

Max's Magnificent Multiplication Challenge

Learning objective: To multiply numbers up to 4 digits by a one-digit or two-digit number using a formal written method, including long multiplication for multiplying by two-digit numbers.

Max the monkey has been busy organising the BookFlik library! Help him solve these complex multiplication problems. Show your working out clearly in the space provided to earn full marks.

Max is stocking the shelves in the grand library. He has 142 boxes of books, and each box contains 26 classic stories. To make sure he has enough shelf space, he needs to calculate the total number of books accurately. Max also found a rare collection of 1,245 poetry books that need to be packed into 8 crates. He needs to know how many books will fit if each crate is filled to capacity.

Word bank: multiplicand · multiplier · product · long multiplication · place value · regrouping · estimate

1. Using formal long multiplication, calculate the total number of books Max has if he has 142 boxes with 26 books in each. Show your method. (3 marks)

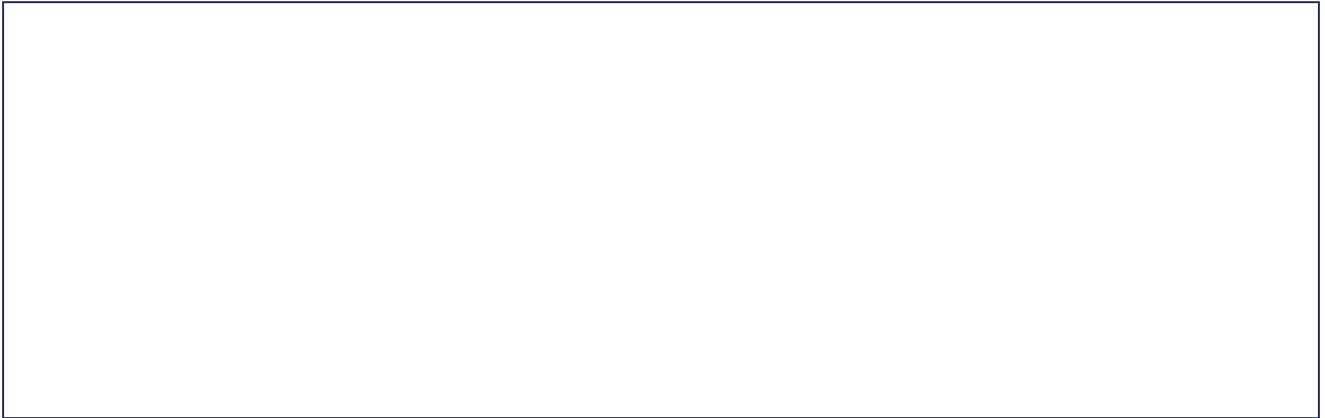
2. Calculate the total number of poetry books if Max has 8 crates, each holding 1,245 books. (2 marks)

3. Explain why it is useful to estimate your answer before calculating the product of 142 and 26. What would a sensible estimate be? (2 marks)

4. Compare and contrast the process of multiplying by a one-digit number versus a two-digit number. What extra step must you remember? (3 marks)

5. Justify your answer: If Max had 250 boxes instead of 142, would the product be more than double the original total? Explain your reasoning. (3 marks)

Draw: Draw a diagram showing how Max might group his books into arrays to help visualise the multiplication 12×14 .



Extension challenge: Max has £1,250 to spend on new library equipment. If a new sturdy wooden bookshelf costs £84, how many can he buy? What is the remainder, and what might happen if he decides to save that money for a library party instead?