

# Practice Exam 1

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1.  $(\frac{1}{2})^7 = .0078125$

Can also be done with ~~StatCrunch~~ StatCrunch binomial calculator

Stat → Calculators → Binomial

$$n=7 \quad p=0.5$$

$$P(X=7) = \text{answer}$$

2. Sex and hair color independent

$$P(\text{girl}) = .5 \quad P(\text{blonde}) = 0.25$$

$$P(\text{girl and blonde}) = P(\text{girl})P(\text{blonde}) = .125 =$$

$$\frac{1}{2} \cdot \frac{1}{4} = \frac{1}{8}$$

3. Stat → Calculators → Binomial

$$n=20 \quad p=0.166667$$

$$P(X=6) = \text{answer}$$

$$\swarrow$$
$$0.0647$$

4. The answer to this question is

$$\frac{20}{30} \cdot \frac{1}{6} + \frac{10}{30} \cdot \frac{1}{5} = .17778$$

1.2  
~~1.2~~

However to do this problem correctly requires conditional independence which I haven't gone over yet. So if this question confuses you don't worry about it

5 Heavy tailed

6 Normal Calculator

Stat → Calculators → Normal

mean = 1509      Std dev 321

$P(X \leq \text{answer}) = .92$



1960.028

7. Same calculator Same mean and std dev

$$P(X \leq 1700) = \text{answer}$$

$$8. \frac{X - \mu}{\sigma} = \frac{1700 - 1509}{321} \quad 72.4\%$$

$$z = 0.5950$$

$$9. \frac{X - \mu}{\sigma} = 1.3$$

$$X = \mu + 1.3\sigma = 1509 + (1.3)(321)$$

$$= 1926.3$$

10 Stat  $\rightarrow$  Calculator  $\rightarrow$  Normal  
Between tabs

$$P(1700 \leq X \leq 1800) = 0.0935$$

~~Q~~

11 Data  $\rightarrow$  Simulate - Normal

Rows 500

Columns 1

Mean 0

Std Dev 1

Used Fixed Seed 20

Stat  $\rightarrow$  Summary Stat

Normal 1

Median, Min, Max,  $Q_1$ ,  $Q_3$

5 number summary

$$\text{min} = -2.821$$

$$Q_1 = -0.69709$$

$$\text{Median} = 0.03845$$

$$Q_3 = 0.6064$$

$$\text{max} = 2.6998$$