

PHYSICS POINT

ASSIGNMENT-PROJECTILE MOTION

1. Is the rocket in flight an illustration of a projectile?
2. A Projectile is projected at an angle of 15° to the horizontal with speed u . If Another projectile is projected with the same speed, then at what angle with the horizontal it must be projected so as to have the same range.
3. Keeping the angle of projection same what is the effect on horizontal range of a projectile when its velocity is doubled?
4. At what points on the projectile trajectory is the speed (a) minimum (b) maximum
5. Two bodies are thrown with the same velocity at an angle α and $90^\circ - \alpha$ with the horizontal what is the ratio of: (a) maximum height attend by them (b) their horizontal ranges?
6. A ball is projected with a velocity u making an angle θ with the horizontal find the maximum height that time of flight and the horizontal range.
7. Find the angle for which the horizontal range of a projectile fired with a certain velocity is maximum.
8. Prove that the path of a projectile projected at an angle θ with the vertical is a parabola. Show that the range of projectile for two angle of projection α and β is the same where $\alpha + \beta = 90^\circ$.
9. An aeroplane is flying horizontally at a height of 90 m with a velocity of 360 km per hour. A bag containing ration is to be dropped to the Jawan on the ground how far from them should the bag be released so that it falls directly over them.
Ans:- 1000 m
10. Two tall building are 200 m apart. With what is speed master ball be thrown horizontally from the window 540 m above the ground in one building so as to enter of 50 m window in the other building?
Ans:- 20 m/s
11. The greatest height to which a man can throw a stone is h . What will be the greatest distance up to which he can throw a stone?
Ans:- $2h$
12. A car is moving horizontally with a velocity v . A shell is fired upward with velocity u from the car. Find the horizontal range of the cell relative to the ground and relative to the car.
13. Many bullets are projected with equal velocity V not with the horizontal in different directions. What is the area in which these bullets can spread?
Ans:- $\pi V_0^2/g$
14. A ball of mass M is thrown vertically upwards another ball of mass $2m$ is thrown at angle θ with the vertical both of them stage in the air for the same time. What is the ratio of the height attained by the two balls?
Answer is 1:1

15. A projectile can have the same range R for two angle of projection. If T_1 and T_2 be the time of flights in the two cases, find the relation between horizontal range and product of two time of flights.
Ans: $T_1 T_2 = 2R/g$

16. A body sitting at a distance of hundred metre from a hunter if the bullet leaves the gun horizontally with a speed of 500 m per second what will be the vertical deflection of the bullet at the sight of the bird?
Ans: 20 cm

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