Assessing students' work

Note: The student work shown below is from a UK version of the task – the language has since been adapted for the US.

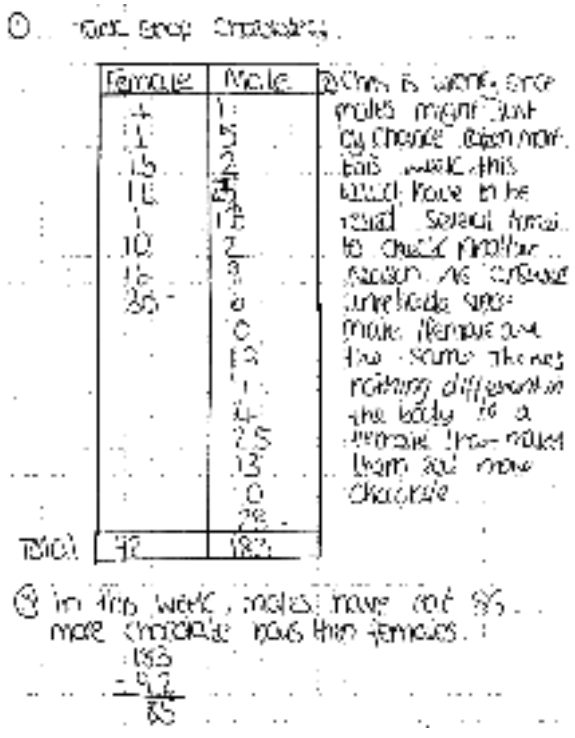
The following descriptions indicate typical levels of performance. After each description is an example of some work at this level.

Little progress

- **Representing:** May tabulate the data, but does not choose a suitable graph or chart for comparing the data. Does not choose a method for making comparisons.
- **Analysing:** Makes a simple analysis of raw male and female data. E.g. Tabulates data and/or checks totals accurately.
- **Interpreting and evaluating:** Makes a sensible comment on the reasoning presented. No comparison is made between male and female data
- **Communicating and reflecting:** Communicates limited findings in an understandable way, but with errors and/or omissions.

Sample response: Megan

Megan tabulates the numbers of bars of candy for males and females. She does not draw any graphs. She checks the difference between the total number of bars for males and females, but does not comment on the fact that there are more male than female entries in the table.



Questions for Megan:

Megan could be encouraged to improve her response by asking the following questions:

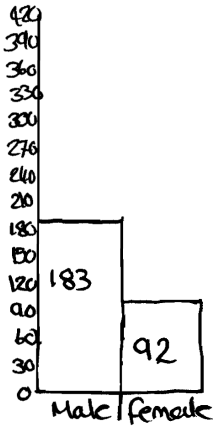
- *If we had asked more females than males how might your answer have changed?*
- *Can you think of a method to take into account the fact that a different number of males than females were asked?*

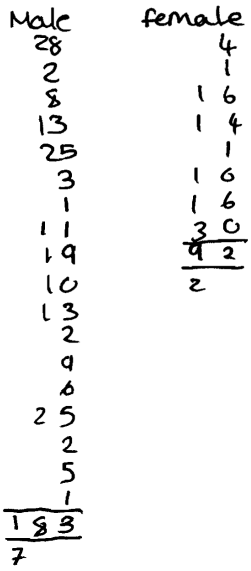
Some progress

- **Representing:** May tabulate the data but does not choose a suitable graph or chart for comparing the data. Does not choose method for making comparisons.
- **Analysing:** Makes a simple analysis of raw male and female data. E.g. Tabulates data and/or checks totals accurately
- **Interpreting and evaluating:** Identifies a valid error in reasoning presented. E.g. "Only 30 people were asked". Some comparison is made of male and female data. E.g. "More males than females responded to the questionnaire".
- **Communicating and reflecting:** Communicates findings in an understandable way. but with errors and/ or omissions.

Sample response: Nikela

Nikeela sorts the data into males and females, then draws a block graph showing the number of bars eaten by males and females - this is not particularly helpful! She correctly comments on the fact, however, that more men than women were surveyed. Her communication is clear. The final comment is based on personal opinion rather than the data.





a. Chris is wrong because there is more male than female and because they only did it for a typical week so people could start eating loads or not eating any at all.

b. I think that males eat more than females.

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Questions for Nikeela:

Nikeela could be encouraged to improve her response by asking the following probing questions:

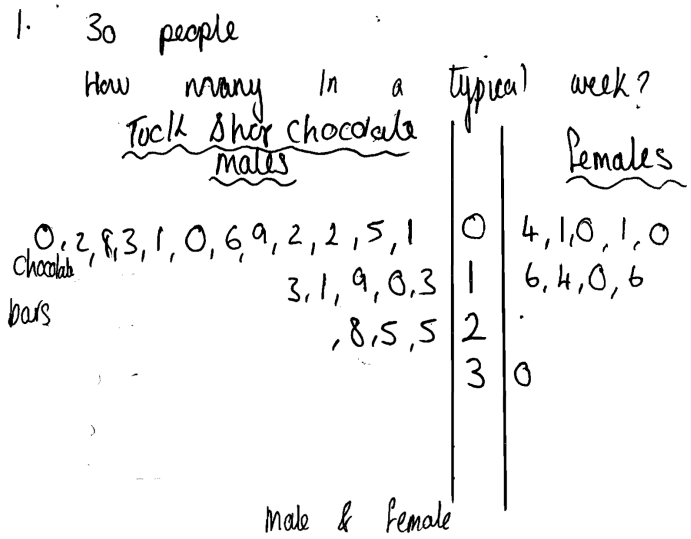
- *How many males ate less than 5 bars of candy? How does this compare with females? Can you draw a chart or graph to show the data grouped in some way, so that we can compare males and females?*
- *You note that there are more males than females. What were the numbers?*
- *Can you find a way of comparing the data from males and females that accounts for a different number of males and females being asked?*

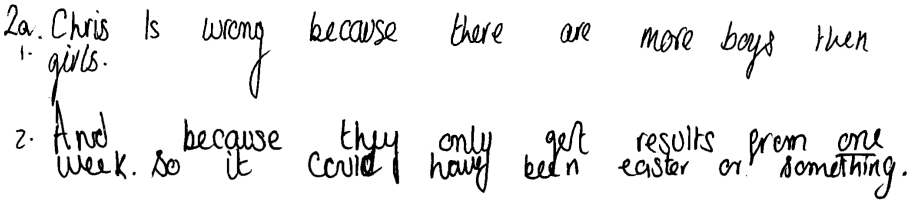
Substantial progress

- **Representing:** Chooses an appropriate way of representing the data using a chart or graph. E.g. Comparative bar charts, stem and leaf plots. Does not choose suitable method for making comparisons.
- **Analysing:** Sorts the data and draws charts accurately to compare data or to calculate suitable values for comparison.
- **Interpreting and evaluating:** Engages with someone else's reasoning and identifies errors. E.g. “Sample size too small”; “Survey asked 20 boys but only 10 girls”
- **Communicating and reflecting** Communicates two valid reasons why Chris is wrong.

Sample response: Sophie

Sophie draws an accurate stem and leaf graph but reaches no conclusion from it. She correctly notes that more men than women were surveyed and that the results were gathered in only one week.





Questions for Sophie:

Sophie could be encouraged to improve her response by asking the following questions:

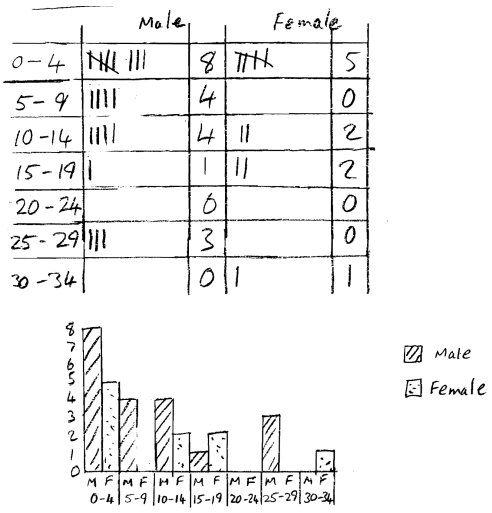
- *What can you deduce from your stem and leaf diagram*
- *You note that there are more males than females who were asked in obtaining the totals of 183 and 92 bars of candy. What were the numbers of males and females asked and what would you have expected the results to have been if the same number of males and females had been asked?*
- *What valid conclusion (comparing males and females) does the data support?*

Task accomplished

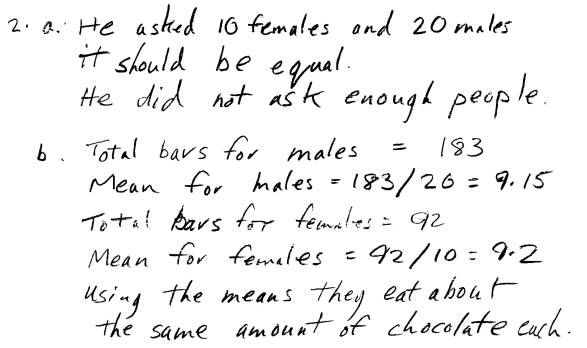
- **Representing** Chooses an appropriate way of representing the data using a chart or graph. E.g. Comparative bar charts, stem and leaf plots. Chooses appropriate method (e.g. means) for making comparisons
- **Analysing:** Draws suitable charts or graphs to compare data and calculates comparable values for the amount of candy eaten.
- **Interpreting and evaluating:** Engages with someone else's reasoning and identifies errors. Makes valid comparison between male and female data. E.g. “Means are about equal.”
- **Communicating and reflecting:** Communicates two valid reasons why Chris is wrong and writes down a clear, correct conclusion that is supported by the data. E.g. “Boys and girls eat about the same”.

Sample response: Pat

Pat makes tally charts and bar graphs showing males and females separately. She notes that there were more males than females and that the sample was small. Then she calculates the mean number of bars eaten for males and females, showing that they eat about the same average number of bars. Her work is clear and easy to follow.



	Male		Female	
0–4	𝍸 III	8	𝍸	5
5–9	IIII	4		0
10–14	IIII	4	II	2
15–19	I	1	II	2
20–24		0		0
25–29	III	3		0
30–34		0	I	1



2. a. He asked 10 females and 20 males
it should be equal.
He did not ask enough people.

b. Total bars for males = 183
Mean for males = 183/20 = 9.15
Total bars for females = 92
Mean for females = 92/10 = 9.2
Using the means they eat about the same amount of chocolate each.

Questions for Pat:

Pat could be encouraged to improve her response by asking the following questions:

- *You mention that not enough people were asked. What number of people would you recommend?*
- *How much do you feel that the results might vary from week to week?*
- *What other changes would improve the survey?*

