

## Homework 5.2

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Exercise 6.11 (a)

$\bar{x} \pm 1.645 * \sigma / \sqrt{n}$  95% interval.

(b)

```
30+1.645*10/sqrt(100)
```

```
## [1] 31.645
```

```
30-1.645*10/sqrt(100)
```

```
## [1] 28.355
```

(c) 95%

Exercise 6.13 (a) 95

(d) The width would decrease.

Exercise 6.14 (a)

```
16.3+1.282*6/sqrt(25)
```

```
## [1] 17.8384
```

```
16.3-1.282*6/sqrt(25)
```

```
## [1] 14.7616
```

```
16.3+1.645*6/sqrt(25)
```

```
## [1] 18.274
```

```
16.3-1.645*6/sqrt(25)
```

```
## [1] 14.326
```

```
16.3+2.576*6/sqrt(25)
```

```
## [1] 19.3912
```

```
16.3-2.576*6/sqrt(25)
```

```
## [1] 13.2088
```

(b) The widths would decrease.  
Exercise 6.15 (a)

```
110.5+1.960*3/sqrt(10)
```

```
## [1] 112.3594
```

```
110.5-1.960*3/sqrt(10)
```

```
## [1] 108.6406
```

We are 95% confident that the true mean lies in this range. Thus the specifications are met 95% of the time in this interval.

(b)

```
110.5-1.645*3/sqrt(10)
```

```
## [1] 108.9394
```

We are 95% confident that the value of the mean voltage will be above this value. Thus the specifications are met.

(c)

```
110.5+1.645*3/sqrt(10)
```

```
## [1] 112.0606
```

We can tell the specification is met at least 95% of the time since this confidence interval is below the given value.

Exercise 6.16 50%

```
1-.5^(10)
```

```
## [1] 0.9990234
```