Frequency Worksheet (Answer Key)

KEY TERMS

- **Frequency**: *the number of times a value of the data occurs*
- **Relative frequency:** *the ratio (fraction or proportion) of the number of times a value of the data occurs in the set of all outcomes to the total number of outcomes*
  - To find the relative frequencies, divide each frequency by the total number in the sample. Relative frequencies can be written as fractions, percents, or decimals.
- **Cumulative relative frequency:** *the accumulation of the previous relative frequencies*
  - To find the cumulative relative frequencies, add all the previous relative frequencies to the relative frequency for the current row.

Illowsky, B., & Dean, S. (2018). Introductory statistics.

EXERCISE 1: Mokauea loko i'a (fishpond) is in need of restoration to eventually be able to raise fish for consumption. A major factor in the pond's restoration is its temperature. The table below contains a sample of data on the pond's bottom temperature (rounded to the nearest tenth) from April 2020. Help us understand how the pond's temperature fluctuates by completing the table below. Round to the nearest thousandth.

Bottom Temperature (°C)	Frequency	Relative Frequency	Cumulative Relative Frequency
22.1	10	10 ÷ 1600 ≈ 0.006	0.006
23.2	64	64 ÷ 1600 = 0.040	0.006 + 0.040 = 0.046
23.9	123	123 ÷ 1600 ≈ 0.077	0.046 + 0.077 = 0.123
24.5	204	204 ÷ 1600 ≈ 0.128	0.123 + 0.128 = 0.251
25.7	218	218 ÷ 1600 ≈ 0.136	0.251 + 0.136 = 0.387
26.3	228	228 ÷ 1600 ≈ 0.143	0.387 + 0.143 = 0.530
26.9	204	204 ÷ 1600 ≈ 0.128	0.530 + 0.128 = 0.658
27.1	199	199 ÷ 1600 ≈ 0.124	0.658 + 0.124 = 0.782
27.4	212	212 ÷ 1600 ≈ 0.133	0.782 + 0.133 = 0.915
29.6	138	138 ÷ 1600 ≈ 0.086	0.915 + 0.086 ≈ 1.00
	Total = 1600	**Total ≈ 1.000**	

The above data is real data collected from research at Mokauea loko i'a.
Additional Mokauea loko i`a data can be explored here: http://grogdata.soest.hawaii.edu/

EXERCISE 2: Another major factor in the pond's restoration is its salinity. Salinity is measured in the unit of *PSU* stands for *Practical Salinity Unit* which is a unit based on the properties of seawater conductivity. The table below contains a sample of data on the pond's salinity (rounded to the nearest tenth) from March 2020. Help us understand how the pond's salinity fluctuates by completing the table below. Round to the nearest thousandth.

Salinity (PSU*)	Frequency	Relative Frequency	Cumulative Relative Frequency
27.8	418	418 ÷ 9767 ≈ 0.043	0.043
28.2	1423	1423 ÷ 9767 ≈ 0.146	0.043 + 0.146 = 0.189
28.9	769	769 ÷ 9767 ≈ 0.079	0.189 + 0.079 = 0.268
29.4	476	476 ÷ 9767 ≈ 0.049	0.268 + 0.049 = 0.317
29.8	1373	1373 ÷ 9767 ≈ 0.141	0.317 + 0.141 = 0.458
30.1	1233	1233 ÷ 9767 ≈ 0.126	0.458 + 0.126 = 0.584
30.5	1447	1447 ÷ 9767 ≈ 0.148	0.584 + 0.148 = 0.732
30.6	1871	1871 ÷ 9767 ≈ 0.192	0.732 + 0.192 = 0.924
31.3	498	498 ÷ 9767 ≈ 0.051	0.924 + 0.051 = 0.975
31.4	259	259 ÷ 9767 ≈ 0.027	0.975 + 0.027 ≈ 1.000
	Total = 9767	**Total ≈ 1.000**	

The above data is real data collected from research at Mokauea loko i'a.
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