

HW 10.27

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Problem 1

a.)

```
heights <- c(160, 165, 170, 185)
mean(heights)
```

```
[1] 170
```

```
sd(heights)
```

```
[1] 10.80123
```

b.)

```
mean(c(160, 160))
```

```
[1] 160
```

```
mean(c(160, 165))
```

```
[1] 162.5
```

```
mean(c(160, 170))
```

```
[1] 165
```

```
mean(c(160, 185))
```

```
[1] 172.5
```

```
mean(c(165, 165))
```

```
[1] 165
```

```
mean(c(165, 170))
```

```
[1] 167.5
```

```
mean(c(165, 185))
```

```
[1] 175
```

```
mean(c(170, 170))
```

```
[1] 170
```

```
mean(c(170, 185))
```

```
[1] 177.5
```

```
mean(c(185, 185))
```

```
[1] 185
```

c.)

```
sample_means <- c(160, 162.5, 165, 172.5, 165, 167.5, 175, 170, 177.5, 185)
mean(sample_means)
```

```
[1] 170
```

```
sd(sample_means)
```

```
[1] 7.637626
```

d.)

```
sd(heights) / sqrt(2)
```

```
[1] 7.637626
```

Problem 2

```
mu <- 90 # sample mean same as population mean
sigma <- 12
n <- 25

mu
```

```
[1] 90
```

```
sigma / sqrt(n)
```

```
[1] 2.4
```

Problem 3

```
mu <- 90 # sample mean same as population mean
sigma <- 12
n <- 100

mu
```

```
[1] 90
```

```
sigma / sqrt(n)
```

```
[1] 1.2
```