I believe that in applied mechanics, a mastery of algebra and geometry is a lot like driving a car or at least knowing how the car responds to certain inputs like turning the wheel or pressing the pedals.

Quite often, I’ll see students who are shaky at the start of the course with basic geometrical concepts become more and more puzzled when confronted with example mechanisms that are increasing in complexity.

I would liken it to seeing a rabbit jump out in front of you when driving. If you understand how the car works and have been driving a car for some time, the potential responses are almost automatic: can I stop, steer around, etc. If one is just learning how to drive for the first time, you could stomp the accelerator when you intended to brake.

The basic principles of geometry and algebra, if understood well, provide a basis for understanding the path to the solution. Without that basic understanding of what is factual and can be applied, the problem remains shrouded in mystery.

To use another analogy, geometry and algebra show you how to move the pieces, applied mechanics shows you how to play chess.

Component Skills:

* Sine, Cosine law
* Geometrical patterns – Similar angles and triangles
* Sine, Cosine, Tangent
* Solving for roots of an equation