

Stat 235

Lab 2

WOOSAREE, Arun

Lab EL12

TA: Jessa Marley

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1 Normal Density

1.a

As σ increases, there is more variation in the tensile strength (makes sense, since $\sigma^2 = V(x)$). This is seen visually as the curve flattening as a result of the frequency count of the mode being lowered, and the frequency counts at the more extreme ends being increased. In terms of tensile strength, an increase in σ does not change the mean but it increases the variation in tensile strength. This does, however mean that less of the alloy produced will be around the mean tensile strength, and it would increase the frequency of alloys exceeding the tolerances.

1.b

the mean changes

As μ increases, the fraction below 275 **increases/decreases** and the fraction below 295 **increases/decreases**.

2 How changes in the Mean and Std. Deviation affect the fraction of alloy slabs that do not meet the TS Specifications.

	Parameters	Problem	Answer
a)	$\mu = 285$ and $\sigma = 5$	Fraction of unacceptable	0
	$\mu = 283$ and $\sigma = 5$	Fraction of unacceptable	0
b)	$\mu = 285$ and $\sigma = 6$	Fraction of unacceptable	0
c)	$\mu = 285$ and $\sigma = 5$	Within 1 std. deviation	0
		Within 2 std. deviations	0
d)	$\mu = 285$ and $\sigma = 5$	Strength exceeded by 95%	0
		Strength exceeded by 99%	0
e)	$\mu = 285$	σ so that 1% have $TS < 275$ or $TS > 295$	0

Table 1: My caption

3 Random Number Generator

3.a

3.b

k	Within k Std. Deviations of the mean $\mu = 285$	Frequency	Relative Frequency
1	(0,0)	0	0
2	(0,0)	0	0
3	(0,0)	0	0

Table 2: My caption

3.c

It's a normalized standard distribution.

3.d

Using the *Descriptive Statistics Tool*, we find that

$$mean = XX.XXXX$$

$$std. deviation = XX.XXXX$$

4 Changes in Manufacturing Process

4.a Summary Statistics

Using the *Descriptive Statistics Tool*, we find that

$$mean = XX.XXXX$$

$$std. deviation = XX.XXXX$$

This is consistent / inconsistent

4.b Histogram

4.c

4.d

5 Binomial Probabilities

5.a

5.b