

LITTLE MAN



Little Man is much smaller than you and me. Here is a picture of him standing next to an ordinary mug.

Can you estimate how tall he is? How tall do you think Little Man's mug might be?

My mug is 11 centimetres tall and it holds 320 millilitres but mugs come in different sizes. How big is your mug?

Can you estimate how many "Little Man mugs" of tea might fill one of our mugs?

SOLUTION

There is no exact solution here. Learners should measure the capacity of a mug and work out the answers for their mug. They might experiment with a sewing thimble or an egg cup for Little Man's mug.

Typical Solution

I am 160 centimetres tall.

So if Little Man is 10 centimetres tall then I am 16 times his height and he is one sixteenth of my height.

If his mug is one sixteenth of the height of my mug ...

then it is also one sixteenth of the width of my mug across in each direction.

So it will take about $16 \times 16 \times 16 = 4096$ of Little Man's Mugs to fill my mug.

NOTES FOR TEACHERS

Why do this activity?

In doing this activity learners will work with a mug with which they are familiar and a story that will capture their imagination. It gives learners the chance to measure length in centimetres and volume and capacity in cubic centimetres and millilitres and also to estimate quantities. This could be a good practical activity if you can find very small containers such as sewing thimbles to use as Little Man mugs.

Intended Learning Objectives (Grades 4 to 6)

To gain practical experience of measuring 3-D objects and estimating, recording, comparing and ordering objects by length and capacity. To use measuring instruments such as rulers and measuring jugs to measure in centimetres and millilitres. To develop problem solving skills and an understanding of the relationship between length, volume and capacity.

Possible approach

Before working on this task you might like to ask learners to make up stories about Little Man. If you can get a copy you might read together the children's book called "The Man" by Raymond Briggs or some other story about pixies or fairies or other small beings.

You might like to start by investigating how much liquid different everyday items hold, for example empty containers you might otherwise throw out from the kitchen or you could use spoons, bowls, bottles and jugs. You could ask the class to vote whether filling a larger container from a smaller one will take more than 10 times or less than 10 times the smaller one (or 5 or 20 or 100 times as you decide). This practical exploration could be done as a practical demonstration with 2 or 3 learners helping at the front of the class.

If possible use mug and a small container such as a sewing thimble or egg cup so that learners can check whether their estimates are realistic. You might like to concentrate at first on how many of the smaller container fill up the bigger one and make measuring the capacity of the mug in millilitres an extension activity.

It is important that you ask learners to make estimates and to explain their answers. You could challenge learners to describe the relationship between the relative size of the little man and one of them. Is the man about twice as small as us? Five times smaller? Ten times smaller? What does smaller mean? If we are talking about his height does the same relationship hold for how heavy he is? Will this relationship hold for Little Man's mug? Will it hold for the amount of tea to fill his mug? Why or why not?

To measure heights either have a ruler and tape measure or mark a scale on strips of paper and on a rolled newspaper measuring stick. See <https://aiminghigh.aimssec.ac.za/grade-3-to-7-metre-measures/>

One common misconception is to think that if a person is 16 times the height of the Little Man then it will take 16 of his mugs to fill one belonging to the big person, or $16 \times 16 = 156$ of his mugs forgetting that they must think in 3 dimensions.

Key questions

How would you compare the size of Little Man's mug and this mug?

How long is one centimetre? Ten centimetres? So how high do you think a mug might be?

How did you think of that answer?

Can you think of anything that you know holds about a litre of liquid?

How much do you think a mug might hold?

Possible extension

You could make measuring the capacity in millilitres an extension activity. It would be helpful to have a mug, ruler and a measuring jug available so that learners can measure the mug and how much liquid it holds.

Possible support

Some learners might find it helpful to have a series of tasks requiring them to estimate and then to measure concrete items in the classroom before going on to estimate measurements of items they are visualising.

Note: The Grades or School Years specified on the AIMING HIGH Website correspond to Grades 4 to 12 in South Africa and the USA and to Years 4 to 12 in the UK.				
	Lower Primary or Foundation Phase	Upper Primary	Lower Secondary	Upper Secondary
South Africa	Grades R and 1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
USA	Kindergarten and G1 to 3	Grades 4 to 6	Grades 7 to 9	Grades 10 to 12
UK	Reception and Years 1 to 3	Years 4 to 6	Years 7 to 9	Years 10 to 13
East Africa	Nursery and Primary 1 to 3	Primary 4 to 6	Secondary 1 to 3	Secondary 4 to 6

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