

Max's Mountain Expedition: Navigating Negative Numbers

Learning objective: To understand, order, and calculate with negative numbers in context, including crossing zero.

Max the monkey is helping a team of researchers study temperatures on a mountain range. Use your knowledge of number lines and temperature scales to help him solve these challenges.

Word bank: Negative · Positive · Interval · Difference · Decrease · Increase · Below zero · Ascend

1. The temperature at the base of the mountain is 4°C . As the team climbs higher, the temperature drops by 7°C . What is the new temperature? (2 marks)

2. Max records the temperature at the summit as -3°C . By midday, the temperature rises by 5°C . Explain how you calculated the new temperature. (3 marks)

3. Order these mountain temperatures from coldest to warmest: -8°C , 2°C , -12°C , 0°C , -5°C , 7°C . (2 marks)

4. The team finds a hidden cave where the temperature is -15°C . Outside, the air is -9°C . What is the difference in temperature between the cave and the outside air? (2 marks)

5. Justify your answer: If the temperature is -2°C and it falls by another 3°C , why does the number get 'larger' even though the temperature is colder? (3 marks)

6. Compare and contrast: A mountain thermometer shows -4°C and a different sensor shows 4°C . How are these two values similar, and how are they different in terms of their distance from zero? (3 marks)

Draw: Draw a vertical number line representing a mountain side, starting at -10°C at the bottom and rising to 10°C at the top. Mark the positions of the temperatures mentioned in the questions.



Extension challenge: Imagine the temperature at the summit fluctuates throughout the day. If the temperature starts at -6°C , drops by 4°C , rises by 11°C , and then drops by 3°C , what is the final temperature? Write a short word problem for a partner that involves starting at a negative number and crossing zero twice.