The weights of newborn babies is normally distributed with 68% of the newborns weighing from 6.3 pounds to 6.9 pounds.

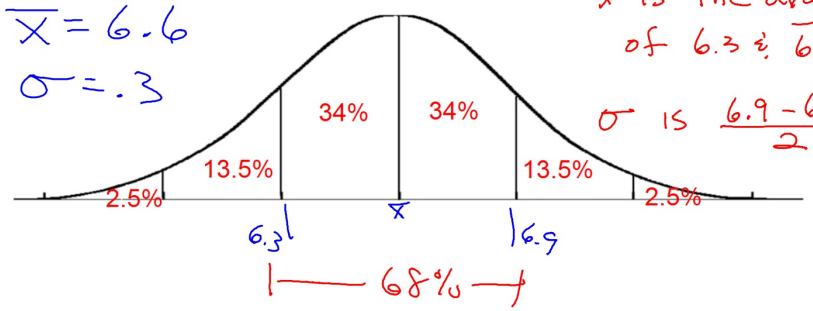
Find the mean weight and the standard deviation of these newborns.

$\bar{x} = 6.6$

$\sigma = .3$

$\bar{x}$ is the avg of 6.3 & 6.9

σ is $\frac{6.9 - 6.3}{2}$



The diameters of a sample of Ping-Pong balls shows that the diameter of a ball that is 3 standard deviations below the mean is 1.18 in and the diameter of a ball that is 2 standard deviations above the mean is 1.38 inches.

Find the mean and standard deviation of this sample.

Find σ first

$\frac{1.38 - 1.18}{5}$

$\sigma = 0.4$

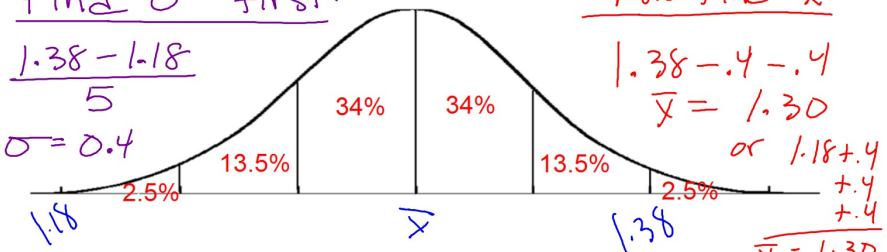
Now find $\bar{x}$

$1.38 - .4 - .4$

$\bar{x} = 1.30$

or $1.18 + .4 + .4 + .4$

$\bar{x} = 1.30$



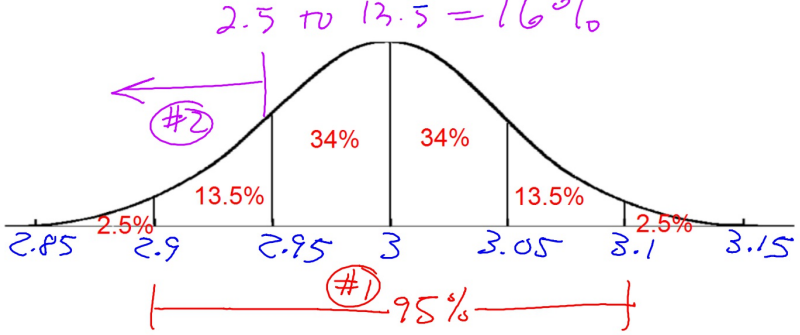
A company makes nails and sells them in boxes of 200 nails. The lengths of the nails are normally distributed with a mean of 3 inches and a standard deviation of 0.05 in.

1. What range of lengths contain 95% of the nails?

2.9 to 3.1

2. What % of the nails are shorter than 2.95 in long?

2.5 to 13.5 = 16%



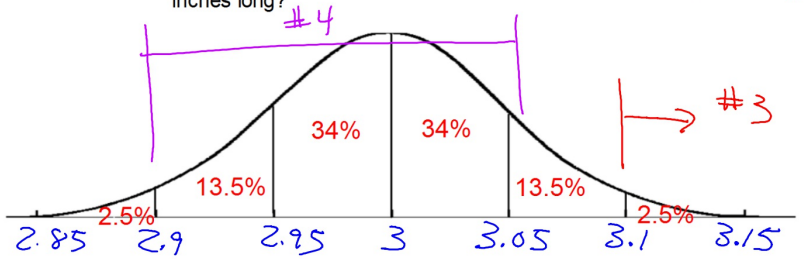
A company makes nails and sells them in boxes of 200 nails. The lengths of the nails are normally distributed with a mean of 3 inches and a standard deviation of 0.05 in.

3. If you were to grab a random nail what is the probability that you grab one longer than 3.1 in long?

2.5%

4. If you were to grab a random nail what is the probability that you grab one between 2.9 and 3.05 inches long?

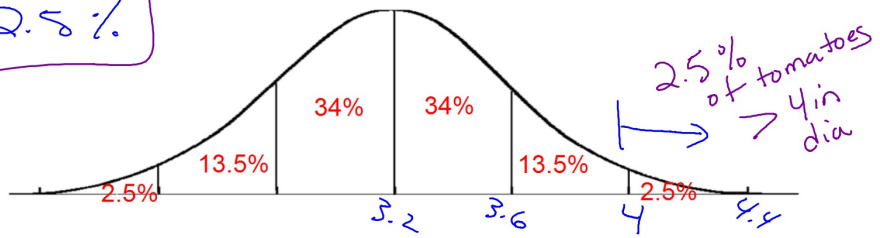
81.5%



To win a prize, a tomato must be greater than 4 inches in diameter. The diameters of a crop of tomatoes grown on your farm are normally distributed with a mean of 3.2 inches and a standard deviation of 0.4 inches.

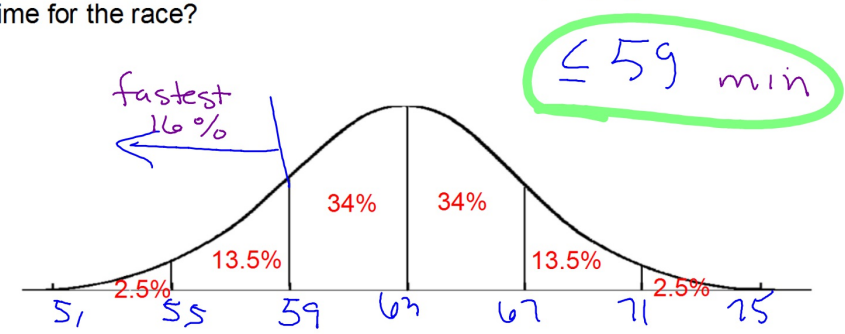
Find the probability that your crop will contain a winning tomato.

2.5%



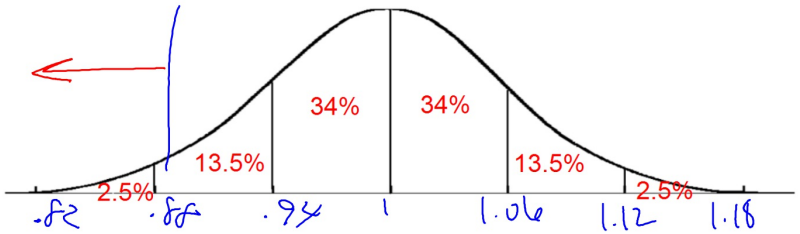
To qualify as a contestant in a race, a runner has to be in the fastest 16% of all applicants. The running times are normally distributed with a mean of 63 minutes and a standard deviation of 4 minutes. What is the qualifying time for the race?

≤ 59 min



Tubs of a certain brand of butter have weights that are normally distributed and have a mean weight of 1 lb and a standard deviation of 0.06 lbs.
At a quality control checkpoint a sample of tubs is taken and weighed. It turns out 12 of these tubs weigh less than 0.88 lbs.

How many tubs were in the sample?



2.5% are below 0.88

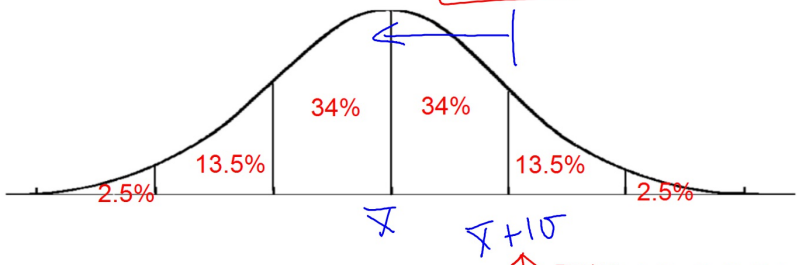
Therefore we want to know
12 is 2.5% of what?

$\frac{2.5}{100} = \frac{12}{x}$

$x = 480$ is the sample size

If your z-score on a test is 1, you scored higher than what % of those who took the test?

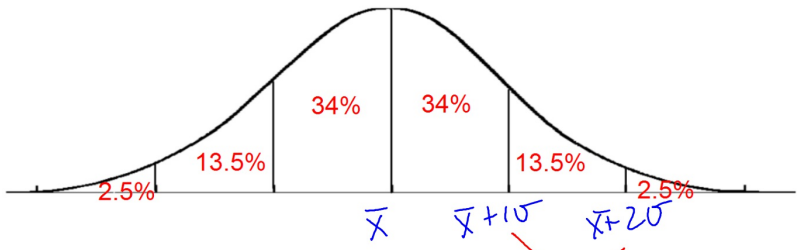
84%



↑ THIS is a z-score of 1

What if your z-score is 1.5?

What % of the data is below your score?



a z-score of 1.5 is somewhere between these 2 values

See the next page for more info.

Table of Standard Normal Probabilities for Positive Z-scores

This table gives % of data below a given z-score

hundredths place

$z = 1.5 \rightarrow 1.50$

whole # & Tenths place

STANDARD NORMAL DISTRIBUTION: Table Values Represent AREA to the LEFT of the Z score.

Z	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
0.0	.50000	.50399	.50798	.51197	.51595	.51994	.52392	.52790	.53188	.53586
0.1	.53983	.54380	.54776	.55172	.55567	.55962	.56356	.56749	.57142	.57535
0.2	.57926	.58317	.58706	.59095	.59483	.59871	.60257	.60642	.61026	.61409
0.3	.61791	.62172	.62552	.62930	.63307	.63683	.64058	.64431	.64803	.65173
0.4	.65542	.65910	.66276	.66640	.67003	.67364	.67724	.68082	.68439	.68793
0.5	.69146	.69497	.69847	.70194	.70540	.70884	.71226	.71566	.71904	.72240
0.6	.72575	.72907	.73237	.73565	.73891	.74215	.74537	.74857	.75175	.75490
0.7	.75804	.76115	.76424	.76730	.77035	.77337	.77637	.77935	.78230	.78524
0.8	.78814	.79103	.79389	.79673	.79955	.80234	.80511	.80785	.81057	.81327
0.9	.81594	.81859	.82121	.82381	.82639	.82894	.83147	.83398	.83646	.83891
1.0	.84134	.84375	.84614	.84849	.85083	.85314	.85543	.85769	.85993	.86214
1.1	.86433	.86650	.86864	.87076	.87286	.87493	.87698	.87900	.88100	.88298
1.2	.88493	.88686	.88877	.89065	.89251	.89435	.89617	.89796	.89973	.90147
1.3	.90320	.90490	.90658	.90824	.90988	.91149	.91309	.91466	.91621	.91774
1.4	.91924	.92073	.92220	.92364	.92507	.92647	.92785	.92922	.93056	.93189
1.5	.93319	.93448	.93574	.93699	.93822	.93943	.94062	.94179	.94295	.94408
1.6	.94520	.94630	.94738	.94845	.94950	.95053	.95154	.95254	.95352	.95449
1.7	.95543	.95637	.95728	.95818	.95907	.95994	.96080	.96164	.96246	.96327
1.8	.96407	.96485	.96562	.96638	.96712	.96784	.96856	.96926	.96995	.97062
1.9	.97128	.97193	.97257	.97320	.97381	.97441	.97500	.97558	.97615	.97670

.93319 means 93.319 % of the data is below a z-score of 1.5

The mean length of a certain fish is 56 cm with a standard deviation of 4 cm.

1. What percent of this kind of fish would have a length of less than 63 cm?

$z = \frac{63-56}{4} = 1.75$

Use the table to find 94.995%

THIS is the % of data below.

2. What percent of this kind of fish would have a length greater than 65cm?

$z = \frac{65-56}{4} = 2.25$

Use the table to find %

94.778%

THIS is the % of data below.

To find % of data above subtract this from 100

$100 - 94.778$

$= 5.222\%$ is above

You can now finish Hwk #28
Sec 12-7

Due Tomorrow

Pages 695-696

Problems 5, 9-15, 18, 20-22, 27