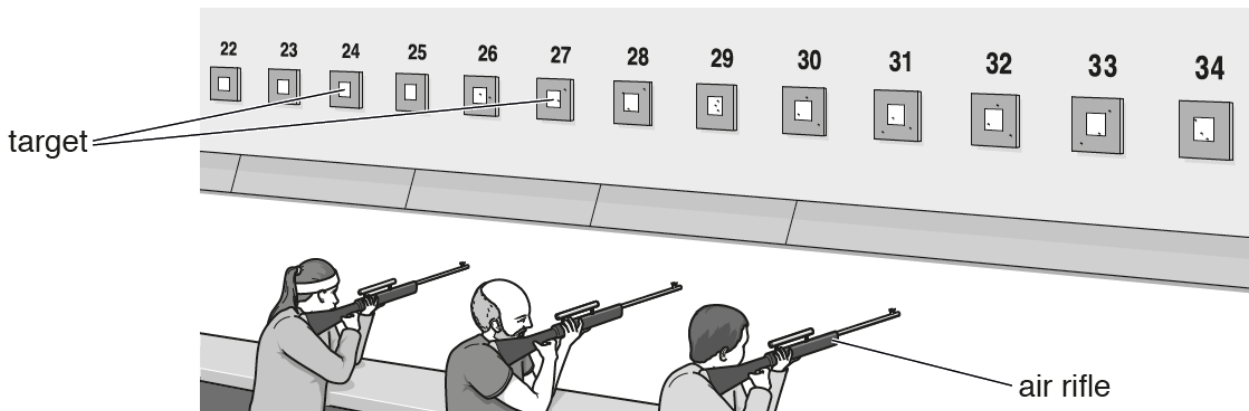


1. 0625/41/O/N/19/No.3

Fig. 3.1 shows a shooting competition, where air rifles fire soft metal pellets at distant targets.



**Fig. 3.1**

When an air rifle is fired, it exerts an impulse of 0.019 N s on the pellet.

(a) Define *impulse*.

.....  
..... [1]

(b) The pellet has a mass of  $1.1 \times 10^{-4}$  kg.

Determine:

(i) the speed with which the pellet leaves the rifle

..... speed = ..... [2]

(ii) the kinetic energy of the pellet as it leaves the rifle.

..... kinetic energy = ..... [3]

(c) The pellet melts when it strikes the target.

Describe how the molecular structure of the liquid metal differs from that of the solid metal.

.....

.....

.....

..... [3]

[Total: 9]

