

# Quiz #7: Solutions

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Create an R-notebook which prints out the answers to the following problems. Knit the Rmd file into a pdf. Upload the pdf of your solutions onto Canvas. All of your work and calculations **must** be done in R.

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## Arithmetic (1 point each)

### Problem 1.

Divide 385 by 11.

```
385/11  
## [1] 35
```

### Problem 2.

Find the square root of  $2\pi$ .

```
sqrt(2*pi)  
## [1] 2.506628
```

### Problem 3.

Calculate the square root of  $e$ .

```
exp(1/2)  
## [1] 1.648721
```

### Problem 4.

Find the third root of 27.

```
(27)^(1/3)  
## [1] 3
```

### Problem 5.

Calculate the natural logarithm of 10.

```
log(10)
## [1] 2.302585
```

## Variables and vectors

### Problem 6. (2 points)

Assign the value 7 to variable **a** and the value 4 to variable **b**; print out their product

```
a=7
b=4
a*b
## [1] 28
```

### Problem 7. (3 points)

Set the vector **v** to be the numbers between -1 and 4 (inclusive); set the vector **w** to be the first 6 natural numbers, i.e., integers strictly greater than zero; what do you get when you multiply **v** by **w**?

```
v=-1:4
w=1:6
v*w
## [1] -1 0 3 8 15 24
```

## Loops

### Problem 8. (5 points)

Write and execute a chunk of code which calculates and prints out the sum of squares of the first  $n$  natural numbers for  $n = 1, 2, \dots, 25$ .

**Be extra careful: The number of terms in the sum is varying from 1 to 25; you need to produce code which outputs 25 numbers.**

```
for(i in 1:25){
  print(sum((1:i)^2))
}
## [1] 1
## [1] 5
## [1] 14
## [1] 30
## [1] 55
## [1] 91
## [1] 140
## [1] 204
```

```
## [1] 285
## [1] 385
## [1] 506
## [1] 650
## [1] 819
## [1] 1015
## [1] 1240
## [1] 1496
## [1] 1785
## [1] 2109
## [1] 2470
## [1] 2870
## [1] 3311
## [1] 3795
## [1] 4324
## [1] 4900
## [1] 5525
```