

## Year 11 Physics student work sample – Grade B

Models of the universe

Advances in technology have allowed astronomers new insight into the mysteries of the universe. From using eyesight and observational skills to taking photos from an orbiting telescope, our knowledge has increased drastically. The invention <sup>of</sup> the telescope has improved our understanding of our universe drastically, but several observational equipments have also brought a fundamental change to our perception of the solar system.

Initially, Aristotle and Ptolemy used observational skills in order to make inferences about the universe, such as when a ship travels beyond the horizon its mast falls last. Rather than technology, Copernicus utilised the advancements in mathematics to support and propel his study as he proposed a heliocentric model of the universe.

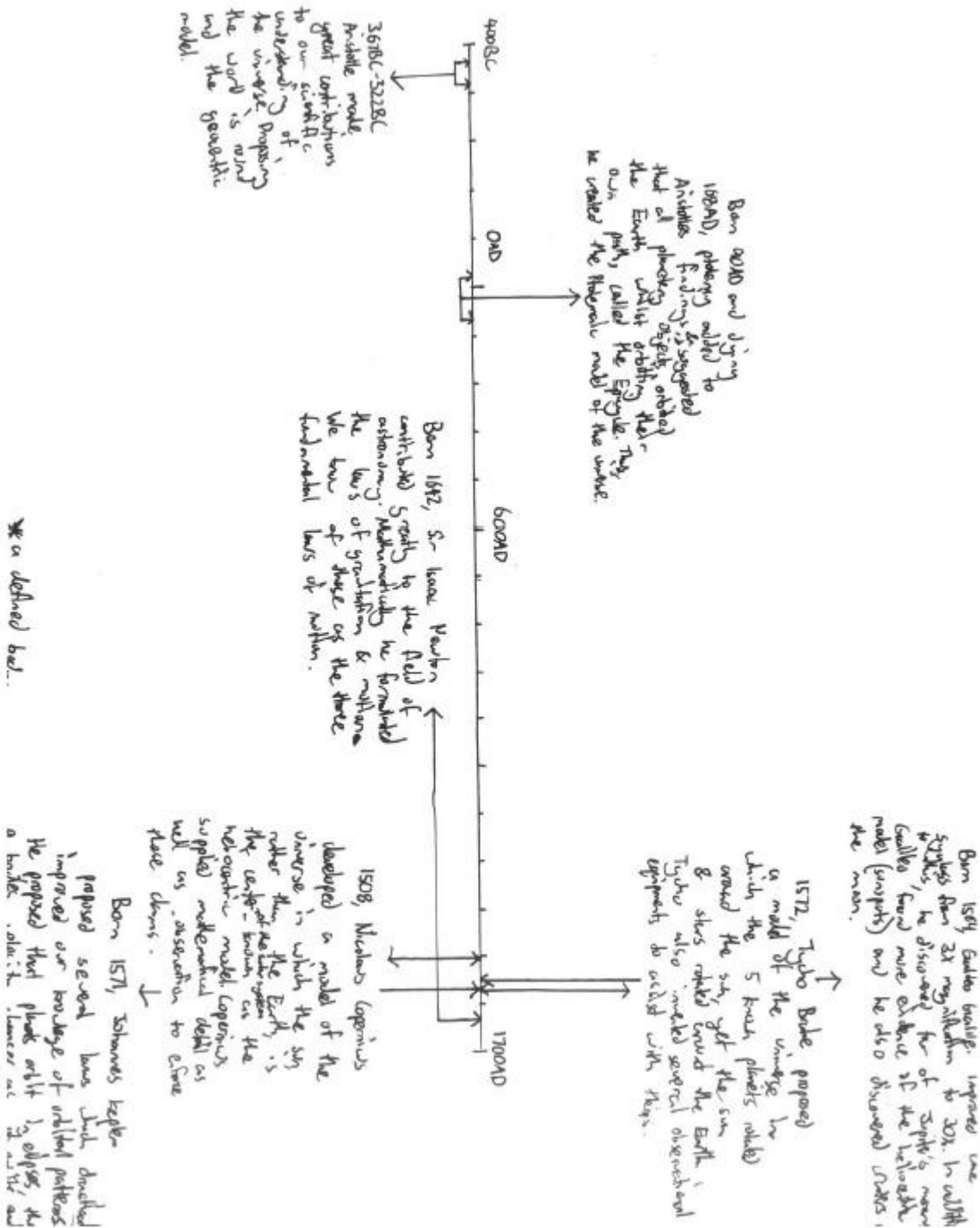
Tycho Brahe used his eyesight to make inferences about the universe such like those before him, however he developed several tools that assisted in observing planets unknown before his time. Tycho developed the sextant to accurately measure angles of planetary bodies. In addition to this, he created a brass globe to map his model of the universe.

Proceeding this, Galileo began to enhance the spyglass to increase magnification from 3X to 30X, this allowed him great insight into planetary bodies such as the observation of craters on the moon (contrary to the catholic church's stance that all heavenly bodies were smooth) and moons around Jupiter, which also was a contrary opinion to the catholic church that the Earth was the important central body of the universe.

In conclusion the advancements in technology have drastically propelled our understanding of the universe and have allowed us to make inferences about the universe and our solar system.

A well-structured response including an introduction stressing the significance of modern technologies

The response demonstrates a thorough understanding of content and critical thinking skills in communicating complex ideas and information. Whilst the information is outlined in a logical sequence, the response would be improved with the inclusion of details of the models of Kepler and Newton



Clearly communicates the key elements using an appropriate scale and including relevant information for each model. Response would be enhanced by the inclusion of the life span of each relevant scientist

## Grade Commentary

Gina applies well-developed skills and processes in the analysis of the role of technology in the development of models of the solar system. Whilst all the key scientists were included in the timescale, there is evidence of a lack of sustained development of ideas in the summary.

Gina's response demonstrates characteristics of work typically produced by a student performing at a grade B standard.