

Max's Marathon of Time: Mastering Intervals and Durations

Learning objective: To calculate time intervals, convert between 12-hour and 24-hour clock formats, and solve complex multi-step word problems involving time durations.

Read each scenario carefully. Use your knowledge of hours, minutes, and seconds to solve Max the Monkey's mathematical challenges. Show your working out clearly.

Max the Monkey is planning a series of jungle activities. He needs help calculating his schedule using both 12-hour and 24-hour time formats to ensure he is never late for his afternoon adventures.

Word bank: Duration · Interval · 24-hour clock · AM/PM · Chronological · Elapsed time · Midnight · Noon

1. Max starts his morning exercise at 08:45 and finishes at 10:20. Calculate the total duration of his workout in minutes. Explain your method. (2 marks)

2. If a train departs at 14:15 (24-hour clock), what is this time in 12-hour format? If the journey lasts 1 hour and 50 minutes, what time does it arrive using the 12-hour clock? (3 marks)

3. Max's favourite nature documentary begins at 19:30 and lasts for 115 minutes. At what time does the documentary end? Give your answer in 24-hour format. (2 marks)

4. Compare and contrast the difference between calculating time intervals that stay within the same hour and those that cross the hour threshold. Why is it easier to make mistakes when crossing the hour? (3 marks)

5. Max is travelling to a science fair. The fair opens at 09:00 and closes at 17:30. If Max spends 2 hours and 15 minutes at the exhibits, 45 minutes at lunch, and 1 hour and 30 minutes in the workshop, how much 'free time' does he have left before the fair closes? (3 marks)

6. Justify your answer: Is it more efficient to use the 24-hour clock or the 12-hour clock when planning a trip that lasts across noon and midnight? Provide a reason for your choice. (2 marks)

Draw: Draw two clock faces side-by-side. The first should show 14:45 and the second should show the time exactly 3 hours and 20 minutes later. Label both clocks clearly with the time in 12-hour format underneath.

Extension challenge: Design a 'Time-Travel Itinerary' for a full day of activities (08:00 to 20:00). You must include at least five activities with varying durations. Write a reflection explaining what might happen if you failed to account for the transition between AM and PM in your schedule.