 Minute-to-win-it data analysis

Complete any or all of the suggested activities for a minimum of 10 round. Record your results as you go and then complete a data analysis at the end. As an extension, you may like to compare your results with the results of a family member or friend.

Suggested activities

**Coin tower**

Stack as many coins as you can using one hand within a minute.

**Cup stack**

**St**ack a series of paper cups on top of one another. Place the stack upside down and draw a cross on the bottom of the top cup. By repeatedly moving the top cup to the bottom, measure how long it takes for the cup with the cross to appear back at the top.

**Cereal pursuit**

See how many pieces of cereal you can thread onto a skewer within a minute. Use your own cup of cereal and then you can munch on it at the end!

**Bottle toss**

Fill an empty bottle with a set amount of water. It is important that the bottle and water level is the same each time. Students are to flip the bottle and try to make it stand upright when it lands. Students are to count how many successful flips that can produce in a minute.

Recording the results

Students can record their results in a table similar to the one featured below.

| Activity | Trials (unordered) | Trials (ordered) | Mode | Median | Mean | Range |
| --- | --- | --- | --- | --- | --- | --- |
| **Example**Coin tower | 30, 30, 29, 15, 26, 5, 18, 34, 46, 17 | 5, 15, 17, 18, 26, 29, 30, 30, 34, 46 | 30 | $$=\frac{26+29}{2}=27.5$$ | $$\frac{250}{10}=25$$ | $$46-5=41$$ |
| Coin tower |  |  |  |  |  |  |
| Cup stack |  |  |  |  |  |  |
| Cereal pursuit |  |  |  |  |  |  |
| Bottle toss |  |  |  |  |  |  |

**Mode –** The score that occurs the most

**Median –** The middle score in an ordered set of scores

**Mean –** Sum of the scores divided by the number of scores

**Range –** The highest score minus the lowest score

Analysing the results

Students are to determine the mean, median, mode and range of each set of data scores. Instructions on how to calculate each of these measures is outlined above.

When analysing the data consider your response to the following questions:

* If you competed against another person, who performed better and why? Did you choose the winner based on mode, median, mean or range? Why?
* Do you think a person’s age impacts on the results for any of the challenges? If so, which ones and why?
* When playing the coin tower do you think the size and shape of the coins makes a difference to the outcome? Can you stack more 5 cent coins or 50 cent coins in a minute?
* When playing the bottle toss, why is it important when comparing results that each participant has the same size bottle with the same amount of liquid? Do you think you would have more success with a larger bottle or a smaller bottle? Do you think the amount of water in the bottle impacts the results?

Outcomes

A student:

* Communicates and connects mathematical ideas using appropriate terminology, diagrams and symbols MA4-1WM
* Applies appropriate mathematical techniques to solve problems MA4-2WM
* Recognizes and explains mathematical relationships using reasoning MA4-3WM
* Analyses single sets of data using measures of location, and range MA4-20SP

All outcomes referred to in this unit come from [Mathematics K-10 Syllabus](https://educationstandards.nsw.edu.au/wps/portal/nesa/k-10/learning-areas/mathematics/mathematics-k-10) © NSW Education Standards Authority (NESA) for and on behalf of the Crown in right of the State of New South Wales, 2012