

RANDOMNESS AND PROBABILITY

Sampling methods:

Simple random sample - every sample of size n has the same chance of being selected

Stratified sample - make sure the sample is selected from all backgrounds, regions, sexes, races, etc.

Cluster sample - picking sample from one (or more) regions

Multi-stage cluster sample - randomly pick a state, then a county in that state, then a school district in that county, then a grade in that district, then a student in that grade

Systematic sample - use every 10th individual (or 5th, 100th, etc.)

Sample of convenience - using what you've got

The only way to pick someone at random is to use a random number table, a random event (dice, coin flip, etc.), or your calculator.

To get a random number on your calculator, press
MATH, LEFT, ENTER

To get a random integer between 1 and 30, press **MATH, LEFT, 5**, then type in `randInt(1,30)`. If you keep pressing you'll keep getting random numbers.

To flip a coin, use the command `randInt(0,1)`.

To roll a die 100 times, use the command `randInt(1,6,100)`.



Probability = $P(\text{event}) = \frac{\text{\# of ways possible}}{\text{Total \#}}$

$$P(H) \quad \overline{P(3)}$$

All probabilities must be between 0 and 1.

$P(\text{one event} \underline{\text{and}} \text{ the other}) = (P(\text{event 1})) (P(\text{event 2}))$

$P(\text{one event} \underline{\text{or}} \text{ the other}) = P(\text{event 1}) + P(\text{event 2}) - P(\text{event 1 and 2})$

Ex 1 What's the probability of rolling a die and getting a 3 **and** flipping a coin and getting a tail?

$$\frac{1}{6} \cdot \frac{1}{2} = \boxed{\frac{1}{12}}$$

Ex 2 What's the probability of rolling a die and getting a 3 **or** flipping a coin and getting a tail?

$$\frac{1}{6} + \frac{1}{2} - \frac{1}{12}$$

$$\frac{2}{12} + \frac{6}{12} - \frac{1}{12} = \boxed{\frac{7}{12}}$$

Homework
p.69
#1-19, 30-31

due Wednesday, February 13