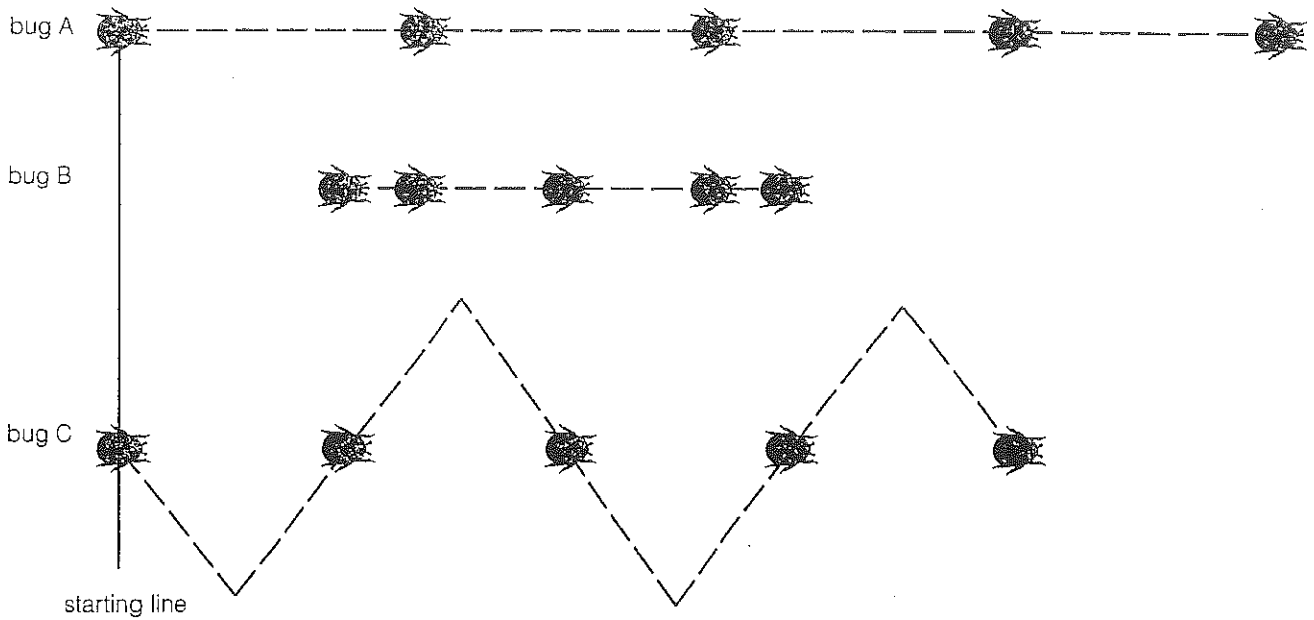


The Bug Race

Goal • Investigate the terminology of motion, and practise calculating distance and displacement.

What to Do

The diagrams below show three bugs as they move across a table. The time interval between each picture is 1.0 s. The first picture of each bug is at time 0 s. The dotted line indicates the path taken by each bug.

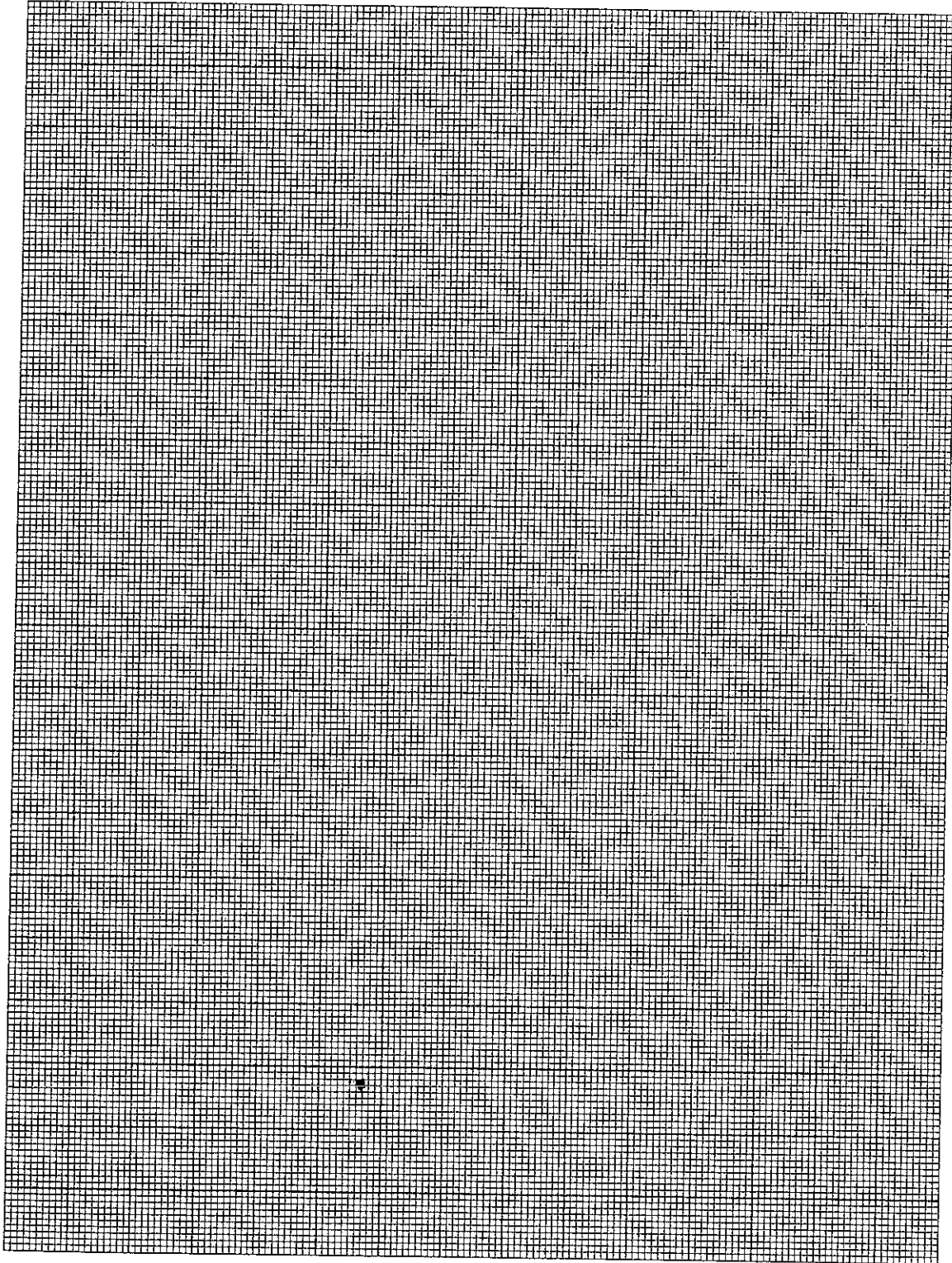


- Fill in the following table with the time and position of each bug at each picture. Use a ruler to measure carefully. Make all your measurements from the starting line (displacement 0 m).

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

The Bug Race (continued)

2. Draw a position-time graph for each bug on the same set of axes. Use a different colour for each bug.



The Bug Race (continued)

3. (a) Calculate the displacement of each bug, from its starting position, after 4 s.

Displacement of bug A = _____

Displacement of bug B = _____

Displacement of bug C = _____

(b) Which bug had the greatest displacement? _____

(c) Which bug had the greatest speed? _____

(d) Are your answers to parts (b) and (c) the same? Explain why or why not.

4. (a) Use your ruler to find the total distance (length of the path travelled) for each bug. Be careful when measuring the distance for bug C.

Distance for bug A = _____

Distance for bug B = _____

Distance for bug C = _____

(b) Which bug travelled the greatest distance? Why?

5. Which bug(s) was/were accelerating? How can you tell?

6. The information for bug C in the table and graph does not tell the whole story. Explain.

The Bug Race (continued)

7. Why are the spaces between the pictures of bug A bigger than the spaces between the pictures of bug B?

8. Why do the spaces between the pictures of bug A stay the same?

9. Why do the spaces between the pictures of bug B change?

10. (a) How can you tell when an object is speeding up?

(b) How can you tell when an object is slowing down?

(c) How can you tell when an object has a constant velocity?
