

Task - Use mathematical functions

Consider the age values below. What are the mean, standard deviation, and median of these patients' ages?

```
# patient age values:  
c(27, 40, 31, 53, 25)
```

```
[1] 27 40 31 53 25
```

```
# your code here  
# suggestion: copy-paste the line of code above to use the values more than once,  
# rather than having to type them
```

Solution - Use mathematical functions

```
mean(c(27, 40, 31, 53, 25))  
sd(c(27, 40, 31, 53, 25))
```

```
median(c(27, 40, 31, 53, 25))
```

The mean is 35.2 and the SD is 11.4978259.

Task - Wrap functions

You will frequently need to “wrap” an existing function call with another function. For example, after calculating a mean, you may want to round the result.

1. Our results initially have too many digits. A quick google search tells you that the function you want for handling significant figures is `signif()`. Run `?signif` in the chunk below to open the help article for this function.
2. Examining the Usage and Arguments sections, what arguments does `signif()` accept?
3. Consider the example using `round()`. Without running the code, how many decimal places do you expect to see?
4. Now, add code below to round the mean and SD values to 2 significant digits.

```
# patient age values:  
c(27, 40, 31, 53, 25)
```

```
[1] 27 40 31 53 25
```

```
# an example of a c() call wrapped into a round() function call:  
round(mean(c(1, 99, 100)), 4)
```

```
[1] 66.6667
```

```
# your code here
```

💡 Solution - Wrap functions

```
?signif  
signif(mean(c(27, 40, 31, 53, 25)), 2)  
signif(sd(c(27, 40, 31, 53, 25)), digits=2)
```

`signif()` accepts two arguments, `x` and `digits`. Notice that we specify `digits` in the last function call above.