**Ian Sweeney – Exam Paper 2017-18 Q1**

* 1. Vector from Archer to Target:

= (10, 0, 156) – (38, 7, 100)

= ((10 - 38), (0 - 7), (156 - 100))

= (-28, -7, 56)

* 1. Distance from Archer to Target:

=

=

=

= 36.9053

* 1. ArcherForward:

=

=

= 2.236

=

= (-0.894, 0.447, -0.894)

* 1. Scalar Dot of (Archer to Target) and (ArcherForward)

= (-28 x -0.894) + (-7 x 0.447) + (56 x -0.894)

= 25.032 + -3.129 + -50.064

= -28.161

The Archer is not facing the target

* 1. No, because the Archer is not facing the target
  2. Speed = Velocity x Time

Therefore, ArrowSpeed = InitialVelocity x 0

ArrowSpeed = InitialVelocity

* 1. Speed = Velocity x Time (s = u.t)

New Velocity = Old Velocity + Acceleration x Time (v = u + a.t)

Force = Mass x Acceleration (f = m.a)

* 1. transform.position += velocity \* Time.deltatime;

velocity += acceleration \* Time.deltatime;

* 1. f = m.a

**Gravity:** Acceleration = Vector3.Down \* 9.8f