

Section 2 R Activity

How should we think about randomness?

```
set.seed(123)
num_vec = 1:5
num_vec[c(5,3,1,2,4)]
```

```
[1] 5 3 1 2 4
```

```
num_vec[c(1,3,4,2,5)]
```

```
[1] 1 3 4 2 5
```

On your own computer, try to make a different order than the ones on the screen.

How many possible ordering are there are 5 numbers?

```
factorial(5)
```

```
[1] 120
```

What are we doing here?

SAMPLING!

```
sample(1:5, 5)
```

```
[1] 3 2 5 4 1
```

Section 101

```
sections = read.csv("sections.csv")
section101 = subset(sections, section == 101)
section102 = subset(sections, section == 102)
```

```
head(section101)
```

	first	section	
1	Eric	101	
2	Andrew	101	
3	Sarah	101	
4	Erika	101	
5	Charlie	101	
6	Alex	101	

Let's make some random groups

How many students do we have

```
nrow(section101)
```

```
[1] 27
```

Let's make 9 groups

```
group = 1:9
section101$group = sample(group, nrow(section101), replace = TRUE)
section101[order(section101$group),]
```

	first	section	group
17	Carl	101	1
7	Marlyn	101	3
11	Iesha	101	3
15	D'Angelo	101	3
3	Sarah	101	4
16	Roland	101	4
2	Andrew	101	5

6	Alex	101	5
19	Zoe	101	5
24	Alondra	101	5
26	Vignesh	101	5
1	Eric	101	6
4	Erika	101	6
27	Billy	101	6
13	Luz Tlahui	101	7
18	Vishwaa	101	7
20	Simonel	101	7
23	Mark	101	7
25	Rafael	101	7
12	Yuning	101	8
5	Charlie	101	9
8	Sara	101	9
9	Isabelle	101	9
10	Sammy	101	9
14	Emely	101	9
21	Ryusei	101	9
22	Iman	101	9

We have a problem when we do this. Why?

An alternative

```
group2 = c(rep(1:9, each = 3))
section101$group = sample(group2,
                           nrow(section101),
                           replace = FALSE)
section101[order(section101$group),]
```

	first	section	group
2	Andrew	101	1
8	Sara	101	1
26	Vignesh	101	1
3	Sarah	101	2
9	Isabelle	101	2
15	D'Angelo	101	2
4	Erika	101	3
11	Iesha	101	3
21	Ryusei	101	3

5	Charlie	101	4
13	Luz Tlahui	101	4
17	Carl	101	4
6	Alex	101	5
10	Sammy	101	5
19	Zoe	101	5
7	Marlyn	101	6
20	Simonel	101	6
24	Alondra	101	6
12	Yuning	101	7
16	Roland	101	7
22	Iman	101	7
14	Emely	101	8
18	Vishwaa	101	8
27	Billy	101	8
1	Eric	101	9
23	Mark	101	9
25	Rafael	101	9

Section 102

```
head(section102)
```

	first	section
28	Joshua	102
29	Ron	102
30	Sean	102
31	Adena	102
32	Sandra	102
33	Jonathan	102

Let's make some random groups

How many students do we have?

```
nrow(section102)
```

```
[1] 27
```

Let's make 9 groups

```
group = 1:9
section102$group = sample(group, nrow(section101),
                           replace = TRUE)
section102[order(section102$group),]
```

	first	section	group
53	Parth	102	1
49	Patrick	102	2
50	Christopher	102	2
30	Sean	102	3
37	Andrew	102	3
40	William	102	3
42	Amish	102	3
48	Wenjing	102	3
32	Sandra	102	4
52	Reva	102	4
28	Joshua	102	5
45	Mel	102	5
46	Mackay	102	5
29	Ron	102	6
33	Jonathan	102	6
44	Andrea	102	6
51	William	102	6
54	Krishn	102	6
36	Charlotte	102	7
41	Haley	102	7
43	Emma	102	7
38	Matthew	102	8
47	Tristan	102	8
31	Adena	102	9
34	Runru	102	9
35	Anna	102	9
39	Emily	102	9

We have a problem when we do this. Why?

An alternative

```
group2 = c(rep(1:9, each = 3))
section102$group = sample(group2, nrow(section101), replace = FALSE)
section102[order(section102$group),]
```

	first	section	group
28	Joshua	102	1
51	William	102	1
52	Reva	102	1
37	Andrew	102	2
43	Emma	102	2
49	Patrick	102	2
29	Ron	102	3
35	Anna	102	3
54	Krishn	102	3
34	Runru	102	4
42	Amish	102	4
46	Mackay	102	4
30	Sean	102	5
32	Sandra	102	5
53	Parth	102	5
33	Jonathan	102	6
44	Andrea	102	6
47	Tristan	102	6
31	Adena	102	7
40	William	102	7
41	Haley	102	7
36	Charlotte	102	8
39	Emily	102	8
50	Christopher	102	8
38	Matthew	102	9
45	Mel	102	9
48	Wenjing	102	9