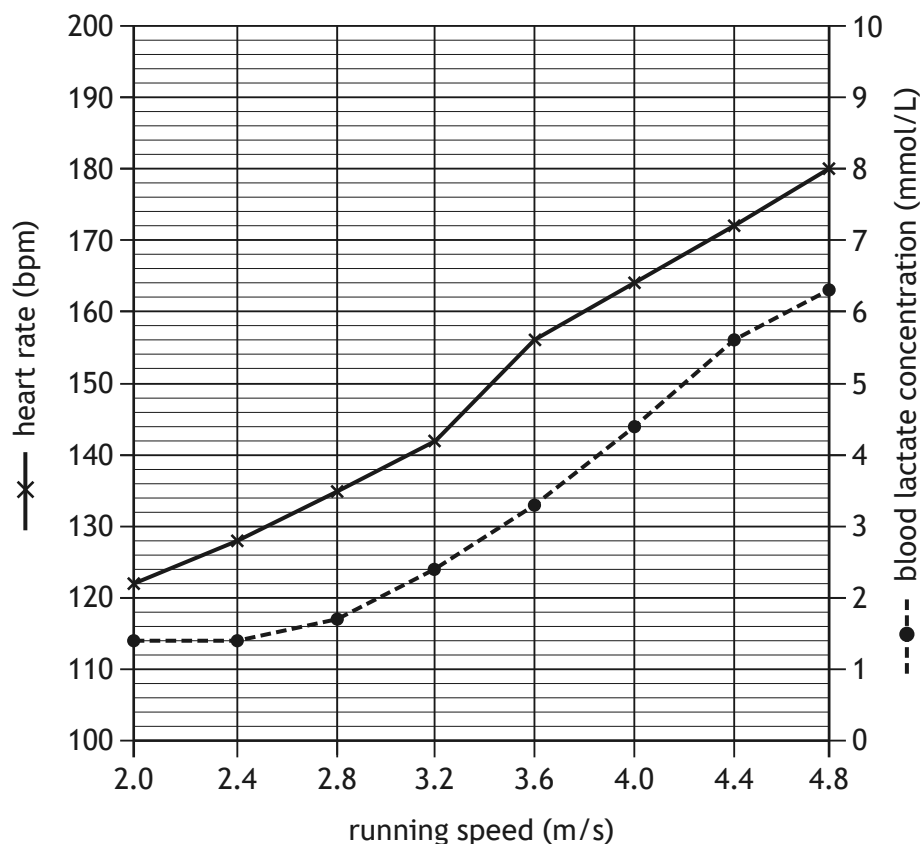


8. In an investigation an athlete ran at different speeds on a treadmill. Their heart rate and blood lactate concentration were measured at each running speed.

The results are shown in the graph.



- (a) (i) Use values from the graph to describe changes in blood lactate concentration as running speed increased from 2.0 to 4.8 m/s.

2

- (ii) State the blood lactate concentration when heart rate was 135 bpm.

1

_____ mmol/L

- (iii) Calculate the percentage increase in heart rate as running speed increased from 2.0 to 4.8 m/s.

1

Space for calculation

_____ %



* X 8 0 7 7 6 0 1 1 4 *

8. (continued)

- (b) The power generated by the same athlete at different heart rates was calculated in another investigation on the same treadmill.

The results are shown in the **table**.

Heart rate (bpm)	Power (watts)
84	120
92	135
112	148
140	162
164	184

- (i) Calculate the average increase in power generated as the heart rate increases from 84 to 164 bpm.

1

Space for calculation

_____ watts per bpm

- (ii) Using information in the graph and table state the athlete's blood lactate concentration when they generated 184 watts.

1

_____ mmol/L

- (c) Name the cell process that produces lactate.

1

- (d) The athlete's blood lactate concentration was recorded 10 minutes after they finished running and it had decreased to 1.1 mmol/L.

Explain this observation.

1



* X 8 0 7 7 6 0 1 1 5 *