

Da Vinci's Theory of Free-Fall Motion

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Before Galileo, a number of medieval scholars attempted to describe the motion of falling bodies. In the 14th century, Albert Saxony argued that the speed of a falling body is proportional to the distance that it has fallen. Without any means to measure this motion precisely, Saxony's argument could not be verified but it seemed to agree with common sense. Nicole Oresme shifted his focus to establishing the relationship between time and speed. He suggested that the speed is directly proportional to the time spent falling.

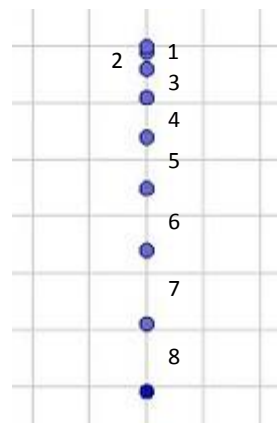
In the 15th century, Leonardo Da Vinci formulated a law in terms of quantities that might be easier to measure: intervals of distance and time. Da Vinci hypothesized that bodies in free fall would accelerate, travelling faster as they fell, falling greater distances in successive intervals of time and that these distances would follow a pattern of change according to the consecutive integers.

Although the formulations of Saxony, Oresme and Da Vinci were products of a serious study of motion, they were primarily based on qualitative observations. Galileo utilized a method of experimentation to verify hypothesis by a quantitative analysis of data. Furthermore, Galileo derived mathematical constructs (equations) which precisely described motion and these could be used to predict motion under the same conditions.

Summary of Da Vinci's Theory

- **Heavy bodies fall at a faster rate than lighter bodies..that is, the acceleration of heavy bodies is greater than lighter bodies.**
- **As an object falls, its distance travelled increases in equal times. This pattern of increase goes according to the consecutive integers.**

Law of Integers



The diagram shows how distance changes in equal time intervals for free-fall motion according to DaVinci's law of integers.