

Question 1: What other function is listed in the help file for sum under the 'See Also' section?

colSums

Question 2: Which of the following commands work and which produce errors? (type works/error). (See if you can also understand what each is doing.)

```
> v*2  
[1] 2 6 12
```

Works

```
> v4+3  
Error in v4 + 3 : non-numeric argument to binary operator
```

```
> c(v2,v4)  
[1] "1"      "3"      "6"      "7"      "9"      "one"  
[7] "three" "six"    "seven" "nine"
```

Works

```
> prod(v2)  
[1] 1134
```

Works

Question 3: See if you can come up with a formula to calculate the mean of the exam1 scores. What is the mean?

```
> sum(exam1)/5  
[1] 77
```

or:

```
> mean(exam1)  
[1] 77
```

Question 4: Try and come up with a formula for the difference in means between exam2 and exam1. What is the difference in these means?

```
> exam2 = c(82,96,60,55,72)  
> diff_means = sum(exam2)/5 - sum(exam1)/5  
> diff_means  
[1] -4
```

Question 5: Who has a better grade, Maria or Fred?

Maria

Question 6: Suppose you wanted to print out only the grade for John. Type out the command you would use (with no spaces).

There are many ways to do this... here are some:

```
> results[1,5]  
[1] A  
Levels: D C B A
```

or

```
> results2[1,2]  
[1] A  
Levels: D C B A
```

or

```
> results$grade[1]  
[1] A  
Levels: D C B A
```

or

```
> results2$results.grade[1]  
[1] A  
Levels: D C B A
```