Age 14+ Level ★★★
Worksheet 3

1. Traffic Jam

Yesterday evening, Emily's journey home took 25% longer than usual, as she was stuck in a traffic jam.

By what percentage was her average speed reduced compared to normal?

2. 100m Sprint

Anna, Bridgit and Carol run in a 100 m race. When Anna finishes, Bridgit is 16 m behind her and when Bridgit finishes, Carol is 25 m behind her.

The girls run at constant speeds throughout the race.
How far behind was Carol when Anna finished?

3. Backwards Laps

Chris and Sophie are running in opposite directions around a track, with constant speeds. Chris notices that he passes Sophie every 24 seconds.

It takes Chris 60 seconds to complete each lap.
How long does it take Sophie to complete each lap?

4. Fraction of Percentages

The value of W is 25% of X.
The value of X is 45% of Y.
The value of Z is 60% of Y.
What is W as a fraction of Z?

5. Two Trains

Amityville and Brookville are two stations.
Two trains started simultaneously from Amityville and Brookville, each traveling towards the other station with constant velocity.

After they met, one train needed another nine hours to reach Brookville and the other train needed another four hours to reach Amityville.
Find the time taken by each train to complete the journey.

These problems are adapted from UKMT (ukmt.org.uk) and SEAMC (seamc.asia) problems.