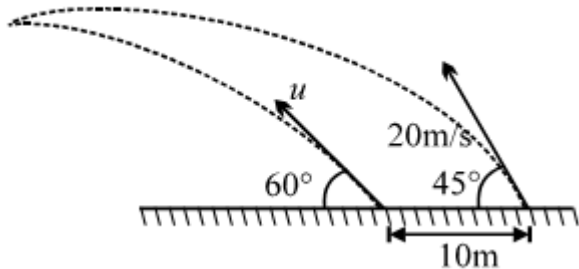


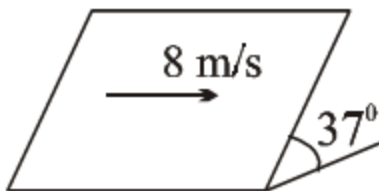
PAATHSHALA OPEN TEST-1 | JEE(M&A)

1. In the figure shown, the two projectiles are fired simultaneously. What should be the initial speed of the left side projectile for the two projectiles to hit in mid-air?

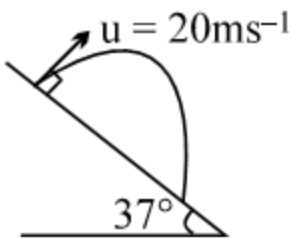


2. A balloon is ascending vertically with an acceleration of 0.2 m/s^2 . Two stones are dropped from it at an interval of 2 sec. Find the distance between them 1.5 sec after the second stone is released. (use $g = 9.8 \text{ m/s}^2$)

3. A ball is projected on smooth inclined plane in direction perpendicular to line of greatest slope with velocity of 8 m/s . Find its speed after 1 sec.



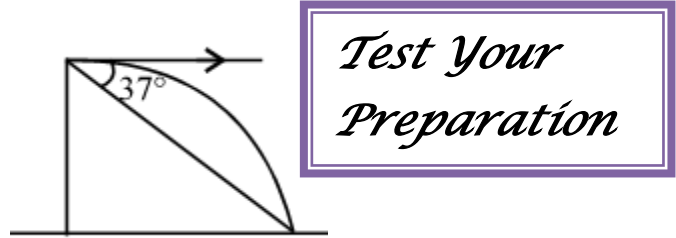
4. Find range of projectile on the inclined plane which is projected perpendicular to the incline plane with velocity 20 m/s as shown in figure.



5. A stone is dropped from a height h . Simultaneously another stone is thrown up from the ground with such a velocity that it can reach a height of $4h$. Find the time when two stones cross each other.

6. A ball is thrown horizontally from a cliff such that it strikes ground after 5 sec. The line of sight from the point

of projection to the point of hitting makes an angle of 37° with the horizontal. What is the initial velocity of projection?



7. A rocket is launched at an angle 53° to the horizontal with an initial speed of 100 m/s . It moves along its initial line of motion with an acceleration of 30 m/s^2 for 3 seconds. At this time its engine falls & the rocket proceeds like a free body. Find the maximum altitude reached.

8. A speeder in an automobile passes a stationary policeman who is hiding behind a bill board with a motorcycle. After a 2.0 sec delay (reaction time) the policeman accelerates to his maximum speed of 150 km/hr in 12 sec and catches the speeder 1.5 km beyond the billboard. Find the speed of speeder in km/hr .

COMPREHENSION

Two inclined planes OA and OB having inclination (with horizontal) 30° and 60° respectively, intersect each other at O as shown in fig. A particle is projected from point P with velocity $u = 10\sqrt{3} \text{ m/s}$ along a direction perpendicular to plane OA. If the particle strikes plane OB perpendicularly at Q.

9. Calculate the Time of flight.

10. Find Velocity with which particle strikes the plane OB.

11. Find Vertical height h of P from O.

12. Find Maximum height from O attained by the particle.

13. Calculate Distance PQ.

