Two-Way Tables

Ten students in a class were asked two questions. They were asked to tell if they do chores at home or not. They were then asked if they received an allowance or not. The results are shown below.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student** | **Abby** | **Bella** | **Chris** | **Deb** | **Erin** | **Frank** | **Gus** | **Hal** | **Isadore** | **John** |
| **Chores** | Yes | Yes | No | No | No | Yes | Yes | Yes | No | Yes |
| **Allowance** | Yes | Yes | No | No | No | Yes | Yes | No | Yes | No |

Create a two-way table to show the frequency counts for these data.

Step 1: Determine how the table will look. Then fill in the frequencies

Step 2: Decide how to fill in the rows. Then add the columns and record the totals.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Allowance** | **No Allowance** | **Total** |
| **Chores** |  |  |  |
| **No Chores** |  |  |  |
| **Total** |  |  |  |

Can you conclude that students who get an allowance are more likely to do chores than students who do not? Find the relative frequencies for the columns in the table and see.

Recreate the two-way table showing the relative frequencies for the columns.

Step 1: Find the relative frequencies.

 Of all students who get an allowance, $\frac{4}{5}$, or 80%, also do chores, while $\frac{1}{5}$, or 20%, do not.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Allowance** | **No Allowance** | **Total** |
| **Chores** | 80% |  |  |
| **No Chores** | 20% |  |  |
| **Total** | 100% |  |  |

What conclusions can you draw?

The data do show that students who do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ are more likely to get an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ than students who do not do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_, because \_\_\_\_\_\_\_\_\_ of the students who get an \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ also do \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.

Solution: The data indicate a \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ association between getting an allowance and doing chores.

**Two-Way Tables - Key**

Ten students in a class were asked two questions. They were asked to tell if they do chores at home or not. They were then asked if they received an allowance or not. The results are shown below.

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Student** | **Abby** | **Bella** | **Chris** | **Deb** | **Erin** | **Frank** | **Gus** | **Hal** | **Isadore** | **John** |
| **Chores** | Yes | Yes | No | No | No | Yes | Yes | Yes | No | Yes |
| **Allowance** | Yes | Yes | No | No | No | Yes | Yes | No | Yes | No |

Create a two-way table to show the frequency counts for these data.

Step 1: Determine how the table will look. Then fill in the frequencies

Step 2: Decide how to fill in the rows. Then add the columns and record the totals.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Allowance** | **No Allowance** | **Total** |
| **Chores** | 4 | 2 | 6 |
| **No Chores** | 1 | 3 | 4 |
| **Total** | 5 | 5 | 10 |

Can you conclude that students who get an allowance are more likely to do chores than students who do not? Find the relative frequencies for the columns in the table and see.

Recreate the two-way table showing the relative frequencies for the columns.

Step 1: Find the relative frequencies.

 Of all students who get an allowance, $\frac{4}{5}$, or 80%, also do chores, while $\frac{1}{5}$, or 20%, do not.

|  |  |  |  |
| --- | --- | --- | --- |
|  | **Allowance** | **No Allowance** | **Total** |
| **Chores** | 80% (4/5) | 40% (2/5) | 60% (6/10) |
| **No Chores** | 20% (1/5) | 60% (3/5) | 40% (4/10) |
| **Total** | 100%  | 100% | 100% |

What conclusions can you draw?

The data do show that students who do chores are more likely to get an allowance than students who do not do chores, because 80% of the students who get an allowance also do chores.

Solution: The data indicate a positive association between getting an allowance and doing chores.