

# Penetration and Shock Demonstrations

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This demonstration is an effective way of contrasting the actions of firearms and archery equipment. It requires an adequate range. For best results, use a high velocity cartridge loaded with frangible bullets in the rifle. A bow powerful enough to completely penetrate the backstop material completely should be used. Have junior leaders or parents assist.

First, shoot water filled (completely!) milk jugs, oil cans or similar containers with each arm. The targets should be at the same range from the firing line and close enough to hit them easily. The rifle should produce a response resembling an explosion. The bullet has high

kinetic energy that is quickly transferred to the water as hydrostatic shock. Since water is incompressible, it moves away from the impact area violently. Water in living things behaves similarly, and the bullet kills by tissue disruption and hydrostatic shock.

The arrow should easily penetrate both sides of the jug, and may pass through the container without too much disturbance, merely causing a leak or making the jug tip over. It has relatively little kinetic energy and causes very little hydrostatic shock. Arrows are penetrating and cutting projectiles, and they kill large game by massive and rapid hemorrhage.

Repeat the performance on jugs filled with sand, hay bales or some similar backstop. The rifle bullet should be stopped by the material, but the arrow should pass completely through again. This should help the youngster to realize that even a relatively light bow can drive an arrow through material that can stop a bullet. Use the graphic demonstration as an introduction to a discussion of safety and the functions of both bullets and arrows in taking game animals.

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