

Measures Week - Multiplicative Reasoning Y3/4

This week is all about exploring the relationships between lengths of different body parts.

We come in all sorts of different shapes and sizes but when you start measuring and comparing, there are lots of similarities between parts of our bodies.

For example, if you know your height you can predict approximately how long your arm span is. If you know the distance all the way around your wrist you can predict approximately how long your neck is.

For this week you will need:

- Pencil and paper
- String, ribbon, wool, cotton etc. that can be cut into pieces
- Scissors

You will need to keep the pieces of string that you use to measure each body part. Label each clearly.

You may also need the help of an adult or friend to measure and cut the string during the week.

Notes for adults working with groups of children

During this week the children might need help with identifying the multiplicative relationship between different lengths of string. There are different ways to do this including:

- Use the shorter piece like a ruler, lying it alongside the longer piece starting at one end, marking the longer piece where the short piece ends and then moving the short piece and repeating from the mark made.
- Cut several pieces of string the same length as the shorter piece, lay them end to end next to the longer piece and count how many are needed to match the length.
- Fold the longer piece into equal parts so the length of each part equals the length of the shorter string.

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You will need to use this table each day:

Body parts	What and how to measure
Height	Distance from top of head to heel of foot. Stand against the wall with feet flat, or lie on the floor with feet flat against a wall.
Arm span	Distance between middle finger tips of hands when you stretch out your arms as far as you can reach
Thigh bone	Sit down and measure from your hip joint to the tip of your knee.
Forearm	Distance from wrist to tip of elbow
Head length	Distance from top of your head to your chin
Foot length	Distance from tip of big toe to heel
Shoulder width	Distance from one shoulder to the other across the chest
Upper arm	Distance from arm pit to elbow
Hand	Distance from tip of middle finger to base of hand
Face	Distance from hair line to the tip of your chin

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Day 1

How do you think your foot length compares to your forearm?

- Cut a piece of string/wool/ribbon to match the length of your foot.
- Next cut a piece to match the length of your forearm.
- What do you notice about the two lengths?
- For example, is your foot **approximately** two times as long as your forearm, about the same length or half as long?
- Start recording the things you notice in table like this one:

Body Parts	What you notice
Foot and forearm	

How do you think the distance around your wrist compares to the distance around your neck?

- Cut a piece of string to fit around your wrist.
- Cut a piece of string to fit around your neck.
- What do you notice about the lengths?
- Record in your table.

Find other people in your house and with string measure the length of their: feet, forearms, wrists and necks. Or you could phone some friends and ask them to do the activities and let you know their results.

- Record what you notice.

Notes for adults working with groups of children

- Model how to measure accurately using the string and how to record. Encourage children to notice the relationships between pairs of body parts. You might want to use a stem sentence to support their explanation. For example: The distance around the wrist is **approximately half** the distance around the neck. The distance around the neck is **approximately twice** the distance around the wrist.

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Day 2

How do you think your height compares to your arm span?

- Cut a piece of string to match your height.
- Cut a piece of string to match your arm span.
- What do you notice?
- Record in the table.

How do you think your height compares to the length of your thigh bone?

- Cut a piece of string to match the length of your thigh bone.
- Compare this with your height.
- What do you notice?

Find other people in your house and measure their heights, arm spans and thigh bones. Or you could phone some friends and ask them to do the activities and let you know their results.

- Record what you notice.



Notes for adults working with groups of children

- See Day 1 and introduction

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Day 3

How do you think your height compares to the width of your shoulders?

- Cut a piece of string to match the width of your shoulders.
- Compare this with your height.
- What do you notice?
- Record in your table.

How do you think your height compares to the length of your upper arm?

- Cut a piece of string to match the length of your upper arm.
- Compare this with your height.
- What do you notice?
- Record in your table.

Find other people in your house and measure their heights, shoulder widths and upper arms. Or you could phone some friends and ask them to do the activities and let you know their results.

- Record what you notice.

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Day 4

How do you think the length of your face compares to the length of your hand?

- Cut a piece of string to match the length of your face.
- Cut a piece of string to match the length of your hand.
- What do you notice?
- Record in your table.

How do you think the length of your face compares to the length of your ear?

- Cut a piece of string to match the length of your ear.
- Compare this with the length of your face.
- What do you notice?
- Record in your table?

Find other people in your house and measure their faces, hands and ears. Or you could phone some friends and ask them to do the activities and let you know their results.

- Record what you notice.

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Day 5

Body Parts	What you notice
Foot and forearm	
Neck and wrist	
height and arm span	
height and thigh bone	
height and shoulder width	
height and upper arm	
face length and hand	
face length and	

- Look back at your recordings from the week and gather together all the lengths of string.
- Did you notice that your height was **approximately** four times the length of your thigh bone?
- Look at the statements below. Complete for other pairs of body parts. The first one is done for you.

My height is approximately **4** times the length of my thigh bone.

My height is approximately ___ times the length of my arm span.

My forearm is approximately ___ times the length of my foot.

The distance round my neck is approximately ___ times the distance around my wrist.

My height is approximately ___ times the length of my shoulder width.

My height is approximately ___ times the length of my upper arm.

The length of my face is approximately ___ times the length of my hand

The length of my face is approximately ___ times the length of my ear

- What do you notice?

You might like to explore some comparisons between other body parts such as eye width, nose length, finger lengths, lower leg, waist etc.

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