**Skill Sheet: Frequency Tables**

***What You Need to Know:***

The frequency of a value is the number of times that value appears in a set of data. For example, if eight users have a height of 1.5 m, then the height of 1.5 m has a frequency of 8.

When a set of data is collected, it is often in a random order. For example, user A is 1.6 m tall, user B is 1.8 m, user C is 1.5 m, user D is 1.7 m etc. Frequency tables are typically constructed with three columns – the first column shows what is being arranged in increasing order from the lowest to the highest, the second column lists a tally mark for each time the value occurs in a set of data, and the third column counts up the tally marks to show the frequency. For example:

***Examiners***

***Top Tip***

*Always include the tally column – there may be marks for showing this*

|  |  |  |
| --- | --- | --- |
| *Height, m* | *Tally* | *Frequency* |
| *1.5* | *IIII* | *4* |
| *1.6* | *~~IIII~~ III* | *8* |
| *1.7* | *~~IIII~~ I* | *6* |
| *1.8* | *II* | *2* |

You may be asked to construct frequency tables or interpret the data that they contain.

***Example:***

The lengths of a set of similar parts were measured. The results, in mm, were:

17, 20, 19, 18, 20, 16, 20, 19, 17, 18, 18, 19, 18, 19, 17, 18, 18, 20, 19, 16, 19, 19

Present this information in a frequency table.

***Answer:***

***Examiners***

***Top Tip***

*The first column may not be a list of single values – it can be a list of ranges of values, for example1.45-1.54, 1.55-1.64, 1.65-1.74 etc.*

|  |  |  |
| --- | --- | --- |
| *Length, mm* | *Tally* | *Frequency* |
| *16* | *II* | *2* |
| *17* | *III* | *3* |
| *18* | *~~IIII~~ I* | *6* |
| *19* | *~~IIII~~ II* | *7* |
| *20* | *IIII* | *4* |

***Now Try These:***

1. To help build a customer profile, one of the questions in a questionnaire asked customers their age (in years). Use the following responses to complete the frequency table below.

|  |  |  |
| --- | --- | --- |
| *Age, years* | *Tally* | *Frequency* |
| *No response* |  |  |
| *10-19* |  |  |
| *20-29* |  |  |
| *30-39* |  |  |
| *40-49* |  |  |
| *50-59* |  |  |
| *60+* |  |  |

Customer Responses, years:

*No response, 17, 53, 42, no response, 65, 23, 43, 41, 55, 33, 44, 39, 58, 46, 43, 25, 62, 33, 35, 59, 42, 49, 27, 46, no response, 29, 32, 19, 47, 38, 28, 41, 35, 44*

**Practice Sheet: Frequency Tables**

***Now Try These:***

1. Complete the frequency table below, which shows the diameter of a cut piece of material in mm.

|  |  |  |
| --- | --- | --- |
|  | *Tally* | *Frequency* |
| *10.5-11.4* | *~~IIII~~ ~~IIII~~* |  |
| *11.5-12.4* |  | *9* |
|  | *~~IIII~~ I* | *6* |
| *13.5-14.4* |  | *4* |

1. A machinist has 20 boxes of fasteners. The boxes contained the following numbers of fasteners:

18, 20, 20, 21, 18, 21, 20, 19, 20, 18, 19, 20, 21, 19, 20, 19, 20, 21, 20, 19

1. Use this information to construct a frequency table in the table below.

|  |  |  |
| --- | --- | --- |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |
|  |  |  |

1. Calculate the percentage of the boxes that contained 20 or more fasteners.

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1. Produce a graph showing the frequency of the fasteners in the boxes.



**Answers:**

**Skill Sheet: Frequency Tables**

1.

|  |  |  |
| --- | --- | --- |
| *Age, years* | *Tally* | *Frequency* |
| *No response* | *III* | *3* |
| *10-19* | *II* | *2* |
| *20-29* | *~~IIII~~* | *5* |
| *30-39* | *~~IIII~~ II* | *7* |
| *40-49* | *~~IIII~~ ~~IIII II~~* | *12* |
| *50-59* | *IIII* | *4* |
| *60+* | *II* | *2* |

**Practice Sheet: Frequency Tables**

1.

|  |  |  |
| --- | --- | --- |
| *Diameter, mm* | *Tally* | *Frequency* |
| *10.5-11.4* | *~~IIII~~ ~~IIII~~* | *10* |
| *11.5-12.4* | *~~IIII~~ IIII* | *9* |
| *12.5-13.4* | *~~IIII~~ I* | *6* |
| *13.5-14.4* | *IIII* | *4* |

2. a)

|  |  |  |
| --- | --- | --- |
| No of Fasteners | Tally | Frequency |
| 18 | III | 3 |
| 19 | ~~IIII~~ | 5 |
| 20 | ~~IIII~~ III | 8 |
| 21 | IIII | 4 |

1. ((8 + 4) / 20) x (100 / 1) = 60 %
2. 

8

6

Frequency

4

2

0

18

21

20

19

Number of fasteners