

The shoulder fired weapons of the revolution fell into two main categories: rifles and muskets. Each had its respective strengths and weaknesses and many differences between the two.

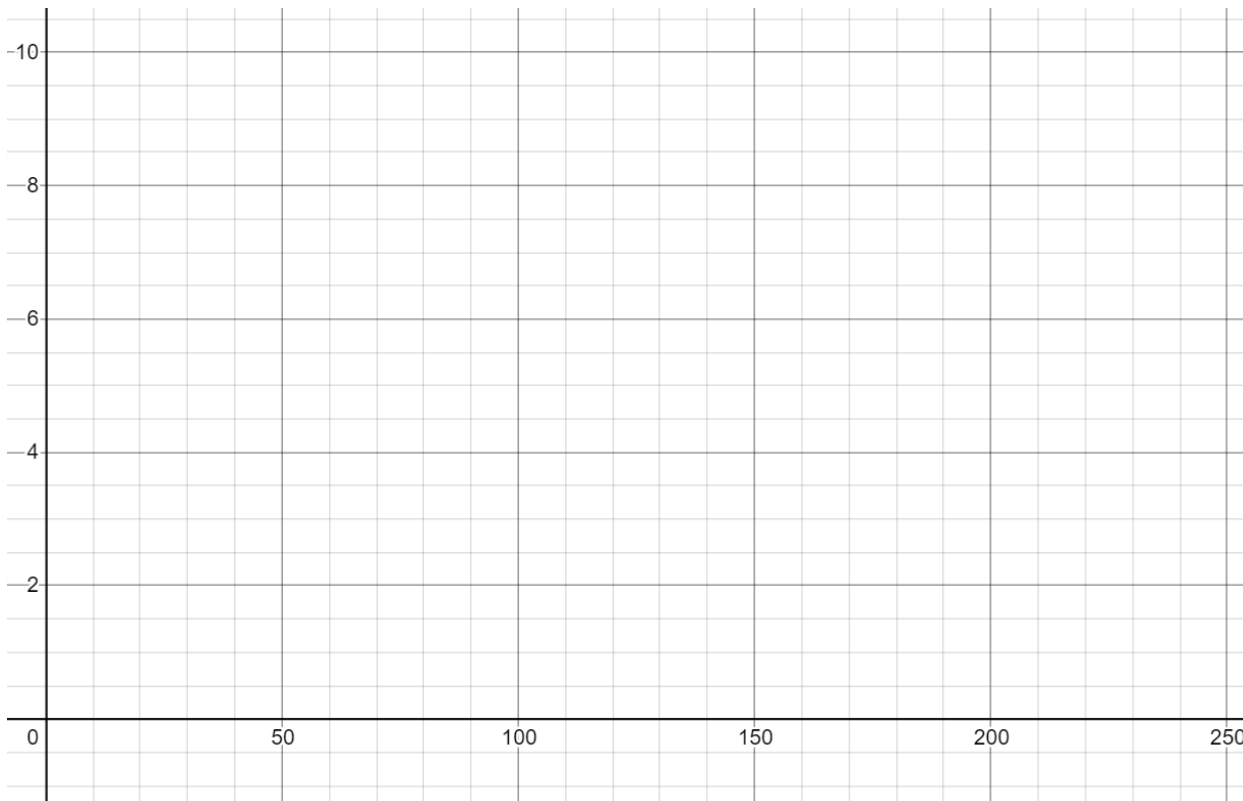
The rifle was a hunting weapon and was made as light as possible in order to be carried great distances. The rifle in the hands of a skilled marksman was accurate out to several hundred of yards. It was not as effective in close quarter combat. The barrels of the weapons had a series of spiral grooves cut into them. The spirals imparted a spin on the ball as the round grabbed the grooves through the barrel. However, the grooves also made the weapon slower to reload.

The musket was smoothbore, shorter and heavier than the rifle. A bayonet could be mounted making the weapon excel in close combat. It was far less accurate but had a faster loading and firing time. Although many makes and models of muskets were used during the American Revolution, they all had some similarities. Most ranged from .69 caliber to .80 caliber with some exceptions. The ammunition was a paper cartridge preloaded with black powder and a lead ball.

Directions: Let's graph the distances in order to decide what weapon you would bring into battle. Label the x-axis in feet and the y-axis in yards. Answers the questions in order to help make your selection.

Rifle: $y = -0.0001125x^2 + 4.5$

Musket: $y = -0.0018x^2 + 4.5$



1. What type of function models the motion of both weapon?
2. What does the 4.5 represent in each equation?
3. Why is only the first quadrant graphed? State the domain and range of each function.
4. What is the firing distance of each weapon?
5. If a musket can fire 3 rounds per minute and a rifle can only fire 1 then the musket can fire ____ times faster than the rifle.
6. A rifle uses 36 bullets per pound of lead and a musket uses 12. Soldiers could get ____ times as many rifle balls as for the musket.