1. Kelly runs a distance of 100 metres in a time of 10.52 seconds.

The distance of 100 metres was measured to the nearest metre.
The time of 10.52 seconds was measured to the nearest hundredth of a second.

(a) Write down the upper bound for the distance of 100 metres.

.... metres

(1)

(b) Write down the lower bound for the time of 10.52 seconds.

.... seconds

(1)

(c) Calculate the upper bound for Kelly's average speed.
Write down all the figures on your calculator display.

.... metres per second

(2)

(d) Calculate the lower bound for Kelly's average speed.
Write down all the figures on your calculator display.

.... metres per second

(2)
(Total 6 marks)

2.   A tank contains 480 litres of water.
A tap is opened, and water flows out of the tank at the rate of 0.2 litres per second.

How long will it take to empty the tank?

40 minutes	96 minutes	960 minutes	2400 minutes	4800 minutes
A	**B**	**C**	**D**	**E**

(Total 1 mark)

3.   A tank contained 48 000 cm^3 of salt.
The salt was removed from the tank at a constant rate.
It took 2 hours and 40 minutes to empty the tank completely.

At what rate, in cm^3 per second, was the salt removed from the tank?

5	6	13	36	300
A	**B**	**C**	**D**	**E**

(Total 1 mark)

4.   There are 960 litres of water in a tank.
A workman empties the tank.
The water flows out of the tank at a constant rate of 0.4 litres per second.

How long, in **minutes**, does it take the workman to empty the tank completely?

40	96	384	960	2400
A	**B**	**C**	**D**	**E**

(Total 1 mark)

5. Water flows from a container at a constant rate of 0.1 litres per second.

How long does it take to fill a can with 9 litres of water?

9 seconds	90 seconds	9 minutes	10 seconds	90 minutes
A	**B**	**C**	**D**	**E**

(Total 1 mark)

6. A plane is flying at a speed of 1440 kilometres per hour.

How long, in seconds, will the plane take to fly a distance of 1 kilometre?

0.4 seconds	2.4 seconds	2.5 seconds	4 seconds	24 seconds
A	**B**	**C**	**D**	**E**

(Total 1 mark)

1. (a) 100.5   1

B1 cao

(b) 10.515   1

B1 cao

(c) $\dfrac{100.5}{10.515} = 9.5577746$ 2

M1 for greatest distance divided by least time
Where 100 < greatest distance ≤ 100.5, 10.51 ≤ least time <
10.52
A1 for 9.555 – 9.56

(d) $\dfrac{99.5}{10.525}$

9.45368..   2

M1 for least distance divided by greatest time
Where 99.5 ≤ least distance < 100, 10.52 < greatest time ≤
10.53
A1 for 9.45 – 9.455

[6]

2.   A

[1]

3.   A

[1]

4.   A

[1]

5.   B

[1]

6.   C

[1]

1.   As a whole the question was poorly done. Candidates had some difficulty with part (b) because of the unusualness of the degree of accuracy.

In part (c), many candidates did not take the hint given in parts (a) and (b) and use those values to work out the answer to part (c). Some candidates did not have the correct formula for speed, distance and time and ended up with Kelly running at speeds in excess of 1000 metres per second.

2. No Report available for this question.

3. No Report available for this question.

4. No Report available for this question.

5. No Report available for this question.

6. No Report available for this question.