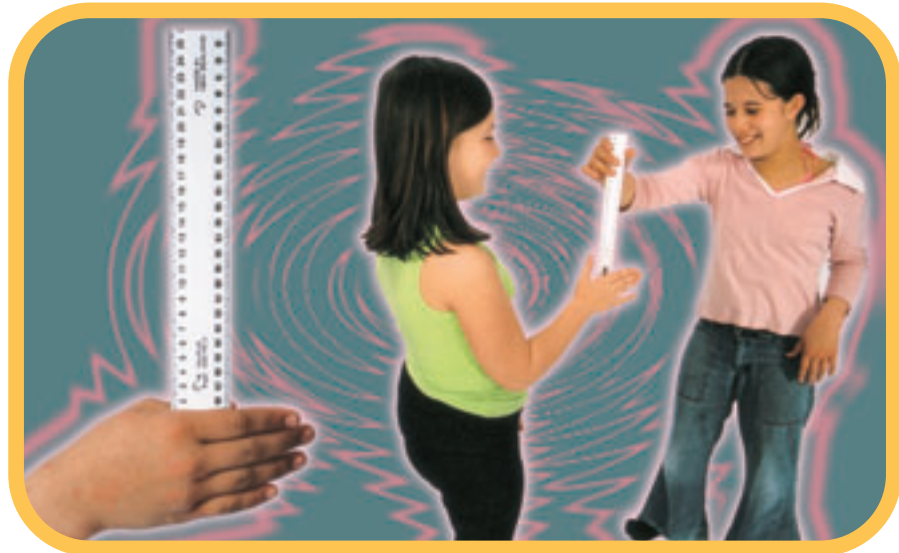


Action and Reaction

You need: a 30 centimetre ruler, square grid paper, a computer, a classmate

ACTIVITY

- Using a 30 centimetre ruler, work with a classmate to test your reaction times. Get your classmate to hold the top end of the ruler while you position your thumb and forefinger alongside the 0 centimetre mark at the bottom. Do not grip the ruler.



Without warning, your classmate lets the ruler go. As soon as this happens, you grab it. Measure, to the nearest millimetre, the length that has passed through your fingers.

- Do this 10 times and record the details in a table like the one below.
 - Swap roles and record the results for your classmate.
- Graph the two sets of results on a single time-series graph or histogram. Comment on any patterns you can see.
 - Work out the mean, median, and mode for each set of 10 trials. Which is the best measure of your reactions?
 - Who has the better reaction times? How does the data show this?

3. Here are 10 results from Mele:

Trial	1	2	3	4	5	6	7	8	9	10
Length (cm)	23.7	19.2	21.5	20.6	18.3	22.1	24.0	13.2	19.5	21.8

Sometimes a set of data is “truncated” (the lowest and highest numbers are ignored). This is done when there is probably a good explanation as to why these numbers are so high or so low.

Look at trials 7 and 8. Should these be truncated? Give your reasons.



4. Mele and Louise are trying to make sense of the reaction data for their whole class. Each student gives their median reaction length in centimetres.

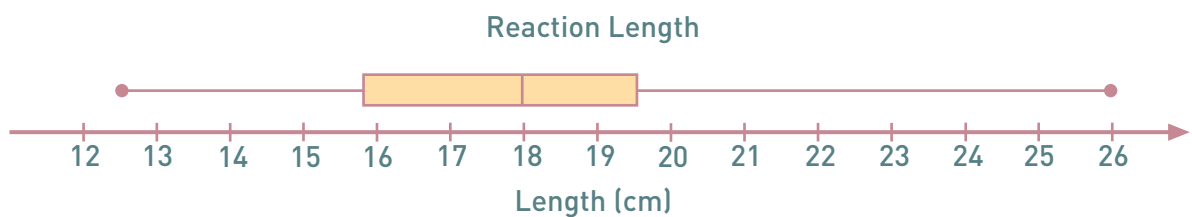
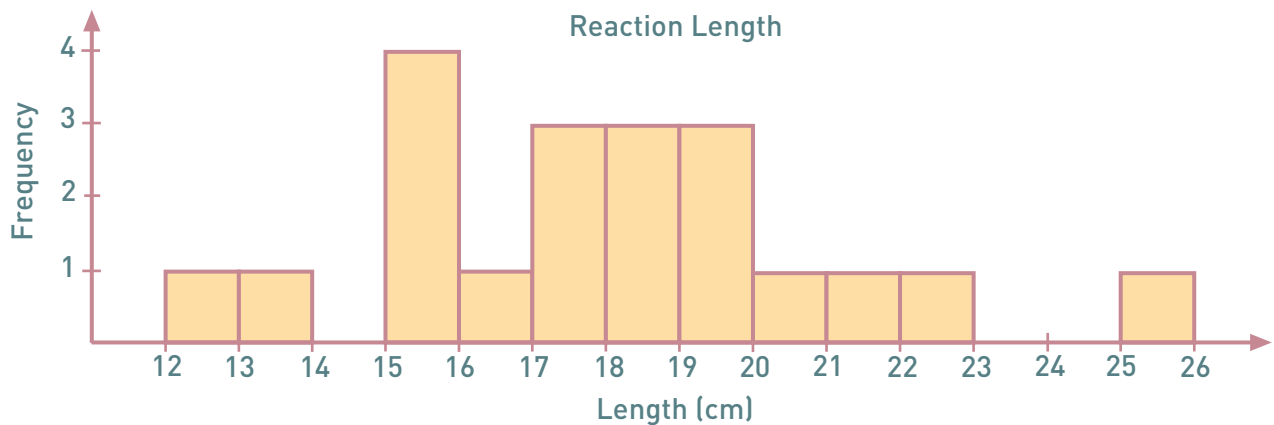
12.6	13.5	15.1	15.4	15.6	15.9	16.3	17.0	17.4	17.5	18.3	18.6
18.7	19.2	19.2	19.5	20.6	21.8	22.3	25.7				



15 centimetres is common.

Yes, but the median should be around 17 or 18.

Mele and Louise draw a histogram and a box-and-whisker plot of the median reaction length for all the students in their class.



Compare the two graphs. What can you see clearly in one that you can't see as clearly in the other?

5. Collect median reaction length data from your class. Present it both as a histogram and as a box-and-whisker plot. Discuss what each graph shows.