

Probability Distributions and Frequency Tables (Section 14-2)

* **Relative Frequency**: the ratio of the frequency of the category to the total frequency.

ex:

Type of Music	Frequency
Rock	10
Hip Hop	7
Country	8
Classical	5
Altern.	6
Other	4
Total:	40

Rel Freq of...

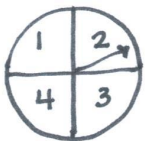
Classical: $\frac{5}{40} = \frac{1}{8}$

Hip Hop: $\frac{7}{40}$

Country: $\frac{8}{40} = \frac{1}{5}$

* Relative Frequencies are used to approximate probabilities.

ex:



Spinner Results

1 → 29

2 → 32

3 → 21

4 → 18

100 Total

$P(4) = \frac{18}{100} = \frac{9}{50}$

ex: Fav. Snacks

Bananas: 8

Trail Mix: 5

Celery/Cheese: 4

Popcorn: 6

Total: 23

$P(\text{popcorn}) = \frac{6}{23}$

$P(\text{Not bananas}) =$

$1 - \frac{8}{23}$

$= \frac{15}{23}$

* **Probability Distribution**: shows the probability of each outcome. Can be shown in a freq. table.

ex: Math Test

90-100: 10

80-89: 12

70-79: 15

60-69: 8

↓ 60: 2

Write a probability distribution.

Score:	90-100	80-89	70-79	60-69	↓ 60	
Freq	10	12	15	8	2	Total: 47
Prob	$\frac{10}{47}$	$\frac{12}{47}$	$\frac{15}{47}$	$\frac{8}{47}$	$\frac{2}{47}$	Total: 1

Section 14-2 Notes

Probability Distributions and Frequency Tables

A student records the type of weather each day for 21 consecutive days. The results are shown in the table below.

Weather Type	Number of days
Sunny	12
Rainy	4
Cloudy with no rain	5

Find the relative frequency of each type of weather.

1. Sunny

frequency of sunny days: 12

total frequency: 21

$$\text{relative frequency} = \frac{\text{frequency of sunny days}}{\text{total frequency}} = \frac{12}{21} = \frac{4}{7}$$

2. Rainy

$$\frac{4}{21}$$

3. Cloudy with no rain

$$\frac{5}{21}$$

A student randomly chooses marbles from a bag containing 3 blue marbles and 3 red marbles. He chooses two at a time, and repeats this 10 times. The results are shown in the frequency table below.

Colors	BB	BR	RR	RB
Frequency	2	3	1	4

4. If 2 marbles are randomly chosen, what is the probability of choosing *exactly*

a. one red marble?

$$\frac{3+4}{10} = \frac{7}{10}$$

b. two blue marbles?

$$\frac{2}{10} = \frac{1}{5}$$

At a recreation center, 15 friends throw 3 darts each to try and get a bull's eye. The results are shown in the probability distribution below. Complete the table.

Number of Bull's Eyes	0	1	2	3
Frequency	8	4	2	1
Probability	5. $\frac{8}{15}$	$\frac{4}{15}$	6. $\frac{2}{15}$	7. $\frac{1}{15}$

Practice (continued)

Form K

Probability Distributions and Frequency Tables

8. A student records the favorite sport for 17 students. The results are shown in the table at the right.

Favorite Sport

Sport	Number of Responses
Soccer	8
Baseball	5
Basketball	4

a. What is the relative frequency of soccer as a favorite sport? $\frac{8}{17}$

b. What is the relative frequency of basketball as a favorite sport? $\frac{4}{17}$

9. A student chooses socks randomly, one at a time, from his drawer. Out of 20 different times, he chooses 6 black socks, 3 blue socks, and 11 white socks. What is the probability of choosing a blue sock? $\frac{3}{20}$

10. **Error Analysis** A gymnastics coach records the number of medals won by 17 of his gymnasts at a recent meet. The results are shown in the probability distribution below.

Number of Medals	0	1	2
Frequency	3	6	9
Probability	$\frac{3}{17}$	$\frac{6}{17}$	$\frac{9}{17}$

$3+6+9=18$
 $\frac{3}{18} = \frac{1}{6}$ $\frac{6}{18} = \frac{1}{3}$ $\frac{9}{18} = \frac{1}{2}$

Explain the error the coach made when making the table.

He totaled the frequency wrong. $3+6+9=18$.

11. **Vocabulary** What is the difference between the total frequency and the relative frequencies of a probability experiment?

TOTAL frequency = # of results of the experiment
 Relative freq = # of times each outcome occurs in the experiment.