

RM QUIZ EXTERNAL BALLISTICS

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Intellectual Infantryman

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1. What is the study of internal ballistics?
 - a. Study of the propulsion of a projectile. Internal ballistics begin from the time the firing pin strikes the primer to the time the bullet leaves the muzzle. Once the primer is struck the priming charge ignites the propellant. The expanding gasses caused by the burning propellant create pressures which push the bullet down the barrel. The bullet engages the lands and grooves (rifling) imparting a spin on the bullet that facilitates stabilization of the projectile during flight. Internal ballistics ends at shot exit, where the bullet leaves the muzzle.
2. What is the study of external ballistics?
 - a. The study of the physical actions and effects of gravity, drag, and wind along the projectile's flight to the target. It includes only those general physical actions that cause the greatest change to the flight of a projectile. External ballistics begins at shot exit and continues through the moment the projectile strikes the target.
3. What is the axis of a rifle's bore?
 - a. The line passing through the center of the bore or barrel.
4. What is a weapon's line of sight?
 - a. A straight line between the sights or optics and the target. This is never the same as the axis of the bore. The LOS is what the Soldier sees through the sights and can be illustrated by drawing an imaginary line from the firer's eye through the rear and front sights out to infinity. The LOS is synonymous with the GTL when viewing the relationship of the sights to a target.
5. What is a line of elevation?
 - a. the angle represented from the ground to the axis of the bore.
6. What is the ballistic trajectory of a projectile?
 - a. the path of a projectile when influenced only by external forces, such as gravity and atmospheric friction.
7. What is a maximum ordinate?
 - a. The maximum height the projectile will travel above the line of sight on its path to the point of impact.
8. What is a bullet's time of flight?
 - a. The time taken for a specific projectile to reach a given distance after firing.
9. What is the definition of jump?
 - a. Vertical jump in an upward and rearward direction caused by recoil. Typically, it is the angle, measured in mils, between the line of departure and the line of elevation.
10. What is considered the line of departure?
 - a. The line the projectile is on at shot exit.
11. What is the definition of muzzle velocity?
 - a. The velocity of the projectile measured at shot exit. Muzzle velocity decreases over time due to air resistance. For small arms ammunition, velocity (V) is represented in feet per second (f/s).
12. What is a rifle's twist rate? Why is rate of twist important for ballistics?
 - a. The rotation of the projectile within the barrel of a rifled weapon based on the distance to complete one revolution. The twist rate relates to the ability to

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gyroscopically spin-stabilize a projectile on rifled barrels, improving its aerodynamic stability and accuracy. The twist rate of the M4- or M16-series weapon is a right hand, one revolution in every seven inches of barrel length (or R 1:7 inches).

13. What is considered the shot exit?
 - a. The moment the projectile clears the muzzle of the barrel, where the bullet is not supported by the barrel.
14. What is considered oscillation?
 - a. the movement of the projectile in a circular pattern around its axis during flight.
15. What is considered drift?
 - a. the lateral movement of a projectile during its flight caused by its rotation or spin.
16. What is yaw?
 - a. A deviation from stable flight by oscillation. This can be caused by cross wind or destabilization when the projectile enters or exits a transonic stage.