Question 1:

'What is true for a type-Ia ("type one-a") supernova?', A. 'This type occurs in binary systems.', B. 'This type occurs in young galaxies.', C. 'This type produces gamma-ray bursts.', D. 'This type produces high amounts of X-rays.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 2:

'If you know both the actual brightness of an object and its apparent brightness from your location then with no other information you can estimate:', A. 'Its speed relative to you', B. 'Its composition', C. 'Its size', D. 'Its distance from you'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 3:

'Why is the sky blue?', A. 'Because the molecules that compose the Earth's atmosphere have a blue-ish color.', B. 'Because the sky reflects the color of the Earth's oceans.', C. 'Because the atmosphere preferentially scatters short wavelengths.', D. 'Because the Earth's atmosphere preferentially absorbs all other colors.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 4:

'You've made a scientific theory that there is an attractive force between all objects. When will your theory be proven to be correct?', A. 'The first time you drop a bowling ball and it falls to the ground proving your hypothesis.', B. 'After you've repeated your experiment many times.', C. 'You can never prove your theory to be correct only "yet to be proven wrong".', D. 'When you and many others have tested the hypothesis.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 5:

'Which of the following is/are true?', A. 'Titan is the only outer solar system moon with a thick atmosphere', B. 'Titan is the only outer solar system moon with evidence for recent geologic activity', C. 'Titan's atmosphere is composed mostly of hydrocarbons', D. 'A and D'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 6:

'A comet of mass m impacts the earth (mass M radius R) at the minimum impact speed. What is the expression for the total energy released in the impact?', A. 'm*v', B. '0.5*m/(R^3)', C. '0.5*m*(2GM/R)', D. '0.6*G(M^2)/R'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 7:

'Some of Mars'water is frozen in the soil and the ice caps and some was lost due to solar wind stripping but much of the original water is thought to have been lost through another mechanism. What happened to this "lost"water?', A. 'it was stripped away by the magnetic field when it rapidly decreased in strength', B. 'it was broken into hydrogen and oxygen by ultraviolet light and the hydrogen was lost through thermal escape', C. 'it was consumed by a civilization of thirsty Martians', D. 'it was vaporized during a period of intense volcanism and was lost to space through thermal escape'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 8:

'Most rocks on the Moon's surface are older than those on the Earth's surface. The best evidence for this is:', A. 'Lunar rocks are composed of fragments pulverized by many impacts.', B. 'Radioactive dating of lunar samples shows that they are older.', C. 'The Moon's surface is more heavily eroded than the Earth's surface.', D. 'The Moon's surface has more impact craters than the Earth's surface.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 9:

'What is the second most common element in the solar system?', A. 'Iron', B. 'Hydrogen', C. 'Methane', D. 'Helium'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 10:

'What is the source of the material that causes meteor showers?', A. 'Near-Earth asteroids gradually disintegrate and spread out along their orbital path. When the Earth passes through the orbit of an asteroid we are bombarded by sand-sized particles which cause a meteor shower.', B. 'Near-Earth asteroids disintegrate as they enter Earth's atmosphere creating hundreds of bright meteors that appear to radiate from a single location in the sky.', C. 'The nuclei of comets disintigrate as they enter Earth's atmosphere creating hundreds of bright meteors that appear to radiate from a central location in the sky.', D. 'The nuclei of comets gradually disintegrate and spread out along the comet's orbital path. When the Earth passes through the orbit of a comet we are bombarded by sand-sized particles which cause a meteor shower.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 11:

'Why does the plasma (ion) tail of a comet always point away from the Sun?', A. 'Radiation pressure from the Sun's light pushes the ions away.', B. 'The conservation of the angular momentum in the tail keeps it always pointing away from the Sun.', C. 'The ions are following Keplerian orbits that lead away from the Sun.', D. 'The solar wind electromagnetically "blows" the ions directly away from the Sun.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 12:

'How did Eratosthenes estimate the size of Earth in 240 B.C.?', A. 'By observing the duration of a solar eclipse.', B. 'By measuring the size of Earth's shadow on the Moon in a lunar eclipse.', C. 'By comparing the maximum altitude of the Sun in two cities at different latitudes at the same time on the same day.', D. 'By sending fleets of ships around Earth.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 13:

'The Large Magellanic Cloud is ...', A. 'a dwarf galaxy orbiting the Milky Way.', B. 'the closest planetary nebula to the Earth.', C. 'a bright star cluster discovered by Magellan.', D. 'the outer arm of the Milky Way named after Magellan.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 14:

'Why do we look for water-ice in craters at Mercury's pole?', A. 'Actually water-ice is all over Mercury and not just at the poles.', B. 'The pole is the only place fortunate enough to have had comet impacts', C. 'Radar from the earth can only see Mercury's poles.', D. 'These craters contain the only permanently shadowed regions on Mercury'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 15:

'The Milky Way is part of a giant supercluster with a diameter of 160 Mpc. What is the name of this supercluster?', A. 'Virgo', B. 'Laniakea', C. 'Sculptor', D. 'Boötes'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 16:

'On which planet in our solar system can you find the Great Red Spot?', A. 'Venus', B. 'Mars', C. 'Jupiter', D. 'Saturn'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 17:

'Why does Earth have the strongest magnetic field among the terrestrial worlds?', A. 'It is by far the largest terrestrial world.', B. 'It is the most volcanically active world.', C. 'It is the only one that has both a partially molten metallic core and reasonably rapid rotation.', D. 'It rotates much faster than any other terrestrial world.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 18:

'Which of the following is not true?', A. 'The Earth and Venus are in a 1:1 orbital resonance (for every 1 Earth orbit there is exactly 1 Venus orbit)', B. 'Neptune and Pluto are in a 3:2 orbital resonance (for every 3 Neptune orbits there are exactly 2 Pluto orbits)', C. 'The Kirkwood Gaps in the asteroid belt are due to resonances with Jupiter', D. 'Neptune and Pluto won't collide because of their orbital resonance'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 19:

'Which of the following is/are common feature(s) of all fresh (i.e. not eroded) impact craters formed on solid surfaces:', A. 'ejecta', B. 'raised rims', C. 'central peaks', D. 'A and B only'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 20:

'From laboratory measurements we know that a particular spectral line formed by hydrogen appears at a wavelength of 486.1 nanometers (nm). The spectrum of a particular star shows the same hydrogen line appearing at a wavelength of 485.9 nm. What can we conclude?', A. 'The star is getting hotter.', B. 'The star is getting colder.', C. 'The star is moving toward us.', D. 'The star is moving away from us.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 21:

'The lithosphere of a planet is the layer that consists of', A. 'the softer rocky material of the mantle.', B. 'the lava that comes out of volcanoes.', C. 'material between the crust and the mantle.', D. 'the rigid rocky material of the crust and uppermost portion of the mantle.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 22:

'What is the Cassini division of Saturn's rings?', A. 'a dark ring visible from Earth composed of dark dusty particles', B. 'the most opaque ring of Saturn made of highly reflective ice particles', C. 'the widest ring of Saturn located between two large ring gaps', D. 'a large gap visible from Earth produced by an orbital resonance with the moon Mimas'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 23:

'Which of the following statements about sidereal and solar days is not true?', A. 'The time it takes for the Sun to make one circuit of our sky is one solar day.', B. 'A solar day is 4 minutes longer than a sidereal day.', C. 'A solar day represents more than 360° of rotation for the earth.', D. 'The time it takes for the Moon to make one circuit of our sky is one solar day.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 24:

'Meteorites with high metal content probably are', A. 'pieces of comets rather than of asteroids.', B. 'chunks of large differentiated asteroids that were shattered by collisions.', C. 'chunks of rock chipped off the planet Mars.', D. 'leftover chunks of rock from the earliest period in the formation of the solar system.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 25:

'Most people use C°(degree Celsius) to measure everyday temperatures. Astronomers prefer to use K (Kelvin) to measure temperatures. Approximately how many Kelvin are 25 C°?', A. '200 Kelvin', B. '250 Kelvin', C. '300 Kelvin', D. '350 Kelvin'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 26:

'The four big moons of Jupiter are Callisto Europa Ganymede and Io. Which one of them has the smallest distance to Jupiter?', A. 'Callisto', B. 'Europa', C. 'Ganymede', D. 'Io'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 27:

'Why are the season's in Mars' southern hemisphere so extreme?', A. 'because Mars is farther from the sun than the Earth', B. 'because Mars has more carbon dioxide in its atmosphere than the Earth', C. 'because Mars has a more eccentric orbit than the Earth', D. 'because Mars' axis is more tilted than the Earth's'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 28:

'What Mars mission will be landing on May 25 2008 and will dig a trench into (hopefully) ice-rich soil?', A. 'ExoMars', B. 'Mars Exploration Rovers', C. 'Mars Science Laboratory', D. 'Phoenix Mars Lander'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 29:

'What is the significance of the 1:2:4 resonance in the Jupiter's moons system?', A. 'The resonance pulls Io in different directions and generates heat.', B. 'It makes the orbit of Io slightly elliptical.', C. 'It creates a gap with no asteriods between the orbits.', D. 'It prevents formation of the ring material into other moons.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 30:

'The terrestrial planet cores contain mostly metal because', A. 'the entire planets are made mostly of metal.', B. 'metals condensed first in the solar nebula and the rocks then accreted around them.', C. 'metals sank to the center during a time when the interiors were molten throughout.', D. 'radioactivity created metals in the core from the decay of uranium.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 31:

'Why are the inner planets made of denser materials than the outer planets?', A. 'In the beginning when the protoplanetary disk was spinning faster centrifugal forces flung the lighter materials toward the outer parts of the solar nebula.', B. 'In the inner part of the nebula only metals and rocks were able to condense because of the high temperatures whereas hydrogen compounds although more abundant were only able to condense in the cooler outer regions.', C. 'Denser materials were heavier and sank to the center of the nebula.', D. 'When the solar nebula formed a disk materials naturally segregated into bands and in our particular solar system the denser materials settled nearer the Sun while lighter materials are found in the outer part.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 32:

'What do meteorites reveal about the solar system?', A. 'They reveal that the early solar system consisted mostly of hydrogen and helium gas.', B. 'They reveal that meteorites are much older than the comets and planets.', C. 'They reveal that the age of the solar system is approximately 4.6 billion years.', D. 'They reveal that the solar system once contained 10 planets.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 33:

'Venus shows evidence of which of the following surface processes?', A. 'Impacts', B. 'Erosion', C. 'Volcanism', D. 'A B and C'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 34:

'Planetary rings are', A. 'known to exist for all of the jovian planets.', B. 'composed of a large number of individual particles that orbit their planet in accord with Kepler's third law.', C. 'nearer to their planet than any of the planet's large moons.', D. 'all of the above'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 35:

'Suppose the angular separation of two stars is smaller than the angular resolution of your eyes. How will the stars appear to your eyes?', A. 'You will not be able to see these two stars at all.', B. 'You will see two distinct stars.', C. 'The two stars will look like a single point of light.', D. 'The two stars will appear to be touching looking rather like a small dumbbell.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 36:

'What is not true of Jupiter's magnetic field?', A. 'it is about 20000 times stronger than Earth's magnetic field', B. 'it traps charged particles from Io's volcanoes in a "plasma torus" around the planet', C. 'it causes spectacular auroral displays at Jupiter's north and south poles', D. 'it switches polarity every 11 years'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 37:

'What does the astronomical term ecliptic describe?', A. 'The path of the Sun in the sky throughout a year.', B. 'The axial tilt of the Earth throughout a year.', C. 'The movement of the stars due to Earth's rotation.', D. 'The central line through the axis of rotation.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 38:

'The so-called dark energy is a model to explain ...', A. 'the radiation of black holes.', B. 'the mass distribution of galaxies.', C. 'the acceleration of the universe.', D. 'the microwave background of the universe.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 39:

'How do scientists know that the majority of meteorites come from the asteroid belt?', A. 'Bubbles of gas trapped in the crystals within meteorites are identical to the gases trapped in asteroids.', B. 'The spectra of some meteorites are similar to the spectra of asteroids in the asteroid belt.', C. 'Collisions are common in the asteroid belt and we can track the fragments from their source asteroid to the Earth where they become meteorites.', D. 'The asteroid belt is the only possible source of meteorites therefore they must originate there.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 40:

'Jupiter and the other jovian planets are sometimes called "gas giants." In what sense is this term misleading?', A. 'The materials they are made of are not normally gaseous in everyday experience.', B. 'They actually contain a significant fraction of non-gaseous matter.', C. 'The materials that make up these planets are primarily in the form of a plasma not a gas.', D. 'Actually it's a great description because these worlds are big and gaseous throughout.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 41:

'Which of the following is not one of nor follows directly from Kepler's laws?', A. 'As a planet moves around its orbit it sweeps out equal areas in equal times.', B. 'The orbit of each planet about the Sun is an ellipse with the Sun at one focus.', C. 'The force of attraction between any two objects decreases with the square of the distance between their centers.', D. 'A planet travels faster when it is nearer to the Sun and slower when it is farther from the Sun.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 42:

'The name of the black hole in the center of our Milky Way is ...', A. 'Altair A*', B. 'Alsephina A*', C. 'Fomalhaut A*', D. 'Sagittarius A*'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 43:

'Why is Saturn almost as big as Jupiter despite its smaller mass?', A. 'Jupiter's greater mass compresses it more thus increasing its density.', B. 'Saturn has a larger proportion of hydrogen and helium than Jupiter and is therefore less dense.', C. 'Jupiter's strong magnetic field constrains its size.', D. 'Saturn is further from the Sun thus cooler and therefore less compact.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: A

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Question 44:

'Which of these has NOT been one of the main hypotheses considered for the origin of the Moon?', A. 'The Moon split from the Earth due to tidal forces.', B. 'The Moon was captured into Earth orbit.', C. 'The Earth and Moon co-accreted in the solar nebula.', D. 'Earth was rotating so rapidly that the Moon split from it.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 45:

'We were first able to accurately measure the diameter of Pluto from:', A. 'a New Horizons flyby in the 1990s', B. 'Hubble Space Telescope images that resolved Pluto's disk', C. 'brightness measurements made during mutual eclipses of Pluto and Charon', D. 'radar observations made by the Arecibo telescope'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 46:

'According to the Solar Nebular theory what are asteroids and comets?', A. 'They are the shattered remains of collisions between planets.', B. 'They are chunks of rock or ice that condensed long after the planets and moons had formed.', C. 'They are chunks of rock or ice that were expelled from planets by volcanoes.', D. 'They are leftover planetesimals that never accreted into planets.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 47:

'How do we know how old the Earth is?', A. 'From the layering of materials within the Earth.', B. 'From fossils of ancient life.', C. 'From the cratering history of Earth's surface.', D. 'From radioactive dating of rocks and meteorites.'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: D

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

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Answer Option 5:

Final Answer: D

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Answer Option 6:

Final Answer: D

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Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: D

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Question 48:

'Life on Earth originated from', A. 'We don't know for sure.', B. 'aliens (panspermia).', C. 'comets.', D. 'the Earth's oceans.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: A

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Answer Option 3:

Final Answer: A

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: A

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Answer Option 7:

Final Answer: A

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Answer Option 8:

Final Answer: A

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Answer Option 9:

Final Answer: A

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Question 49:

'By locating the north celestial pole (NCP) in the sky how can you determine your latitude?', A. 'The azimuth of the NCP is the angular distance from the North Pole.', B. 'The azimuth of the NCP is the same as your latitude.', C. 'The altitude of the NCP is the same as your latitude.', D. 'The altitude of the NCP is your angular distance from the North Pole.'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: C

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: C

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Answer Option 7:

Final Answer: C

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: C

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Question 50:

'How does the greenhouse effect work?', A. 'Ozone transmits visible light allowing it to heat the surface but then absorbs most of the infrared heat trapping the heat near the surface.', B. 'Greenhouse gases transmit visible light allowing it to heat the surface but then absorb infrared light from Earth trapping the heat near the surface.', C. 'Greenhouse gases absorb infrared light from the Sun which then heats the atmosphere and the surface.', D. 'Greenhouse gases absorb X-rays and ultraviolet light from the Sun which then heat the atmosphere and the surface.'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: B

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Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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