St Robert of Knaresborough

Knaresborough Schools Project 2019

Maths and Measurement

THE CRAZY WORLD OF MEDIEVAL MEASUREMENTS: USE YOUR BODY

Resources: Poppy seeds (possibly two small and messy), Barley, Rulers (cms and inches), Tape Measures (cms and inches); fingers, hands and arms; a range of things to measure

TEACHER – Guide for introduction: Today, we can all agree how long or wide something is because we have an agreed set of measurements. We all have a ruler or a tape measure with exactly the same measurements on so we don't have to worry or argue about things too much. But in the time of St. Robert, things were much more complicated. It was much harder to agree on sizes, lengths and distances.

Discussion: Why was it harder to measure things accurately a long time ago than it is today? Who decides how long a centimetre or a metre, an inch or a mile is? And the same goes for how heavy something is – who decided what a kilogram or a pound was? And how large something is – a litre or a pint? How do we agree on these things? And why are these things important?

Focus on measuring how long something is and consider some of the following:

- People had a lack of interest as it didn't matter much how tall you were in numbers – people could see how tall you were and could make an easy comparison with someone or something; people knew their local area and knew the distance or area of things;
- Most people could not read or write although they had very good memories, were good with numbers and all knew their local area very well;
- People had more important things to make and to worry about because staying alive, getting food, being safe, building shelters and the like were more important;
- It was difficult to create agreed measurements that made sense to everyone in an area or country;
- Laws would be needed to enforce any measurements and enforcing it was very difficult as there were no police or government officials to deal with such things;
- The rough measurements people had were enough for the community to be able to agree and get on with life

TEACHER - Introducing common terms: small measurements, barley, digit, inch, hand, span, foot, cubit, yard.

People did not have rulers or tape measures that they all agreed on. Different people, like carpenters, blacksmiths, bakers and farmers, might use their own way of measuring but it was hard to make everyone agree – and it did not matter too much for most people. They needed a system that made sense for them, their, family, their village or their work. They needed things that they could have with them and could be easily used and compared – so they used their bodies for a lot of things.

Before we look at them, what parts of the body would everyone regardless of age, gender, intelligence and skill be able to use to give a clear measurement of something?

Discuss these and make a list – and also discuss what is good about these measures. For example, fingers, hands and arms are all good as we can see them, have them with us all the time and they are easy to compare. If you say you need a piece of wood that is the same length as my hand and the width of my thumb, you can easily remember it and cut it to the right size.

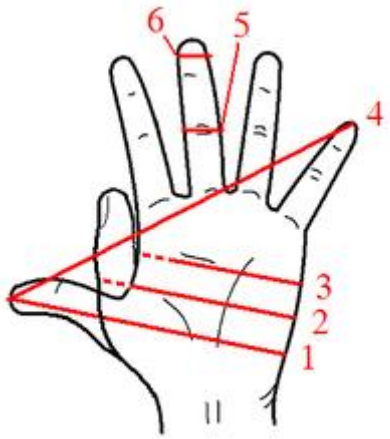
And consider some of the problems: people's hands and arms are different sizes, they change over time, few things are exactly the length of, say, three arms or two thumbs. And what happens when people work together on something? You could have to go and find the person who measured something with their hand because your hand is a different size.

And some things are too small to easily measure with your body, so they needed another way of measuring them. These had to be small, tough and widely available, so they started with two seeds: poppy and barley.

The smallest measure used at the time of St Robert was the poppyseed.

The largest measurement that can be made using the body is the fathom – but there are lots in between.

Term	Size - Imperial	Size - Metric
Poppyseed	1/5 of a barleycorn	
Barleycorn	1/3 of an inch	
Digit (width of an adult fingertip)	¾ of an inch	
Finger (width of the middle finger at the first knuckle went the fingers are bent)	7/8 of an inch	
Inch	3 barleycorns end to end	
Palm (inside of hand)	3 inches	
Hand (full width of hand to include outside of thumb)	4 inches	
Shaftment (Width of the hand and outstretched thumb)	6 inches	
Span (Width of the outstretched hand, from the tip of the thumb to the tip of the little finger)	3 palms = 9 inches	
Foot	4 palms = 12 thumbs = 12 inches	
Cubit (From middle fingertip to elbow)	6 palms = 18 inches	
Yard	2 cubits = 36 inches	
Ell (from fingertip of outstretched arm to edge of opposite shoulder)	1¼ yards	
Fathom (from fingertips of outstretched arms at shoulder height)	6 feet	



Every ancient civilisation used the body as the basic way of measuring things

TASKS

1. Make drawings or diagrams to show how we work out the different measurements. This could be done with photographs that are then made into a wall display. They could discuss the strengths and weaknesses of these types of measurement, when they are helpful and when they are not.

2. Pupils could compare the different sizes of some of these forms of measurement (in inches or cms) within their class, including the teacher and some other members of staff. They could also do a list for the members of their family.

3. Describe the size of the classroom and a number of things in it, such as the tables, chairs, bookcases, pens, books, doors and the like using some of the different measures.

4. Go out and about around the school to measure things: the size of the hall, the length of the corridor, the height of the Head Teacher, circumference of a tree or the distance between two trees

Fun Fact: Shoes

The difference in measurements between British shoe sizes is still based on barley corns. For example, the difference between size 3 and 4 or between 7 and 8 is the length of one barley corn.

One barleycorn is 1/3rd of an inch or 8.46mm.

A half-size difference is 1/6th of an inch or 4.23mm. These half sizes did not exist until 1880.

LINK - How to measure a horse: **https://www.youtube.com/watch?v=R2h9mM4hGzk**

ADVANCED LINK: For students who are really interested in the Imperial measurements, with lots of connections and mention of new things, here is a video: **https://www.youtube.com/watch?v=r7x-RGfd0Yk**