

communicate solutions individually in a variety of settings
communicate solutions individually in a variety of formats
communicate solutions collaboratively in a variety of settings
communicate solutions collaboratively in a variety of formats

engage respectfully in scientific argumentation using applied scientific explanations and empirical evidence.

Breakouts

engage respectfully in scientific argumentation using applied scientific explanations
engage respectfully in scientific argumentation using empirical evidence

Scientific and engineering practices. The student knows the contributions of scientists and recognizes the importance of scientific research and innovation on society. The student is expected to:

analyze, evaluate, and critique scientific explanations and solutions by using empirical evidence, logical reasoning, and experimental and observational testing, so as to encourage critical thinking by the student;

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analyze scientific explanations and solutions by using empirical evidence so as to encourage critical thinking by the student
analyze scientific explanations and solutions by using logical reasoning so as to encourage critical thinking by the student
analyze scientific explanations and solutions by using experimental testing so as to encourage critical thinking by the student
analyze scientific explanations and solutions by using observational testing so as to encourage critical thinking by the student
evaluate scientific explanations and solutions by using empirical evidence so as to encourage critical thinking by the student
evaluate scientific explanations and solutions by using logical reasoning so as to encourage critical thinking by the student
evaluate scientific explanations and solutions by using experimental testing so as to encourage critical thinking by the student
evaluate scientific explanations and solutions by using observational testing so as to encourage critical thinking by the student
critique scientific explanations and solutions by using empirical evidence so as to encourage critical thinking by the student

record the apparent movement of the Moon

analyze the apparent movement of the Moon

observe the apparent movement of the stars

record the apparent movement of the stars

analyze the apparent movement of the stars

predict sunrise

predict sunset

observe the movement of planets throughout the year and measure how their positions change relative to the constellations;

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observe the movement of planets throughout the year

measure how [the planets'] positions change relative to the constellations

identify constellations such as Ursa Major, Ursa Minor, Orion, Cassiopeia, and constellations along the ecliptic and describe their importance; and

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identify constellations along the ecliptic

describe the importance [of the constellations along the ecliptic]

understand the difference between astronomy and astrology, the reasons for their historical conflation, and their eventual separation.

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understand the difference between astronomy and astrology

understand the reasons for their historical conflation

understand [the] eventual separation [of astronomy and astrology]

Science concepts. The student knows our relative place in the solar system. The student is expected to:

demonstrate the use of units of measurement in astronomy, including astronomical units and light years, minutes, and seconds;

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demonstrate the use of units of measurement in astronomy, including astronomical units

demonstrate the use of units of measurement in astronomy, including light years

demonstrate the use of units of measurement in astronomy, including minutes

demonstrate the use of units of measurement in astronomy, including seconds

model the scale, size, and distances of the Sun, Earth, and Moon system and identify

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calculate the relative light-gathering power of different-sized telescopes to compare telescopes for different applications

analyze the importance and limitations of optical, infrared, and radio telescopes, gravitational wave detectors, and other ground-based technology; and

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analyze the importance of optical telescopes

analyze the importance of infrared telescopes

analyze the importance of radio telescopes

analyze the importance of gravitational wave detectors

analyze the importance of other ground-based technology

analyze the limitations of optical telescopes

analyze the limitations of infrared telescopes

analyze the limitations of radio telescopes

analyze the limitations of gravitational wave detectors

analyze the limitations of other ground-based technology

analyze the importance and the

relate Kepler's laws of planetary motion to the motion of the planets

relate Kepler's laws of planetary motion to the formation of the [planets'] satellites

relate Kepler's laws of planetary motion to the motion of the [planets'] satellites

explore and communicate the origins and significance of planets, planetary rings, satellites, asteroids, comets, Oort cloud, and Kuiper belt objects;

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explore the origins of planets

explore the origins of planetary rings

explore the origins of satellites

explore the origins of asteroids

explore the origins of comets

explore the origins of Oort cloud objects

explore the origins of Kuiper belt objects

explore the significance of planets

explore the significance of planetary rings

explore the significance of satellites

explore the significance of asteroids

explore the significance of comets

explore the significance of Oort cloud objects

explore the significance of Kuiper belt objects

communicate the origins of planets

communicate the origins of planetary rings

communicate the origins of satellites

communicate the origins of asteroids

communicate the origins of comets

communicate the origins of Oort cloud objects

communicate the origins of Kuiper belt objects

communicate the significance of planets

communicate the significance of planetary rings

communicate the significance of satellites

communicate the significance of asteroids

communicate the significance of comets

communicate the significance of Oort cloud objects

communicate the significance of Kuiper belt objects
compare the planets in terms of orbit, size,

identify the source of energy within the Sun as nuclear fusion of hydrogen to helium
describe the eleven-year solar cycle and the significance of sunspots;

and Breakouts

describe the eleven-year solar cycle

describe the significance of sunspots

analyze the origins and effects of space weather, including the solar wind, coronal mass ejections, prominences, flares, and sunspots.

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analyze the origins of space weather, including the solar wind

analyze the effects of space weather, including the solar wind

analyze the origins of space weather, including the coronal mass ejections

analyze the effects of space weather, including the coronal mass ejections

analyze the origins of space weather, including the prominences

analyze the effects of space weather, including prominences

analyze the origins of space weather, including flares

analyze the effects of space weather, including flares

analyze the origins of space weather, including sunspots

analyze the effects of space weather, including sunspots

Science concepts. The student understands the characteristics and life cycle of stars. The student is expected to:

identify the characteristics of main sequence stars, including surface temperature, age, relative size, and composition;

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identify the characteristics of main sequence stars, including surface temperature

identify the characteristics of main sequence stars, including age

identify the characteristics of main sequence stars, including relative size

identify the characteristics of main sequence stars, including composition

describe and communicate star formation from nebulae to protostars to the development of main sequence stars;

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describe star formation from nebulae to protostars to the development of main sequence stars

communicate star formation from nebulae to protostars to the development of main sequence stars

evaluate the relationship between mass and fusion on stellar evolution;

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evaluate the relationship between mass and fusion on stellar evolution

compare how the mass of a main sequence star will determine its end state as a white dwarf, neutron star, or black hole;

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compare how the mass of a main sequence star will determine its end state as a

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evaluate the limits of observational astronomy methods used to formulate the distance ladder

evaluate the indirect evidence for the existence of dark energy;

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evaluate the indirect evidence for the existence of dark energy

describe the current scientific understanding of the evolution of the universe,

