**Number and Place Value Prior Assessment Question 3:**

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

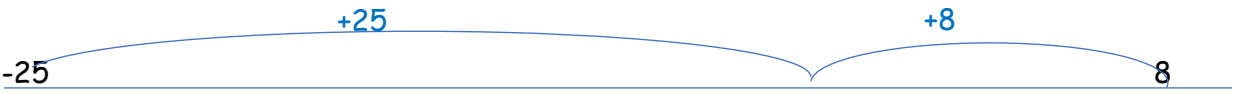
NPV 3 : use negative numbers in context, and calculate intervals across zero

**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.
Encourage the children that completed the yellow task in lesson 2 to share their line graphs and tables.

Discuss what the line graph is showing and the change in temperature. Hide the clues at the bottom of the task. In January the temperature in Mongolia was -25 degrees and in May it was 8 degrees. By how much did the temperature rise by? Discuss the vocabulary used. What is it asking us to work out? Discuss that we are asked to find the difference between -25 and 8. Ask the children for ideas as to how they will work this out.

Some children may benefit from seeing this on a blank number line




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?

Encourage that we are adding 25, to get to zero and then 8 more to get to 8.

Some children may combine the 8 then the 25. Discuss different strategies.

Also look at when we have two negative amounts such as -3.4 and -7.9.

Then look at how some amounts may be harder to work out:

In the summer a temperature was 28. 7. In the winter the temperature was -17.8. How much cooler is was it in the winter?

Ask the children to think about working this out. Encourage the children to suggest adding the amounts together. Some children may do this with a written

method. Encourage children to share their methods and discuss if written or mental was more efficient for them.

**Practice Activities**

**Purple Practice: Most suited for children who show little understanding of strategies when calculating with negative numbers .**

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 cards at a time to find the difference between the temperature in the two places. The amounts the children are provided with are closer in value than in the green task so that children can secure understanding that they need to count on (add) and that they can secure use of mental methods when calculating with negative amounts.

**Green Practice: Most suited for children who demonstrate a good understanding in Q3 a of the Prior Learning Assessment and will further benefit from finding the difference with larger amounts and decimals such as in question 3 b.**

For this activity the children have the opportunity to apply geography skills with the first part of the task. The children can use their understanding of the world to identify different countries on the world map. The children are provided with an image of the world and 10 countries to match the temperature to the correct label. Once the children have solved this part of the task, the children are then required to pick 2 countries at a time to find the difference in temperatures. The children should be encouraged to explore their methods to work out the difference and explain how they are doing this. The children have amounts with larger difference than the purple task.

If you feel that you would like the sole focus to be on finding the difference then Green task sheet 2 provides the answers for the temperature of each country. Furthermore, geography and further maths skills could be developed here in cross curricular learning. The children could pick one of the countries from the list and find out about this place. They could produce a case study about it explaining the geographical features and they could also develop maths links such as find the population size, writing this in figures and words, rounding this to the nearest, hundred thousand, million, etc. They could also find the temperatures of each month and produce a ling graph to show this.

**Yellow Practice** **Most suited for children who demonstrate a good understanding in Question3 of the Prior learning assessment and will benefit from applying skills to word problems.**

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 amounts. The first question is presented with statements about temperatures in a fridge and freezer. The second problem may require some discussion about the vocabulary used. The children may not understand that a bank account can be overdrawn. In the second question, this is represented with a – symbol. However in question 4 the children need to understand that overdrawn is the same as – £58.65.

For the third and 4th questions, the children are presented with multistep problems and will require more than one action/operation. Here there are opportunities for the children to calculate with decimals and apply written division strategies involving money (fluency).

**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 of around 35 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:** See task sheet 2

**Yellow:**

1) 21.2°c
2) £54.57
3) 33.7 °c
4) £33.60

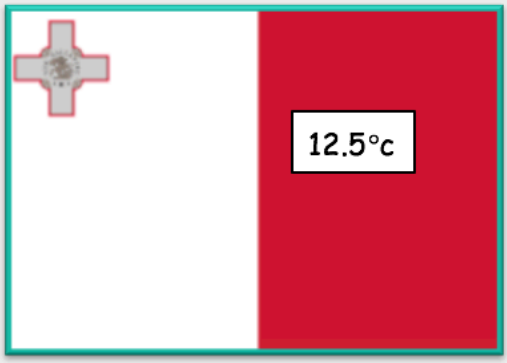
BRICKWORK Mathematics

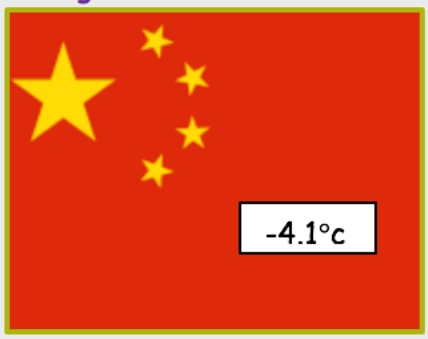
Purple Practice

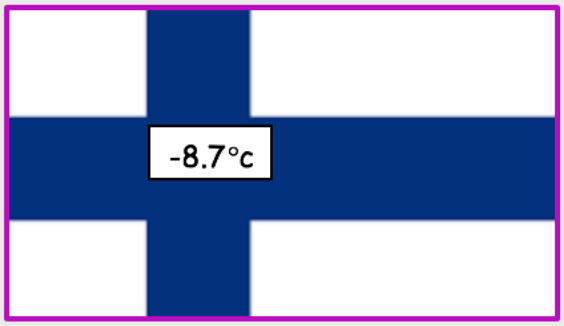
LO: I can find the difference between two amounts involving negative numbers.

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.

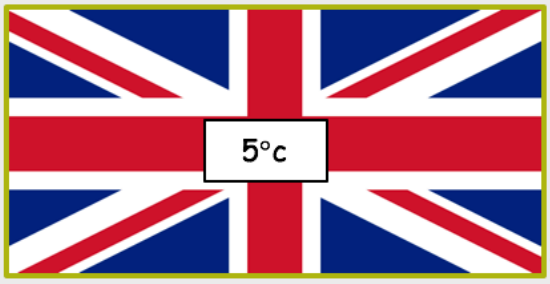
**Challenge: Can you name the correct country for each flag?**





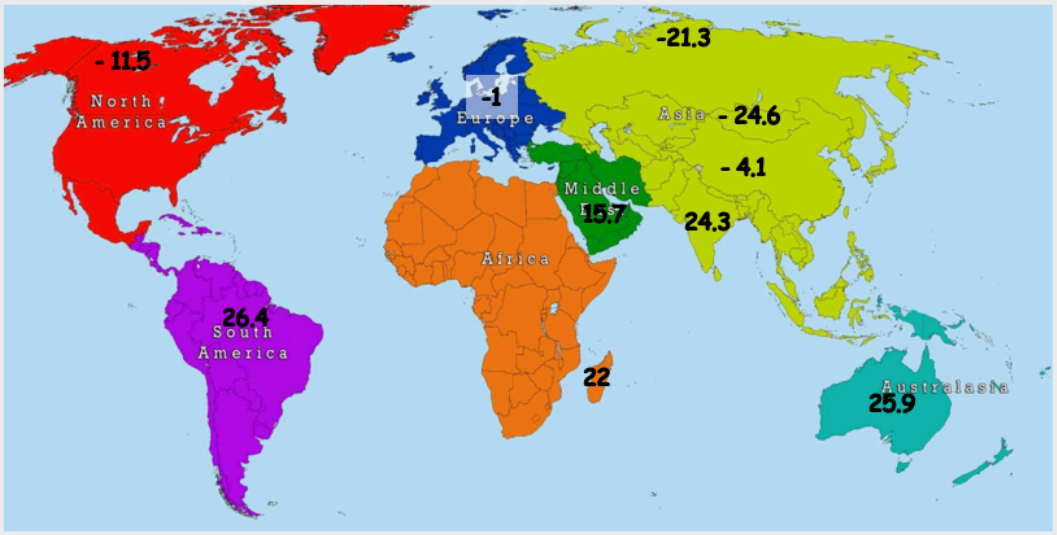



BRICKWORK Mathematics

Green Practice

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

Below is a world map with the average temperatures of some countries in January.
1)Match the correct temperature to the country.
2)Then pick 2 countries at a time to compare the difference in temperature. How many different combinations can you find?




| | | | |
|---|---|---|---|
| Germany | °C | Madagascar | °C |
| Northern Russia | °C | Saudi Arabia | °C |
| Canada | °C | India | °C |
| Brazil | °C | Mongolia | °C |
| Australia | °C | China | °C |

BRICKWORK Mathematics

Green Practice

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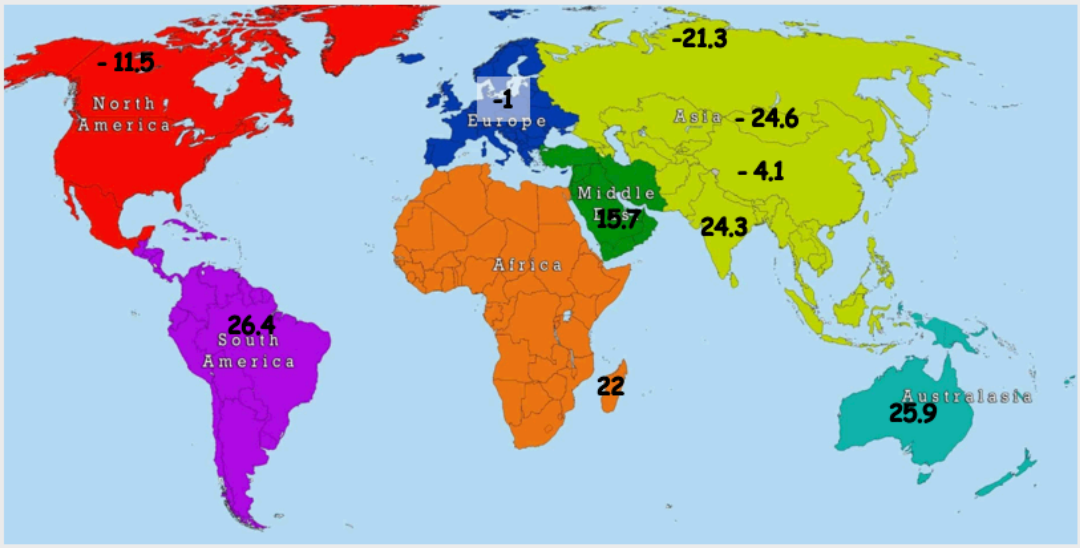


| | | | |
|---|---|---|---|
| Germany | -1°C | Madagascar | 22 °C |
| Northern Russia | -21.3°C | Saudi Arabia | 15.7°C |
| Canada | -11.5°C | India | 24.3 °C |
| Brazil | 26.4 °C | Mongolia | -24.6°C |
| Australia | 25.9°C | China | -4.1 °C |

**Yellow Practice**

LO: I can find the difference involving 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 4.3 °C . She then recorded the temperature in her freezer after she had opened the door. It was -16.9 °C. How much colder was the freezer than the fridge?

2) Sanjay has £15.67 in his bank account. He buys a new pair of shoes. His bank account now says he has -£38.90 . How much does the pair of shoes cost him?

3) Joshua recorded the temperature one day in the winter whilst visiting Canada and it was -9.8 °C . He returned to the same place for a holiday 6 months later. On the first day the temperature was 21.4°C. For 5 days the temperature increased by half a °C each day. What was the difference in temperature from the winter temperature and the last day of the holiday?

4) Sabah bought tickets for her and her friends to go to a theme park. This made her £58.65 overdrawn in her bank account. Once her 4 friends had paid their money in to her account her balance was £75.75. How much did one theme park ticket cost?