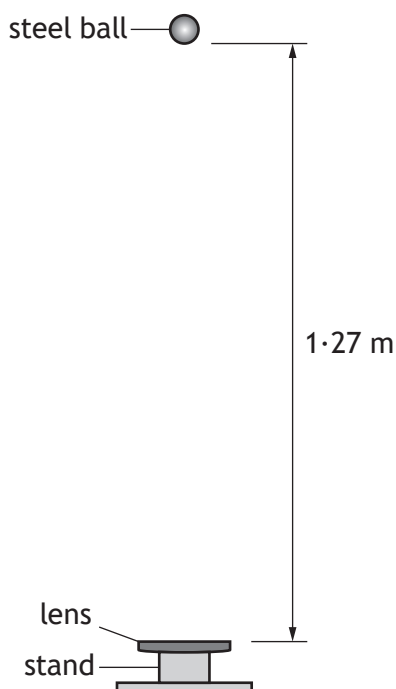


3. A manufacturer tests whether a Perspex lens will break during an impact.

The lens is placed on a stand and a steel ball is dropped from rest onto the lens.

The ball has a mass of 1.59×10^{-2} kg and is dropped from a height of 1.27 m above the lens.



- (a) Calculate the speed of the ball as it reaches the lens.

3

Space for working and answer



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

3. (continued)

- (b) The ball collides with the lens and rebounds upwards.

The magnitude of the change in momentum of the ball is 0.14 kg m s^{-1} .

Calculate the speed of the ball immediately after it rebounds from the lens.

3

Space for working and answer

- (c) The collision between the ball and the lens is inelastic.

Explain what is meant by an *inelastic collision*.

1

- (d) The test is repeated with a second lens made of a softer material.

Explain why this would make the lens less likely to break.

2



* X 8 5 7 7 6 0 1 0 9 *