

More with Logs

31

$$\ln(2x-5) + \ln 3 = 2.4$$

$$e^{\ln(6x-15)} = e^{2.4}$$

$$6x-15 = e^{2.4}$$

$$x = \frac{e^{2.4} + 15}{6} \approx 4.34$$

Purchased \$600 pair of designer sneakers.
The value decreases 2% per month. When will
they be worth \$350.

$$N = N_0(1 \pm r)^t$$

$$350 = 600(1 - 0.02)^t$$

$$\frac{350}{600} = \frac{600(0.98)^t}{600}$$

$$\frac{7}{12} = 0.98^t$$

$$\log \frac{7}{12} = t \log(0.98)$$

$$\frac{\log(\frac{7}{12})}{\log(0.98)} = \frac{t \log(0.98)}{\log(0.98)}$$

$$26.7_{\text{months}} = t$$

Measures of Central Tend

mean, median, mode

Measures of Variation

Range, IQR, stand. dev

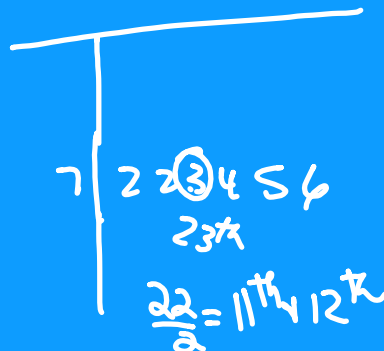
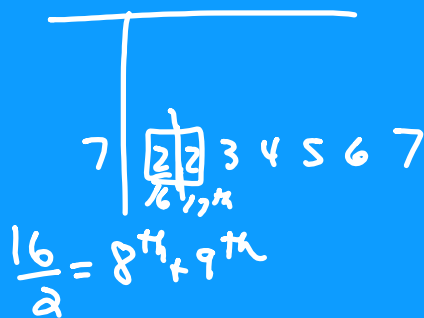
↑
UQ - LQ

1) $\frac{\# \text{ of items}}{2}$

$$\frac{200}{2} = 100^{\text{th}} \& 101^{\text{st}}$$

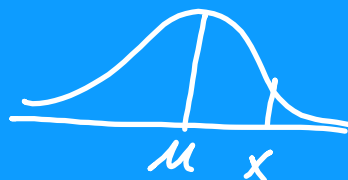
$$\frac{25}{2} = 12.5 \approx 13^{\text{th}}$$

2) Put data in order!



NORMAL DISTRIBUTION

$$Z = \frac{x - \mu}{\sigma}$$

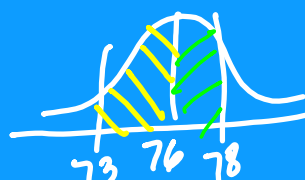


CDL test - Mean = 76 $\sigma = 4$

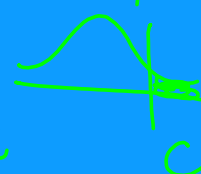
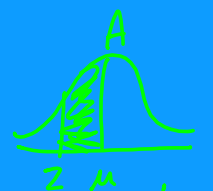
What % of people fall between 73 + 78?

$$Z = \frac{73 - 76}{4} = -0.75$$

$$Z = \frac{78 - 76}{4} = 0.50$$



$z = -0.75$ $z = 0.50$



% 0.2734

% 0.1915

0.4649

46.49%

Bottom 60% do not get a license. What is cutoff score?

4. $0.25 = \frac{x - 76}{4}$



$$1 = x - 76$$

$$\boxed{77 = x}$$

COMBINATORICS

Permutations

All $n!$
 Use part nPr
 Alike $\frac{\text{total!}}{\text{alike! alike!}}$
 Specific positions/
 repeat

Combinations

$$nC_r$$

PROBABILITY

Combinations

- All true
- 1) No replacement
 - 2) No order
 - 3) Dependent

Indiv. Fractm

← If any fail

Binomial

2 possible outcome
 Indep (same chance every time)

20 pitches =
 Prob (hit at best 18)

Prob (2 smokers or 2 guys)

$$\frac{C_2 + C_2 - C}{}$$

$${}_{20}C_2 H^{18} M^2 \text{ or } {}_{20}C_1 H^{19} M^1 \text{ or } {}_{20}C_0 H^{20} M^0$$

$${}_{20}C_2 (.8)^{18} (.2)^2 + {}_{20}C_1 (.8)^{19} (.2)^1 + (.8)^{20}$$

Subtract Overlaps

Prob Tree

$$P(M | S) = \frac{P(MS)}{P(S)}$$

↑
Know

