

ARTILLERY 101

Different Anti-Air Defenses

MISSILES

Missiles vary in size, speed, and means of guidance. Some also differ in their application and adaptability.

Some missiles use heat to find their target.
Others use radar signatures.

Active radar means the missile has its own.

Passive radar means it uses offboard system.

Some missiles are also fired from the air.

Rockets are unguided systems.

There are many non-aircraft missiles.

GUNS

There are multiple kinds of guns that function at various altitudes. These vary in size, speed, and application.

Large guns reach higher but are slower.
Small guns don't reach as high but are faster.
Guns in the middle are generally still slow.

Some rounds explode on contact or in mid-air.
Some systems are radar guided.

MUNITIONS & SYSTEMS



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HIGH ALTITUDE

Altitudes over 40,000 feet do not require fast moving guns, but larger calibers to achieve the altitude. Targets at this altitude tend to move slower.



40,000 Feet

AIR-TO-AIR

Air-to-air missiles and guns can be launched and guided from aircraft and helicopters.

MIDDLE ALTITUDE

Altitudes between 20,000 and 40,000 feet need slightly larger guns to achieve altitude without sacrificing much maneuverability.



20,000 Feet

SURFACE-TO-AIR

Surface-to-air missiles and guns can be launched from several different types of ordnance systems.



LOW ALTITUDE

Lower altitudes between 0 and 20,000 feet require smaller ammunition and high rates of maneuverability for high-speed aircraft.



ALTITUDES, SPEED & AIR DEFENSE

Altitude & speed determines the effectiveness of air defense systems, and what systems are applied.

Aircraft at low altitude give defenses less time to react. Aircraft at the highest altitudes give defenses more time. The difference in altitude determines how fast systems have to be.

Air speed also is a factor, the defenses must be able to keep up with the target.

AIR SPEED & ALTITUDE OF AIRCRAFT

F-15 Eagle	U.S.	65 kft / 1,650 mph
F-16 Viper	U.S.	50 kft / 1,350 mph
F-22 Raptor	U.S.	65 kft / 1,500 mph
MiG-29 Fulcrum	RUS	59 kft / 1,520 mph
Tu-95 Bear	RUS/PRC	45 kft / 575 mph
Typhoon	EU	65 kft / 1,320 mph
Su-35 Flanker	RUS/PRC	59 kft / 1,500 mph

