Iowa Science

Astronomy

Develop and use models to evaluate the relationship between the relative positions of the Earth, Sun, and Moon and the phenomena caused by the relationship as observed from Earth. HS-AST1-1	1 **Develop and use models to evaluate the relationship between the relative positions of the Earth, Sun, and Moon and the phenomena caused by the relationship as observed from Earth.** HS-AST1-1
Plan and carry out an investigation using the celestial sphere to explain how latitude and time of year affect the visibility of constellations, planets, and other celestial objects. HS-AST1-2	2 **Plan and carry out an investigation using the celestial sphere to explain how latitude and time of year affect the visibility of constellations, planets, and other celestial objects.** HS-AST1-2
Obtain, evaluate, and communicate information about how patterns in ancient structures, instruments, philosophies, and civilizations influenced the study of astronomy. HS-AST1-3	3 **Obtain, evaluate, and communicate information about how patterns in ancient structures, instruments, philosophies, and civilizations influenced the study of astronomy.** HS-AST1-3
Plan and carry out an investigation to analyze patterns in telescopic data of various electromagnetic spectra to explain astronomical phenomena. HS-AST1-4	4 **Plan and carry out an investigation to analyze patterns in telescopic data of various electromagnetic spectra to explain astronomical phenomena.** HS-AST1-4

Construct an argument based on evidence for the significance of historical and future space exploration as they relate to affecting leaps in technology, cultural cooperation, knowledge, and inspiration. HS-AST1-5	**5 Construct an argument based on evidence for the significance of historical and future space exploration as they relate to affecting leaps in technology, cultural cooperation, knowledge, and inspiration.** HS-AST1-5
Ask questions to investigate and communicate the structure and properties of objects in our solar system and the zones they inhabit. Emphasize grouping the objects found in the solar system into different categories based on their major properties. HS-AST2-1	**6 Ask questions to investigate and communicate the structure and properties of objects in our solar system and the zones they inhabit. Emphasize grouping the objects found in the solar system into different categories based on their major properties.** HS-AST2-1
Develop and use models, based on evidence, to explain the formation of the solar system and the different proportions of matter and energy within regions of the system. HS-AST2-2	**7 Develop and use models, based on evidence, to explain the formation of the solar system and the different proportions of matter and energy within regions of the system.** HS-AST2-2
Use computational thinking to model gravitational force at varying scale and proportion that explain motion and interaction of objects in the solar system. HS-AST2-3	**8 Use computational thinking to model gravitational force at varying scale and proportion that explain motion and interaction of objects in the solar system.** HS-AST2-3
Design a solution for a functioning human colony on an object in the solar system other than Earth. HS-AST2-4	**9 Design a solution for a functioning human colony on an object in the solar system other than Earth.** HS-AST2-4

Develop and use models to explain stability and change during the process of stellar evolution from birth to death of a star. HS-AST3-1	**10** **Develop and use models to explain stability and change during the process of stellar evolution from birth to death of a star.** HS-AST3-1
Construct an argument on the constructive and destructive lifecycle of a star based on evidence. HS-AST3-2	**11** **Construct an argument on the constructive and destructive lifecycle of a star based on evidence.** HS-AST3-2
Ask questions to evaluate evidence that predicts the stability and change of a star during its lifespan and its final stage of stellar evolution based on mass. HS-AST3-3	**12** **Ask questions to evaluate evidence that predicts the stability and change of a star during its lifespan and its final stage of stellar evolution based on mass.** HS-AST3-3
Construct an argument from evidence to explain the patterns that describe the formation of the universe. HS-AST4-1	**13** **Construct an argument from evidence to explain the patterns that describe the formation of the universe.** HS-AST4-1
Use models to describe the conditions of the early universe that led to the formation and evolution of matter including the birth of the first stars and galaxies. HS-AST4-2	**14** **Use models to describe the conditions of the early universe that led to the formation and evolution of matter including the birth of the first stars and galaxies.** HS-AST4-2
Construct an explanation using evidence to support the existence of dark matter and dark energy. HS-AST4-3	**15** **Construct an explanation using evidence to support the existence of dark matter and dark energy.** HS-AST4-3
Develop and use models to relate the cause for	**16** **Develop and use models to relate the cause for how galactic evolution occurs.** HS-AST4-4

how galactic evolution occurs. HS-AST4-4