(1) Coin $p(H) = 0.72$ $n = 10$

q: Probability that "even number of heads" come up.

soln: P(0 heads) or P(2 heads) or ..... P(10 heads)

(All are mutually exclusive. So, do calculations seperately and add)

$P(0 \text{ heads}) = (0.28)^{10}$ (all tails)

$= 0.00000296$

$P(2 \text{ heads}) = P\{\_\_TTTTTTTTTT\}$

$= (0.72)^2 (0.28)^8 = 0.0000196$

and there are 10-choose-2 ways to arrange the "blanks"

That's just the binomial dist. if you've watched that video!

So $\binom{10}{2} \cdot 0.0000196$

$= 0.00088$

$P(4 \text{ heads}) = \binom{10}{4} \cdot (0.72)^4 (0.28)^6 = 0.0272$

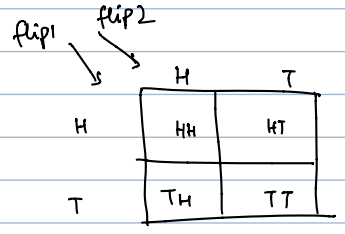
$P(6 \text{ heads}) = \binom{10}{6} \cdot (0.72)^6 (0.28)^4 = 0.1798$

$P(8 \text{ heads}) = \binom{10}{8} \cdot (0.72)^8 (0.28)^2 = 0.2548$

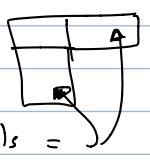
$P(10 \text{ heads}) = \binom{10}{10} \cdot (0.72)^{10} = 0.0374$

Total ≈ 0.49939

(3) a) fair coin 2 times



"one of them was heads"



new universe

Prob that other was tails =

so $P(\text{other was tails}) = 1/3 = 0.66$

b) "second one was head"

new universe

P(first one was tails)

$= \frac{1}{2} = 0.5$