1. Which is greater, an acceleration from 25km/h to 30km/h or one from 96km/h to 100km/h if both occur during the same time?

2. What is the acceleration of a vehicle that changes its velocity from 100km/h to a dead stop in 10s?

3. A ball is thrown straight up with an initial speed of 30m/s. How high does it go, and how long is it in the air (neglecting air resistance)?

4. What is the instantaneous velocity of a freely-falling object 10s after it is released from a position of rest? What is its average velocity during this 10-s interval? How far will it fall during this time?

5. If there were no air drag, how fast would drops fall from a cloud 1 kilometre above the Earth's surface? (Be glad that raindrops experience air drag in fall!)

6. A ball is thrown vertically upwards, with a velocity of 20m/s. It takes 2s for the ball to rise to its maximum height, at which it stops for an instant.
   a) What is the acceleration caused by gravity?
   b) In which direction does it act?
   The ball falls to the ground, taking a further two seconds to do so.
   c) With what velocity does it hit the ground? (You can ignore air resistance in answering this question.)

7. A car travels from standing still (0m/s) to 80m/s in 8s. What is its acceleration?

8. A sports car accelerates from 0 to 96km/h in 8.6s.
   a) What is a velocity of 96km/h in m/s?
   b) What is the acceleration of the car, in m/s^2?
   c) How far has the car travelled while accelerating to this velocity?

9. A man drops a stone at the top of a tower. It hits the ground after two seconds. How high is the tower? ($g \approx 9.81m/s^2$)

10. A car accelerates from 0km/h to 80km/h in 6s. What is its acceleration?

11. A tractor accelerates from 0 to 10km/h in 2 seconds. A sports car accelerates from 190km/h to 200km/h in 5 seconds. Which acceleration is greater?

12. A boy drops a stone into a well and claims that it took the stone 4 seconds to hit the water. How deep would the well be in this case?