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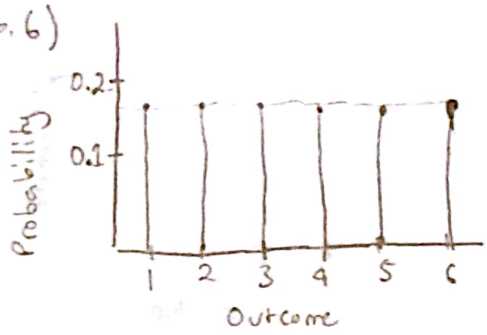
404 904 494

Stats Hw 5

6.4) a) continuous since the numbers may not be whole

b) Discrete since there is only a whole number count to people who have climbed to the top

6.6)

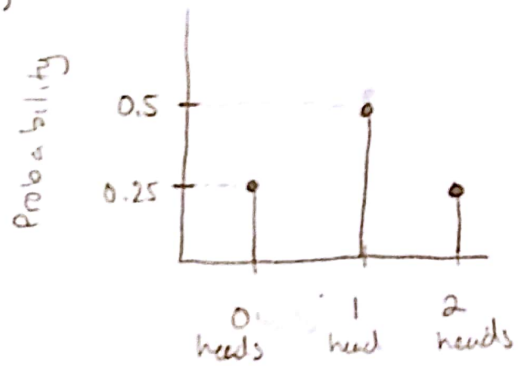


6.10) a) Probability of getting 0 heads $= \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

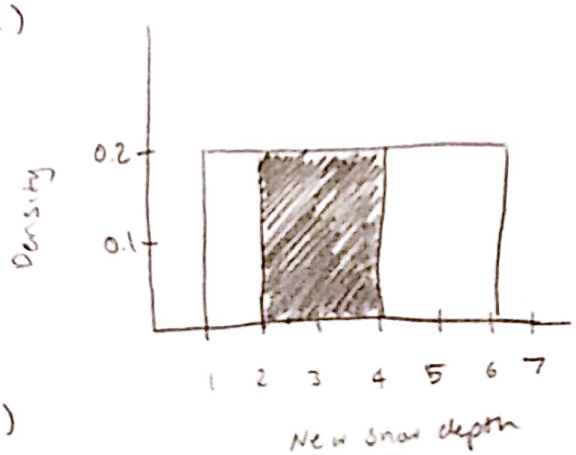
2 heads $= \frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$

1 head $= 1 - (\frac{2}{4}) = \frac{2}{4}$

b)



6.12)



Possibility of snow being 2-4 inches is $\frac{\text{area}}{\text{total Area}} = \frac{2 * 0.2}{5 * 0.2} = \frac{2}{5}$ or 0.4

6.16)

a) $\frac{72.5 - 65}{2.5} = 3$ z score = outlier or less than 1% of women duller than 72.5 inches [v]

b) $\frac{60 - 65}{2.5} = -2$ z score $\frac{70 - 65}{2.5} = 2$ z-score Thus, since the range is ± 2 standard deviations, the percentage of women is 95% or [ii]

c) $\frac{65 - 67.5}{2.5} = -1$ z score $\frac{68\%}{2} = 34\%$ of women between 65 & 67.5 inches [iv]

d) $\frac{62.5-65}{2.5} = -1$ z score

$\frac{67.5-65}{2.5} = 1$ z score

Based on Empirical rule 68% of women fall within 1 std deviation [iii]

e) $\frac{57.5-65}{2.5} = -3$ z-score

Based on Empirical Rule less than 1% of women are 3 std deviations away. [v]

f) $\frac{70-65}{2.5} = 2$ z score

Based on empirical rule $\frac{95\%}{2}$ of women fall within this range. [iii]

6.22) a)

Based off z-table chart probability of z-score -1 or less is 15.87%.

b)

Based off z-table & complement

100% - 15.87% = 84.13%.

c)

Based off z-table 0.9 probability = 81.59%.

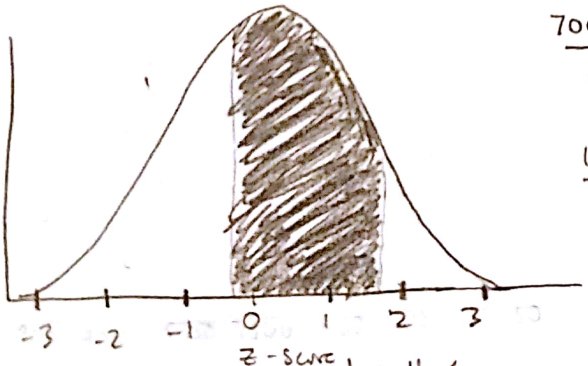
1.8 probability = 96.41%.

1.8 probability - 0.9 probability = 96.41 - 81.59

= 14.82%.

6.30)

a)

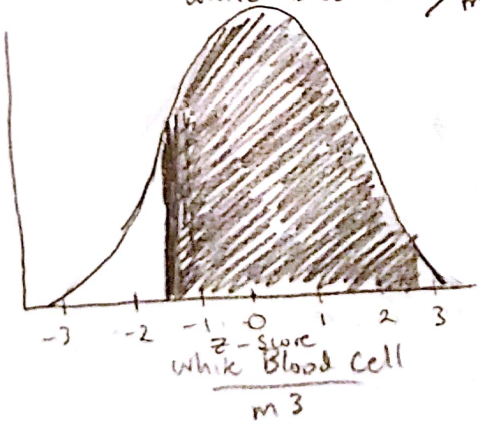


$\frac{7000-7500}{1750} = -0.285$ => probability based on table = 38%

$\frac{10000-7500}{1750} = 1.42$ => probability based on z table = 92%

92% - 38% = 54%

b)

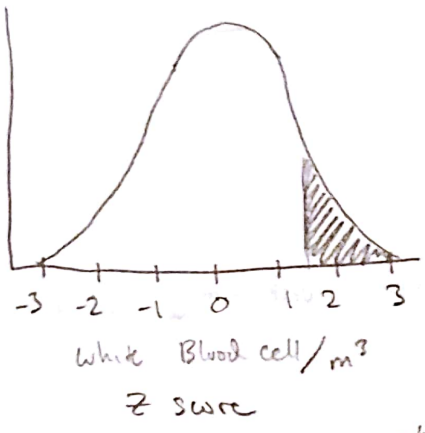


$\frac{5000-7500}{1750} = -1.42$ => probability based on z table = 7.7%.

$\frac{12000-7500}{1750} = 2.57$ => probability based on z table = 99.4%.

99.4% - 7.7% = 91.7%

c)



$\frac{1000 - 7500}{1750} = 1.42$ => probability based off z-table = 92.3%.

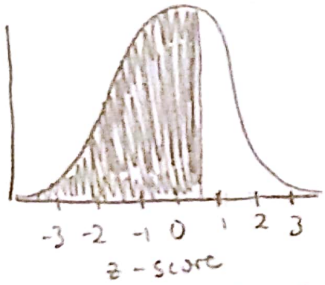
100% - 92.3% = **7.7%**

6.40) a) Probability since its asking for area of college women who have height 68 inch or more

b) Inverse since its asking for a measurement for 2% of the area.

6.44)

a) Based on z table, a z score with left area of roughly 0.7 is 0.53



b) Based on z table, z-score that gives left area of roughly 0.9500 area is 1.65

6.46) Based on z table, 96th percentile is 1.76 z-score

$\frac{x - 530}{100} = 1.76$

$x - 530 = 176$

$x = 530 + 176$

96th percentile score is 706

6.58) This is a binomial experiment as there are only 2 outcomes possible (heads & tails), the outcomes are independent of each other, there is a set amount of trials (I), and the possibility of each success or in this case heads is the same in each trial.

6.62) The model isn't appropriate since while it satisfies three conditions, the number of trials, having only 2 outcomes, & each trial being independent of one another, it doesn't satisfy the condition that the probability of success is the same in each trial since a married man (for the first time) has an 80% chance of staying married within 5 years while someone who is married for the second time has a 70% chance of staying married within 5 years.

6.64) a) $n = 20 \quad p = 0.1 \quad x = 6$

probability = $b(20, 0.10, 6)$

b) $n = 20 \quad p = 0.5 \quad x = 6$

probability = $b(20, 0.5, 6)$

6.80) a) $n = 100 \quad p = 0.9$

$100 * 0.9 = 90$ people are expected to pass

b) std deviation = $\sqrt{(100)(0.9)(1-0.9)} = 3$ = std deviation

c) $90 - 2$ std dev = $90 - 2(3) = 84$

$90 + 2(3) = 96$

Interval is 84 - 96 drives

d) No, because 89 lies in the interval (84 - 96)