


Place Value Question 18:

Objective: I am beginning to understand that there are numbers less than zero.

I can count backwards and forwards and use negative numbers.

NPV3 :count backwards through zero to include negative numbers

Assessment Question

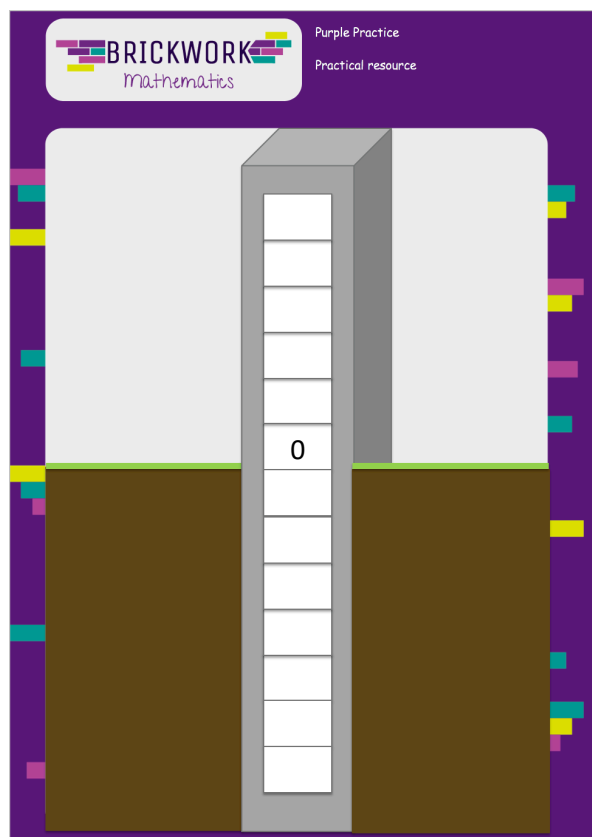
 Question 18: I can count backwards and forwards and use negative numbers.	I feel								
<p>Fill in the missing boxes</p> <table><tr><td><input type="text"/></td><td><input type="text"/></td><td><input type="text"/></td><td>0</td><td>1</td><td>2</td><td>3</td><td><input type="text"/></td></tr></table>		<input type="text"/>	<input type="text"/>	<input type="text"/>	0	1	2	3	<input type="text"/>
<input type="text"/>	<input type="text"/>	<input type="text"/>	0	1	2	3	<input type="text"/>		

Input ideas:

Many children find the introduction to negative numbers difficult to understand as often children haven't seen or heard these used before. The most common place for negative numbers to be seen is in temperature. However, this is an abstract example to many children.

One way to introduce this visually to the children, and to explore counting up and down positive and negative numbers, is with a lift. This can be created with apparatus, a large tube or cardboard boxes for the children to explore. Introduce the idea of a car park with lots of different floors. Show the children where the ground floor is and the label 0. This is on the ground floor as we have not had to go up the stairs /lift so this is labelled 0. The floor above is labelled 1 because another floor has been added, that's why we need a lift, again another floor is added so there are 2 floors.

For example:



Ask the children if they have ever gone underground before. For example under a tunnel, in a cellar or a carpark that has underground floors. Let the children explain any examples. Then introduce the children to the idea that the carpark we have created has some floors underground. Has anyone been in a carpark with floors underground before? So my lift goes underground to different floors. What do you think this floor is called? Introduce - 1. Discuss why this is used and what it shows. Then repeat with - 2 etc. Encourage the children to count backwards from 5 to - 5 and then forwards from -5 to 3, moving up and down on the lift.

Practice Activities

Purple Practice: Most suited for children who show little understanding of negative numbers.

For the purple task, the children are provided with an image of a lift with floors above the ground and below the ground. Establish with the children where the 0 should be placed. How do they know? Why have they placed the zero there? Then ask the children to label the levels/numbers above ground. Then ask the children to label the levels below zero. Encourage the children to start from the zero and count backwards with -1, -2, -3, rather than starting at the bottom of the sheet. Ensure that the children are counting in the correct order and understand why they start with -1. This is one less than zero.

On the second task sheet the children are provided with a thermometer rather than a lift. This can be used instead of or as well as to introduce that negative numbers are often used to show different temperatures. This can be filled out with the children and kept for when the temperature is in the negative numbers or if the children are learning about a country that has a cold climate. The children can record different temperatures on different days using their thermometer. This could be referred back to throughout the year/winter. Ensure children understand why negative numbers are used for temperature.

Green Practice: For children who show some understanding of what negative numbers are and are ready to count forwards and backwards through negative numbers.

For this activity the children are presented with a game. They are required to make their own number line strip using the resources provided. The children are to make a character or use a counter as their player. The children are to start on zero. They are aiming to get to floor nine for work. But the lift keeps going up and down. The children are to aim to get to the top first. The children should be provided with 2 different coloured dice. The children to take it in turns to roll one dice and then on their next go roll the other dice. One dice should add amounts (so the children are to move up/count on) the other dice should encourage the children to move back that amount (move down- taking away). The children should be moving up and down different amounts using the dice.

Yellow Practice Most suited for children who are familiar with counting backwards and forwards with negative numbers.

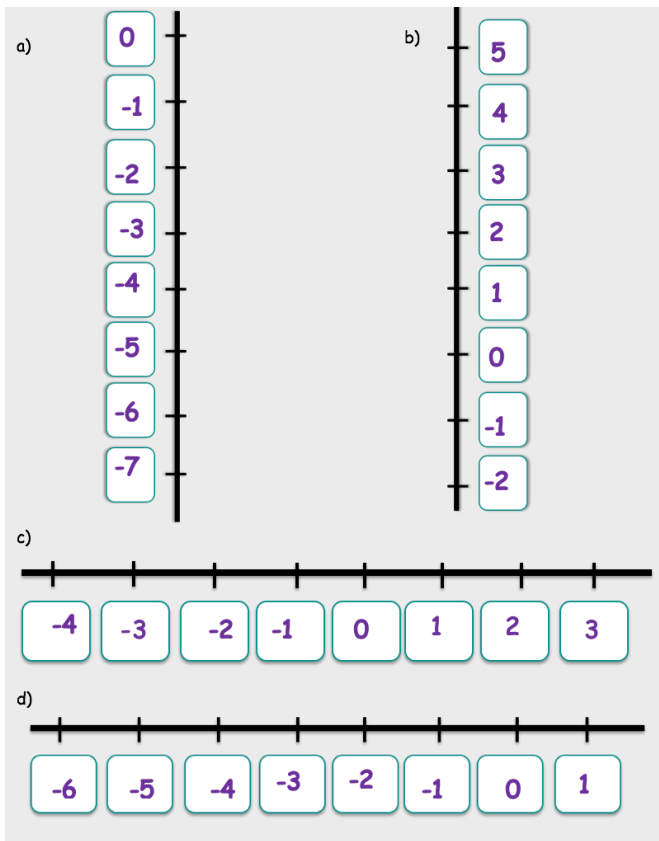
For this activity, the children are presented with 4 number lines. Some are presented vertically and some are presented horizontally for the children. The children should count on or back to work out the missing boxes.

Mastery - reasoning and fluency

For this mastery activity the children are provided with 2 word problems to solve. The children are to apply their knowledge of negative numbers to work out the answers to the problems. The children are required to count forward or back a certain amount of steps to work out the answers. For the first question, the children are presented with an image to help them to work out the answer. The second question is more challenging as the children will either need to suggest using the number line from the first question, draw their own or count forward mentally to work out the answer. Also you may need to discuss with the children the meaning of the word warmer in the context of the question.

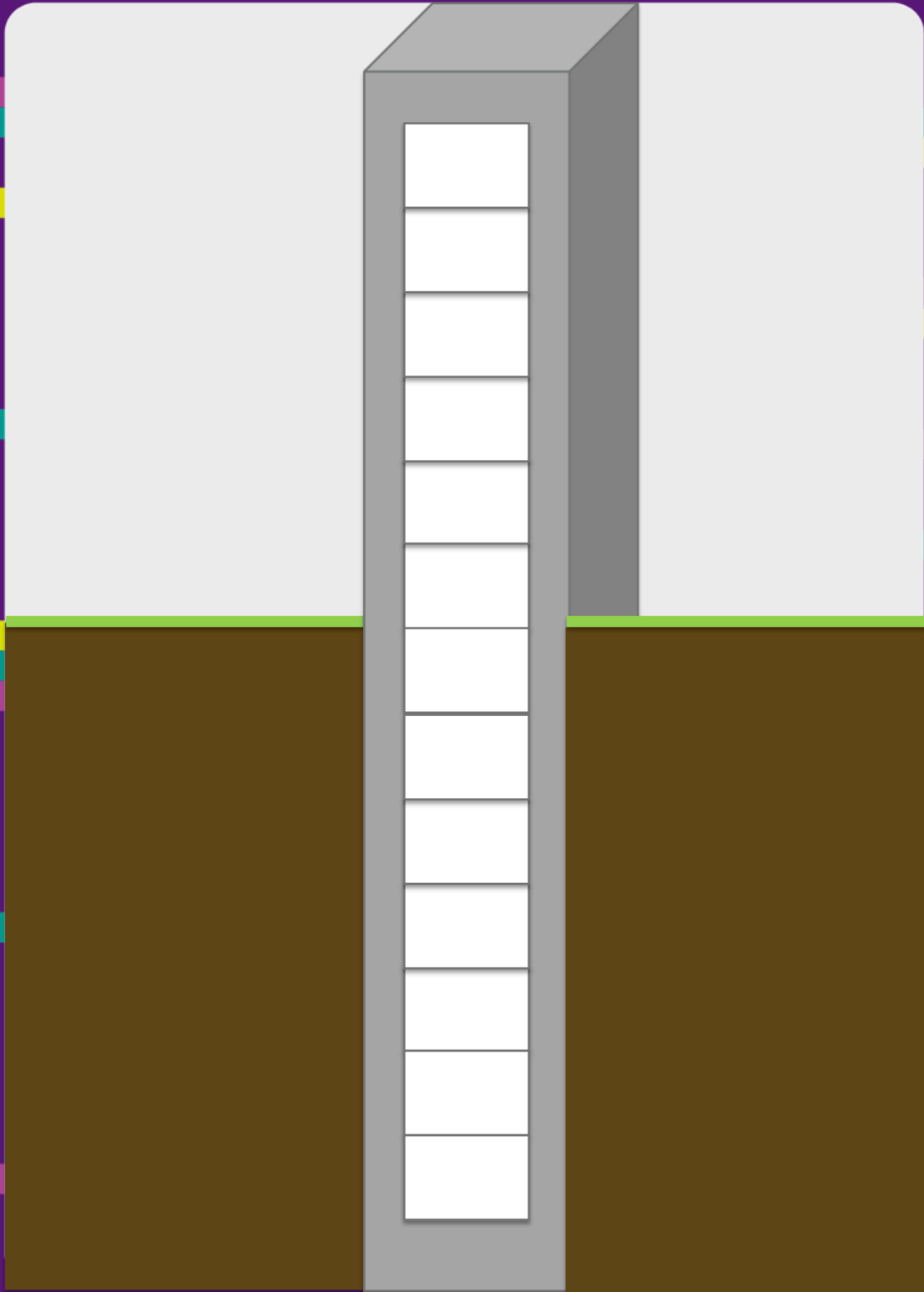
Answers :

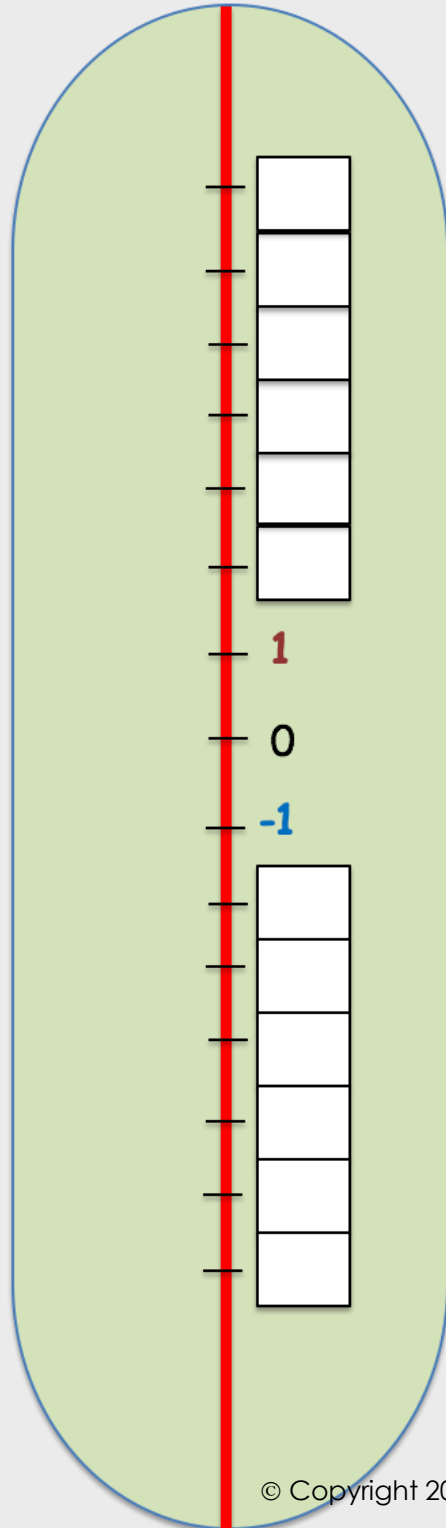
Yellow:



Mastery :

- 1) -1
- 2) 5 degrees.





- 1) Cut out the lift on sheet 1 and 2.
- 2) Stick the zero block on top of the 'stick here' block on sheet two.
- 3) This should make a number line from 9 to -9.
- 4) Both players must start on floor zero.
- 5) One dice is for adding amounts and the other dice is for taking away amounts.



You will need:

- 2 different coloured dice
- Counters or characters

- 6) Take it in turns to roll one dice.
- 7) Move your counter up the lift the correct amount. You are adding this amount.
- 8) Then roll the other dice. Move your counter down the correct amount. You are taking away this amount.
- 9) Continue taking turns. Which player can get to floor nine first?

Stick here

-1

-2

-3

-4

-5

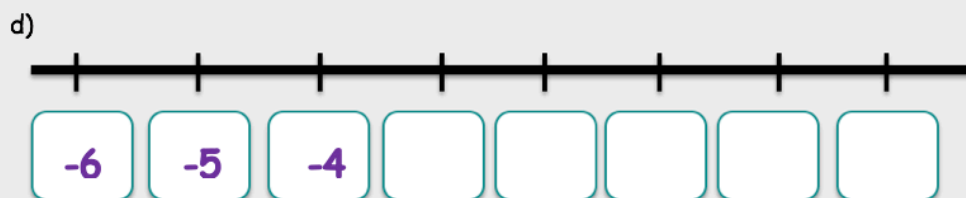
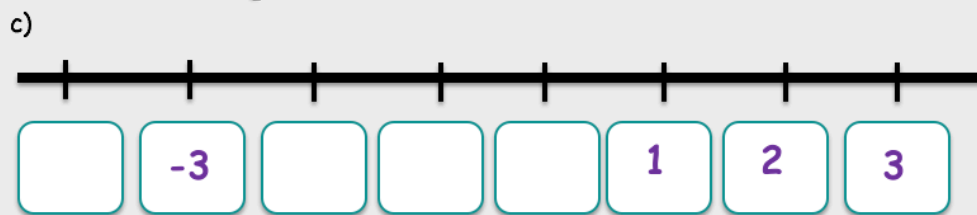
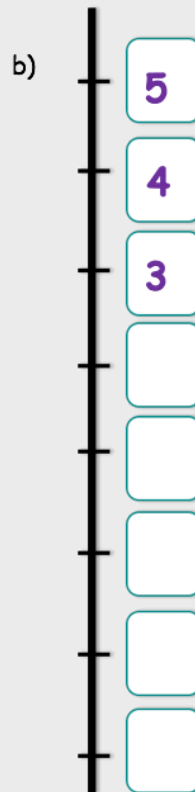
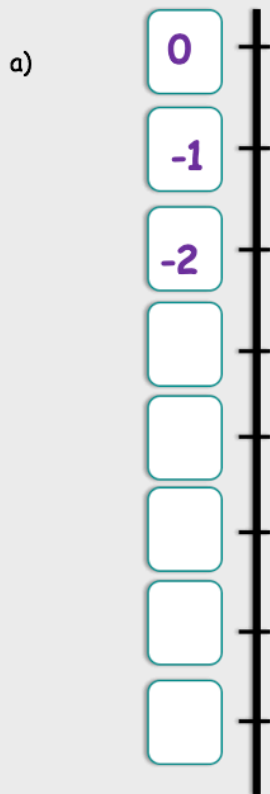
-6

-7

-8

-9

Here are some number lines that use positive and negative numbers. Can you fill in the missing amounts?



1) Billy works on floor 5 in the building. He parks his car 6 floors below him. Circle the button he should press in the lift to get to his car.

- 7
- 6
- 5
- 4
- 3
- 2
- 1
- 0
- 1
- 2
- 3

2) On Thursday morning, the temperature in Heidi's garden was -2 degrees. In the afternoon, the temperature got warmer by 7 degrees. What was the temperature?

degrees