

VOCABULARY

**Sample Space:**

List of all possible outcomes.

**Compound Events:**

2 or more things happening

**Tree diagram:** Method of listing ALL possible outcomes

**Fundamental Counting Principle:**

STEPS to make:

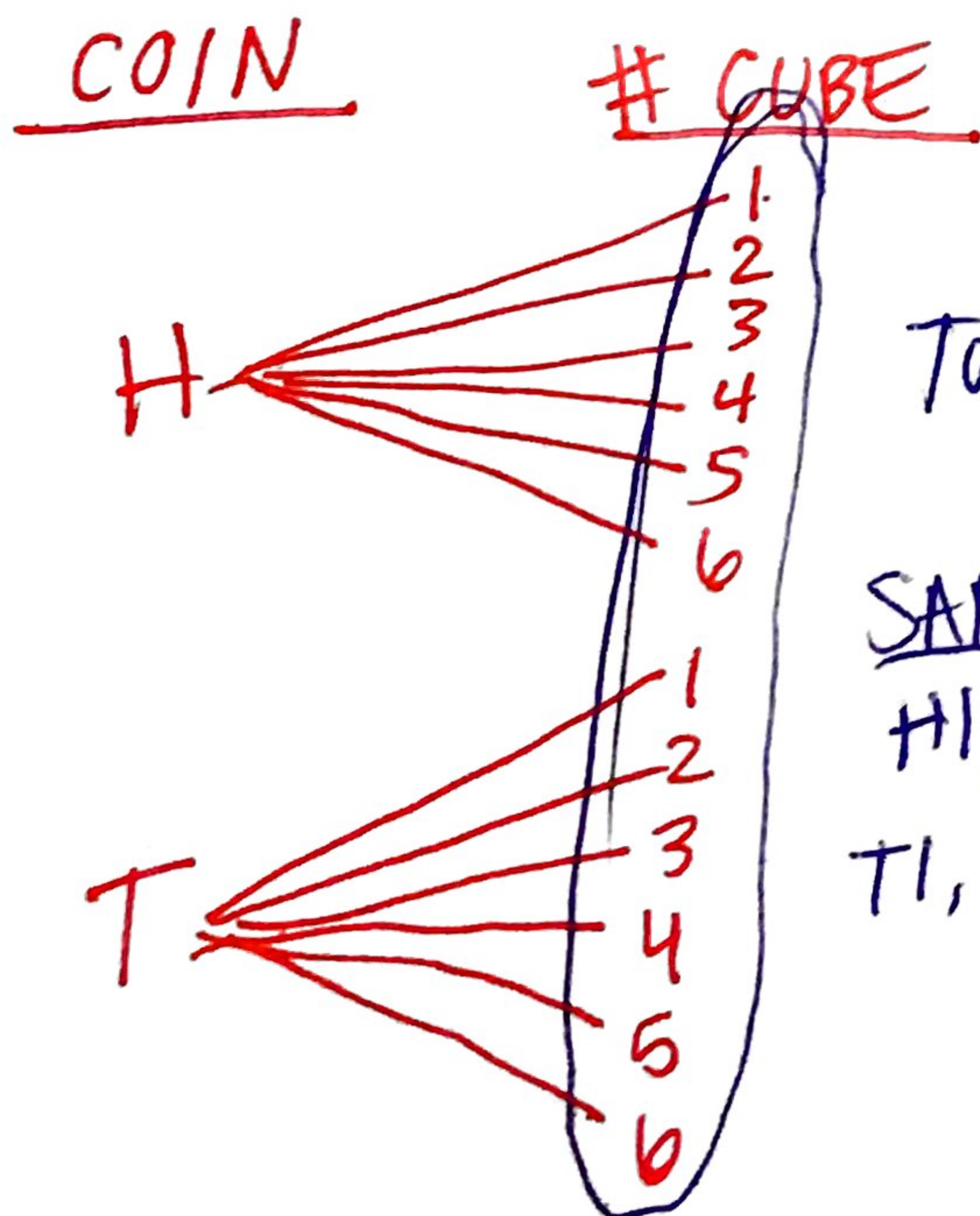
$$\left( \begin{matrix} \text{TOTAL \#} \\ \text{of OUTCOMES} \end{matrix} \right) = \left( \begin{matrix} \# \text{ outcomes} \\ \text{for event 1} \end{matrix} \right) \cdot \left( \begin{matrix} \# \text{ outcomes} \\ \text{for event 2} \end{matrix} \right) \dots$$

- ① Write the names of your two/three events
- ② List outcomes for 1st event
- ③ Draw Branches to show possibilities for the next event.

**Ex. 1:** Draw a tree diagram to show all the possible outcomes when a COIN is tossed and a NUMBER CUBE is rolled. How many total outcomes are there?

Tree Diagram:

Fundamental Counting Principle:



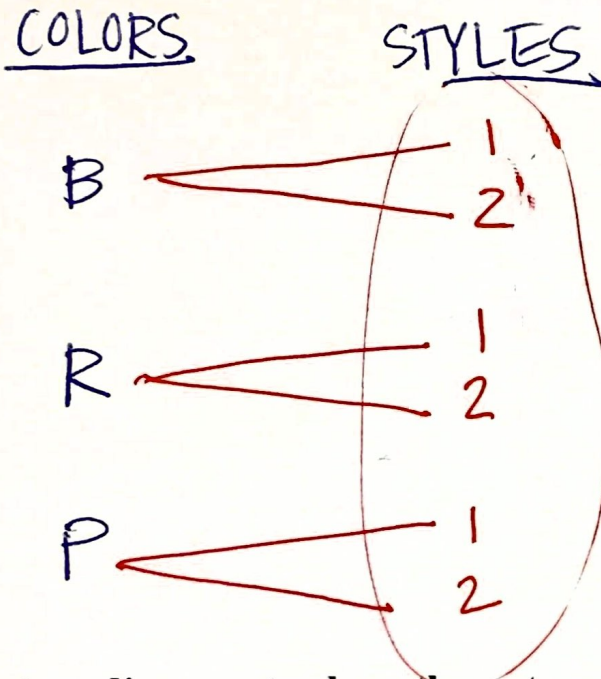
TOTAL OUTCOMES = 12

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

$$\boxed{\text{COIN}} \quad \boxed{\# \text{ CUBE}}$$

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

Ex. 2: Draw a tree diagram showing the outcomes of a bike helmet that comes in blue, red and purple and has two different styles. How many outcomes are there?

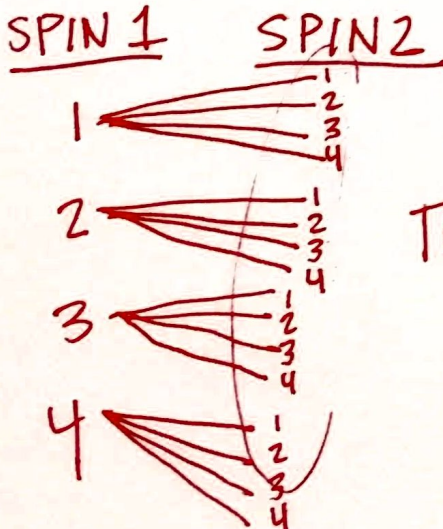
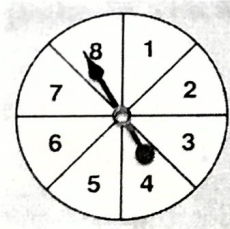
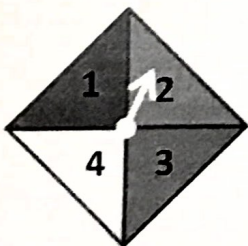


TOTAL OUTCOMES: 6

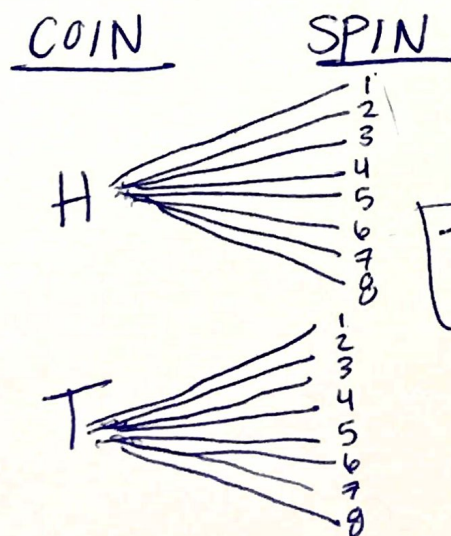
Draw a tree diagram to show the outcomes of each situation:

Ex. 3: The spinner below is spun 2 times.

Ex. 4: The spinner below, and a coin is flipped.



TOTAL: 16



TOTAL = 16

**USING THE Fundamental Counting Principle:**

Use the Fundamental Counting Principle to find the total number of possible outcomes in each sample space.

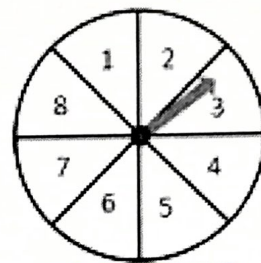
$$\text{TOTAL \# OUTCOMES} = (\# \text{ for event 1}) \cdot (\# \text{ for event 2}) \cdot \dots$$

Ex. 5: Three pennies are tossed

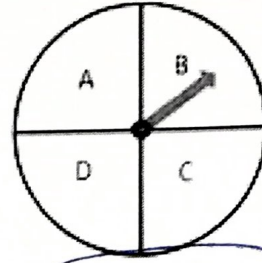
Ex. 6: Each spinner below is spun once.

Penny 1    Penny 2    Penny 3

$$2 \cdot 2 \cdot 2 = 8$$



SPINNER 1



SPINNER 2

$$8 \cdot 4 = 32$$

Ex. 7: A restaurant offers four types of pasta with three types of sauce and a choice of meatballs or sausage.

Ex. 8: Mark has a choice of red, purple, and blue shirt with a choice of jeans or slacks.

SHIRT    PANTS

$$3 \cdot 2 = 6$$