Math Virtual Learning

Grade 8

Two-Way Tables: Relative Frequency

May 5, 2020

Math 8
Lesson: May 5, 2020

Objective/Learning Target:
I can interpret a two-way table.

Warm-Up: A group of teachers was asked to state their favorite fitness activity. The results are shown below. Complete the two-way table to represent the data.

Answer Key provided

Favorite Fitness Activity

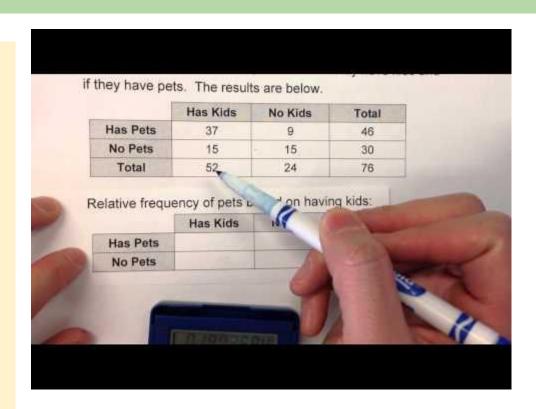|	Cycling	Running	Swimming	Total
Men	8	6	14	
Women	7	7	8	
Total				

Favorite Fitness Activity

	Cycling	Running	Swimming	Total
Men	8	6	14	**28**
Women	7	7	8	**22**
Total	**15**	**13**	**22**	**50**

Video:

Take notes on a piece of paper as you watch this video.

How to: Interpret a Two-Way Table

"What is the relative frequency that a girl likes sandwiches?"

	Boys	Girls	Total
Sandwiches	20	13	33
Pizza	35	25	60
Salads	1	6	7
Total	56	44	100

1) You will be given a table and a question. The question can be broken into two parts: the <mark>sample size</mark> and the <mark>group size</mark>. The <u>sample size</u> is the small, specific number. The <u>group size</u> is the larger number and is not always the <u>grand total</u>.

The sample size is "girls who like sandwiches". The group size is "girls".

2) Create a fraction of the <u>sample size</u> (numerator) and <u>group size</u> (denominator).

$$\frac{\text{sample size}}{\text{group size}} = \frac{\text{"girls who like sandwiches"}}{\text{"girls"}} = \frac{13}{44}$$

3) Use a calculator to divide. Then write your answer as a percentage (multiply by 100).

$$\frac{13}{44} = 0.29545454... \quad \times 100 = \quad 29.5\%$$

Example 1:

"What is the relative frequency that a boy likes pizza?"

	Boys	Girls	Total
Sandwiches	20	13	33
Pizza	35	25	60
Salads	1	6	7
Total	56	44	100

1) *The* **sample size** *is "boys who like pizza" and the* **group size** *is "boys".*

2) $\dfrac{sample\ size}{group\ size} = \dfrac{\text{"boys who like pizza"}}{\text{"boys"}} = \dfrac{35}{56}$

3) $\dfrac{35}{56} = 0.625 \times 100 = $ **62.5 %**

Example 2:

"What is the relative frequency that a student is a girl who likes pizza?"

	Boys	Girls	Total
Sandwiches	20	13	33
Pizza	35	25	60
Salads	1	6	7
Total	56	44	100

1) *The <mark>sample size</mark> is "girls who like pizza" and the <mark>group size</mark> is "students".*

This is the grand total!

2) $\dfrac{sample\ size}{group\ size} = \dfrac{\text{"girls who like pizza"}}{\text{"students"}} = \dfrac{25}{100}$

3) $\dfrac{25}{100} = 0.25$ x 100 $=$ **25.0 %**

Example 3:

"What is the relative frequency that a student is a boy?"

	Boys	Girls	Total
Sandwiches	20	13	33
Pizza	35	25	60
Salads	1	6	7
Total	56	44	100

1) The sample size is "boys" and the group size is "students".

This is the grand total!

2) $\dfrac{\text{sample size}}{\text{group size}}$ = $\dfrac{\text{" boys "}}{\text{"students"}}$ = $\dfrac{56}{100}$

3) $\dfrac{56}{100}$ = 0.56 x 100 = 56.0 %

Practice 1:

The data is summarized in a two-way table for the number of boys and girls that regularly drink water, lemonade, or soda at lunch. Use the table to answer the questions.

	Boys	Girls	Total
Water	45	32	77
Soda	50	38	88
Lemonade	42	32	74
Total	137	102	239

1. What is the relative frequency that a boy regularly drinks water?

2. What is the relative frequency that a girl regularly drinks soda?

3. What is the relative frequency that a student regularly drinks lemonade?

4. What is the relative frequency that a student is a boy who regularly drinks soda?

Practice 1:   *Answer Key*

1. **What is the relative frequency that a boy regularly drinks water?**
    45 / 137   =   32.8 %

2. **What is the relative frequency that a girl regularly drinks soda?**
    38 / 102   =   37.3 %

3. **What is the relative frequency that a student regularly drinks lemonade?**
    74 / 239 = 31 %

4. **What is the relative frequency that a student is a boy who regularly drinks soda?**
    50 / 239 = 20.9 %

Practice 2:

A local sporting goods store asked 160 customers if they like skateboards and snowmobiles. The results are shown on the two-way table below. Use the information to answer the questions below. Round your answers to the nearest tenth.

	Like Skateboards	Do Not Like Skateboards	Totals
Like Snowmobiles	80	25	105
Do not like Snowmobiles	45	10	55
Totals	125	35	160

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1) **What is the relative frequency that a customer liked skateboards but not snowmobiles?**

2) **What is the relative frequency that a customer who liked snowmobiles did not like skateboards?**

Practice 2: Answer Key

1. **The number of customers who like skateboards but not snowmobiles is 45 out of 160.**

$$\frac{45}{160} = 0.28125$$

Solution: 28.1%

2. **The number of customers who like snowmobiles but do not like skateboards is 25 out of 105.**

$$\frac{25}{105} = 0.2380952$$

Solution: 23.8%

Additional Resources:

[Two-Way Tables Lesson and Practice Activities](#)