

PhySecS

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③

let initial time be t_1 and Final time be t_2

let initial distance be d_1 and Final distance be d_2

$$t_1 = 4s$$

$$t_2 = 6s$$

$$t_1 = \frac{2d_1}{v}$$

$$4 \times \frac{2d_1}{340}$$

$$\frac{2d_1}{2} = \frac{1360}{2}$$

$$d_1 = 680m //$$

$$t_2 = \frac{2d_2}{v}$$

$$6 \times \frac{2d_2}{340}$$

$$\frac{2d_2}{2} = \frac{2040}{2}$$

$$d_2 = 1020m //$$

Overall distance between the two cliffs = $d_1 + d_2$

$$= 680 + 1020$$

$$= 1700m //$$

$$(1) \quad t = \frac{2d}{v}$$

$$t = 0.015 \text{ milliseconds} = \frac{0.015}{1000} = 0.000015 \text{ seconds}$$

$$v = 3 \times 10^8 \text{ ms}^{-1} = 3 \times 10^8 = 300000000 \text{ ms}^{-1}$$

$d = ?$

$$t = \frac{2d}{v}$$

$$0.000015 = \frac{2d}{300000000}$$

$$2d = 0.000015 \times 300000000$$

$$\frac{2d}{2} = \frac{4500}{2}$$

$$d = 2250 \text{ m}$$

$$2a \quad t = \frac{2d}{v}$$

$$1 \times \frac{2 \times 170}{v}$$

$$v = 340 \text{ ms}^{-1}$$

2b If half of the distance between the two cliffs is 170 m
 $\therefore$ distance between the two cliffs

$$= 170 \times 2$$

$$= 340 \text{ m}$$

4a

let d_1 be initial distance and let d_2 be final distance
 let t_1 be initial time and let t_2 be final time

$$d_1 = \frac{d_2}{t_1 - t_2}$$

$$d_1 = \frac{82.5}{3 - 2.5}$$

$$d_1 = \frac{82.5}{0.5}$$

$$d_1 = \underline{\underline{165\text{m}}}$$

4b

$$t = \frac{2d}{v}$$

$$3 = \frac{2 \times 165}{v}$$

$$3v = 330$$

$$\underline{3v} = \underline{330}$$

$$\underline{3} \quad \underline{3}$$

$$v = 110\text{ms}^{-1}$$