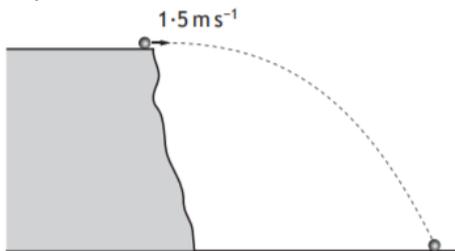## Section A

1. What is a projectile?

Section B

1. What happens to the horizontal velocity of a projectile?

2. What happens to the vertical velocity of a projectile?

Section C

1. Which row in the table shows how the acceleration and average velocity compare with the previous results obtained?

1·5 m s⁻¹

The ball hits the ground 1·2 s after it leaves the cliff. The effects of air resistance are negligible.
Which row in the table shows the horizontal velocity and vertical velocity of the ball just before it hits the ground?

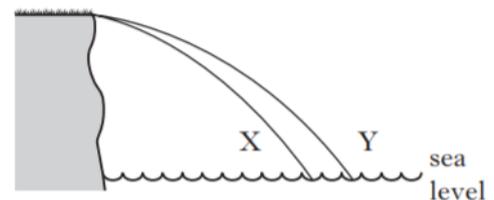|	Horizontal velocity (m s⁻¹)	Vertical velocity (m s⁻¹)
A.	12	12
B.	12	1·5
C.	1·5	12
D.	1·5	13
E.	0	12

3. A ball is released from point Q on a curved rail, leaves the rail horizontally at R and lands 1 s later. The ball is now released from point P.

not to scale

P
Q
R
S
← 2 m →
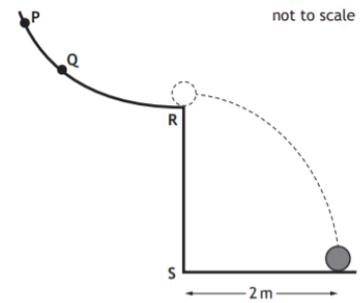
Which row describes the motion of the ball after leaving the rail?

	Time to land after leaving rail	Distance from S to landing point
A.	1 s	less than 2 m
B.	less than 1 s	more than 2 m
C.	1 s	more than 2 m
D.	less than 1 s	2 m
E.	more than 1 s	more than 2 m

4. Two identical balls X and Y are projected horizontally from the edge of a cliff. The path taken by each ball is shown.

X   Y   sea level

A student makes the following statements about the motion of the two balls.

I. They take the same time to reach sea level.

II. They have the same vertical acceleration.
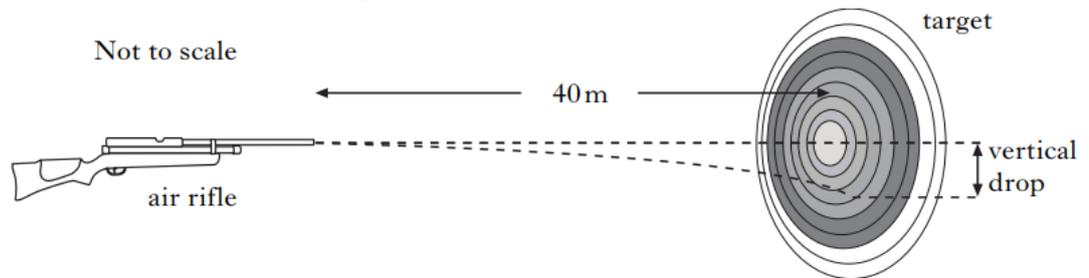
III. They have the same horizontal velocity.

Which of these statements is/are correct?

A. I only

B. II only

C. I and II only

D. I and III only

E. II and III only

Section D

1.   At a firing range a pellet is fired horizontally at a target 40 m away.
        It takes 0.20 s to reach the target.

Not to scale

40 m

target

air rifle

vertical drop

   a) Calculate the horizontal velocity of the pellet.   **2**

   b) Calculate the vertical velocity of the pellet on reaching the target.   **3**

   c) Calculate the vertical drop.   **3**