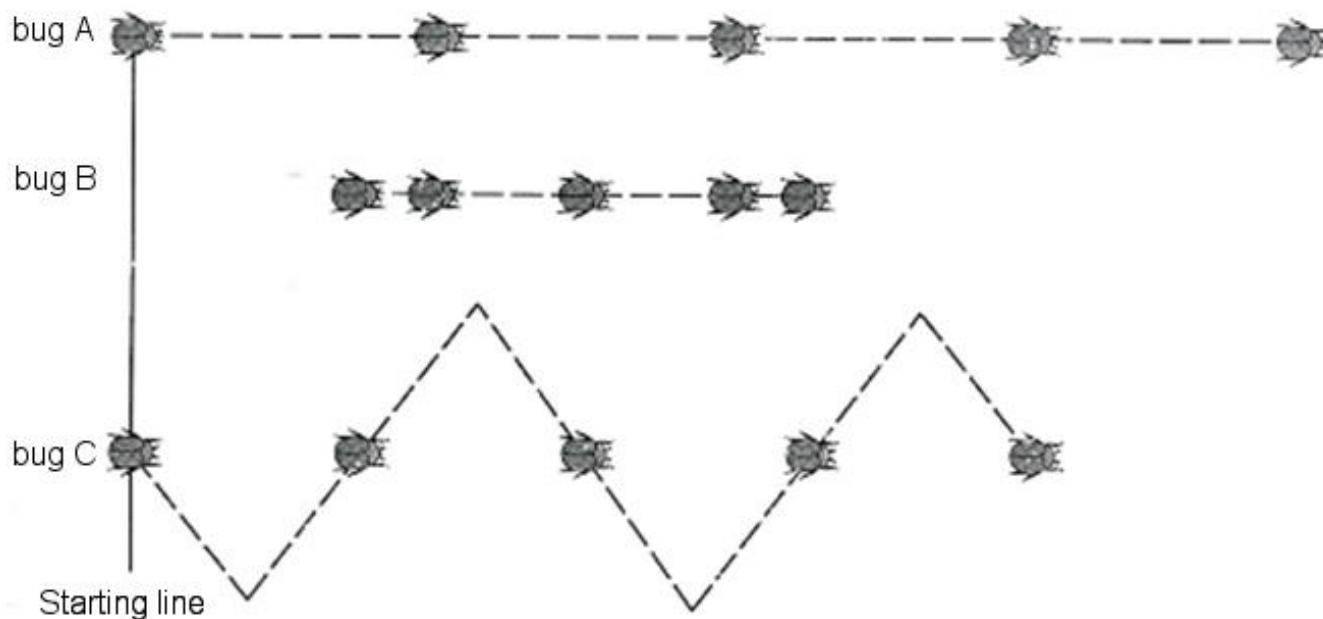


## The Bug Race

The diagram below shows three bugs as they move across a table. The location of each bug is recorded at 1.0 s intervals. The path of each bug is indicated by the dashed line.



1. Complete Table 1.

**Table 1** Position of bugs at each time interval

Time (s)	Position (cm)		
	Bug A	Bug B	Bug C
0			
1			
2			
3			
4			

2. Draw a distance-time graph for each bug on the same set of axes.

3. a) Which bug had the greatest displacement after 4 s?

b) Which bug had the greatest speed?

c) Is the bug with the greatest displacement the same as the bug with the greatest speed? Justify your answer.

4. a) Determine the total distance travelled for each bug.

b) Which bug travelled the greatest distance? Justify your answer.

5. Did any of the bugs display acceleration? Justify your response.

6. How are the data in Table 1 and the graph misleading for bug C?

7. Why are the spaces between the pictures of bug A larger than those for bug B?

8. Why are the spaces between pictures for bug A all the same?
9. Why are the spaces between the pictures of bug B different in length?
10. a) How can you tell if an object is speeding up?  
b) How can you tell if an object is slowing down?  
c) How can you tell if an object is moving at a constant speed?