Number and Place Value Prior Assessment Question 3:

Q3: I can find the difference between amounts including negative numbers.

NPV3: interpret negative numbers in context, count forwards and backwards with positive and negative whole numbers, including through zero.

Teacher Input:

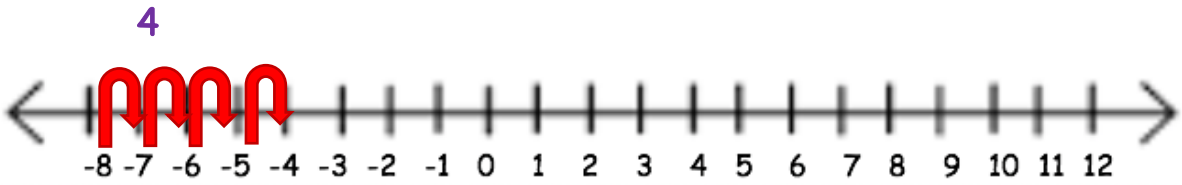
Recap with the children strategies they used to calculate increase and decrease of amounts in previous lesson. Check the children show understanding.
Introduce that often the most common places to see negative amounts are in temperature, money(overdraft) and below ground/sea level.

Now introduce the word difference. Ask the children what this means when seen in a maths context. When may we have to find the difference with temperature or money? Discuss what vocabulary may be used in different contexts. Such as by how much has the temperature increased? How much cooler is Canada than England in January?

Introduce a problem such as below. Encourage the children to think about how they may work this out and methods they can use.

The temperature in Finland in January is -8 °c. In parts of China it is -4°c. What is the difference in temperature? Or could also phrase as how much cooler is Finland than China?

Number line

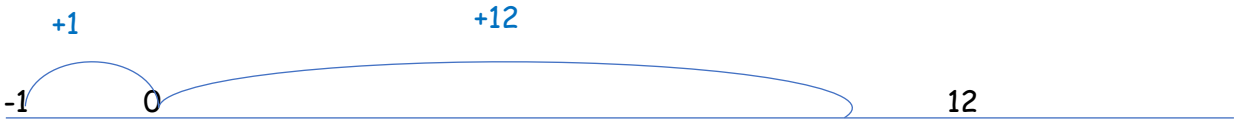


Model starting at -8 and then counting on to -4 to work out the difference.

The temperature in Germany in January is -1°c. In Malta the temperature is 12°c. How much cooler is Germany than Malta?

Blank Number Line

Some children may ready to use chunking and use of a blank number line



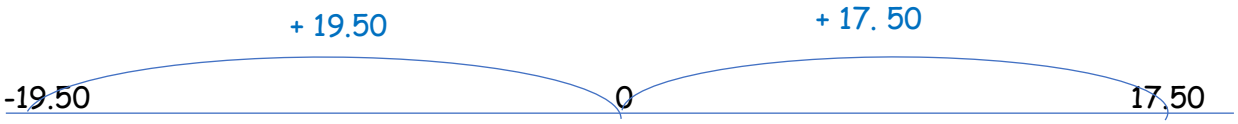
Encourage to spot that we are adding 1 to get to zero and then 12 to get to 12. This is gives us the answer of 13.

Establish why we need to add the amounts together. How is this different to finding the difference if we had positive amounts? How does this differ to learning from the previous lesson? Why?

Repeat with other amounts that have a larger difference such as , what is the difference between – 13 and 21? Encourage children to use blank number lines to record their jumps and amounts they are adding.

You may also want to present the context of being overdrawn and the vocabulary you may use in this context . Such as : I had £17.50 in my bank account. I buy a pair of shoes. My bank account now says I am overdrawn by £19.50. It will look like this in my bank account -£19.50. How much did the shoes cost?

Discuss the vocabulary and how we know we need to find the difference between £17.50 and -£19.50



Written

1 9. 5 0

\+ 1 7. 5 0

3 7 .0 0

1 1

Ensure children understand why a written method can be used and why the amounts have been added together. Modelling alongside the above blank number line may help.

Practice Activities

Purple Practice: Most suited for children who demonstrate difficulty in question 3a of the Prior Learning Assessment as they were unable to understand the word difference and calculate this.

For this task the children have been provided with flags showing temperatures of places in January around the world. The children are to select 2 flags at a time to find the difference between the temperature in the two places. Encourage the children through questioning. such as: how much warmer is the UK than Germany? How do you know?

The children can cut out the flags and stick into their books showing the difference between the temperatures. They can then record sentences such as the UK is 6degrees warmer than Germany. The difference in the temperature of the 2 countries is 6 degrees. The amounts the children are provided with are closer in value so that children can secure understanding of finding the difference and use the number lines on the second sheet to count the number of jumps between the 2 amounts.

Green Practice: Most suited for children who demonstrate understanding Q3 b of the Prior Learning Assessment and will further benefit from finding the difference understanding the vocabulary presented in word problems .

For this activity the children are presented with word problems and templates of blank number lines so that they can pick out the key vocabulary used in find the difference word problems and secure mental methods of finding the difference between positive and negative amounts. The word problems use phrases such as : by how much did the temperature increase? How much cooler is .....than.....? What is the difference in the temperature between..... and .....? How much warmer is .... than...?

Children may want to highlight the vocabulary that is linked to find the difference.

Yellow Practice Most suited for children who demonstrate a good understanding in Question 3 of the Prior learning assessment and will benefit from developing strategies using mental and written methods.

For this activity the children are presented with a selection of word problems. The first 2 questions require the children to find the difference between 2 temperatures. The children are to pick out the key information and vocabulary used. The children are then to calculate the difference in temperature for each word problem.

The last 2 word problems may require some discussion about the vocabulary used. The children may not understand that a bank account can be overdrawn. The children will

need to understand that if a bank account is overdrawn it is a negative amount. The children are to pick out the key information and vocabulary again and use this to calculate the cost of items. The last question also provides a fluency opportunities for adding decimal amounts and dividing an amount by 2 to find the price of one theme park ticket.

Mastery

Investigate and explore: children to use an atlas/internet to find different countries and their temperatures in December. Children to select countries and then research the temperatures in December. You could set a challenge such as: I want to find 2 countries that have a difference in temperature of less than 10 degrees in December. How many different countries can you find with this difference?

Answers:

Purple : share answers as a group for the different combinations.

Green:

1) 10 degrees
2) 20 degrees
3) 10 degrees
4) 26 degrees

Yellow:

1) 22 degrees
2) 36 degrees
3) £36.50
4) £19.50

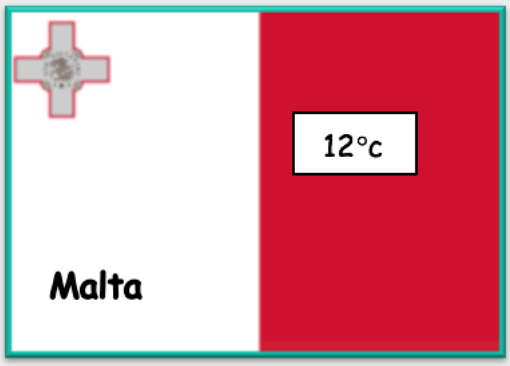
BRICKWORK Mathematics

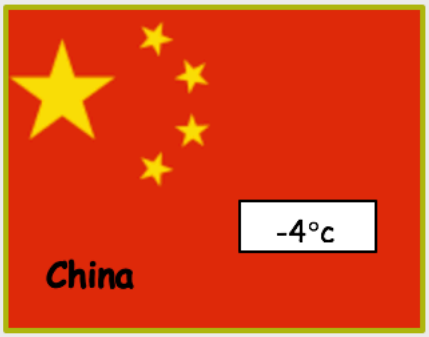
Purple Practice

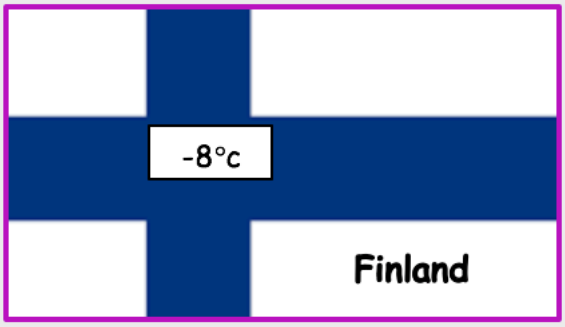
LO: I can find the difference between two amounts including negative numbers.

Below are flags of different countries. On each flag is recorded the average temperature in January. Pick 2 flags and work out the difference between the two places.

Challenge: Can you try different combinations?



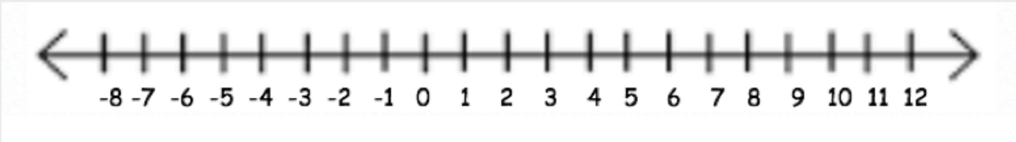


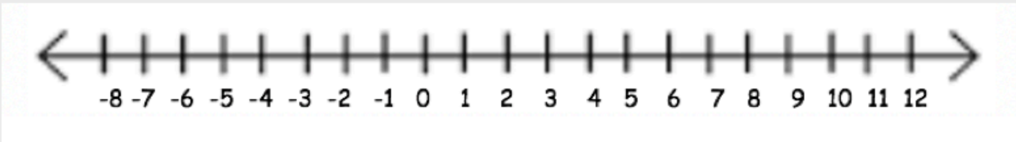


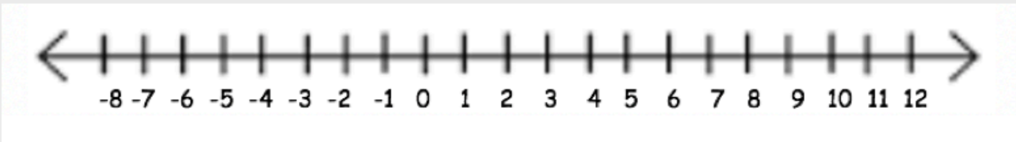
BRICKWORK Mathematics

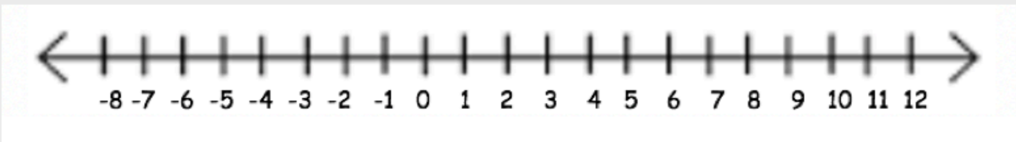
Practical resource

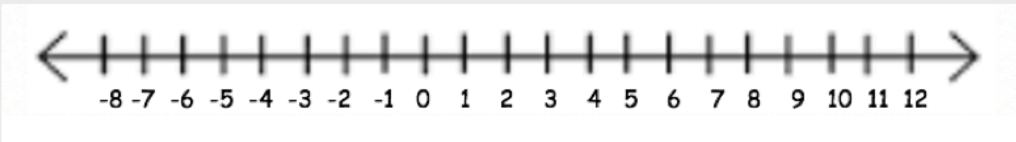
Negative number lines

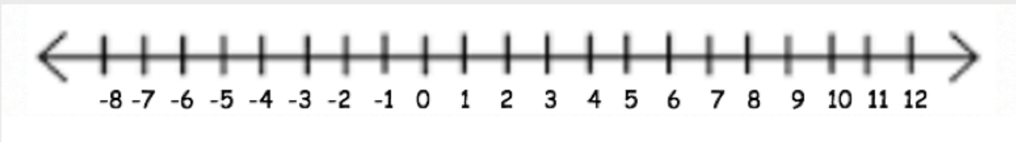


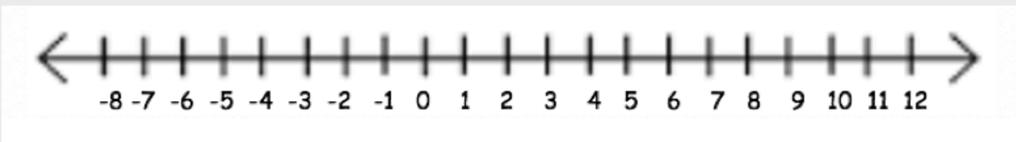










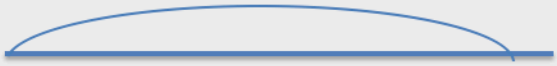


Green Practice

LO: I can find the difference involving negative amounts.

Carefully look at each word problem. Pick out the most relevant information and calculate the answer to each question. Use the blank number lines to help.

1) Joshua recorded the temperature one day in the winter whilst visiting Canada and it was -11 °C . He returned to the same place for a holiday 2 months later. The temperature was - 1°C. What is the difference in temperature?



°C

2) The average temperature in Saudi Arabia in January is 16 °C. The Average temperature in China is -4°C . How much warmer is Saudi Arabia than China in January?

°C

3) The average temperature in Serbia in January is 2°C. The Average temperature in the Finland is -8°C. How much cooler is the Finland than Serbia?

°C

4) The average temperature in Russia in January is -21 °C. The Average temperature in the United Kingdom is 5°C. How much warmer is the United Kingdom than Russia?

°C

BRICKWORK Mathematics

Yellow Practice

LO: I can find the difference including negative amounts.

Carefully look at each word problem. Pick out the most relevant information and select an operation and method you can use to solve each problem.

1) Ava wanted to compare the temperatures of her freezer and her fridge. Ava recorded the temperature in her fridge as 5 °C . She then recorded the temperature in her freezer after she had opened the door. It was -17 °C. How much colder was the freezer than the fridge?

2) Joshua recorded the temperature one day in the winter whilst visiting Canada and it was -11 °C . He returned to the same place for a holiday 6 months later. The temperature was 25 °C. What is the difference in temperature?

3) Sanjay has £15.50 in his bank account. He buys a new pair of shoes. His bank account now says he has -£ 21.00 . How much does the pair of shoes cost him?

4) Sabah had £8.50 in her bank account. She bought tickets for her and her friend to go to a theme park. This made her £30.50 overdrawn in her bank account. How much did one theme park ticket cost?