Forensic Crime Science   Eisenhower High School #265

Lesson Pacing—Forensic Crime Science Bullets and Trajectory

Bullet Striations and Ballistics
power point, see attached, and training lab
In last 15 minutes of class (everyone should be finished with lab) show
video: http://www.youtube.com/watch?v=6CSHt1-ShL4
on calculating trajectory
 Effect of Gravity on Earth = 9.8 m/second squared
You first need to determine time from shooter to target   time: T = d/v   let's say your distance
the bullet traveled (in a straight line) is 30 meters and the velocity was 27 m/sec, the result would
be: 1.1 second
To calculate the distance the bullet dropped (due to gravity) from the weapon to the target the
equation is:
Dd = G/2 x time squared   so 9.8m/second squared = 4.9 m/seconds squared x 1.1 second =
5.39 meters the bullet dropped while traveling from the weapon to the target. So if you string out
the straight direction of travel and the angle of the drop you will determine the angle degrees of
the shooter from the target.
Next Generation Science Standards
- MS-PS1-1. Develop models to describe the atomic composition of simple molecules and
  extended structures.
- MS-PS1-2. Analyze and interpret data on the properties of substances before and after the
  substances interact to determine if a chemical reaction has occurred
Common Core Standards
- CCSS.Math.Content.HSN-Q.A.1 Use units as a way to understand problems and to guide the
  solution of multi-step problems; choose and interpret units consistently in formulas; choose
  and interpret the scale and the origin in graphs and data displays.
- CCSS.Math.Content.HSN-Q.A.3 Choose a level of accuracy appropriate to limitations on
  measurement when reporting quantities.

Cartridges
power point (see website) and training lab—see handout download
http://www.bcps.org/offices/science/secondary/forensic/Firearms%20and%20Ballistics.pdf

Bullet Trajectory
training lab, see handout download
Do bullets travel in a straight
line? view: http://www.youtube.com/watch?v=_R2yg7dPhDY   9min
Next Generation Science Standards
- HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into
  smaller, more manageable problems that can be solved through engineering.
Common Core Standards
- CCSS.Math.Content.7.RP.A.1Compute unit rates associated with ratios of fractions, including
  ratios of lengths, areas and other quantities measured in like or different units.
- CCSS.Math.Content.7.RP.A.2Recognize and represent proportional relationships between
  quantities.

- CCSS.Math.Content.HSN-Q.A.3Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.

Close Range Shooter
Complete application lab, see handout download

Distant Range Shooter
complete application lab see handout download after reviewing how to calculate the tanget of an angle see: http://www.youtube.com/watch?v=GyWcneG-VLM

Case of the Shattered Dream
Complete application lab, see handout down load