

Max's Mountain Maths: Understanding Negative Numbers

Learning objective: To be able to count forwards and backwards through zero and understand negative numbers in context.

Read the story about Max the monkey and use the number line to help you solve the maths puzzles below.

Max the monkey is visiting the Snowy Peaks. He starts his adventure at the base of the mountain, which is 0 metres above sea level. As he climbs, the temperature starts to drop. At the base, it is 5°C . As Max climbs higher, the temperature falls by 2°C every hour. By the time he reaches a high ridge, the temperature has dropped to -3°C . Max loves to think of this as a maths puzzle: if he is at -3°C and the sun comes out to warm the air by 5 degrees, what will the new temperature be? Max uses a number line to jump forward and backwards, making sure he crosses the zero point carefully.

Word bank: negative · positive · below zero · above zero · interval · difference · descend

1. Max starts at 4°C . The temperature drops by 6°C . What is the new temperature? (2 marks)

2. The temperature on the mountain peak is -5°C . In the valley, it is 3°C . What is the difference between these two temperatures? (2 marks)

3. A shop at the base of the mountain has a bank balance of $-\text{£}15$ (they owe money for supplies). If they make a profit of $\text{£}20$, what is their new balance? (2 marks)

4. Put these temperatures in order from coldest to warmest: 2°C , -4°C , 0°C , -1°C , 5°C . (2 marks)

5. If Max is at -2°C and the temperature rises by 7°C , show your working out to find the final temperature. (2 marks)

Draw: Draw a vertical number line shaped like a mountain. Label the 0 mark as 'Sea Level'. Show Max at the -3°C mark and draw the items he might need to stay warm at that temperature.



Extension challenge: Imagine Max is in a lift in a tall building. The ground floor is 0. The car park is -1 and -2. If Max is at -2 and goes up 5 floors, which floor does he arrive at? Explain your answer.