Numeracy
Exemplification materials

Year 3: Owain's garden (1)

Design and technology

- Develop and communicate their design ideas in a variety of ways, using ICT and models where appropriate.

- Measure, mark out, cut, shape, join, weigh and mix a range of materials and ingredients, using appropriate tools/utensils, equipment and techniques.

Numeracy skills

- Use halves and quarters in simple contexts, *e.g. ½ of 20*.

Background information:
The learners had been designing their class garden for the annual gardening competition. They had decided they wanted the garden to represent the flag of Owain Glyndŵr, the class name. They decided they would need to divide the garden into quarters. The learners drew a plan of how they wanted the garden to look.

Key questions:
- If the flower bed measures ____ cm, how can we find out what half of it measures?
- How can we find out where the halfway point is?
- How can we divide the flower bed into quarters?
- How many quarters will we have altogether?

Dividing my garden into quarters.

half 18 is

18

half 10 = 5
half 8 = 4
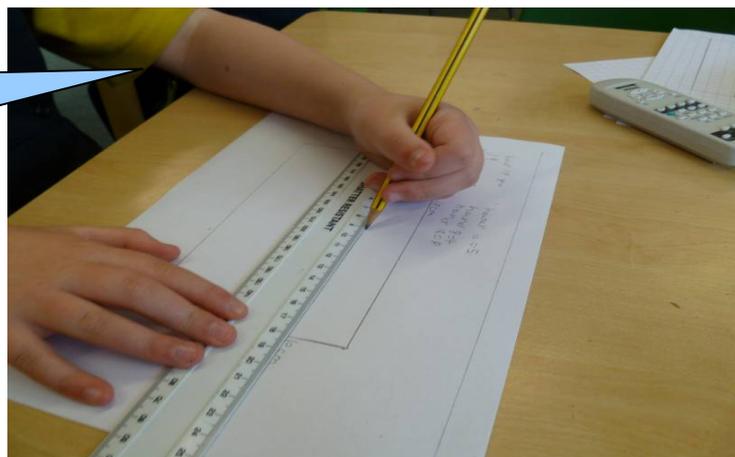half 18 = 9

18 cm

| yellow Flowers | red Flowers |
| red flowers | yellow Flowers |

10 cm

half 10 = 5

> I know that 18 is 10 and 8. Half of 10 is 5 and half of 8 is 4 so half of 18 must be 9. Now I can measure where 9cm is.

Dividing my garden into quarters

24 cm   12

5½ cm

11 cm

| yellow flowers | red flowers |
| red flowers | yellow flowers |

> I need to measure along both sides and halve them. That will help me divide it into quarters like the flag. Half of 24 is 12 and half of 11 is . . . 5 ½ because half of one is half, and I already know that half of 10 is 5.

Numeracy
Exemplification materials

Year 4: The jubilee

History

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Numeracy skills
- Read and write numbers to 10 000.
- Find differences within 1 000.
- Add a 2-digit number to, and subtract a 2-digit number from, a 3-digit number using an appropriate written method.

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Background information:
During a whole-class discussion the learners considered information they wished to research about Queen Elizabeth II. They then developed their own research questions and used the internet to find the relevant information.

Activity description:
Working in pairs the learners used the internet to answer their questions. They were then challenged to work out differences using various mathematics operations.
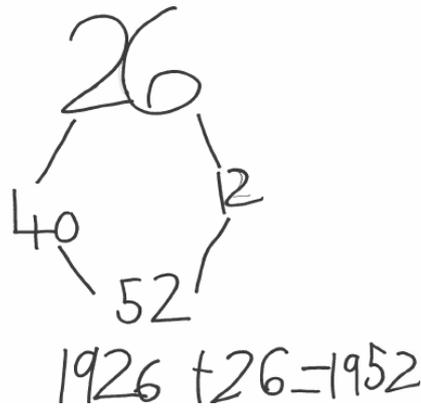
Key questions:
- What year was Queen Elizabeth born?
- How old is the Queen?
- How old was Elizabeth when she became the Queen?
- What year was she crowned? How many years ago was it?
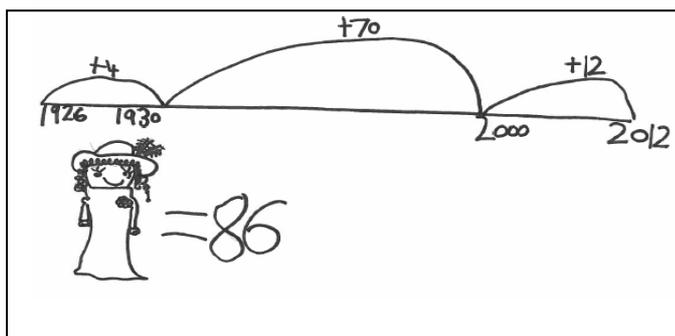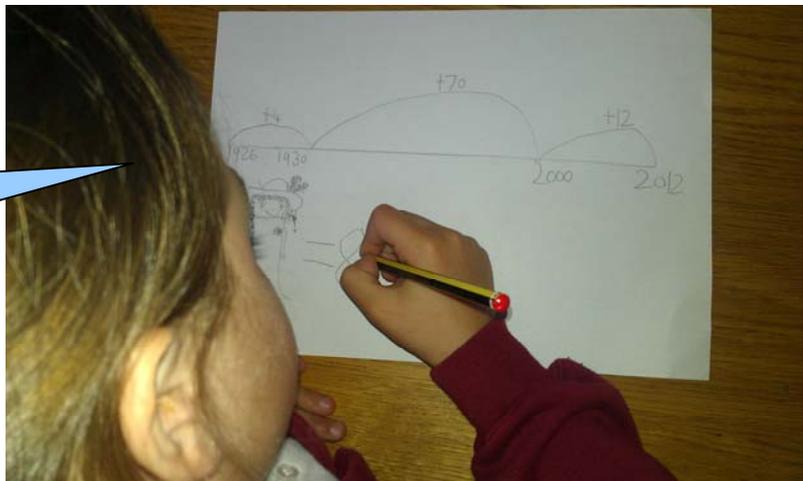
Numeracy
Exemplification materials

She was crowned in 1952 because double 26 is 52, so that's 1952!

How old was Elizabeth when she became Queen?

Queen Elizabeth was born in 1926. It's 2012 now, so she's 86 years old!

Numeracy
Exemplification materials

Year 4: Owain's garden (2)

Design and technology

- Develop and communicate their design ideas in a variety of ways, using ICT and models where appropriate.

- Measure, mark out, cut, shape, join, weigh and mix a range of materials and ingredients, using appropriate tools/utensils, equipment and techniques.

Numeracy skills
- Halve 3-digit numbers in the context of number, money and measures.

Background information:
The learners had been designing their class garden for the annual gardening competition. They had decided they wanted the garden to represent the flag of Owain Glyndŵr, the class name. They decided they would need to divide the garden into quarters. They measured the garden, discussing fractions (halves and quarters).

Key questions:
- How can we find out where the halfway point is?
- How can we divide the flower bed into quarters?
- How many quarters will we have altogether?
- How many quarters will there be in half of the flower bed?
- If the bed measures *x* how can we find out what half of it measures?

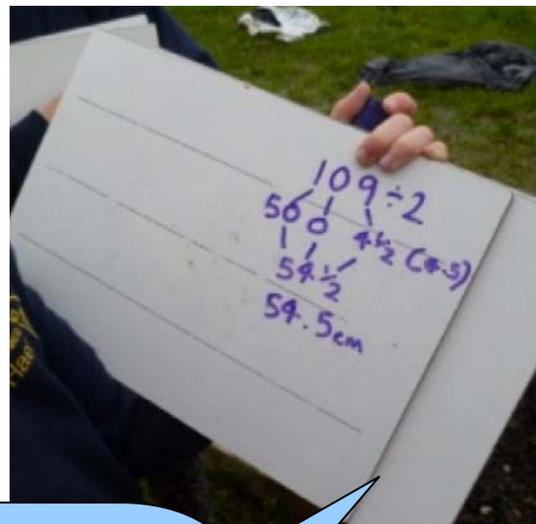# Numeracy
Exemplification materials

Half

359 cm

150   25   9½ (4½)

179½ cm

To mark half way we need to measure the flower bed and halve it.

Half of 300 is 150, half of 50 is 25 and half of 9 is 4½ so that's 179½ altogether. Half the bed is 179½cm or 179.5cm.

109÷2
50   4½ (4·5)
54½
54.5cm

Learner A: Quarter is half of a half so next we can halve 179½ cm to help us do the quarters.

Learner B: No we can't because that would be the wrong way. We need to measure the width of the bed and halve that.

Numeracy
Exemplification materials

Year 4: Severn Bore

Geography

Understanding places, environments and processes
- Learners are studying the Severn Bore and creating a tourist information guide for people wanting to visit.

Numeracy skills
- Read hours and minutes on a 24-hour digital clock.
- Find fractional quantities using known table facts, *e.g.* $\frac{1}{6}$ *of 20*.
- Use calendars to plan events.

Background information:
Through a geography lesson the learners are creating a tourist guide for the Severn Bore. This guide will provide people with timetables of the wave, the size of waves, safety tips for riding the wave, facilities at the site and the number of visitors who visit each year. The learners will be provided with information on the Severn Bore through a variety of sources.
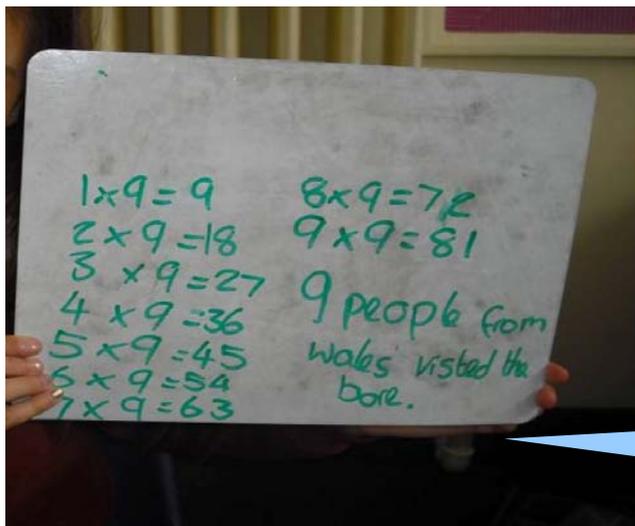
Activity description:
While the learners were reading and recording the information they were going to use in the leaflet, some mathematical-based questions were asked.

Key questions:
- If ½ of 100 people surf the Severn Bore this month, how many people will have surfed the Bore altogether?
- If $\frac{1}{6}$ of 72 people travelled to the Severn Bore by bus, how many people travelled by bus?
- If $\frac{1}{9}$ of 81 people who visited the Severn Bore were from Wales, how many people from Wales visited the Bore?
- If ¼ of children in the class (28 children) are allowed to visit the Severn Bore, how many children will go on the trip?
- What is the earliest time the Severn Bore will arrive this month?
- What is the latest time the Severn Bore will arrive this month?
- People want to surf the Severn Bore after 19:00. What is the earliest time they could do this? What is the latest?
- What time is it now? When is the next Severn Bore wave?

Numeracy
Exemplification materials

I can use my 9 times table facts, 9 x 9 = 81 to work out that 9 people were from Wales.
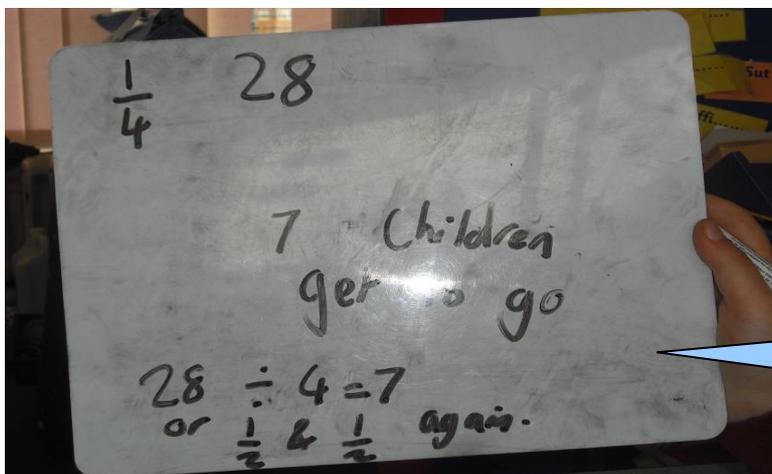
If ¼ of children in the class (28 children) are allowed to visit the Severn Bore, how many children will go on the trip?

To find the quarter, I can use my 4 times table facts or I can halve and halve again.

What is the time at the moment? When is the next Severn Bore wave?

The time now is 2:20pm, if 2 + 12 = 14, then its 14:20. The next wave will be Saturday evening at 19:25.
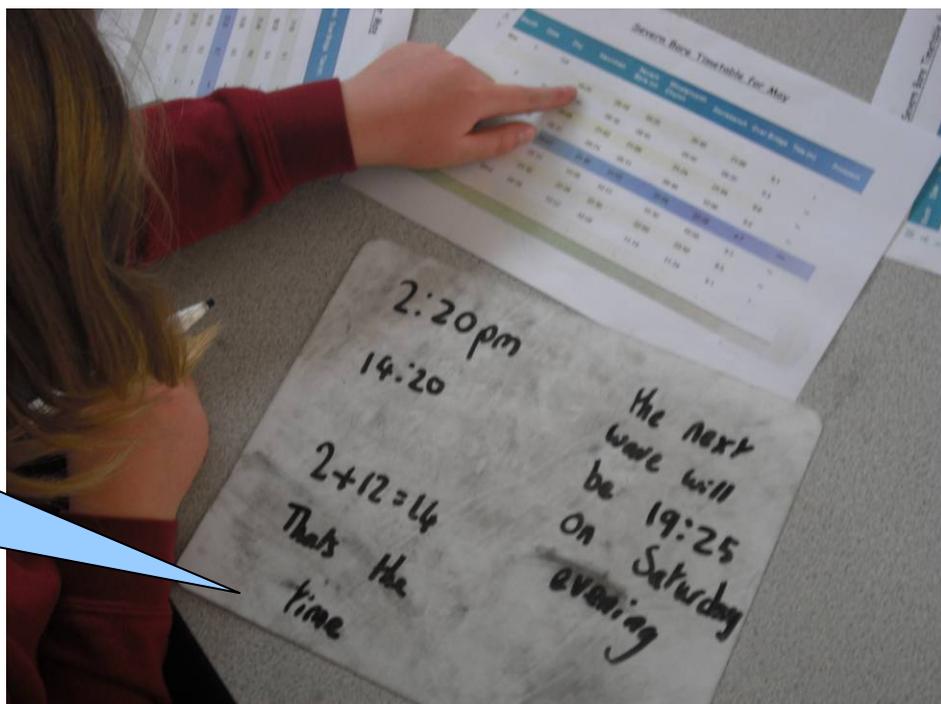
Numeracy
Exemplification materials

Year 4/5: Bones

Science

Interdependence of organisms

- Learners study the names, positions, functions and relative sizes of a human's main organs.

> **Numeracy skills**
> - Multiply a 2-digit number by a single digit (Year 4).
> - Multiply a 3-digit number by a single digit number (Year 5).

Background information:
Through a science lesson the learners were researching the skeleton and finding out about the bones in the human body.
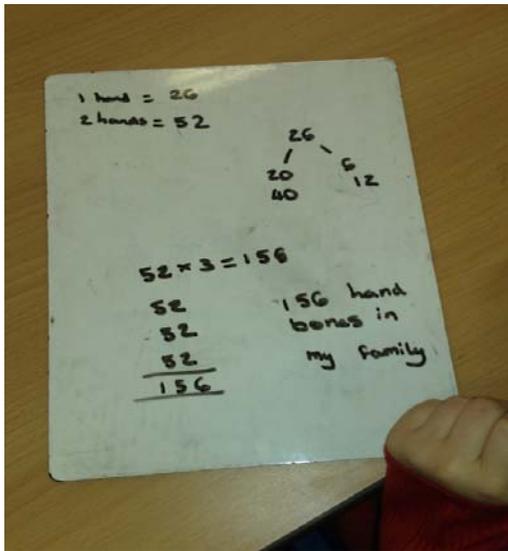
Activity description:
Following the learners initial research they were asked some mathematical questions based on what they have found out.
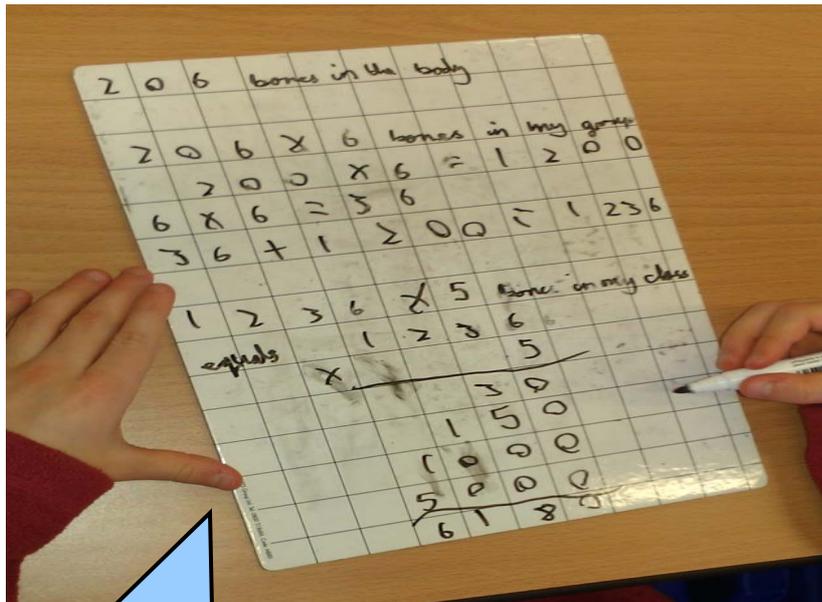
Key questions:
- How many bones are in a human hand?
- How many hand bones are in a human body?
- How many hand bones are in your family?
- How many hand bones are in your group?
- How many hand bones are in our class?
- How many bones are in your body?
- How many bones are there in your group?
- How many bones in our class?

Numeracy
Exemplification materials

There are 1 236 bones altogether in my group.

How many bones are there altogether in our class?

I could say 206 x 30 or I could multiply 1236 by 5.

**Numeracy
Exemplification materials**

Year 4/5: Raising money

Geography skills
To learn about living in other countries: two contrasting localities in countries at different levels of economic development outside the United Kingdom.
To learn about living in my world: caring for places and environments and the importance of being a global citizen.

PSE
Sustainable development and global citizenship.

The activity was carried out with a Year 5 class but it can be easily simplified to work on Year 3/4 numeracy skills.

Numeracy skills
- Calculate fractional quantities based on unitary fractions.
- Add and subtract 2-place decimal numbers in the context of money.
- Read scales with 10 equal divisions between each major unit.

Background information:
As part of their work on contrasting localities, the class read the story 'Down the Pan' from the book *On the Money* (available free from www.pfeg.org.uk).

Activity description:
1. We read the story 'Down the Pan' and discussed why the learners felt it necessary to raise money for the school in Africa and how important it was for everyone to have access to a toilet. We discussed how horrible it must be not to have a toilet to use at school.
2. After the story we discussed the fundraising and the learners suggested that if we were to raise some money for a similar project, selling cakes was a good way to make money.
3. Each group of 2 or 3 learners were given 2 recipes and a list of ingredients and had to decide whether to make cupcakes or chocolate crispy cakes and which would sell best. Then they had to decide which ingredients to buy and had to take into consideration whether to buy:
   - fair trade chocolate or the supermarket cheapest chocolate
   - organic butter, non-organic butter or cooking margarine
   - free range eggs or cheap supermarket value eggs
   - different-sized bags of ingredients.

   They used supermarket websites to compare prices and make their choices. They had to explain why they had made the choices they did.
4. They had to work out how many cakes they were going to make, how much of the ingredients they needed to buy and how much they cost. Once they had a total cost for their cakes, they then had to decide on a fair price to sell the cakes at and work out how much profit they could make.