

## Geometry 13.1

Use lists, tables, and tree diagrams to represent sample spaces.  
Use the fundamental counting principle to count outcomes.

sample space - *what might happen?*

outcome - *list*

tree diagram

experiment - *collect the data*

two-stage experiment

multi-stage experiment

Fundamental counting principle

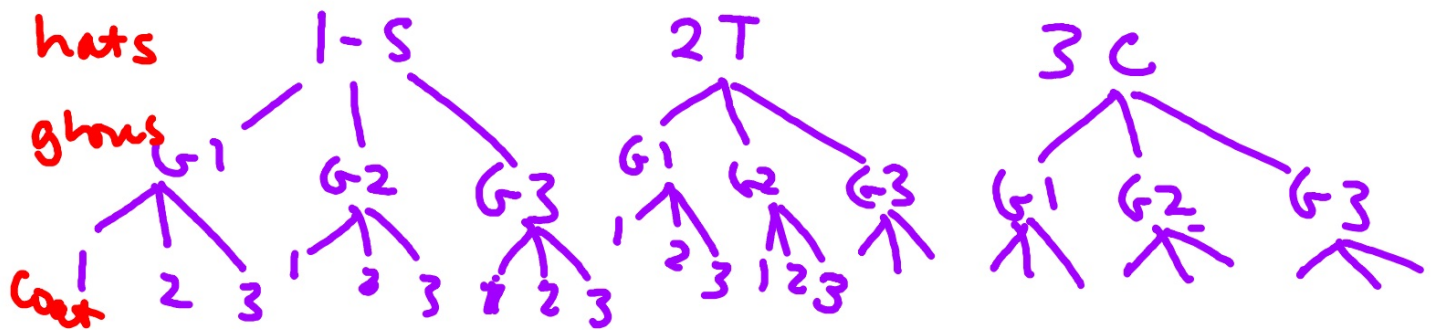
activity: hat coat gloves

● In a football game, a referee tosses a fair coin to determine which team will take possession of the football first. The coin can land on heads or tails.



tree diagram  $3 \cdot 3 \cdot 3 = 3^3$

Activity: hat, coat, gloves



Flipping a coin:

Definition	Example
An <i>experiment</i> is a situation involving chance that leads to results called <i>outcomes</i> .	In the situation above, the experiment is tossing the coin.
An <i>outcome</i> is the result of a single performance or <i>trial</i> of an experiment.	The possible outcomes are landing on heads or tails. H T
An <i>event</i> is one or more outcomes of an experiment.	One event of this experiment is the coin landing on tails. H

What you will do.

What could happen?

What did happen?

Sample space: list of all possible outcomes

tossed= flipped



### Example 1 Represent a Sample Space

A coin is tossed twice. Represent the sample space for this experiment by making an organized list, a table, and a tree diagram.



H	H
H	T
T	H
T	T

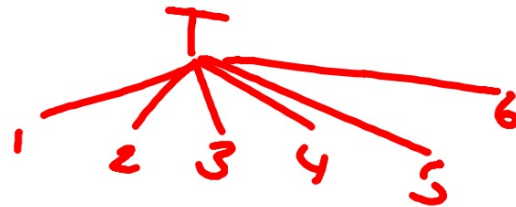
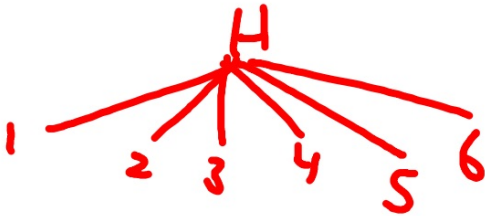
Multiple representations:

Guided Practice

HT

1, 2, 3, 4, 5, 6  
die

1. A coin is tossed and then a number cube is rolled. Represent the sample space for this experiment by making an organized list, a table, and a tree diagram.



H	1
H	2
H	3
H	4
H	5
H	6
T	1
T	2
T	3
T	4
T	5
T	6

H1, H2, H3, H4...

number cubes = dice

**Real-World Example 2 Multi-Stage Tree Diagrams**

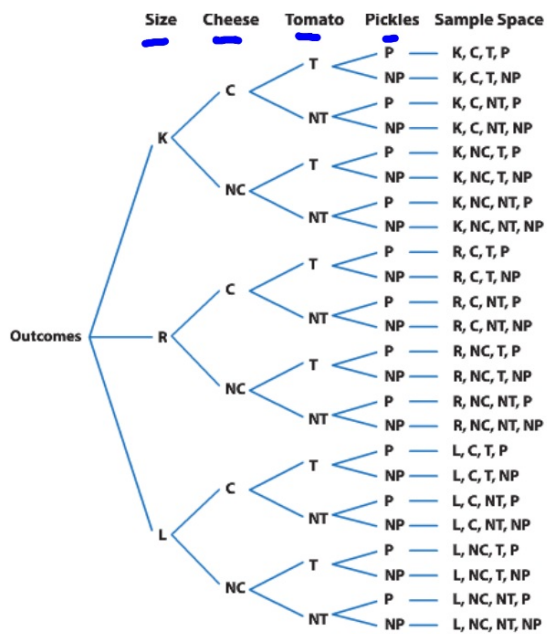
**HAMBURGERS** To take a hamburger order, Keandra asks each customer the questions from the script shown. Draw a tree diagram to represent the sample space for hamburger orders.



vertical or horizontal



24

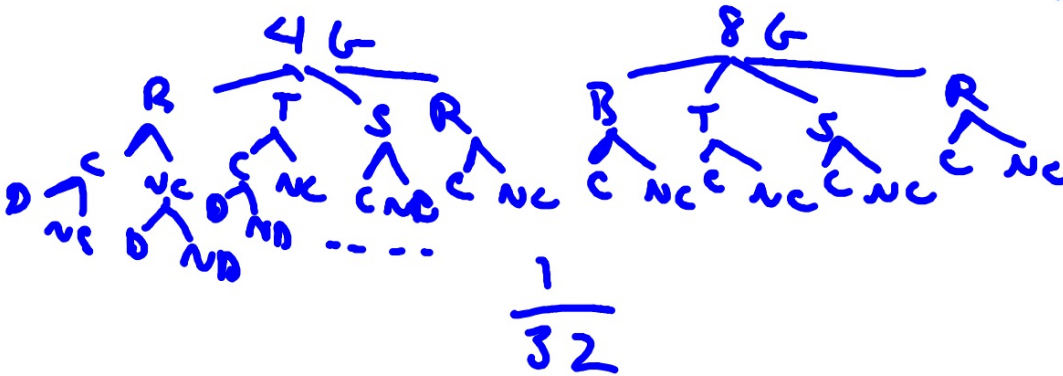


Guided Practice

$$\frac{2}{4/8}$$

4 2. MUSIC Yoki can choose a small MP3 player with a 4- or 8-gigabyte hard drive in black, teal, sage, or red. She can also get a clip and/or a lock to go with it. Make a tree diagram to represent the sample space for this situation.

$$32$$
$$4 \cdot 2 \cdot 2 \cdot 2$$





 **Real-World Example 3** Use the Fundamental Counting System



**CLASS RINGS** Haley has selected a size and overall style for her class ring. Now she must choose from the ring options shown. How many different rings could Haley create in her chosen style and size?

960,000

Ring Options	Number of Choices
metals	10
finishes	2
stone colors	12
stone cuts	5
side 1 activity logos	20
side 2 activity logos	20
band styles	2

1-13 odds      p 918  
14-18 all