

Standing Order

Purpose:

The purpose of this activity is to engage students in applying their number knowledge to compare measurements of the same type but given in different formats.

Achievement Objectives:

GM3-1: Use linear scales and whole numbers of metric units for length, area, volume and capacity, weight (mass), angle, temperature, and time.

NA3-1: Use a range of additive and simple multiplicative strategies with whole numbers, fractions, decimals, and percentages.

Description of mathematics:

In readiness for this problem, the students should have familiarity with each of the following components of mathematics. The problem may be solved with different combinations of these components.

- metric units of length
- converting between cm and m
- fractions
- decimal place value
- ordering values

This activity may be carried out with guidance, or by allowing the student to follow their own method of solution. The approach should be chosen in sympathy with students' skills and depth of understanding.

Activity:

Three friends measured their heights:

- Jayne is one and a half metres tall.
- Chris is 1.6 metres tall.
- Amy is 1 m 58 cm tall.

Who is the tallest and who is the shortest?
Show how you know.



The arithmetic approach

The student is able to convert measurements to a common format in order to make a comparison.

Prompts from the teacher could be:

1. Are these heights ready to compare?
2. What form should they be in, so that they can be compared?
3. Who is the tallest and who is the shortest?

The image shows a student's handwritten work on a piece of paper. At the top, three heights are listed, each on a separate line with a horizontal line underneath:

- Jayne is 150_{cm}
- Chris is 160_{cm}
- Amy is 1.58_{cm}

Below these, the student has written the word "ANSWERS" in a smaller, slanted font. Underneath, the student has written two sentences:

- Jayne is the shortest
- Chris is the tallest

To the right of the student's work is a red speech bubble containing a dialogue:

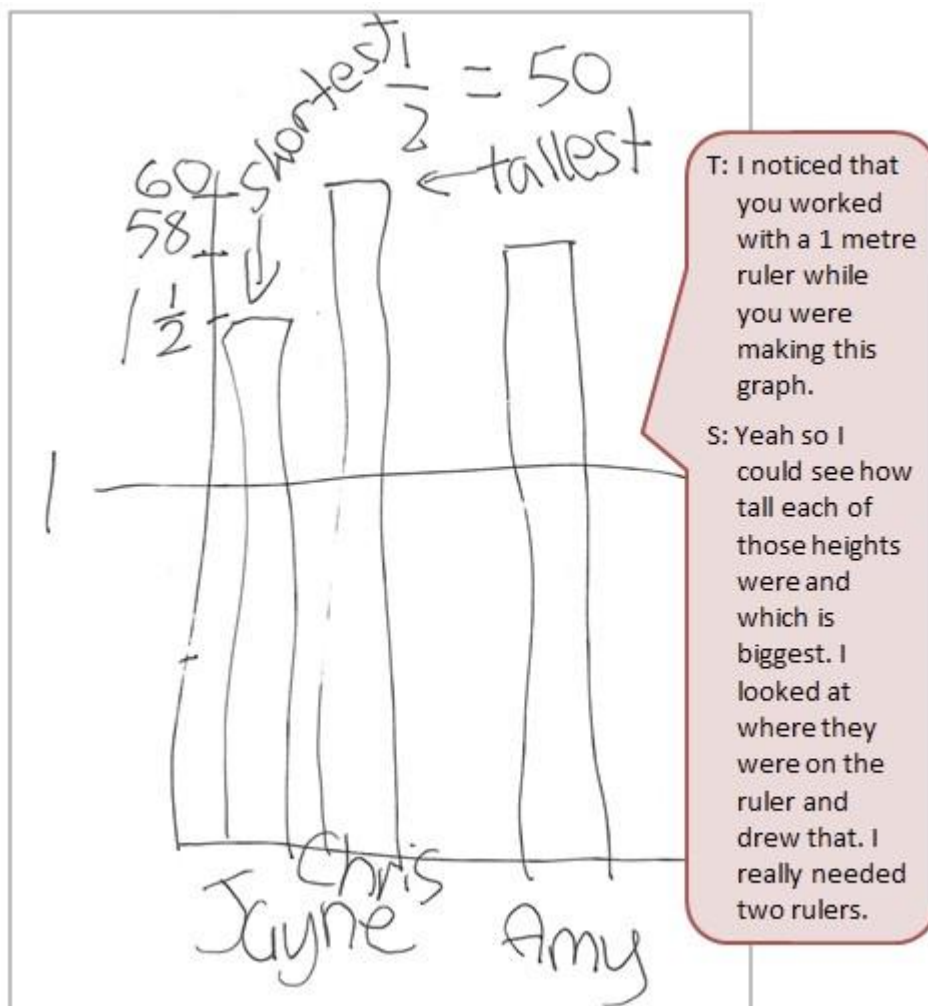
T: I see you have made every height into cm.
S: Yeah I looked at the half and the cm and they all looked different. Once I made them the same then I could compare them.

The visual approach

The student is able to compare measurements to solve a problem.

Prompts from the teacher could be:

1. What can you use to measure someone's height?
2. Where would each of these three friends be on that measuring tool?
3. Who is the tallest and who is the shortest?

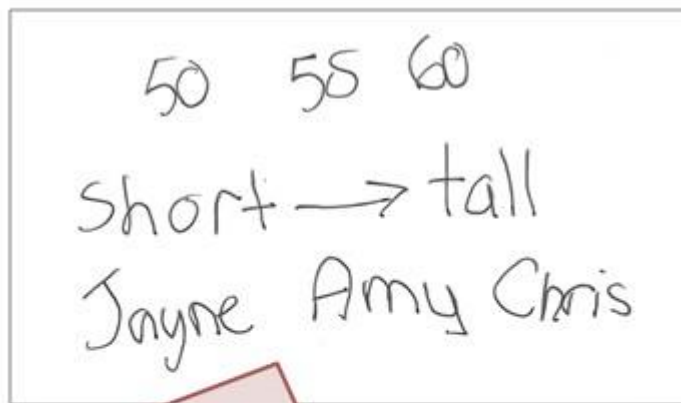


The conceptual approach

The student is able to convert measurements to a common format in order to make a comparison.

Prompts from the teacher could be:

1. Are these heights ready to compare?
2. How could they be compared?
3. Who is the tallest and who is the shortest?



T: You worked this out with a lot of thinking. Tell me about that thinking.

S: I knew they were all over one metre so I took the ones off and I knew that was 50, the half, and I know that with 6 tenths its 60 and the other one is 58 so I put them in order.