

- 6** Light of wavelength 430 nm is incident normally on a surface, as illustrated in Fig. 6.1.

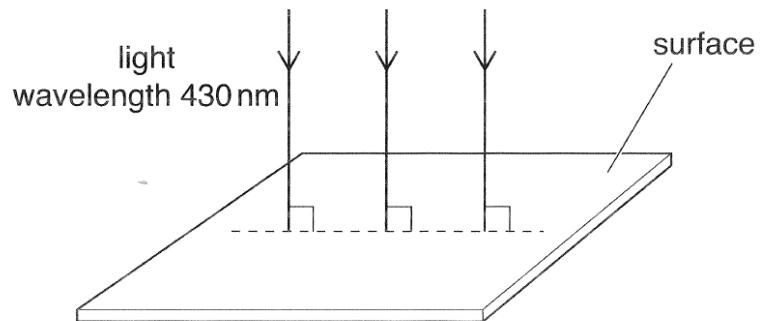


Fig. 6.1

The power of the light is 3.2 mW. The light is completely absorbed by the surface.

- (a)** Calculate the number of photons incident on the surface in 1.00 s.

$$\text{number} = \dots \quad [3]$$

- (b)** Use your answer in **(a)** to determine

- (i)** the total momentum of the photons arriving on the surface in 1.00 s.

$$\text{momentum} = \dots \text{kg m s}^{-1} \quad [2]$$

(ii) the force exerted on the surface by the light. Explain your working.

$$\text{force} = \dots \text{N} \quad [2]$$

(c) Explain why the force exerted is generally lower than the value calculated in (b)(ii).

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[1]

Section B

Answer **one** question in this section in the spaces provided.