

COUNTING + PERMUTATIONS

• "OUTCOMES" ARE THE RESULTS OF A PARTICULAR EVENT. THESE ARE SOMETIMES "CHOICES"

WE CAN USE

- SYSTEMATIC LISTING
- TWO-WAY TABLE
- TREE DIAGRAM.

"SAMPLE SPACE" IS A LIST OF ALL POSSIBLE OUTCOMES

eg. WHAT IS THE SAMPLE SPACE OF FLIPPING A COIN AND ROLLING A DIE?

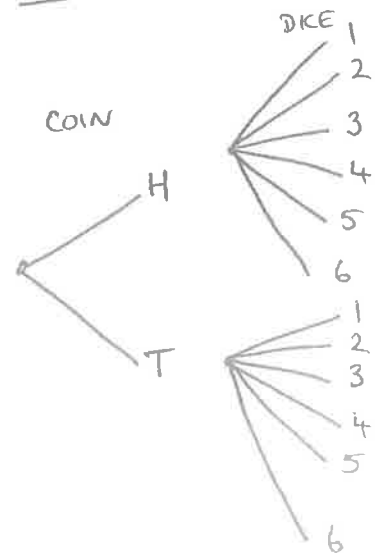
SYSTEMATIC LISTING

H1
H2
H3
H4
H5
H6
T1
T2
T3
T4
T5
T6

TWO-WAY TABLE

	1	2	3	4	5	6
H	H1	H2	H3	H4	H5	H6
T	T1	T2	T3	T4	T5	T6

TREE DIAGRAM.



FUNDAMENTAL PRINCIPLE OF COUNTING

IF ONE EVENT HAS m POSSIBLE OUTCOMES AND A SECOND EVENT HAS n POSSIBLE OUTCOMES, THEN THE TOTAL NUMBER OF POSSIBLE OUTCOMES IS $m \times n$

YOU CAN BE ASKED TO STATE THIS. YOU EITHER HAVE TO LEARN IT OFF OR BE ABLE TO EXPLAIN IT IN YOUR OWN WAY / WORDS:

ie. TO CALCULATE THE NUMBER OF OUTCOMES OF 2 OR MORE EVENTS, WE MULTIPLY THE NUMBER OF OUTCOMES OF EACH EVENT TOGETHER...

eg IN A RESTAURANT, THERE ARE
3 STARTERS
4 MAINS
2 DESSERTS,

THE NUMBER OF DIFFERENT MEALS THAT CAN BE ORDERED IS.

$$\begin{array}{ccc} \text{STARTERS} & \text{MAINS} & \text{DESSERTS} \\ \boxed{3} & \times & \boxed{4} & \times & \boxed{2} & = & 24. \end{array}$$