Summer Scheme of Learning

Year 1/2

#MathsEveryoneCan

2019-20
Notes and Guidance

How to use the mixed-age SOL

In this document, you will find suggestions of how you may structure a progression in learning for a mixed-age class.

Firstly, we have created a yearly overview.

Each term has 12 weeks of learning. We are aware that some terms are longer and shorter than others, so teachers may adapt the overview to fit their term dates. The overview shows how the content has been matched up over the year to support teachers in teaching similar concepts to both year groups. Where this is not possible, it is clearly indicated on the overview with 2 separate blocks.

For each block of learning, we have grouped the small steps into themes that have similar content. Within these themes, we list the corresponding small steps from one or both year groups. Teachers can then use the single-age schemes to access the guidance on each small step listed within each theme.

The themes are organised into common content (above the line) and year specific content (below the line). Moving from left to right, the arrows on the line suggest the order to teach the themes.
How to use the mixed-age SOL

Here is an example of one of the themes from the Year 1/2 mixed-age guidance.

Points to consider

- Use the mixed-age schemes to see where similar skills from both year groups can be taught together. Learning can then be differentiated through the questions on the single-age small steps so both year groups are focusing on their year group content.
- When there is year group specific content, consider teaching in split inputs to classes. This will depend on support in class and may need to be done through focus groups.
- On each of the block overview pages, we have described the key learning in each block and have given suggestions as to how the themes could be approached for each year group.
- We are fully aware that every class is different and the logistics of mixed-age classes can be tricky. We hope that our mixed-age SOL can help teachers to start to draw learning together.

**Subtraction**

Year 1 (Aut B2, Spr B1)
- How many left? (1)
- How many left? (2)
- Counting back
- Subtraction - not crossing 10
- Subtraction - crossing 10 (1)
- Subtraction - crossing 10 (2)

Year 2 (Aut B2, B3)
- Subtract 1-digit from 2-digits
- Subtract with 2-digits (1)
- Subtract with 2-digits (2)
- Find change - money

In order to create a more coherent journey for mixed-age classes, we have re-ordered some of the single-age steps and combined some blocks of learning e.g. Money is covered within Addition and Subtraction.

The bullet points are the names of the small steps from the single-age SOL. We have referenced where the steps are from at the top of each theme e.g. Aut B2 means Autumn term, Block 2. Teachers will need to access both of the single-age SOLs from our website together with this mixed-age guidance in order to plan their learning.
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In this section, content from single-age blocks are matched together to show teachers where there are clear links across the year groups. Teachers may decide to teach the lower year’s content to the whole class before moving the higher year on to their age-related expectations. The lower year group is not expected to cover the higher year group’s content as they should focus on their own age-related expectations.

In this section, content that is discrete to one year group is outlined. Teachers may need to consider a split input with lessons or working with children in focus groups to ensure they have full coverage of their year’s curriculum. Guidance is given on each page to support the planning of each block.

The themes should be taught in order from left to right.
Year 1/2 | Summer Term | Week 7 to 8 – Mass, Capacity & Temperature

Mass, Capacity & Temperature

Common Content

**Weight and Mass**
Year 1 (Spr B4)
- Introduce weight and mass
Year 2 (Sum B4)
- Compare mass

**Measure and compare mass**
Year 1 (Spr B4)
- Measure mass
- Compare mass
Year 2 (Sum B4)
- Measure mass (g)
- Measure mass (kg)

**Capacity and Volume**
Year 1 (Spr B4)
- Introduce capacity and volume
Year 2 (Sum B4)
- Compare capacity

**Measure and compare capacity**
Year 1 (Spr B4)
- Measure capacity
- Compare capacity
Year 2 (Sum B4)
- Millilitres
- Litres

In this block, both year groups measure and compare mass and capacity however Year 1 start with a focus on non-standard units of measure before moving on to standard units of measure.

Year 2 then begin to measure temperature.

**Temperature**
Year 2 (Sum B4)
- Temperature

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Block 4 – Mass, Capacity and Temperature

Theme 1 - Weight & Mass
Introduce Weight & Mass

Notes and Guidance

Children are introduced to weight and mass for the first time. They may already have some understanding of heavy and light from their own experience of carrying objects. Children should begin by holding objects and describing them using vocabulary such as heavy, light, heavier than, lighter than before using the scales to check. The children may believe that larger objects are always heavier and this misconception should be explored.

Mathematical Talk

Hold two objects, which is heavier/lighter? How do you know? How can we prove this?

Are larger objects always heavier than smaller objects?
If the balance scale is down, what does that tell us?
If the balance scale is up, what does that tell us?
If the balance is level, what does that tell us?
Which of these objects is heavier? How do you know? How will this be shown on the weighing scale?

Varied Fluency

Choose two objects. Which is heavier? Which is lighter? Can you be a human weighing scale? Now use the weighing scale to check.

Which object is heavier? Which object is lighter? The ______ is heavier/lighter than the ______.

Fill in the missing gaps to make the sentences correct.

The ______ is heavier than the ______.
The ______ is lighter than the ______.
The ______ is equal to the ______.

Collect different objects from around your classroom. Use a balance scale to find the heaviest object. Can you find 2 objects that are equal in mass?
### Introduce Weight & Mass

#### Reasoning and Problem Solving

<table>
<thead>
<tr>
<th>Eva</th>
<th>The class are seeing whether the balloon or apple will weigh more. The balloon will be heavier because it is bigger than the apple.</th>
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<tbody>
<tr>
<td>Whitney</td>
<td>The balance will be level because they are both red.</td>
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<tr>
<td>Mo</td>
<td>The apple will go down because it is lighter. The balloon will go up because it is lighter.</td>
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<td>Teddy</td>
<td>Teddy is correct. However his explanation needs to be clearer. Children should practice using vocabulary such as heavier than and lighter than when comparing objects alongside talking about the movement of the scale. Children should be encouraged to explain why the others are incorrect.</td>
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<td>I'm thinking of an object. It is heavier than a pencil, but lighter than a dictionary.</td>
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What object could Jack be thinking of? Prove it. How many objects can you think of? Children will use a balance scale to find objects that are heavier than a pencil, then to check that their chosen objects are lighter than the dictionary.
Children recap on Year 1 learning by comparing the mass of different objects. They will initially use balance scales to compare the mass of two or more objects.

Children compare mass using < and > and order objects based on their masses.

**Mathematical Talk**

Look at the scale, which side is lower? What does this tell us about the objects?

Which object is heavier? Which object is lighter?

Can you hold the objects and predict which is heavier? Is a largest object always the heaviest?

**Varied Fluency**

- Using the words ‘more’ and ‘less’ and the > or < symbols, describe the mass.

- Choose three objects. Use the balance scales to order them from heaviest to lightest?

  - The ______ is heavier than the ______ but lighter than the ______.
  - The ______ is lighter than the ______ but heavier than the ______.

- Complete the sentences:

  - 4 bananas weigh the same as ___ doughnuts.
  - 2 bananas weigh the same as ___ doughnuts.

Can you write sentences using ‘more’ or ‘less’ using the image?
3 bananas weigh the same as two apples, so Tommy is correct - an apple must weigh more than a banana.

1 banana weighs the same as 2 doughnuts so Eva is incorrect.

One pear weighs 10 cubes. How many cubes will balance one pineapple?

Always, sometimes or never true?

The larger the box, the heavier it is.

1 pineapple weighs 20 cubes.

Sometimes. Children can explore this using different sized boxes.
Block 4 – Mass, Capacity and Temperature

Theme 2- Measure and compare mass
Children begin by using a variety of non-standard units (e.g. cubes, bricks) to measure the mass of an object. They see that when the scale is balanced, the number of non-standard units can be used to determine the mass.

Eg One apple weighs ____ bricks.

Children may find that it is difficult to balance objects exactly using non-standard units. For example an object may be heavier than 3 bricks, but lighter than 4 bricks.

Mathematical Talk

When the scales are balanced, what does this mean? How many ______ weigh the same as one ________?

If I add one more cube to this side, what will happen? How do you know? What if I take a cube away?

Which classroom objects are the best units to measure with? Why?

Varied Fluency

Use the non-standard units to measure each item on your table.

The _____ weighs _____ cubes.

Weigh an object using cubes and then weigh the same object using different non-standard units. Record your findings. What do you notice? Which non-standard unit was the best to use? Why? Which non-standard unit was not good to use? Why?

Which non-standard units would be the best to measure the mass of a heavy book?

Counters
Wooden blocks
Pencils

Why?
Amir says, "The apple is heavier than the peach, because it weighs 4 cubes.

Teddy says, "The apple and the peach weigh the same."

Who do you agree with? Explain why.

Possible answer: I agree with Jack, because 1 brick weighs the same as 4 cubes so the apple and the peach weigh the same.

The teddy bear weighs 5 cubes. I can take 1 cube off of each side of the scale and it will still balance.

How many cubes does the teddy bear weigh? Explain how you know.
Children continue to use non-standard units to weigh objects and now focus on comparing the mass of two objects. They use balance scales to compare two objects and use the language of ‘heavier’, ‘lighter’ and ‘equal to’. Once children are confident using this language they can use <, > and = to compare mass.

**Mathematical Talk**

How many cubes weigh the same as ______? Which object is heavier? Which object is lighter?

Can we order the objects from heaviest to largest?

Explain why it is important to use the same non-standard unit if we want to compare the mass of two objects.

**Varied Fluency**

Complete the sentences below.

The cupcake weighs □ cubes.
The grapes weigh □ cubes.
A cake is □ than a pineapple. (heavier/lighter)

Can you order the objects from heaviest to lightest?

= 3 pencils
Teddy Bear = 8 pencils
Sock = 4 pencils

Using cubes, find the mass of 4 objects. Order them from lightest to heaviest.
Complete the sentences below:
The __________ is heavier than the __________
The __________ is lighter than the __________
The __________ weighs __________ pencils.

The banana is heavier than the apple. Children may also notice The banana weighs one more pencil than the apple.

Look at the balance scales below.

Which statements are true?
• The car is heavier than the van.
• The van is heavier than the car.
• The car is lighter than the van.
• The van is lighter than the car.
• The car and van weigh the same amount.

Can you make a problem like this for your partner?

Can you match the clue to the images?
• My object weighs more than the car.
• My object is less than 5 cubes.
• My object is not the heaviest or the lightest.

• Van
• Teddy/Car
• Car
In Year 2, the children use standard units of mass (grams) for the first time. They continue to use balance scales before moving on to use standard weighing scales. Children apply their counting in 2s, 5s and 10s skills to reading scales accurately. They should see a variety of scales with different intervals. Give children the opportunity to feel the mass of gram weights so they can use this for estimation.

When the balance scales are level, what does this tell us? What symbol could we use? (=)
What is the mass of the _____? What would two ______ weigh?
How could you tell is something was lighter or heavier than 10g?
How much heavier is the ____ than the ____? How could you work it out?
Which is heavier, the red or the green beanbag? Explain why.

The red beanbag weighs more because it weighs the same as two green beanbags.

The tin of beans weighs 25 g and the pineapple weighs 30 g.
Measure Mass (kg)

Notes and Guidance

Children use their knowledge of measuring mass in grams to start to measure mass in kilograms. They apply counting in 2s, 5s and 10s to measure on different scales. Give children the opportunity to feel the mass of kilogram weights and real life objects that weigh 1 kg so they can use this to estimate.

Mathematical Talk

Which is heavier, one gram or one kilogram? What else do you think we might measure in kilograms?

How much do you think that you weigh? Would you measure this in grams or kilograms? Shall we estimate and then weigh ourselves?

Can you make up some different questions about the suitcases? What words can you use to compare?

Varied Fluency

Find the mass of the sweets and the beans.

The sweets weigh ____kg

The beans weigh ____g.

Read the scales to find the mass of each.

The bag weighs ____ kg.

The person weighs ____ kg.

Sophie's family are going on holiday. Compare the mass of their suitcases.

Sophie's suitcase is _______ than Dad's suitcase

Mum's suitcase weighs ____ kg more than Dad's suitcase.
What is the mass of each barrel?

- Barrel A weighs 8 kg
- Barrel B weighs 16 kg
- Barrel C weighs 4 kg

B is 12 kg heavier than C.

What is the difference between the mass of B and C?

The brown parcel weighs twice as much as the blue parcel.
The green parcel weighs 2 kg more than 30 kg.
The blue parcel weighs 12 kg less than the green parcel.

Draw an arrow to show where each parcel would be on the scale.

The green parcel weighs 32 kg
The blue parcel weighs 20 kg
The brown parcel weighs 40 kg
Introduce Capacity and Volume

Children are introduced to volume and capacity for the first time.

They explore the concept in a practical way, using a variety of containers.

They compare the volume in a container by describing whether it is full nearly full, empty or nearly empty.

Mathematical Talk

Look at my bottle, is it full? Is it empty?

Compare my two bottles, which has more liquid in? Which has less?

How can we show the container is nearly full or nearly empty?

How can we measure the capacity of this container?
Introduce Capacity and Volume

Reasoning and Problem Solving

Always, Sometimes. Never...

- The tallest container holds the most liquid.
- Identical containers can have a different capacity.
- Show me.

Sometimes.

- Never - If the containers are identical they will have the same capacity but they can have different volumes of liquid in.

Rosie, Teddy and Amir are describing their glasses of water.

- Rosie: My glass has more water than Teddy’s.
- Teddy: My glass is nearly full.
- Amir: My glass has less water than Rosie’s.

Can you fill in how much water could be in each of the children’s glasses?

Various representations for Rosie’s and Amir’s as long as they show that Amir’s is less than Rosie’s and Rosie’s is more than nearly full.
Children compare the volume of containers using <, > and =. They build on their understanding of the difference between capacity and volume from Year 1. Capacity is the amount a container can hold. Volume is the amount it is actually holding.

Children use the language ‘quarter’, ‘half’ and ‘three-quarters full’ to describe and compare volume. Make sure children have the opportunity to practically investigate volume and capacity.

Mathematical Talk

Which container has the largest/smallest capacity? How do you know? Can we order them from largest to smallest?

Which container has the most or least liquid in?

How many mugs does it take to fill the bottle? Is this more or less than the pot? Can we find the difference? Does the tallest container always hold the most?

Varied Fluency

Show three different containers. Which container has the largest capacity? Using water or rice, make each container: one quarter full, half full, three-quarters full.

Complete the sentences using the words ‘less’, ‘more’ or equal’.

Container A has _______ than container B.

Container C has _______ than container B.

Container A has _______ than container C but ______ than container B.

Complete the sentences:

The bottle can fill ____ mugs.

The pot can fill ____ mugs.

Use other containers to investigate how many mugs of rice they take to fill.
### Compare Volume

#### Reasoning and Problem Solving

Whitney had two full bottles of juice. She poured some juice into two glasses.

- **Glass A** has the least juice in and **Glass B** has more juice in. Bottle A has more juice left over which means it has less juice poured out.

Which glass has the most juice in? Which has the least juice in? Explain how you know.

<table>
<thead>
<tr>
<th>Glass A</th>
<th>Glass B</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Glass A" /></td>
<td><img src="image" alt="Glass B" /></td>
</tr>
</tbody>
</table>

The pot holds 40 cups of water.

- The pot holds 40 cups of water.

Choose a selection of different sized containers. Decide how you will measure how much liquid each container can hold. Order your containers from smallest to largest. Compare the containers using $<$, $>$ or $=$.

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<table>
<thead>
<tr>
<th>Container 1</th>
<th>Container 2</th>
<th>Container 3</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Container 1" /></td>
<td><img src="image" alt="Container 2" /></td>
<td><img src="image" alt="Container 3" /></td>
</tr>
</tbody>
</table>

How many cups does the pot hold?

- How many cups does the pot hold?
Block 4 - Mass, Capacity and Temperature
Theme 4- Measure and compare capacity
Measure Capacity

Notes and Guidance

Children measure the capacity of different containers using non-standard units of measure. They understand that the unit of measure must stay the same, for example the same cup, the same spoon etc.

They understand to measure accurately, they must make each container or non-standard measure full.

Mathematical Talk

How can we measure how much liquid will fill my container? What could I use?

How many bowls of liquid fill the bottle? How many cups of liquid fill the bottle? How is this different? How is this the same?

Varied Fluency

Work practically using a variety of containers. Investigate how many small containers it takes to fill the larger containers.

The capacity of the \[
\underline{\text{pot}}\] is \[\underline{\text{pots}}.\]

It takes 5 \[\text{cups}\] to fill 1 \[\text{bottle}\].

How many \[\text{cups}\] will it take to fill \[\text{bottle}\]?

What do you notice? Can you continue the pattern?
Whitney pours her cups into the bottle and they fill it exactly.

She says the bottle has a capacity of four cups. Do you agree?

Whitney is wrong. She has not filled the cups to the top so her measuring is inaccurate.

It takes 5 cups to fill 1 bucket.

It takes 2 cups to fill 1 bucket.

How many cups will fill one bucket?

What else can you find out?

10 cups will fill one red bucket.

The children may also find that it will take 20 cups to fill 2 red buckets etc.
Children compare the capacity of different containers using non-standard units of measure.

They use ‘more’, ‘less’ and ‘equal to’ to compare as well as the symbols <, > and =.

Which container has the largest/smallest capacity?
Can we order them from largest to smallest?

Which container do you think will hold more?
How can we check?

What can we use to measure the capacity of these containers?

Can we show A has more than B but less than C?

Take three different containers. Fill each container with liquid or rice using the same unit of measure e.g. A small cup.

Order the containers from largest to smallest capacity.

Complete the boxes to compare the capacity of the bottles:
If

Circle whether the glasses or bottles hold more in each row:

A

B

C

Alex has a bottle of juice. She pours three glasses of juice.

The bottle holds exactly three glasses of juice.

Do you agree? Explain why.

Choose three containers. Investigate how you could compare the capacity of each one.

I disagree. Alex has filled three glasses exactly but there is still juice left so she could have filled more than 3.

Children choose three containers and choose a unit of measure to compare the containers capacity.
Children are introduced to standard units of millilitres (ml) for the first time.

They should be provided with a selection of different measuring cylinders and jugs in order to practice measuring in millilitres. They should be encouraged to estimate how many ml unlabeled containers will hold and then use measuring cylinders or jugs to check.

Which container has the largest/smallest capacity? Can we order them from largest to smallest?

Look at the scale on my cylinder, what do you notice? Is this the same for this cylinder?

If we pour the liquid from this jar/glass into the cylinder, how much does each container hold?

Use a variety of different containers with ml clearly labelled e.g. measuring spoon, water bottle, liquid soap, vinegar etc.

Introduce that liquid can be measured in millilitres. Discuss whether 5 ml is a large or small amount. Show 5 ml using a medicine spoon. Look at the containers estimate then identify how many ml each container holds.

Draw the level on the scale to show the capacity of each container.

Use different containers e.g. mug, bowl, pan, tea cup. Fill them with water or rice. Pour them into a measuring cylinder and measure the amount of liquid or rice in the measuring cylinder.
A holds 5 ml of liquid. How many of liquid are there in each container?

Container A holds 12 teaspoons. Container B holds 16 teaspoons.

Estimate the amount of water in the container.

The water is between 40 ml and 50 ml. It is approximately 45 ml.

Explain why you have given your answer.
Children are introduced to litres (l) as a standard unit for the first time.

Children recognise the difference between measuring in millilitres and litres and when it is more efficient to use litres to measure liquid rather than millilitres. They should be encouraged to estimate volumes and then check by measuring.

Which is larger, 1 millilitre or 1 litre? How do you know?

Would you measure ______ in litres or millilitres? Why?

How many litres of water do you drink a day?

Show the children a litre container. How many litres of water do you think it would take to fill ________?

Provide a variety of different containers with litres clearly labelled e.g. cola bottle, paint bottle, milk etc.

Introduce litres and discuss how these are the same but different to millilitres. Identify how many litres fill each container.

Show how much liquid is in each cylinder after you:
- Pour 3 litres of water into the cylinder.
- Leave 1 litre of cola in the bottle.
- Pour half of the juice into the cylinder.

Use different containers e.g. bucket, large pan etc. Estimate and then measure the capacity of each one.
Mo puts 4 litres of water in bucket A. He then pours 3 litres from bucket A into bucket B.

Which sentence is correct?
- There is more in bucket A.
- There is less in bucket A.
- There are equal amounts in each bucket.

Explain why.

There is less in bucket A because there will be 1 litre in A and 3 litres in B.

3 bowls each have more than 20 l of water in but less than 50 l

The red bowl could have between 20 l and 35 l

The green bowl has 5 l more than the red bowl.

The blue bowl has 10 l more than the green bowl.

The blue bowl could have between 35 l and 50 l

Eva wants to measure 2 litres of water into a tub. She only has a 5 litre and a 3 litre container.

How can she use both containers to measure 2 litres?

Eva could fill her 5 litre container and then empty 3 litres into the 3l container. She will be left with 2 litres.

5l – 3l = 2l
Theme 5 - Temperature
Children are introduced to temperature, thermometers and the units ‘degrees Centigrade’, written °C for the first time. They learn that the temperature is higher when it is warmer.

They apply their counting in 2s, 5s and 10s skills when reading different scales on thermometers.

What unit can we use to measure temperature? What is the scale going up in? How do you know? If the temperature increases what happens to the number on the scale? If the temperature decreases what happens to the number on the scale? Can we compare temperatures using vocabulary such as increased, decreased, warmer, colder and difference?

Take temperatures around the school and complete the following stem sentences:
The temperature in the classroom is ________.
The classroom is ________ than the playground.
The difference in temperature between the _________ and the ________ is __ degrees Celsius.

Complete the thermometers to show the temperatures.

Compare the temperatures using <, > or =
Mollie took the temperature at 12 p.m. and again at 5 p.m. There was a difference of 7°C. What could the temperatures be?

Children may give any temperatures that have a difference of 7

Some children may realise that it is usually cooler in the evening and therefore make sure there 12pm temperature is always warmer than the 5pm temperature.

What is the same and what is different about the thermometers/temperatures?

Both thermometers are showing 30°C

The scale on the first thermometer counts up in 5°C. The scale on the second thermometer counts up in 10°C.

The second thermometer will be able to record higher temperatures.