



Video Solution on Website:-

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https://youtu.be/FOBVSJHhp_k

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<https://physicsaholics.com/note/notesDetails/74>

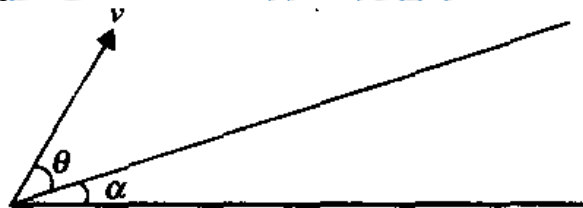
Q 1. On an inclined plane of inclination 30° , a ball is thrown at an angle of 60° with the horizontal from the foot of the incline with a velocity of $10\sqrt{3}$ m/s. If $g = 10$ m/s², then find the time in which ball will hit the inclined plane?

- (a) 1 s (b) 2 s (c) 3 s (d) 4 s

Q 2. Two bodies are projected from the same point with equal speeds in such a directions that they strike on the same point on a plane whose inclination is β . If α the angle of projection of the first, ratio of their times of flight is

- (a) $\frac{\sin \alpha}{\cos \beta}$ (b) $\frac{\sin \alpha}{\sin \beta}$ (c) $\frac{\sin(\alpha-\beta)}{\cos \beta}$ (d) $\frac{\sin(\alpha-\beta)}{\cos \alpha}$

Q 3. A baseball is projected with a velocity v making an angle θ with the incline of inclination α as shown in fig. Find the condition that the ball hits the incline at right angle.

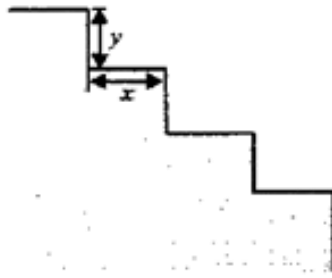


- (a) $\cot \theta = 2 \tan \alpha$ (b) $\sin \theta = \cos \alpha$
(c) $\tan \theta = \sin \alpha$ (d) $\cot \theta = \cos \alpha$

Q 4. A projectile is required to hit a target whose coordinates relative to horizontal and vertical axes through the point of projection are (α, β) . If the gun velocity is $\sqrt{2g\alpha}$, it is impossible to hit the target if

- (a) $\beta > 3\alpha/4$ (b) $\beta \geq 1\alpha/4$
(c) $\beta \leq 3\alpha/4$ (d) $\beta \geq 3\alpha/4$

Q 5. A marble rolls down from top of a staircase with constant horizontal velocity 10 m/s. If each step is $y = 1$ meter high and $x = 1$ meter wide. To which step the marble will strike directly? ($g = 9.8$ m/s²)

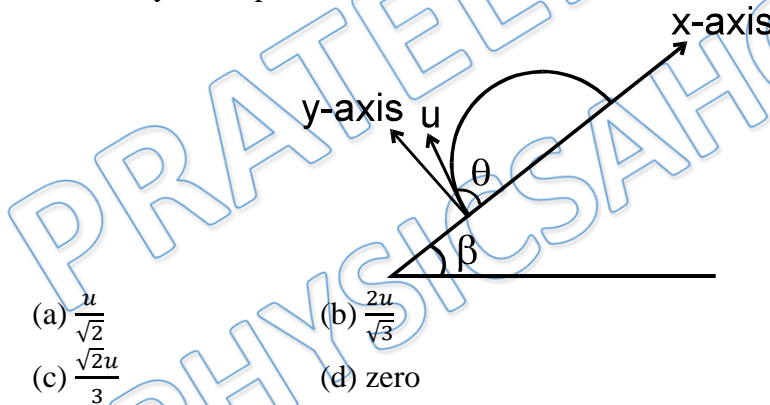


- (a) 21st (b) 8th
 (c) 10th (d) 18th

Q 6. A particle is projected from origin of coordinate system. A target is fixed at point (40m, 30m). Find the minimum velocity of projectile to hit the target? ($g = 10 \text{ m/s}^2$)

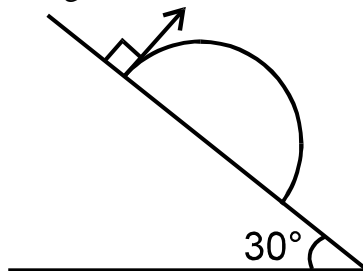
- (a) 10 m/s (b) 17 m/s
 (c) $20\sqrt{2}$ m/s (d) $10\sqrt{5}$ m/s

Q 7. A particle is projected at an angle θ with an inclined plane making an angle β with the horizontal as shown in figure, speed of the particle is u , after time t find y component of velocity when particle is at maximum distance from the incline plane ?



- (a) $\frac{u}{\sqrt{2}}$ (b) $\frac{2u}{\sqrt{3}}$
 (c) $\frac{\sqrt{2}u}{3}$ (d) zero

Q 8. A ball is projected from point A with a velocity 10 m/s perpendicular to the inclined plane as shown in figure. Range of the ball on the inclined plane is :



- (a) $\frac{40}{3}$ m (b) $\frac{20}{13}$ m
 (c) $\frac{13}{20}$ m (d) $\frac{13}{40}$ m



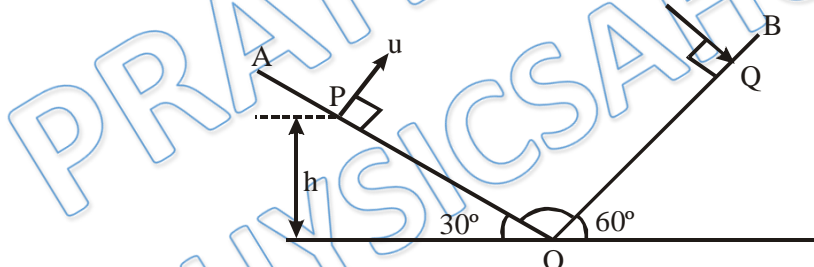
Q 9. A plane surface is inclined making an angle θ with the horizontal. From the bottom of this inclined plane, a bullet is fired with velocity v . The maximum possible range of the bullet on the inclined plane is

- (a) $\frac{v^2}{g}$ (b) $\frac{v^2}{g(1+\sin \theta)}$
 (c) $\frac{v^2}{g(1-\sin \theta)}$ (d) $\frac{v^2}{g(1+\cos \theta)}$

Q 10. A ball is projected horizontal with a speed v from the top of a plane inclined at an angle 45° with the horizontal. How far from the point of projection with the ball strike the plane?

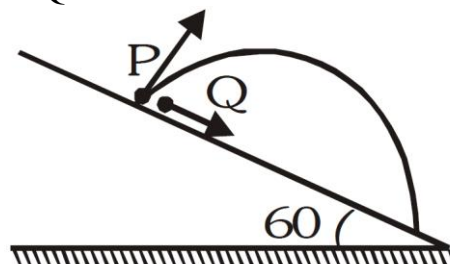
- (a) $\frac{v^2}{g}$ (b) $\sqrt{2} \frac{v^2}{g}$ (c) $\frac{2v^2}{g}$ (d) $\sqrt{2} \left[\frac{2v^2}{g} \right]$

Q 11. Two inclined planes OA and OB having inclination with horizontal 30° and 60° respectively, intersect each other at O as shown in figure. A particle is projected from point P with velocity $u = 10\sqrt{3}$ m/s Along a direction perpendicular to plane OA. If the particle strikes plane OB perpendicularly at Q, calculate Velocity with which particle strikes the plane OB? ($g = 10$ m/s²)



- (a) 10 m/s (b) $10\sqrt{3}$ m/s
 (c) $\sqrt{3}$ m/s (d) $5\sqrt{3}$ m/s

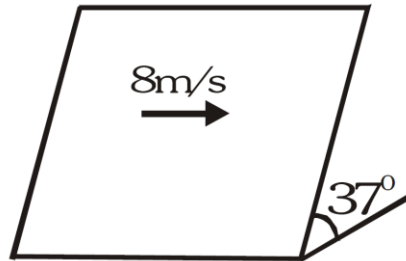
Q 12. A particle P is projected from a point on the surface of smooth inclined plane (see figure). Simultaneously another particle Q is released on the smooth inclined plane from the same position. P and Q collide after $t = 4$ second. The speed of projection of P is :-





- (a) 5 m/s (b) 10 m/s
(c) 15 m/s (d) 20 m/s

Q 13. A ball is projected on smooth inclined plane in direction perpendicular to line of greatest slope with velocity of 8m/s. Find it's speed after 1 sec.



- (a) 10 m/s (b) 12 m/s
(c) 15 m/s (d) 20 m/s

Q 14. A particle is projected from a point P(2,0,0)m with a velocity 10m/s making an angle 45° with the horizontal. The plane of projectile motion passes through a horizontal line PQ which makes an angle of 37° with positive x-axis, xy plane is horizontal. The coordinates of the point where the particle will strike the line PQ is : -(take $g = 10 \text{ m/s}^2$)

- (a) (10,6,0)m (b) (8,6,0)m (c) (10,8,0)m (d) (6,10,0)m

Answer Key

Q.1 b	Q.2 d	Q.3 a	Q.4 a	Q.5 a
Q.6 c	Q.7 d	Q.8 a	Q.9 b	Q.10 d
Q.11 a	Q.12 b	Q.13 a	Q.14 a	