

Max's Mathematical Multiplication Challenge

Learning objective: To demonstrate fluency and reasoning in multiplying multi-digit numbers by 1-digit and 2-digit numbers, and understanding factors and multiples.

Read each question carefully. Show all your working out to gain full marks. Max the monkey is counting his collection of jungle treasures, and he needs your help to calculate the totals.

Max is organising his collection of shiny river stones and exotic fruit. He has 14 baskets, each containing 23 smooth river stones. He also has 12 crates of star-fruit, with 45 pieces of fruit in every crate. He wants to ensure he has enough space for his items before he begins his next adventure.

Word bank: product · factor · multiple · multiplication · estimate · commutative · partitioning · place value

1. Using formal long multiplication, calculate the total number of river stones Max has in his 14 baskets. (2 marks)

2. Calculate the total number of star-fruit using the partitioning method. Show your steps clearly. (3 marks)

3. Max finds 7 gold coins. Each coin is worth £124. What is the total value of the coins? Write your answer in pounds (£). (2 marks)

4. Identify all the factor pairs of 36. Explain why 36 is considered a 'composite' number. (3 marks)

5. Max says, 'If I multiply 45 by 12, it is the same as multiplying 45 by 6 and then doubling the answer.' Justify whether Max is correct using mathematical reasoning. (4 marks)

6. Compare and contrast the methods of short multiplication and long multiplication. Under what circumstances would you choose one over the other? (3 marks)

7. What might happen to the product if both numbers in a multiplication calculation were rounded to the nearest ten before multiplying? Use an example to support your answer. (3 marks)

8. Max is planning a jungle feast. He needs to buy 15 bunches of bananas at £2.45 per bunch. Create a word problem involving this scenario that requires multi-step operations to solve. Then, provide the solution to your problem. (5 marks)

Draw: Draw a visual representation using an array or area model to show how you would calculate 13×12 .



Extension challenge: Total: /25. Consider how multiplication patterns change when using decimals. If Max bought 100 items at £0.05 each, how would the position of the digits change in the final product?