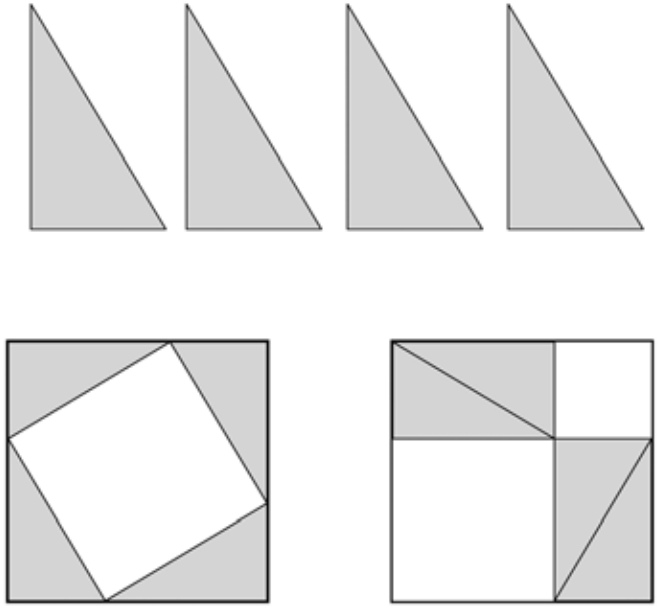
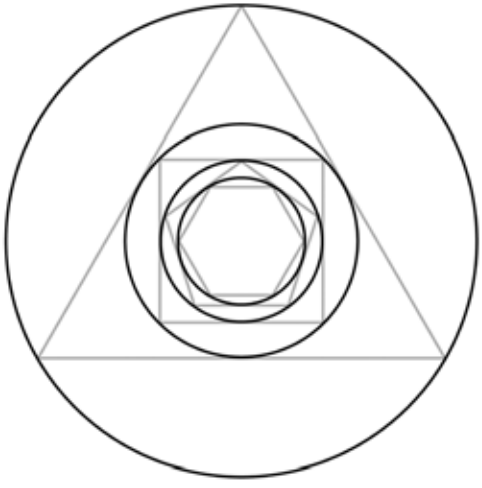
CHRONOLOGY

1543	Copernicus publishes *On the Revolutions of the Celestial Spheres*, which says that the planets circle the sun rather than the Earth
1564	Shakespeare born
1564	Galileo born
1571	Kepler born
1600	Shakespeare writes *Hamlet*
1609	Kepler publishes his first two laws, about the paths of planets as they orbit the sun
1610	Galileo turns a telescope to the heavens
1616	Shakespeare dies
1618–1648	Thirty Years' War
1619	Kepler publishes his third law, which tells how the planets' orbits relate to one another
1630	Kepler dies
1633	Inquisition puts Galileo on trial
1637	Descartes declares "I think, therefore I am," and, in the same book, unveils coordinate geometry
1642–1651	English Civil War
1642	Galileo dies

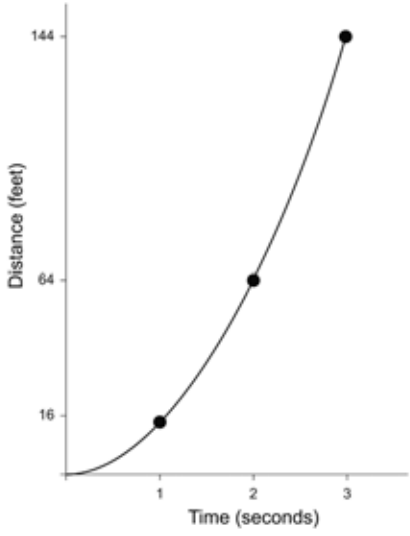
1642	Newton born
1646	Leibniz born
1649	King Charles I beheaded
1660	Official founding of the Royal Society
1664–66	Newton's "miracle years." He invents calculus and calculates gravity's pull on the moon.
1665	Plague strikes London
1666	Great Fire of London
1674	Leeuwenhoek looks through his microscope and discovers a hidden world of "little animals"
1675	Newton becomes a member of the Royal Society
1675–76	Leibniz's "miracle year." He invents calculus, independently of Newton.
1684	Leibniz publishes an account of calculus
1684	Halley visits Newton at Cambridge
1687	Newton publishes the *Principia*, which describes "The System of the World"
1696	Newton leaves Cambridge and moves to London
1699–1722	Newton and Leibniz, and supporters of both men, battle over calculus. Each genius claims the other stole his idea.
1704	Newton publishes an account of calculus, after thirty years of near silence
1705	Newton knighted
1716	Leibniz dies (Newton continues fighting to claim calculus)
1727	Newton dies



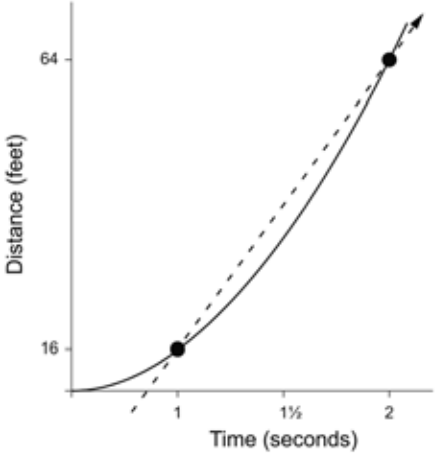
The Pythagorean Theorem, proved in jigsaw-puzzle fashion.



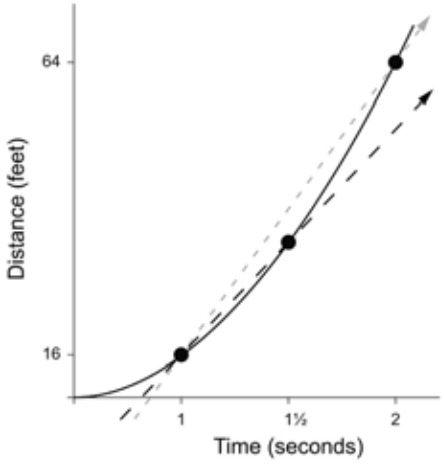
Kepler believed that God had arranged the planets' orbits according to this geometric scheme. (For clarity, the diagram shows only the four outermost planets, not all six planets known in Kepler's day.)



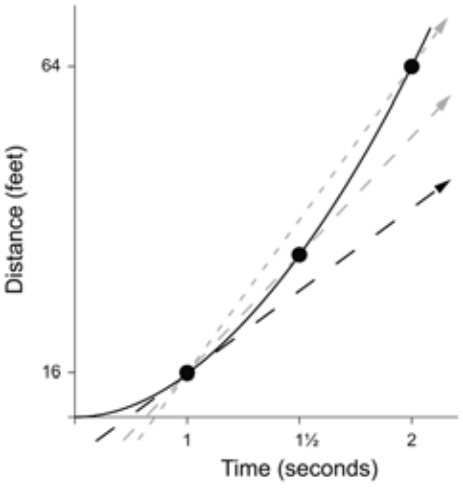
The graph shows how far a rock dropped from a height falls in t seconds. The rock obeys the rule $d = 16\,t^2$.



The dotted line represents the fall of an imaginary rock traveling at constant speed. The slope of the dotted line gives the imaginary rock's speed in the one-second interval between $t = 1$ *and* $t = 2$.



The dashed line represents the fall of a new imaginary rock. The slope of the line gives the imaginary rock's speed, which is constant, in the one-half second interval between t = 1 and t = 1½.



The slope of the tangent line (short dashes) represents the speed of a falling rock at the instant t = 1 second.