

- b) Use a tree diagram to find the sample space for the different styles in which the car can be purchased.

PRACTICE: Read each question carefully. *Show your work.*

The table shows the sandwich choices for a picnic. Find the sample space using a list, table, and tree diagram for a sandwich consisting one type of meat and one type of bread.

Meat	Bread
Ham Turkey	Rye Sourdough White

1. Find the sample space using a list.

2. Find the sample space using a table.

3. Find the sample space using a tree diagram.

A **compound event** consists of two or more simple events. The probability of a compound event, just as with simple events, is the fraction of outcomes in the sample space for which the compound event occurs.

EXAMPLE 3: Finding Probability From a Tree Diagram

Suppose you toss a quarter, a dime, and a nickel. Find the sample space using a tree diagram. What is the probability of getting three tails?

P (3 tails) = _____

PRACTICE: Read each question carefully. Show your work.

4. The animal shelter has both male and female Labrador Retrievers in yellow, brown, and black. There is an equal number of each kind.
- a) Find the sample space using a tree diagram.

- b) What is the probability of choosing a female yellow Labrador Retriever?

EXAMPLE 4: Finding Probability From a Table

To win a carnival prize, you need to choose one of 3 doors labeled 1 through 3. Then you need to choose a red, yellow, or blue box behind each door. What is the probability that the prize is in the blue or yellow box behind door 2?

Outcomes	
door 1	red box
door 1	yellow box
door 1	blue box
door 2	red box
door 2	yellow box
door 2	blue box
door 3	red box
door 3	yellow box
door 3	blue box

NAME: _____

DATE: _____

PROBABILITY

PERIOD: _____

HOMEWORK - (Topic #10)

**Using Sample Space & the Total Number of Possible Outcomes
to Find Probabilities of Compound Events**

For each situation, find the sample space using a list and tree diagram.

1. tossing a coin and spinning a spinner with 5 equal sections labeled 1 through 5

a) *List*

b) *Tree Diagram*

2. picking a number from 1 to 5 and choosing the color red, white, or blue

a) *List*

b) *Tree Diagram*

3. choosing a purple, green, black, or silver bike having 10, 18, 21, or 24 speeds

a) *List*

b) *Tree Diagram*

4. choosing a letter from the word SPACE and choosing a consonant from the word MATH

a) *List*

b) *Tree Diagram*

NAME: _____
PROBABILITY

KEY

DATE: _____
PERIOD: _____

How Can You Use Sample Space & the Total Number of Possible Outcomes to Find Probabilities of Compound Events? (Topic #10)

The set of all possible outcomes of one or more events is called the **sample space**. Organized lists, tables, and **tree diagrams** can be used to represent the sample space.

EXAMPLE 1: Finding Sample Space Using a List

The three students chosen to represent Mr. Fallon's class in a school assembly are shown. All three of them need to sit in a row on the stage. Use a list to find the sample space for the different ways they can sit in a row.

- Adrienne, Carlos, Greg
- Adrienne, Greg, Carlos
- Carlos, Adrienne, Greg
- Carlos, Greg, Adrienne
- Greg, Adrienne, Carlos
- Greg, Carlos, Adrienne

Students
Adrienne
Carlos
Greg

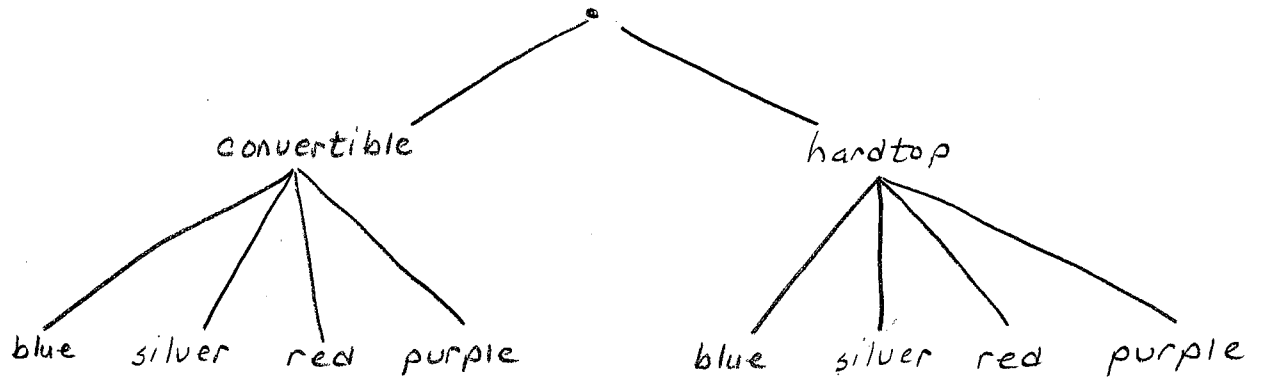
EXAMPLE 2: Finding Sample Space Using a Table or a Tree Diagram

A car can be purchased in blue, silver, red, or purple. It also comes as a convertible or hardtop.

- a) Use a table to find the sample space for the different styles in which the car can be purchased.

Color	Top
blue	convertible
blue	hardtop
silver	convertible
silver	hardtop
red	convertible
red	hardtop
purple	convertible
purple	hardtop

- b) Use a tree diagram to find the sample space for the different styles in which the car can be purchased.



$$S = \left\{ \begin{array}{ll} BC & BH \\ SC & SH \\ RC & RH \\ PC & PH \end{array} \right\}$$

PRACTICE: Read each question carefully. *Show your work.*

The table shows the sandwich choices for a picnic. Find the sample space using a list, table, and tree diagram for a sandwich consisting one type of meat and one type of bread.

Meat	Bread
Ham	Rye
Turkey	Sourdough
	White

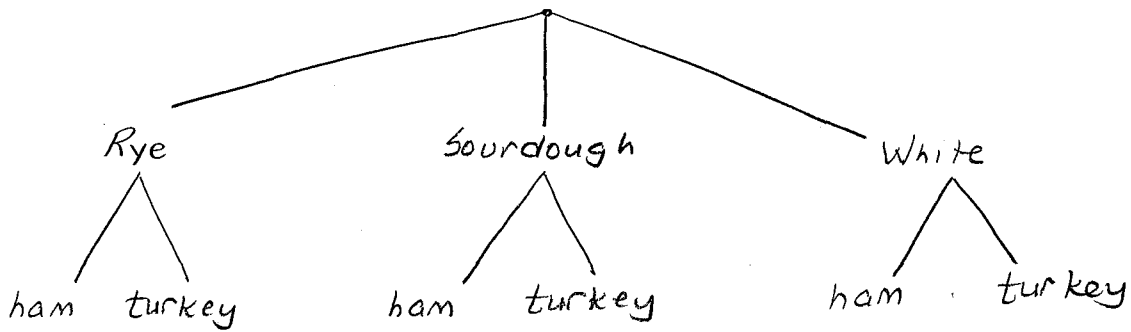
1. Find the sample space using a list.

ham, rye ham, sourdough ham, white	turkey, rye turkey, sourdough turkey, white
--	---

2. Find the sample space using a table.

Meat	Bread
ham	rye
ham	sourdough
ham	white
turkey	rye
turkey	sourdough
turkey	white

3. Find the sample space using a tree diagram.



$$S = \left\{ \begin{array}{ccc} HR & HS & HW \\ TR & TS & TW \end{array} \right\}$$

A **compound event** consists of two or more simple events. The probability of a compound event, just as with simple events, is the fraction of outcomes in the sample space for which the compound event occurs.

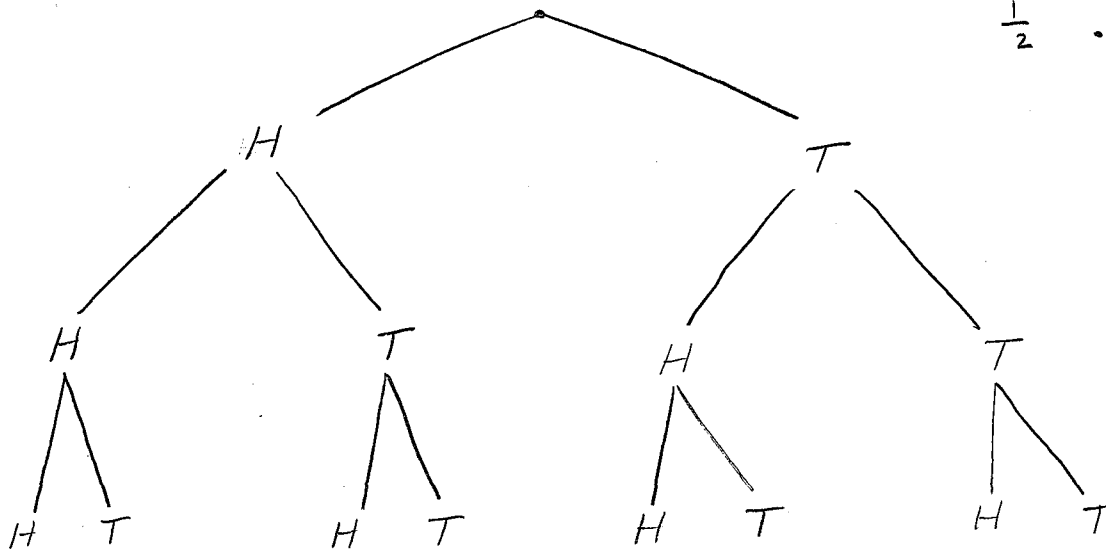
EXAMPLE 3: Finding Probability From a Tree Diagram

Suppose you toss a quarter, a dime, and a nickel. Find the sample space using a tree diagram. What is the probability of getting three tails?

$$P(\text{Tails}) \times P(\text{Tails}) \times P(\text{Tails})$$

$$\frac{1}{2} \cdot \frac{1}{2} \cdot \frac{1}{2}$$

$$\frac{1}{8}$$



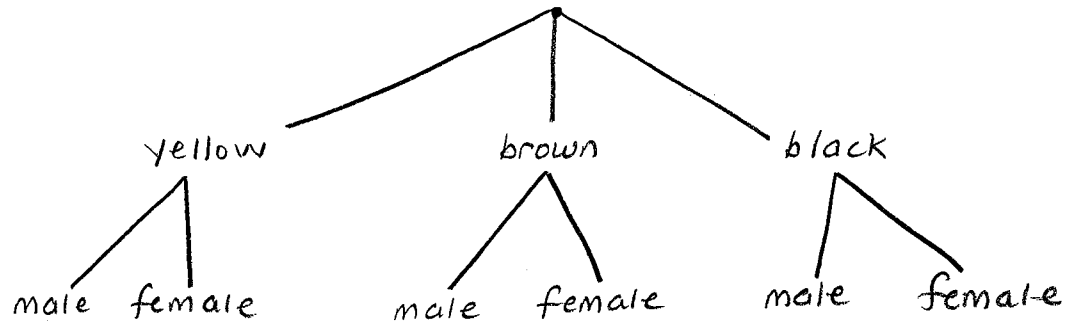
$$P(3 \text{ tails}) = \frac{1}{8}$$

$$S = \left[\begin{array}{cc} HHH & HHT \\ THH & THT \\ HTH & HTT \\ TTH & TTT \end{array} \right]$$

PRACTICE: Read each question carefully. *Show your work.*

4. The animal shelter has both male and female Labrador Retrievers in yellow, brown, and black. There is an equal number of each kind.

a) Find the sample space using a tree diagram.



b) What is the probability of choosing a female yellow Labrador Retriever?

$$P(\text{female, yellow}) = \frac{1}{6} \quad \text{OR} \quad P(\text{female}) \times P(\text{yellow})$$

$$\frac{1}{2} \cdot \frac{1}{3}$$

EXAMPLE 4: Finding Probability From a Table

To win a carnival prize, you need to choose one of 3 doors labeled 1 through 3. Then you need to choose a red, yellow, or blue box behind each door. What is the probability that the prize is in the blue or yellow box behind door 2?

$$P(\text{blue or yellow, 2}) = \frac{2}{9}$$

Outcomes	
door 1	red box
door 1	yellow box
door 1	blue box
door 2	red box
→ door 2	yellow box
→ door 2	blue box
door 3	red box
door 3	yellow box
door 3	blue box

NAME: _____

(KEY)

PROBABILITY

DATE: _____

PERIOD: _____

HOMEWORK - (Topic #10)

Using Sample Space & the Total Number of Possible Outcomes to Find Probabilities of Compound Events

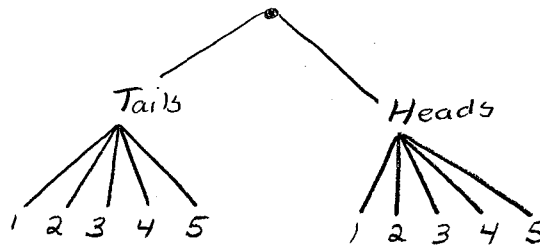
For each situation, find the sample space using a list and tree diagram.

1. tossing a coin and spinning a spinner with 5 equal sections labeled 1 through 5

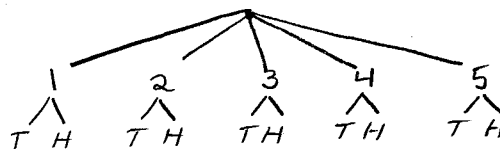
a) List

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

b) Tree Diagram



OR

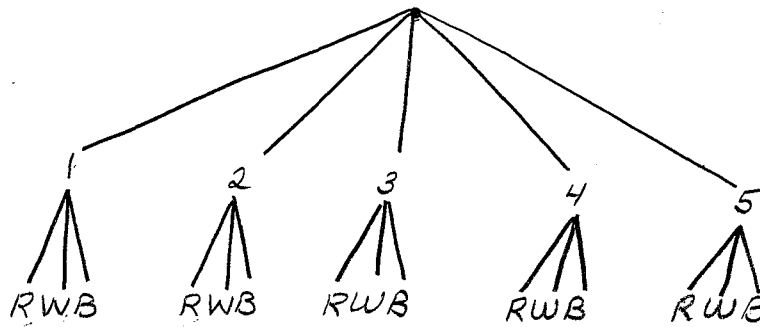


2. picking a number from 1 to 5 and choosing the color red, white, or blue

a) List

1 Red	4 Red
1 White	4 White
1 Blue	4 Blue
2 Red	5 Red
2 White	5 White
2 Blue	5 Blue
3 Red	
3 White	
3 Blue	

b) Tree Diagram



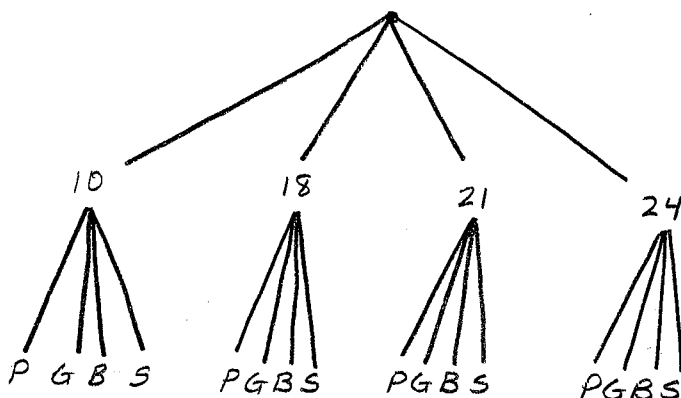
$$S = \begin{bmatrix} R1 & R2 & R3 & R4 & R5 \\ W1 & W2 & W3 & W4 & W5 \\ B1 & B2 & B3 & B4 & B5 \end{bmatrix}$$

3. choosing a purple, green, black, or silver bike having 10, 18, 21, or 24 speeds

a) List

- | | |
|-------|-------|
| P, 10 | P, 21 |
| G, 10 | G, 21 |
| B, 10 | B, 21 |
| S, 10 | S, 21 |
| | |
| P, 18 | P, 24 |
| G, 18 | G, 24 |
| B, 18 | B, 24 |
| S, 18 | S, 24 |

b) Tree Diagram



4. choosing a letter from the word SPACE and choosing a ^{letter} ~~consonant~~ from the word MATH

a) List

- | | | |
|----|----|----|
| SM | PM | AM |
| SA | PA | AA |
| ST | PT | AT |
| SH | PH | AH |
| | | |
| CM | EM | |
| CA | EA | |
| CT | ET | |
| CH | EH | |

b) Tree Diagram

