

**Age 14+ Level ★★  
Worksheet 2****1. Crude Calculation**

When Louise had her first car, 50 litres of petrol cost £40. When she filled up the other day, she noticed that 40 litres of petrol cost £50. By what percentage has the cost of petrol increased over this time?

**2. Pond Runners**

Katherine and James are jogging in the same direction around a pond.

They start at the same time and from the same place and each jogs at a constant speed.

Katherine, the faster jogger, takes 3 minutes to complete one lap, and first overtakes James 8 minutes after starting.

How many seconds does it take James to complete one lap?

**3. Walking in the Mountains**

Heidi and Peter went for a mountain walk from Obersee to Salzbau. They left Obersee at 12 noon and the sign there said that Salzbau was 2 hours and 55 minutes away.

At one o'clock they sat down for lunch under another sign which said that Salzbau was now only 1 hour and 15 minutes away. After stopping for 15 minutes for lunch, they continued their walk at the same speed as before without any further breaks.

At what time did they reach Salzbau?

**4. Shepherd's Flock**

Joseph's flock has 55% more sheep than goats. What is the ratio of goats to sheep in the flock?

**5. Overtake**

Tom left a motorway service station and travelled towards Glasgow at a steady speed of 60 mph. Tim left the same service station 10 minutes after Tom and travelled in the same direction at a steady speed, overtaking Tom after a further 1 hour 40 minutes.

At what speed did Tim travel?

*These problems are adapted from UKMT ([ukmt.org.uk](http://ukmt.org.uk)) and SEAMC ([seamc.asia](http://seamc.asia)) problems.*