Maths measure - Volume

Sesssion 1

Capacity - identifying and using more and less.

Good morning! Today, and this week we're going to be learning about volume, it is part of the maths curriculum and it comes under shape space and measure.
It is actually part of the measure element of maths.

We are learning about capacity and volume. Which objects do you think that we will need to help us learn about this...

yes

no

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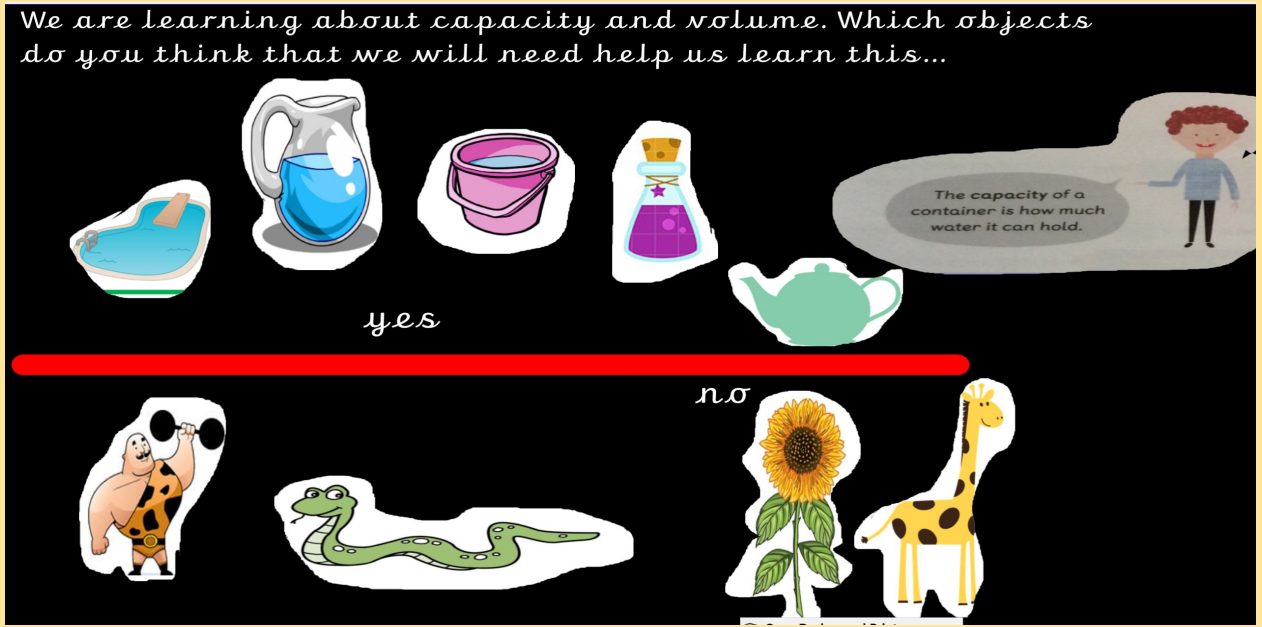
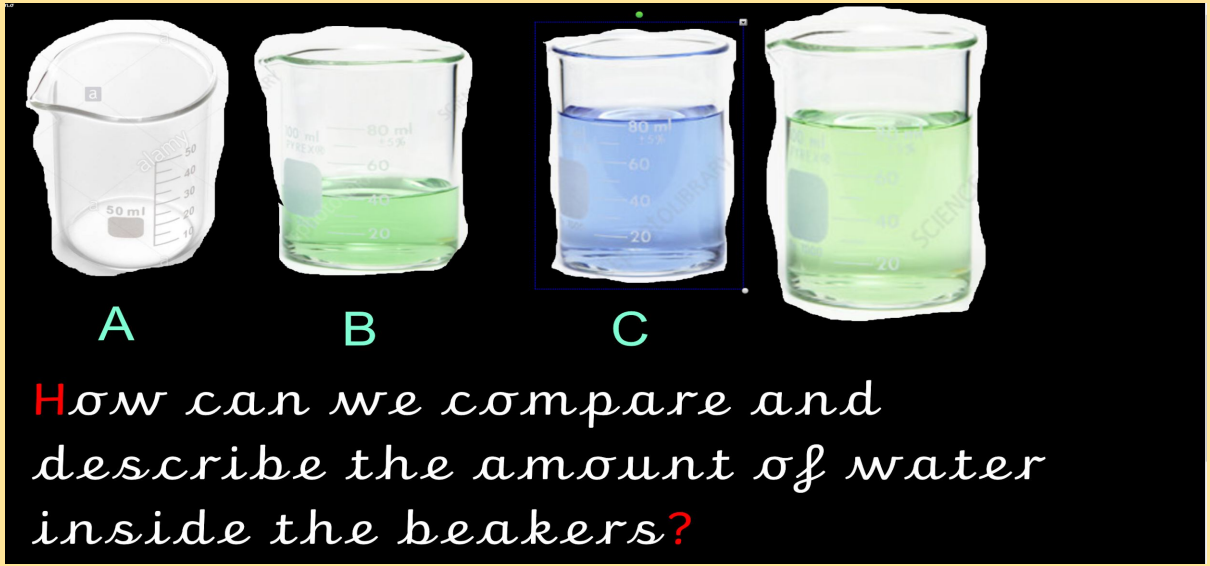
The purpose of these two slides is to help the children to begin to understand and think about the language capacity and volume.

We want the children to understand that the capacity and volume involves liquids and measuring.



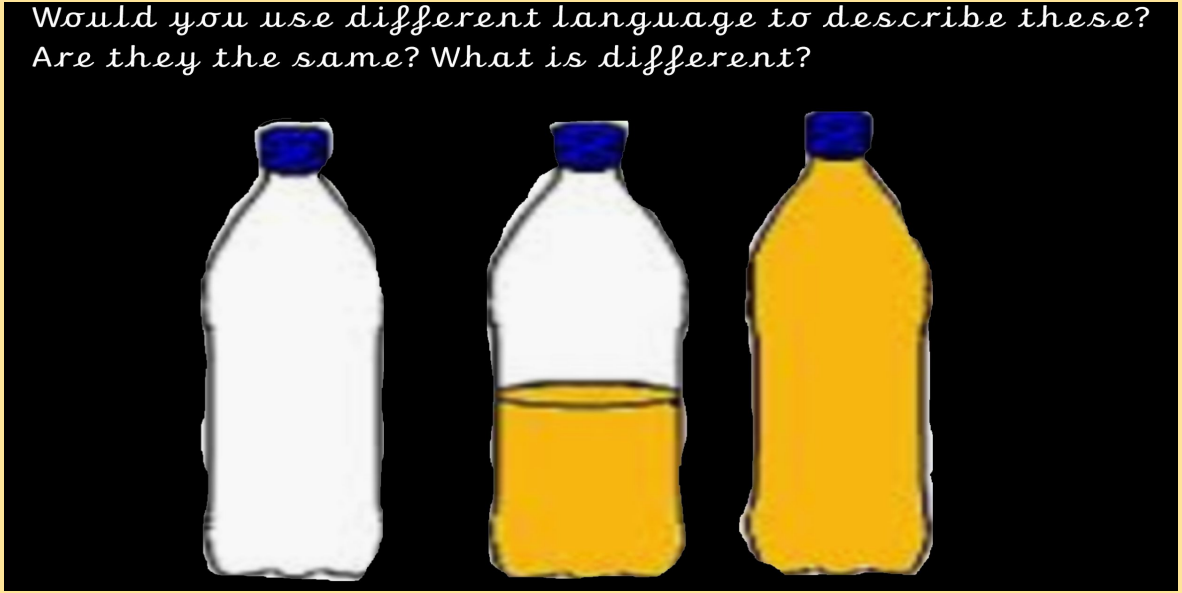
What we are looking for is that the children can use the language for empty nearly full, nearly empty.

We want the children to understand that when they look at the containers the amount of liquid is different in each one.



Again this slide is showing the children that there are different volumes and the language that we are looking for is empty or half empty nearly full full.

Would you use different language to describe these? Are they the same? What is different?



Let's Learn

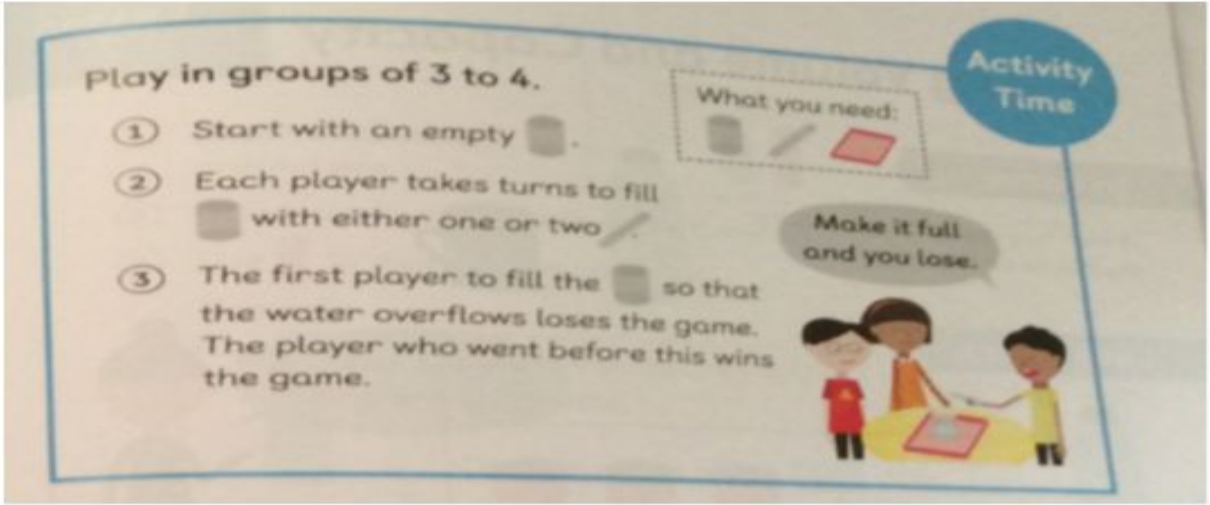
A B C

Bottle A cannot hold any more water. It is full.

Bottle C has no water at all. It is empty.

Bottle B has more water than C but less water than A.

A great way of getting snow but the children know. find some containers around the home different sizes different shapes each player chooses a small container they have to estimate how many attempts it will take to fill up their container and make the bigger container overflow. The person that makes the container overflow loses the game .This is a brilliant way of practically exploring the language for nearly full and empty.

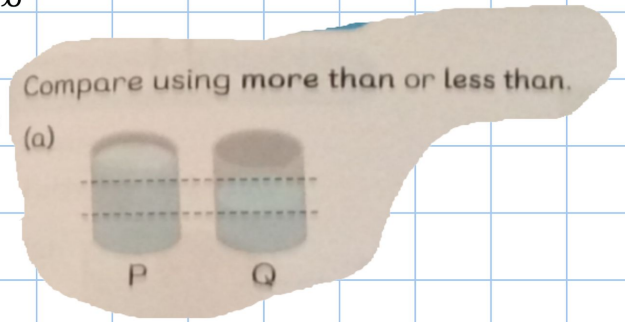


On this slide we want the children to use the language more or less.
Before they actually compare the liquid and the volume just have a very quick discussion about the fact that the cylinder is 3-dimensional which is why there are two lines to compare.
Write each sentence with the missing words completed.

Guided work

Can you explain why there are two lines?

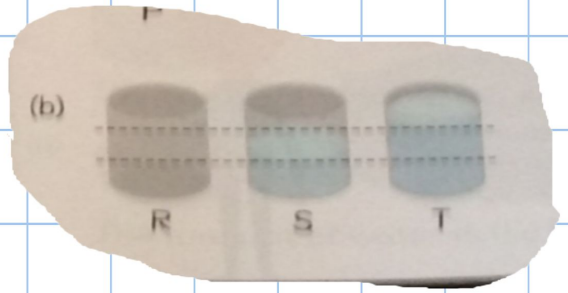
They are measuring the water in two places as the cylinder is 3D.



The amount of water in beaker P has [redacted] beaker Q.

The amount of water in beaker Q is [redacted] Beaker P.

We are looking to use the language more than or less than. the children will be becoming familiar with this now therefore you could ask them to draw the three bakers and write the sentence underneath.

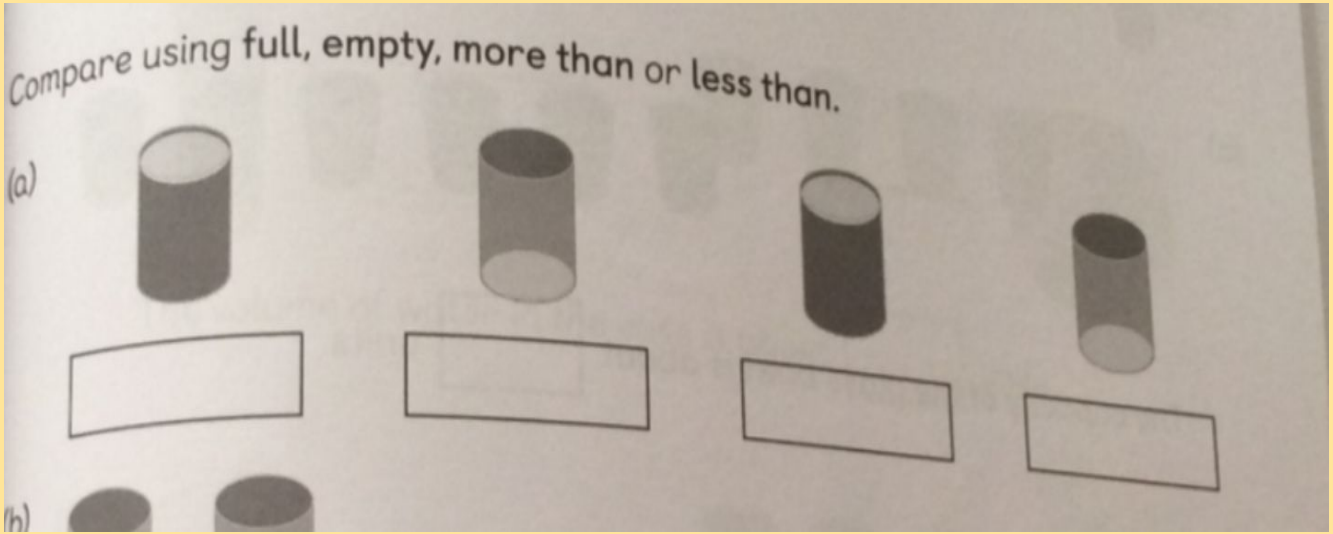


The amount of water in Beaker S

is _____ the amount in Beaker T and

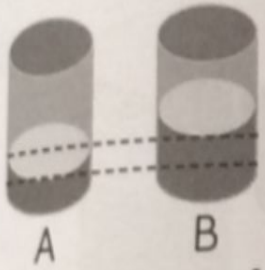
_____ the amount in Beaker R

Look at the four beakers and use the language full empty more than or less than to describe the capacity of the liquid that is in each beaker.



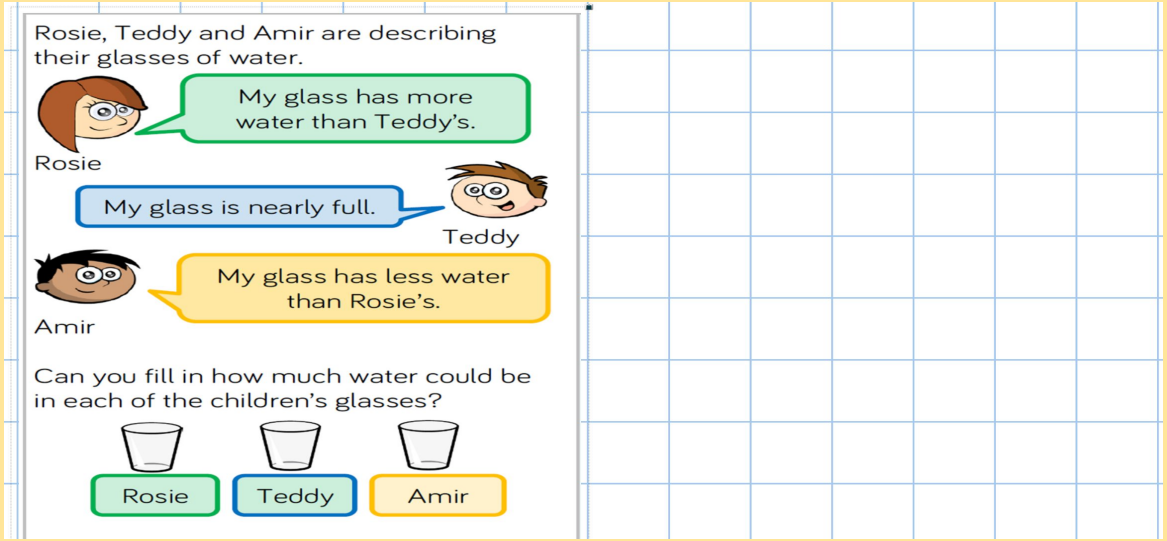
Look at the two beakers and use the language full empty more than or less than to describe the capacity of the liquid that is in each beaker.

(b)



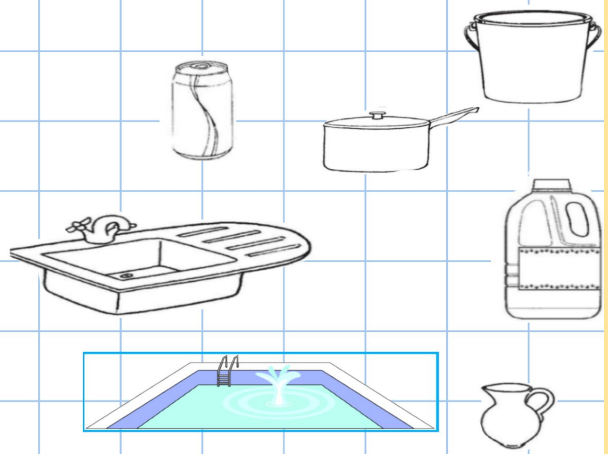
The amount of water in Beaker A is ☐ the amount of water in Beaker B. The amount of water in Beaker B is ☐ the amount of water in Beaker A.

The children to draw the three cups and label them Rosie Teddy and Amir. this is the same as the mind workouts activities. The children have got to read for a purpose they've got to read and then demonstrate that they understand the language they have read. They will do this by filling in the cups with the water.



On this slide the children look at the objects and they choose to to compare for example the can or the bucket where would they put the can and where would they put the book it under more than or less than. We are looking for the children to understand the language capacity.

Which container has the greater capacity?

more than	less than
	

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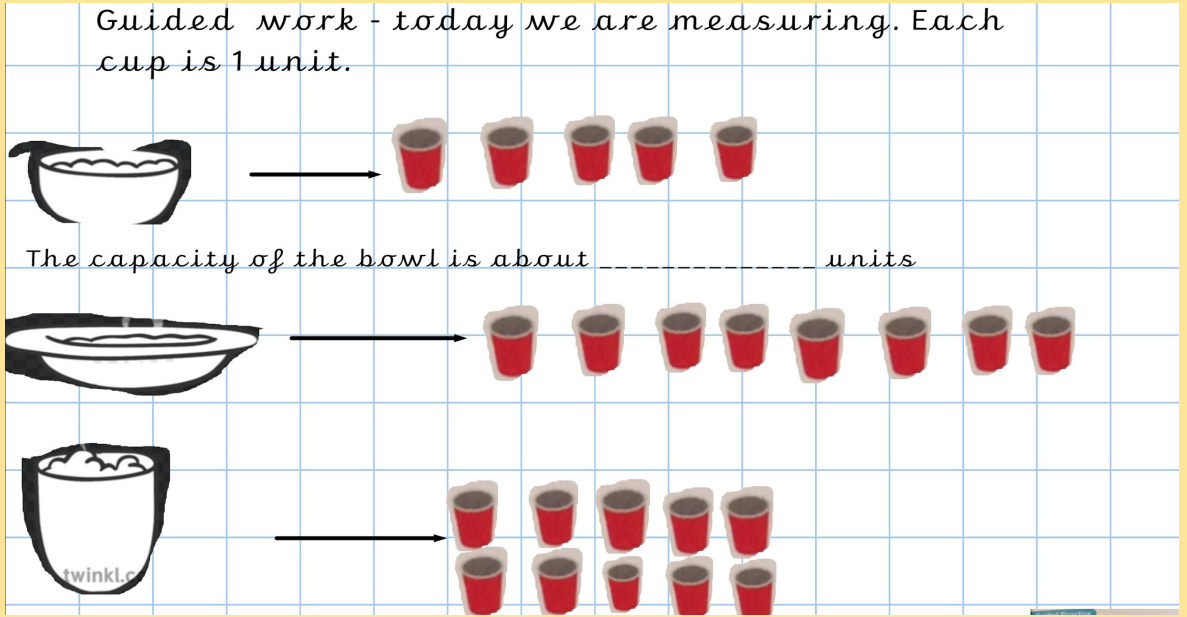
Working together look at the three bowls discuss the different sizes how do we know that they are different sizes the cups are used as a unit and it takes that many cups to fill each bowl.

Ask the children which bowl holds the most , which bowl holds the least? How can they explain their reason for their answer.

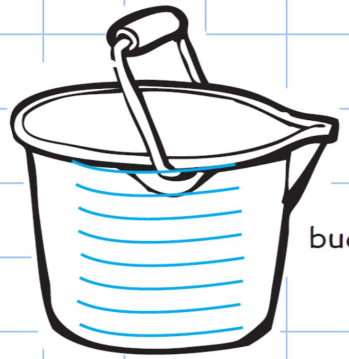
We hope that they will say the top bowl has 5 cups but the bottom bowl has 10 cups therefore the bottom bowl will hold more is the biggest.



Look at each object and discuss why there are lines on them. Explain that these are the measurements, it is called a scale. Each line is the same as 1 cupful of water.
Count the lines on each object and match the measurements by drawing a line to the correct objects.

For example the capacity of the teapot is four cupfuls.

Match the measurement to the object.



bucket

8 cupfuls

glass

1 cupful

2 cupfuls

bowl

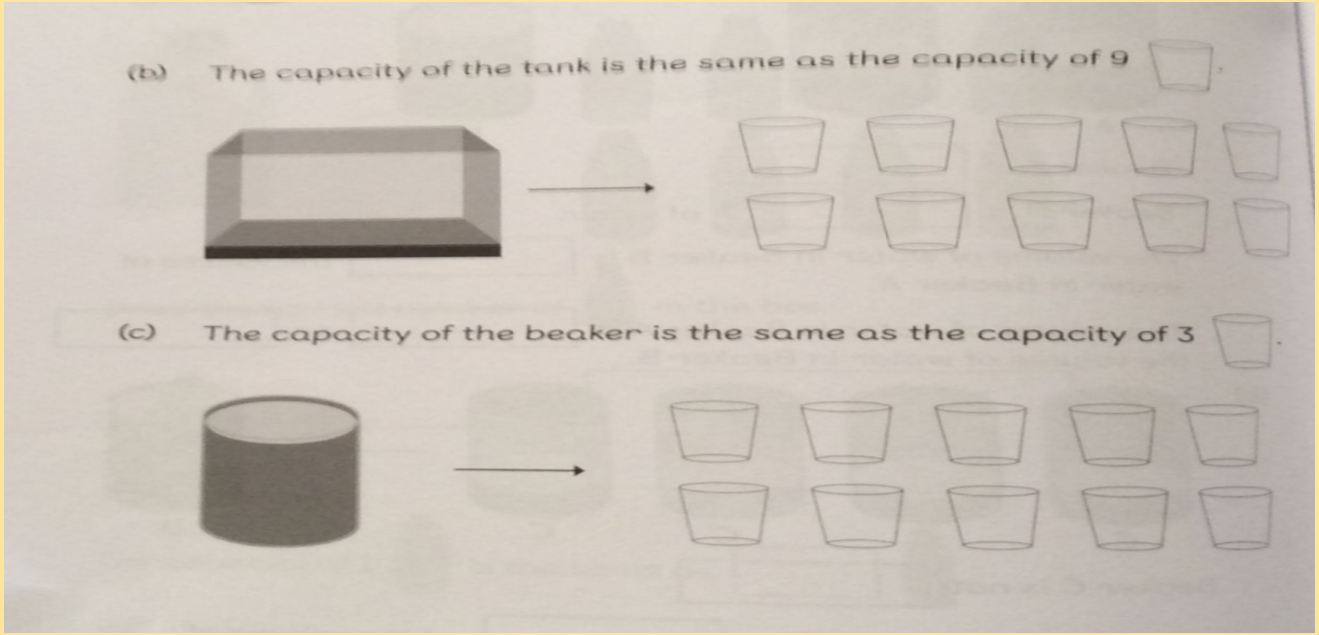
vase

milk jug

teapot

4 cupfuls

Ask the children to draw the larger object and then draw how many cups will be the same capacity as the larger objects.
The reason that we are doing this is to help the children to understand and use comparative language independently and , in a variety of different ways.



Ok, now we are continuing to reinforce the idea to the children that what an object holds is called capacity. In addition containers can hold more or less liquid. We are also continuing to use the language greater and less. In this slide encourage the children to discuss why they think the cup will hold less than the bottle.

Which has the greater capacity?
The bottle or the cup?

Share your ideas with a partner

Are you certain or is it an estimate?

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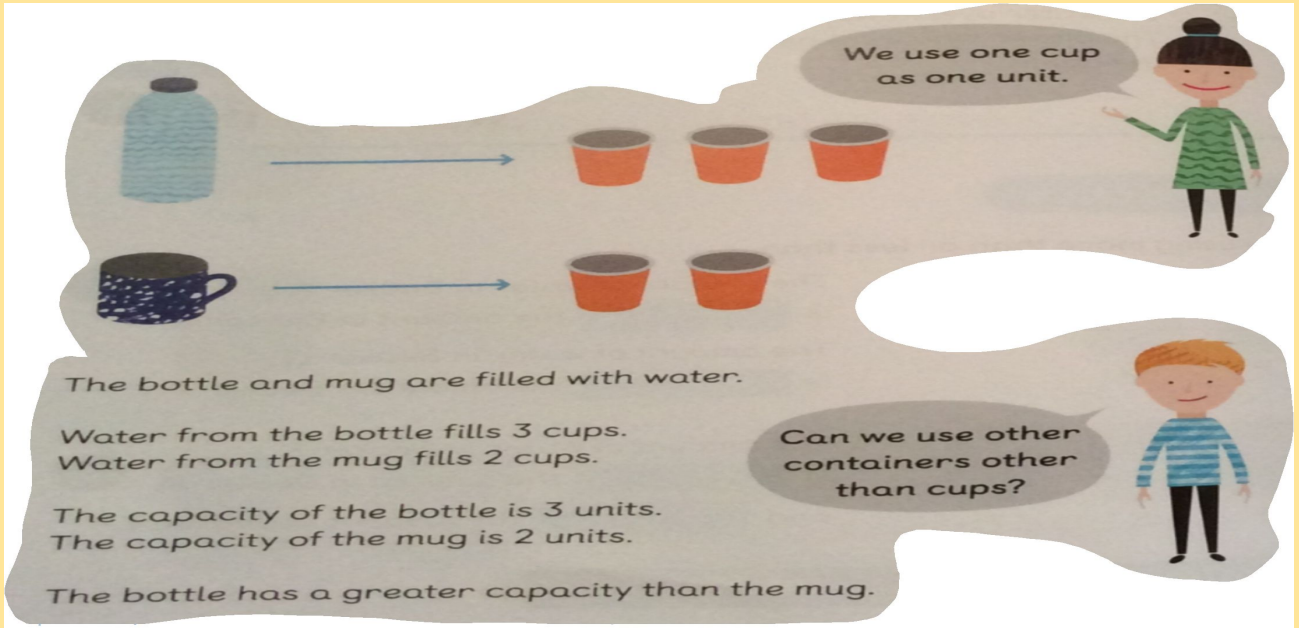
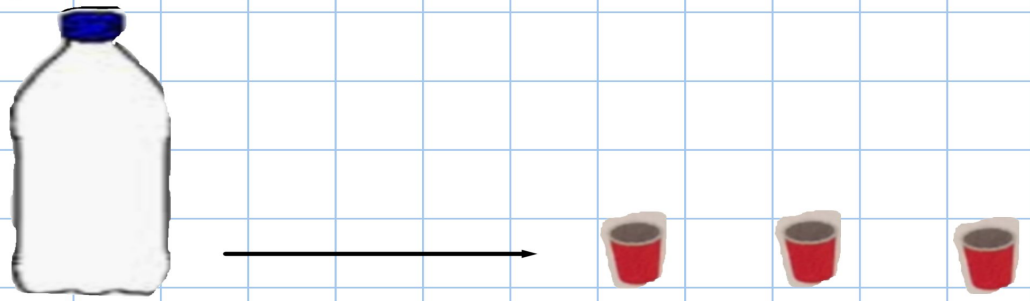
In this slide we are explaining how something with less volume can be added to a bigger container and help them understand that we count less to fill it up.



In this slide we are explaining that we can reverse the calculation too.

If I pour the water from the bottle it will fill 3 cups.



So, the capacity of the bottle is 3 cups.

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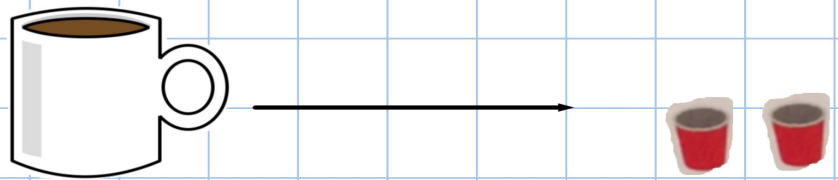
In this slide we are encouraging the children to process and reverse the information we are giving them. We are telling them that the mug can hold two cups.

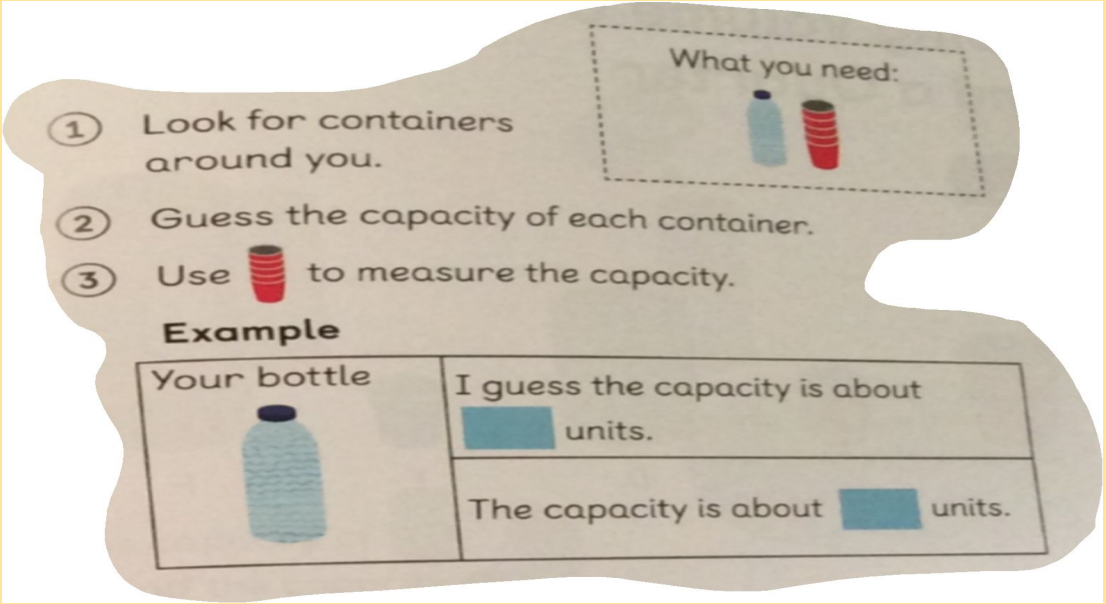
Do they process and verbalise this back?

If I pour the water from the mug it will fill 2 cups.

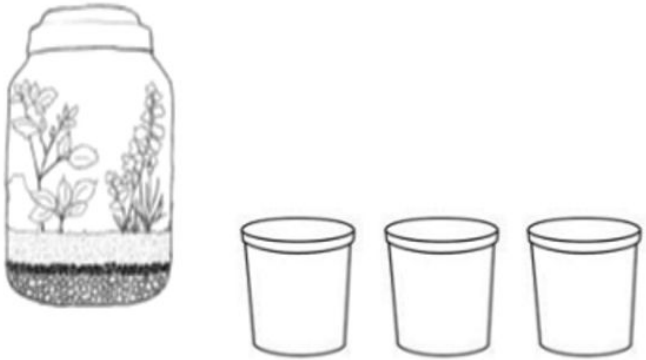


Tell your partner the capacity of the mug.

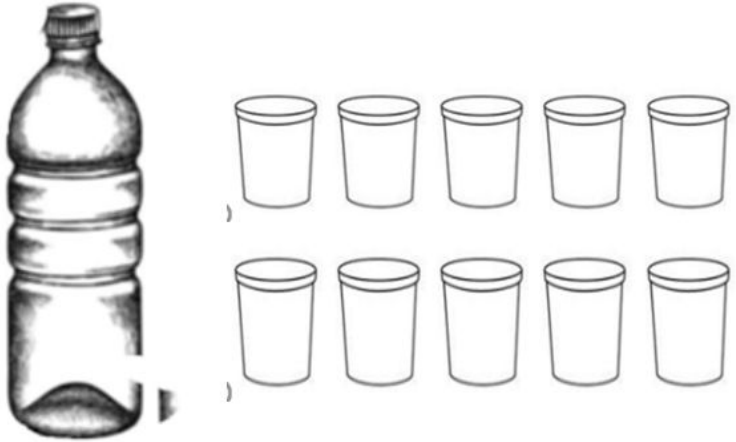
This is just about exploring different sized containers and guessing how many smaller containers it will take to fill the larger ones. It is very important that the cups the children are counting to fill the larger container are not different sizes as this would not be accurate measuring.



For next three slides ask the children to draw the tank and three smaller cups.
Children can write the sentence by completing the missing word.

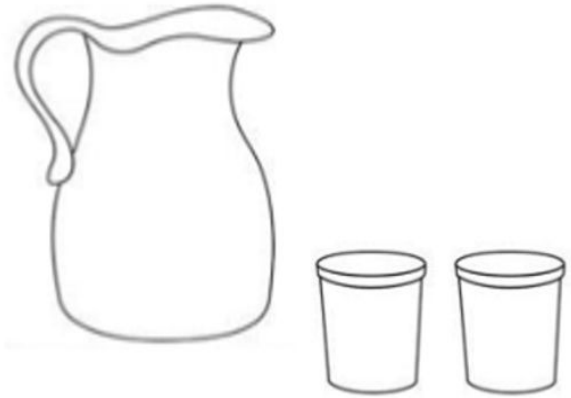


The capacity of the tank is about_____ units.



The capacity of the bottle is about _____ units.

In this slide we are explaining



The volume of the jug is about_____ units.

In this slide it gives the children a chance to show us what they can do independent now. They may need a little bit of help to read it although I don't believe they will! However there is a difference to reading and reading for meaning so, if they need some support that's absolutely great. Ultimately we are looking for the children to identify the pattern when they are thinking about 3 buckets, 4 buckets. It would be great if they wrote down their answers and then you could send it to us and we could see the excellent work they are doing.

The capacity of the _____ is _____ cupfuls

It takes 5 to fill 1

How many will it take to fill 2 buckets?

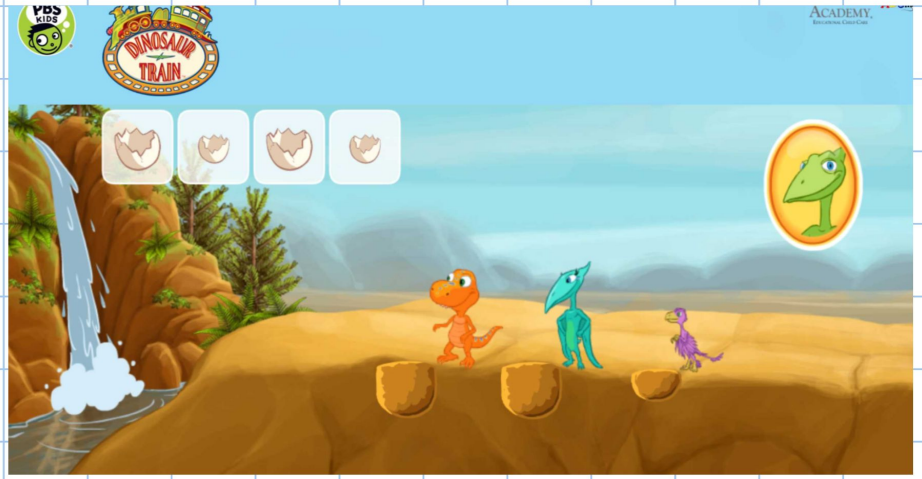
What about three buckets?

Four buckets?

What do you notice?
Can you continue the pattern?

Time to have a little bit of fun and just enjoy volume and capacity together.

https://pbskids.org/dinosaurtrain/games/hydrationstation.html



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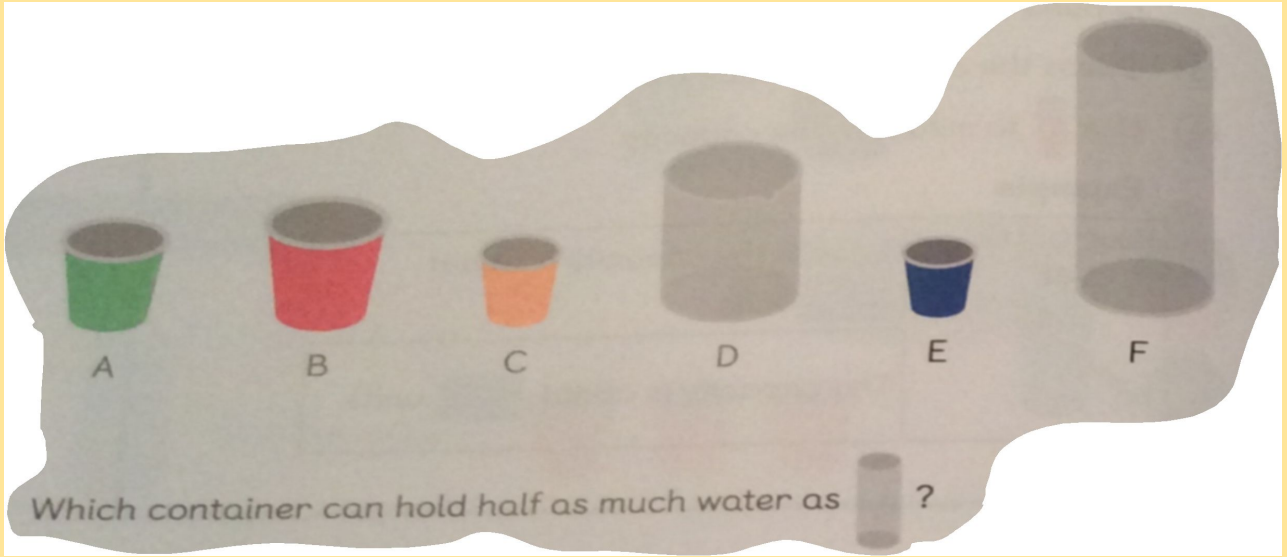
This morning the children are going to be learning about describing volume using half. We're starting think about other elements of maths that we have learnt too (fractions).
This question is for our benefit. It helps us to understand what the children can remember when talking about half.



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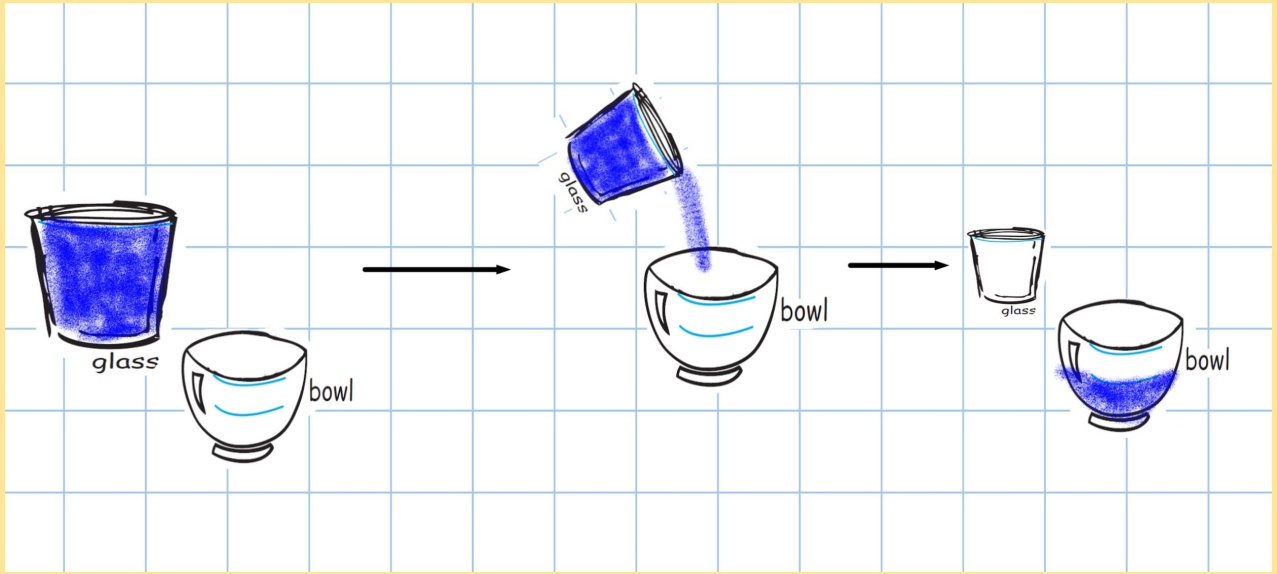
In these two slides we are showing the children that if we pour the water from the glass into the bowl it will be half full. Ultimately what we want the children to do is to identify that there are two cupfuls to fill a bowl (using the lines/ scale) and that half of 2 is 1.

Let's learn

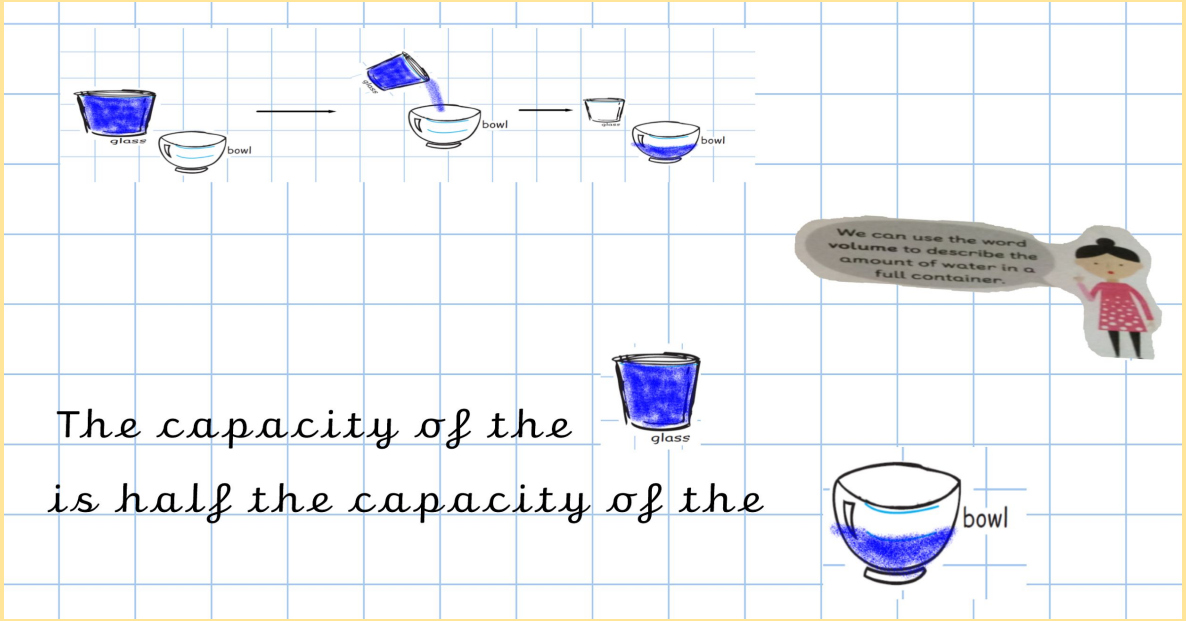
My glass is full.

My bowl is empty.

I pour the water from my glass into the bowl.


glass
bowl
glass
bowl
glass
bowl

Notice have we are constantly using the language capacity volume half.
This is to help our children understand and use this language naturally.



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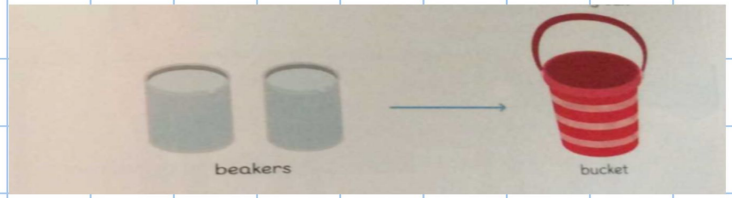
Using either two or the word half read the sentences with the children and get them to decide which word is missing from each one.

Ask the children to draw the picture and then write out each sentence.

Guided Practise

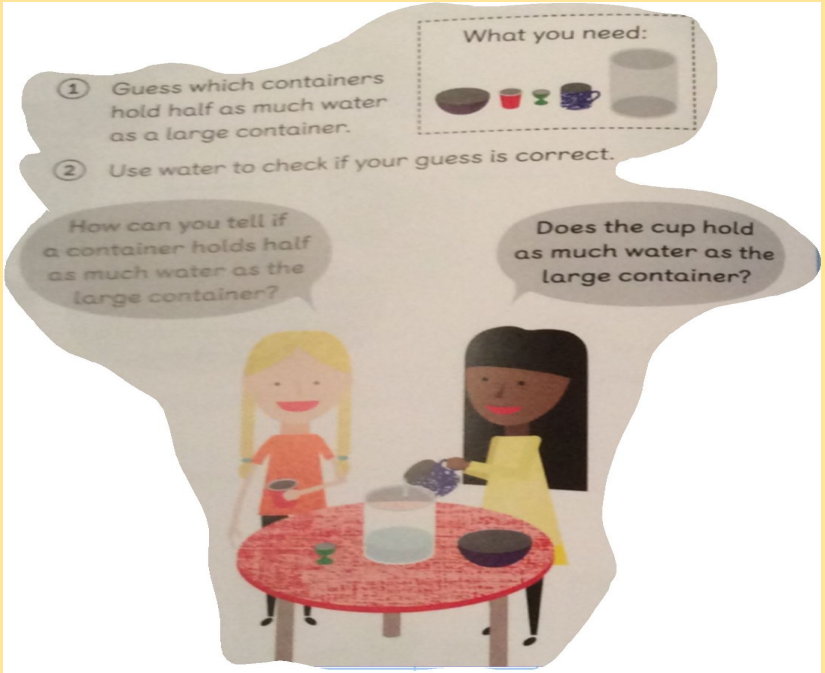
Use either 2 or half to complete the statements.



The volume of water in one beaker is _____the capacity of water in the bucket.

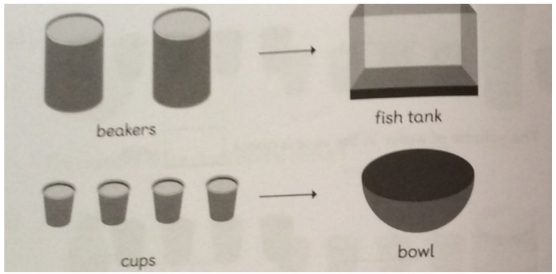
After the bucket is filled with 1 beaker of water the bucket is _____full.

If the weather is still fine, why not take this activity out into the garden?
The purpose of this activity is that the children can practically explore how many containers it takes to fill the large container and whether they can then think what half of the whole container would be.



This is the Independent task the children should be able to read this and then choose the correct to answer. If the children need support to read this that's absolutely fine however, let them tell you which is the correct answer.

S3 Describing Volume using Half and Quarter
independent work (1)



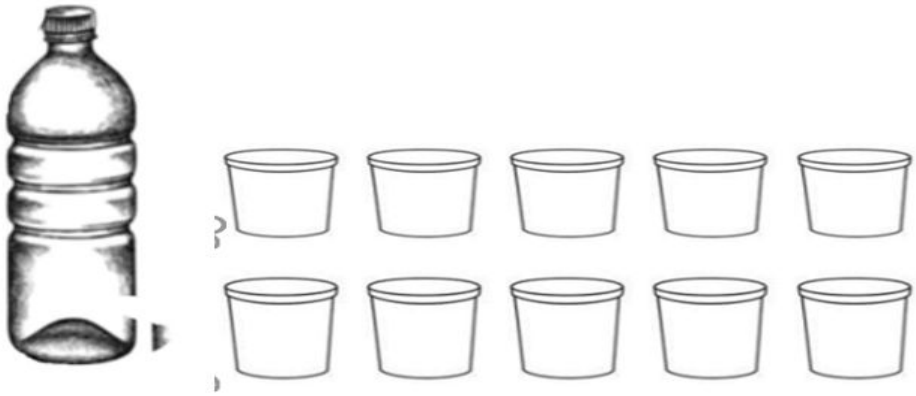
Look at the capacities of the fish tank and the bowl. Find the correct answers.

a) The capacity of one beaker is half of / quarter of the fish tank.

b) The capacity of one cup is half of/ quarter of the fish bowl.

c) After filling the fish tank with one beaker it will be half of / quarter of / half full.

If it is possible to print this off that would be better. However if you can't it doesn't matter. Talk to the children about how many cups are there altogether? If we wanted the bottle to be half full how many cups would you need to colour? If it has been printed and the children can colour half the amount of cups.



The next few slides are what we call mind workouts. I love their sessions and so do the children! This is what they thrive to have - a challenge which works their brain and they can show off! I hope you enjoy them as much as I do.

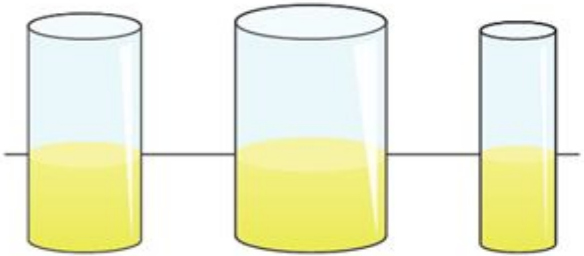
Mind work outs!

I love doing this activity with the children because it generates so much conversation and it really helps them to understand and discover capacity volume and measuring. I always do this one practically and have to do it in small groups of three or 4 children, so today I'm envious of you because you get to do it possibly one-to-one maybe 1 to 2. Post us their answers, I would love to see how they get on with this one!

CAPACITY

Captain Conjecture says, 'All of the glasses contain the same quantity of lemonade.'

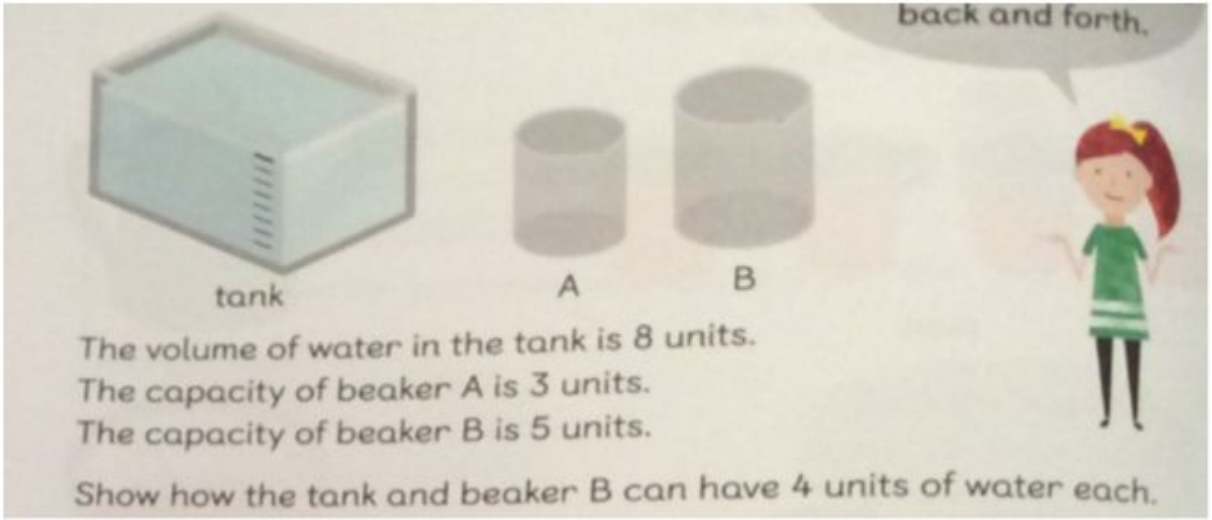
Do you agree?



Explain your reasoning.

Ask the children to write the answer in sentences. I have written how I would do it on the next slide.

Was your any different to mine?



Fill beaker A

Put 1 unit in beaker B

Add the units from beaker A to beaker B

Tank and beaker B have 4 units each.

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This is just a recap to see if the children have retained and understand the language more than ,less than, half ,capacity. The Year One team hope you have enjoyed learning about measuring volume together. We would love to see some examples of work and some photos of you learning whilst having having fun!

The volume of water in the tank is 8 units.
The capacity of beaker A is 3 units.
The capacity of beaker B is 5 units.

Show how the tank and beaker B can have 4 units of water each.

Maths Journal

Describe using **more than half** or **less than half**.

(a) The capacity of beaker A is _____ the capacity of the tank.

(b) The capacity of beaker B is _____ the capacity of the tank.