## Activity:

- visibly random groups of 2 or 3
- there are X coloured counters in each bag
- X is known/given
- all bags are the same
- no looking in the bag
- only one counter may be taken out at a time
- you may take notes on the chalk board

How many counters of each colour?

Sep 4-6:32 PM

$$\frac{R}{16} = 0.30$$

$$\frac{G}{16} = 0.30$$

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## **Experimental Probability:**

Sept 5/2018

In a probability experiment, we count the number of outcomes we are looking for (A) compared to the total number of trials (T).

The experimental probability of outcome A is:

$$P(A) = \frac{n(A)}{n(T)} \underbrace{\qquad}_{\text{total number of trials}} \text{number of trials}$$

As the number of trials increases, the quality of the experimental probability improves.

Aug 21-7:55 AM

Any experiment worth performing will have multiple possible outcomes. Adding all of these will always be 1, which can also mean 100%.

For an experiment with N outcomes:

$$P_1 + P_2 + P_3 + \dots + P_N = 1$$

$$N=2$$
, red, green  
 $P_R=0.70$   $P_G=0.30$   
 $P_{Hock}=P_R+P_6$   
 $=1.00$ 

Ex. A coin is flipped 5 times, landing on 'heads' one time.

Determine:
(a) p(H)
(b) p(T)
(c) the value, and meaning, of p(H) + p(T)

(a) 
$$P(H) = \frac{n(H)}{n(aU)}$$

# of heads

= 0.20

= 20%

(c)  $P(H) + P(T) = 1$ 

P(t) = 1 - P(tt)

= 1 - 0.2

= 0.8

"When you flip a coin, you must get a result (heads or tails)"

Sep 4-6:43 PM

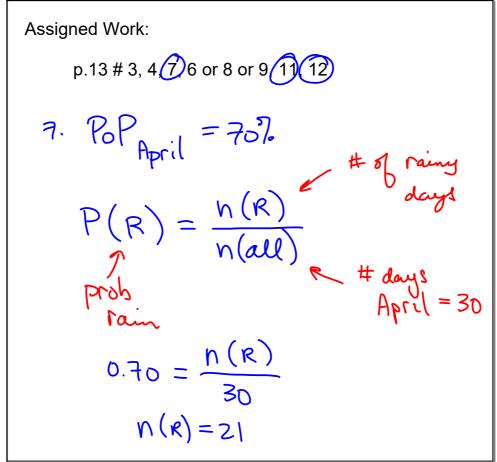
<u>Subjective probability</u> is a statement made based on intuition, often with little or no mathematical data.

Experimental probability is a calculation based on the data obtained from a number of trials.

<u>Theoretical probability</u> is a purely mathematical analysis based upon all possible outcomes for the system.

As the number of trials increases, the experimental will get closer to the theoretical probability (i.e., it will get better and better).

Note: In general, when the term "probability" is used with no context, we will be referring to "theoretical probability." If you are unsure, ask!



Sep 4-6:25 PM

$$P(m) = \frac{1}{4} \qquad P(F) = 0.75$$

$$= 0.25 \qquad n(F) = 6$$

$$n(m) \qquad ? \qquad ? \qquad ?$$

$$P(m) = \frac{n(m)}{n(T)} \qquad n(T) = n(F) + n(m)$$

$$\frac{0.25}{1} = \frac{\chi}{6 + \chi} \qquad P(F) = \frac{3}{4}$$

$$\chi = 0.25 (6 + \chi)$$

$$1\chi = 1.5 + 0.25\chi$$

$$0.75\chi = 1.5$$

$$\frac{3\chi}{4} = \frac{3}{2}$$

$$6\chi = 12$$

$$\chi = 2$$

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