

- 2 (a) Define acceleration.
)

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

- (b) Two projectile launchers are facing each other on horizontal ground as shown in Fig 2.1.

Launcher P fires a projectile at an angle of 30° from the horizontal, at an initial speed of 210 m s^{-1} . Air resistance is negligible.

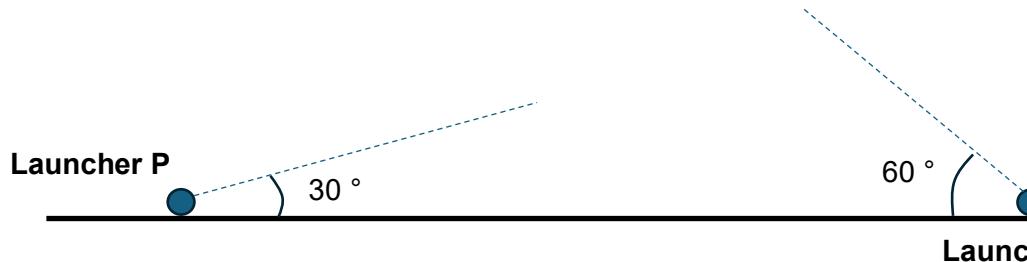


Fig. 2.1

- (i) Determine the maximum height the projectile fired from launcher P reaches.

$$\text{maximum height} = \dots \text{ m} \quad [2]$$

- (ii) Determine the time of flight for the projectile to reach this maximum height.
)

time of flight = s [2]

- (iii) A short time after launcher P fires, launcher Q too fires a projectile at an initial speed of 210 m s^{-1} and an angle of 60° from the horizontal.

Both projectiles collide when the projectile from launcher P reaches its maximum height.

1. Show that the projectile from launcher Q has been in flight for 3.4 s when the two projectiles collide.

[1]

2. Fig. 2.2 shows the variation of the vertical velocity with time of the projectile from launcher P from its launch to when it has reached its highest point.

On Fig. 2.2, sketch another graph to show the variation of the vertical velocity with time of the projectile from launcher Q.

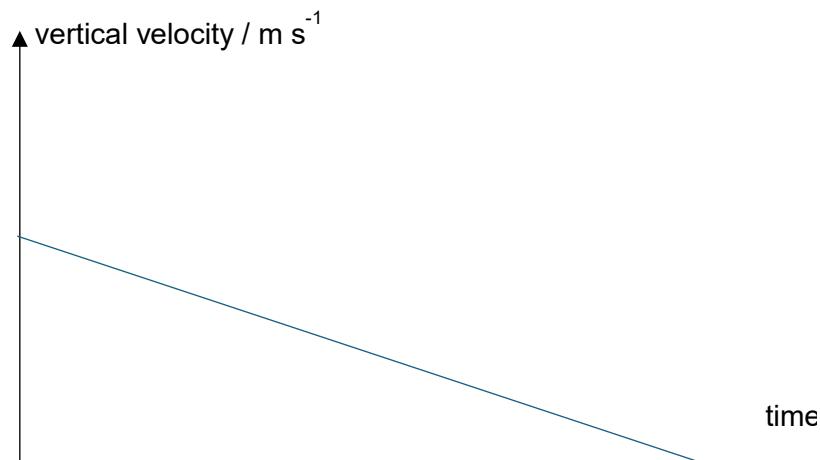


Fig. 2.2

[2]

[Total: 8]

