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: 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 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: D

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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: D

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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: D

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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: 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 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: B

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: B

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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: B

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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: 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 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: D

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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: 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: 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: 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: C

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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 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: 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 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: C

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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: C

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Answer Option 7:

Final Answer: C

****

Answer Option 8:

Final Answer: D

****

Answer Option 9:

Final Answer: D

****

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: 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 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: 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: B

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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: B

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Answer Option 4:

Final Answer: B

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Answer Option 5:

Final Answer: C

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Answer Option 6:

Final Answer: B

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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: 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 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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Question 51:

'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. 'Saturn is further from the Sun thus cooler and therefore less compact.', D. 'Saturn's rings make the planet look bigger.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: B

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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: 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 52:

'Calculate the ratio of the solar radiation flux on Mercury's surface for perihelion (0.304 AU) versus aphelion (0.456 AU).', A. '4:1', B. '1:2', C. '6:5', D. '9:4'

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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: A

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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

****

Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: C

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Question 53:

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

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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 54:

'Which of the following countries has sent landers to Venus?', A. 'The U.S.S.R.', B. 'The U.S.', C. 'France', D. 'A and B'

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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 55:

'Which of the following is/are NOT caused by orbital resonance?', A. '2:3 periodic ratio of Neptune:Pluto', B. 'Kirkwood Gaps.', C. 'Gaps in Saturn's rings.', D. 'Breaking of small Jovian moons to form ring materials.'

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Answer Option 1:

Final Answer: C

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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: B

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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: C

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Question 56:

'Why is it thought that the climate on Mars changed when the planet lost its strong magnetic field?', A. 'without a strong magnetic field the ozone layer was destroyed by the solar wind which stopped the greenhouse effect and cooled Mars down.', B. 'without a strong magnetic field which enhances the greenhouse effect Mars cooled down.', C. 'without a strong magnetic field the solar wind stripped away most of the atmosphere significantly reducing the greenhouse effect and cooling Mars down', D. 'without a strong magnetic field the planet recieves fewer charged particles from the solar wind and therefore is not heated as much'

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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 57:

'Which of the following moons is NOT one of the Galilean moons?', A. 'Ganymede', B. 'Callisto', C. 'Europa', D. 'Dione'

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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 58:

'Planet X orbits its sun once every 100 Earth days and rotates in the prograde direction around its axis with a sidereal day of 100 Earth days. How long is a solar day on Planet X?', A. 'About 10 earth days', B. 'About 100 earth days', C. 'About 200 earth days', D. 'There is no solar day Planet X is tidally locked'

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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: A

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Answer Option 4:

Final Answer: A

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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: A

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Question 59:

'When traveling north from the United States into Canada you'll see the North Star (Polaris) getting _____.', A. 'Brighter', B. 'Dimmer', C. 'Higher in the sky', D. 'Lower in the sky'

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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 60:

'When will the next major impact occur on Earth?', A. 'Hundreds of millennia in the future.', B. 'Major impacts can no longer occur since the period of heavy bombardment is over.', C. 'Hundreds of millennia after the last major impact.', D. 'Could be any time. The probability of impact is the same next year as it is for any later year.'

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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

****

Answer Option 9:

Final Answer: D

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Question 61:

'What about asteroids makes them stand out in sky surveys searching for them?', A. 'Asteroids emit pulsed radiation', B. 'Asteroids emit a lot of their own radiation', C. 'They reflect enough of the sun's light to make them brighter than most background stars', D. 'Asteroids have substantial motion relative to the background stars'

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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 62:

'Why did the solar nebula heat up as it collapsed?', A. 'Collisions among planetesimals generated friction and heat.', B. 'Radiation from other nearby stars that had formed earlier heated the nebula.', C. 'The shock wave from a nearby supernova heated the gas.', D. 'As the cloud shrank its gravitational potential energy was converted to kinetic energy and then into thermal energy.'

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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 63:

'You observe the visible spectrum of a star viewed through a cloud of cool hydrogen gas.', A. 'You see only the star's blackbody spectrum.', B. 'You see the star's blackbody spectrum with absorption lines due to hydrogen.', C. 'You see only emission lines characteristic of hydrogen.', D. 'You see only emission lines characteristic of the star's composition.'

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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 64:

'Which of the following most likely explains why Venus does not have a strong magnetic field?', A. 'Its rotation is too slow.', B. 'It has too thick an atmosphere.', C. 'It is too large.', D. 'It does not have a metallic core.'

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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 65:

'Which of the following characteristics would not necessarily suggest that a rock we found is a meteorite.', A. 'It has a fusion crust', B. 'It contains solidified spherical droplets', C. 'It is highly processed', D. 'It has different elemental composition than earth'

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Answer Option 1:

Final Answer: D

****

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 66:

'Which is not a similarity between Saturn and Jupiter's atmospheres?', A. 'a composition dominated by hydrogen and helium', B. 'the presence of belts zones and storms', C. 'an equatorial wind speed of more than 900 miles per hour', D. 'significant "shear" between bands of circulation at different latitudes'

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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: B

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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 67:

'Jupiter's orbital distance is roughly 5 AU. How many times brighter would the Sun have to be for Europa to receive the same solar flux that we currently receive on Earth (1380W/m2)?', A. '100 times brighter', B. '25 times brighter', C. '2 times brighter', D. '50 times brighter'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: D

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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: 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 68:

'The Pleiades is an open star cluster that plays a role in many ancient stories and is well-known for containing ... bright stars.', A. '5', B. '7', C. '9', D. '12'

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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: 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: A

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Question 69:

'The nebular theory of the formation of the solar system successfully predicts all but one of the following. Which one does the theory not predict?', A. 'Planets orbit around the Sun in nearly circular orbits in a flattened disk.', B. 'the equal number of terrestrial and jovian planets', C. 'the craters on the Moon', D. 'asteroids Kuiper-belt comets and the Oort cloud'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: D

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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: B

****

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 70:

'A sand bag has a mass of 5kg and weight 50N on Earth. What is the mass and weight of this sand bag on a planet with half the gravity compared to Earth?', A. 'Mass 5kg weight 100N', B. 'Mass 5kg weight 50N', C. 'Mass 5kg weight 25N', D. 'Mass 10kg weight 100N'

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Answer Option 1:

Final Answer: C

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Answer Option 2:

Final Answer: B

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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: B

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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 71:

'Where is the crater from the impact that is believed to be responsible for the mass extinction of dinosaurs 65 million years ago?', A. 'Tunguska Siberia.', B. 'Chicxulub Crater Yucatan Peninsula in Mexico.', C. 'Quebec Canada.', D. 'Meteor Crater in Arizona.'

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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 72:

'In addition to the conditions required for any solar eclipse what must also be true in order for you to observe a total solar eclipse?', A. 'The Earth must lie completely within the Moon's penumbra.', B. 'The Moon's penumbra must touch the area where you are located.', C. 'The Earth must be near aphelion in its orbit of the Sun.', D. 'The Moon's umbra must touch the area where you are located.'

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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 73:

'What effect or effects would be most significant if the Moon's orbital plane were exactly the same as the ecliptic plane?', A. 'Solar eclipses would be much rarer.', B. 'Solar eclipses would last much longer.', C. 'Solar eclipses would be much more frequent.', D. 'Solar eclipses would not last as long.'

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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 74:

'What type of radiation causes a black hole to evaporate over time?', A. 'Schwarzschild radiation', B. 'Planck radiation', C. 'Kolmogorov radiation', D. 'Hawking radiation'

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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 75:

'Approximately how far away is the Andromeda Galaxy?', A. '1.7 million light years', B. '2.1 million light years', C. '2.5 million light years', D. '3.2 million light years'

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Answer Option 1:

Final Answer: B

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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: A

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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 76:

'Which living organisms most resemble the common ancestor of all life according to genetic testing?', A. 'viruses', B. 'bacteria such as E. coli', C. 'organisms living deep in the oceans around seafloor volcanic vents and in hot springs', D. 'plankton that use sunlight as an energy source through photosynthesis'

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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 77:

'How did Eratosthenes estimate the size of the Earth in 240 B.C.?', A. 'By measuring the maximum altitude of the Sun in two cities at different latitudes at the same time on the same day.', B. 'By measuring the size of Earth's shadow on the Moon during a lunar eclipse.', C. 'By finding a place on Earth where the Sun passes directly overhead.', D. 'By sending fleets of ships around the Earth.'

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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 78:

'Our current best observations show that Pluto has', A. 'one medium sized satellite and two small satellites.', B. 'no satellites.', C. 'one large satellite and three small satellites.', D. 'one large satellite.'

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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: C

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Answer Option 6:

Final Answer: A

****

Answer Option 7:

Final Answer: C

****

Answer Option 8:

Final Answer: A

****

Answer Option 9:

Final Answer: C

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Question 79:

'Pluto's extremely cold (~40 K) surface is composed of:', A. 'mainly water ice which always remains frozen', B. 'nitrogen methane and carbon monoxide ices which sublimate into an atmosphere near perihelion', C. 'nitrogen methane and carbon monoxide ices which always remain frozen', D. 'roughly half ices and half rocky materials'

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Answer Option 1:

Final Answer: B

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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: B

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Answer Option 5:

Final Answer: B

****

Answer Option 6:

Final Answer: B

****

Answer Option 7:

Final Answer: C

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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 80:

'A Mars year is approximately how many Earth years long?', A. '1/2', B. '1', C. '2', D. '4'

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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: D

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Answer Option 5:

Final Answer: D

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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 81:

'What is the correct numerical value and unit of the Boltzmann constant?', A. '1.38 × 10–21 m^3 · kg · s^–2 · K^–1', B. '1.38 × 10–22 m^2 · kg · s^–3 · K^–1', C. '1.38 × 10–23 m^2 · kg · s^–2 · K^–1', D. '1.38 × 10–24 m^2 · kg · s^–2 · K^–2'

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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 82:

'Which statement about an atom is not true:', A. 'The nucleus contains most of the atom's mass but almost none of its volume.', B. 'A neutral atom always has equal numbers of electrons and protons.', C. 'A neutral atom always has equal numbers of neutrons and protons.', D. 'The electrons can only orbit at particular energy levels.'

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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 83:

'Earth has been gradually warming over the past few decades. Based on a great deal of evidence scientists conclude that this warming is caused by _____.', A. 'human activities that are increasing the concentration of greenhouse gases in Earth's atmosphere', B. 'the fact that our politicians spout a lot of hot air', C. 'the human release of chemicals called CFCs into the stratosphere', D. 'the increase in forest fires during recent years'

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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 84:

'How do scientists know that the majority of meteorites come from the asteroid belt?', A. 'The spectra of some meteorites are similar to the spectra of asteroids in the asteroid belt.', B. 'The asteroid belt is the only possible source of meteorites therefore they must originate there.', 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. 'High levels of Iridum have been detected in both asteroids and meteorites therefore meteorites come from the asteroid belt.'

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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 85:

'Which factor s most important in determining the history of volanism and tectonism on a planet?', A. 'size of the planet', B. 'presence of an atmosphere', C. 'distance from the sun', D. 'rotation period'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: B

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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: A

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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 86:

'The astronomical unit parsec (pc) plays a crucial role in astronomy. One parsec is equal to about 3.26 light-years. How is one parsec defined in astronomy?', A. 'Distance at which one astronomical unit measures one arcsecond from Earth.', B. 'Orbital distance of the solar system around the center of the Milky Way in one year.', C. 'Effective distance of the solar wind (i.e. the radius of the heliosphere).', D. 'Historical distance to the brightest star Sirius.'

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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 87:

'The term Schwarzschild radius usually describes properties of ...', A. 'red dwarfs.', B. 'pulsars.', C. 'black holes.', D. 'galaxies.'

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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 88:

'As the life of a star progresses heavy elements are produced. The elements form layers around the star in this order (starting from the outer layer):', A. 'H → He → Li → N → O → Si → Fe', B. 'H → He → C → O → Ne → Si → Fe', C. 'H → He → Li → O → Ne → Si → Fe', D. 'H → He → C → N → O → Si → Fe'

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Answer Option 1:

Final Answer: B

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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: B

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Answer Option 6:

Final Answer: B

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Answer Option 7:

Final Answer: D

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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 89:

'If you lived on Venus what phases of the Earth would you see? (Assume your telescope can see through Venus's thick clouds…)', A. 'New first quarter full third quarter', B. 'Waning crescent New Waxing crescent', C. 'Waxing gibbous Full Waning gibbous', D. 'New only'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: A

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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 90:

'Moons cause/contribute to which of the following?', A. 'stability of particles within rings.', B. 'gravitational effects at ring edges as the moons pass by.', C. 'gaps between rings.', D. 'Moons contribute to 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 91:

'Mars has an atmospheric pressure of 600 pascals. If the acceleration due to gravity on Mars is (roughly) 4 m/s2 and the surface area of Mars is about 145000000 square km what is the approximate mass of the martian atmosphere?', A. '2.2x1011 kg', B. '2.2x1014kg', C. '2.2x1020kg', D. '2.2x1016 kg'

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Answer Option 1:

Final Answer: D

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: B

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: D

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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 92:

'Why is the Mars Exploration Rover Spirit currently tilted towards the north?', A. 'Because it's climbing up a big hill.', B. 'Because it's in the southern hemisphere where it is winter now.', C. 'Because it's in the northern hemisphere where it is winter now.', D. 'Because one of its wheels broke.'

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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: D

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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: B

****

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 93:

'Mars has an atmosphere that is almost entirely carbon dioxide.Why isn't there a strong greenhouse effect keeping the planet warm?', A. 'the atmosphere on Mars is too thin to trap a significant amount of heat', B. 'There actually is a strong greenhouse effect and Mars would be 35oC colder than it is now without it.', C. 'Mars does not have enough internal heat to drive the greenhouse effect', D. 'the greenhouse effect requires an ozone layer which Mars does not have'

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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 94:

'Which of the following was not cited as evidence for life in the martian meteorite ALH84001?', A. 'Complex organic molecules specifically PAHs', B. 'Magnetite grains similar to those formed by bacteria on Earth', C. 'Carbonate minerals indicating a thicker warmer Martian atmosphere', D. 'Amino acids with a preferred orientation or "chirality"'

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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 95:

'Kirkwood gaps are observed in the main asteroid belt including at the position(s) where:', A. 'asteroids would orbit with a period half that of Jupiter', B. 'asteroids would orbit with a period twice that of Jupiter', C. 'asteroids would orbit with a period twice that of Mars', D. 'A and B'

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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 96:

'The belts and zones of Jupiter are', A. 'names for the layers of gaseous and metallic hydrogen deep within the planet.', B. 'alternating bands of rising and falling air at different latitudes.', C. 'alternating regions of charged particles in Jupiter's magnetic field.', D. 'regions of the plasma torus created by ions from Io's volcanoes'

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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 97:

'The two moons of Mars are called ...', A. 'Tritos and Desmos', B. 'Tritos and Deimos', C. 'Phobos and Tritos', D. 'Phobos and Deimos'

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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 98:

'The visible part of the electromagnetic spectrum is between ...', A. '240 to 680 nm.', B. '360 to 620 nm.', C. '380 to 740 nm.', D. '420 to 810 nm.'

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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

****

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 99:

'What is true about the rotation of a solid disk?', A. 'The velocity is the same on every point on the disk', B. 'The part closer to the axis has a longer period', C. 'The period of rotation is the same on every point on the disk', D. 'The part closer to the axis has a shorter period'

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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

****

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 100:

'The constellation ... is a bright W-shaped constellation in the northern sky.', A. 'Centaurus', B. 'Cygnus', C. 'Cassiopeia', D. 'Cepheus'

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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

****

Answer Option 6:

Final Answer: C

****

Answer Option 7:

Final Answer: C

****

Answer Option 8:

Final Answer: C

****

Answer Option 9:

Final Answer: C

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Question 101:

'The so-called “bigfoot” on Mars was actually a rock that was about 5 cm tall. It had an angular size of about 0.5 degrees (~30 pixels). How far away was this rock from the rover?', A. 'About 6 meters', B. 'About 6 feet', C. 'About 10 meters', D. 'About 10 feet'

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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: A

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Answer Option 9:

Final Answer: C

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Question 102:

'Which is not an essential requirement for life as we know it?', A. 'The ability to breathe oxygen', B. 'The ability to make energy from sunlight or to eat things that do', C. 'A source of organic molecules', D. 'A and B'

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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: D

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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 103:

'Suppose you live on the Moon. How long is a day (i.e. from sunrise to sunrise)?', A. 'about 18 years', B. '24 hours', C. '29 Earth days', D. 'a year'

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Answer Option 1:

Final Answer: B

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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

****

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: C

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Answer Option 9:

Final Answer: B

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Question 104:

'The famous Drake equation attempts to answer the following question:', A. 'Will the Sun become a black hole?', B. 'Is the universe infinitely large?', C. 'How old is the visible universe?', D. 'Are we alone in the universe?'

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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 105:

'20000 years from now ...', A. 'The Moon will be closer to the Earth and the Earth’s day will be longer.', B. 'The Moon will be closer to the Earth and the Earth’s day will be shorter.', C. 'The Moon will be further from the Earth and the Earth’s day will be longer.', D. 'The Moon will be further from the Earth and the Earth’s day will be shorter.'

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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: D

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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: A

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Answer Option 9:

Final Answer: C

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Question 106:

'What element is most common among the Jovian Planets?', A. 'Hydrogen', B. 'Helium', C. 'Carbon', D. 'Oxygen'

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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

****

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 107:

'Imagine that the Earth was instantly moved to an orbit three times further away from the Sun. How much longer would a year be?', A. 'exactly 3 times longer', B. 'about 5.2 times longer', C. 'Not enough information. It will depend on the inclination of the new orbit', D. 'The length of the year wouldn't change because the Earth's mass stays the same.'

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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: B

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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 108:

'What would weigh the most on the moon?', A. 'A kilogram of feathers', B. 'Five pounds of bricks as measured on Earth', C. 'Five kilograms of feathers', D. 'A kilogram of bricks'

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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 109:

'Why can't we see the Sun's corona except during total solar eclipses?', A. 'The corona is made up mostly of charged particles which aren't luminous.', B. 'It's much too cool to emit visible light', C. 'We can't see magnetic fields', D. 'It's too diffuse'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: B

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: D

****

Answer Option 5:

Final Answer: B

****

Answer Option 6:

Final Answer: D

****

Answer Option 7:

Final Answer: D

****

Answer Option 8:

Final Answer: D

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Answer Option 9:

Final Answer: A

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Question 110:

'How do we think the "hot Jupiters" around other stars were formed?', A. 'They where formed when their stars flung material out into the system in a process similar to planetary fission.', B. 'They formed as gas giants beyond the frost line and then migrated inwards.', C. 'They formed as dense rocky planets close to the star in the same orbits that they are seen today.', D. 'They formed as gas giants close to the star in the same orbits that they are seen today.'

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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

****

Answer Option 5:

Final Answer: B

****

Answer Option 6:

Final Answer: B

****

Answer Option 7:

Final Answer: B

****

Answer Option 8:

Final Answer: B

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Answer Option 9:

Final Answer: B

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Question 111:

'The resolution of a telescope is a measure of its:', A. 'Ability to magnify distant objects', B. 'Ability to measure the angular separation of objects', C. 'Ability to measure the distance between objects', D. 'Light-collecting efficiency'

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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 112:

'The axis of the Earth is tilted at an angle of approximately ... relative to the orbital plane around the Sun.', A. '20.3 degrees', B. '21.4 degrees', C. '22.7 degrees', D. '23.5 degrees'

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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 113:

'Why do we see essentially the same face of the Moon at all times?', A. 'because the Moon has a nearly circular orbit around the Earth', B. 'because the Moon does not rotate', C. 'because the other face points toward us only at new moon when we can't see the Moon', D. 'because the Moon's rotational and orbital periods are equal'

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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 114:

'The second cosmic velocity (or escape velocity) is the speed required by an object to escape the gravitational field of a celestial body with mass M and radius R. Which formula correctly calculates this velocity? (G: gravitational constant)', A. 'v = sqrt(GM/R)', B. 'v = 2sqrt(GM/R)', C. 'v = sqrt(2GM/R)', D. 'v = sqrt(GM/2R)'

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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 115:

'Why are there no impact craters on the surface of Io?', A. 'Io did have impact craters but they have all been buried in lava flows.', B. 'It is too small to have been hit during the Late Heavy Bombardment', C. 'Jupiter's strong gravity attracted the planetesimals more strongly than Io and thus none landed on its surface.', D. 'Any craters that existed have been eroded through the strong winds on Io's surface.'

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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 116:

'The star Betelgeuse is one of the brightest stars in the night sky with remarkable red color. In which constellation is Betelgeuse located?', A. 'Cassiopeia', B. 'Cygnus', C. 'Ursa Major', D. 'Orion'

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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 117:

'What is the source of the material that causes meteor showers?', A. 'Asteroid impacts elsewhere in the solar system throw sand-sized particles into space and occasionally the Earth passes through a cloud of these particles which burn up in our atmosphere and cause a meteor shower.', B. 'Near-Earth asteroids gradually disintegrate and spread out along their orbital paths. When the Earth passes through the orbit of an asteroid we are bombarded by sand-sized particles that cause a meteor shower.', C. '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.', D. 'The nuclei of comets gradually disintegrate and spread out along their orbital paths. When the Earth passes through the orbit of an comet we are bombarded by sand-sized particles that cause a meteor shower.'

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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: D

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Answer Option 4:

Final Answer: A

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Answer Option 5:

Final Answer: D

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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: D

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Answer Option 9:

Final Answer: A

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Question 118:

'How does the greenhouse effect work?', A. 'Greenhouse gases absorb infrared light from the Sun which then heats the atmosphere and the surface.', B. 'Ozone transmits visible light allowing it to heat the surface but then absorbs most of the infrared heat trapping the heat near the surface.', C. 'Greenhouse gases transmit visible light allowing it to heat the surface but then absorb infrared light from Earth trapping the heat near the surface.', D. 'The higher pressure of the thick atmosphere at lower altitudes traps heat in more effectively.'

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Answer Option 1:

Final Answer: A

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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: A

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Answer Option 5:

Final Answer: A

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Answer Option 6:

Final Answer: C

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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 119:

'Which of the following methods has led to the most discoveries of massive planets orbiting near their parent stars?', A. 'detecting the gravitational effect of an orbiting planet by looking for the Doppler shifts in the star's spectrum', B. 'detecting the shift of the star's position against the sky due to the planet's gravitational pull', C. 'detecting a planet ejected from a binary star system', D. 'detecting the starlight reflected off the planet'

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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 120:

'The distance between the Earth and the star Altair is one million times greater than the distance between the Earth and the Sun. How far is Altair from the Earth?', A. '9.3 x 1013 meters', B. '9.3 x 1010 meters', C. '1.5 x 1014 meters', D. '1.5 x 1017 meters'

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Answer Option 1:

Final Answer: B

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Answer Option 2:

Final Answer: C

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Answer Option 3:

Final Answer: D

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Answer Option 4:

Final Answer: C

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Answer Option 5:

Final Answer: D

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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 121:

'Why did Ptolemy have the planets orbiting Earth on 'circles upon circles' in his model of the universe?', A. 'To explain why more distant planets take longer to make a circuit through the constellations of the zodiac.', B. 'To explain the fact that planets sometimes appear to move westward rather than eastward relative to the stars in our sky.', C. 'To explain why the Greeks were unable to detect stellar paralax.', D. 'To properly account for the varying distances of the planets from Earth.'

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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 122:

'Sunspots are black regions that temporarily appear on the Sun. Their number highly increases every ... years. This period is also called the solar cycle.', A. '9', B. '11', C. '13', D. '15'

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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 123:

'Which planet(s) in the solar system has/have active plate tectonics?', A. 'Mars', B. 'Venus', C. 'Earth', D. 'Mars and 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 124:

'The sky is blue because', A. 'the Sun mainly emits blue light.', B. 'the atmosphere absorbs mostly blue light.', C. 'molecules scatter red light more effectively than blue light.', D. 'molecules scatter blue light more effectively than red light.'

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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 125:

'What are the conditions necessary for a terrestrial planet to have a strong magnetic field?', A. 'fast rotation only', B. 'a rocky mantle only', C. 'a molten metallic core only', D. 'both a molten metallic core and reasonably fast rotation'

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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 126:

'Where are the Trojan asteroids located?', A. 'in the center of the asteroid belt', B. 'on orbits that cross Earth's orbit', C. 'surrounding Jupiter', D. 'along Jupiter's orbit 60° ahead of and behind Jupiter'

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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 127:

'Which of the following lists the ingredients of the solar nebula from highest to lowest percentage of mass in the nebula?', A. 'hydrogen compounds (H2O CH4 NH3) light gases (H He) metals rocks', B. 'hydrogen compounds (H2O CH4 NH3) light gases (H He) rocks metals', C. 'light gases (H He) hydrogen compounds (H2O CH4 NH3) metals rocks', D. 'light gases (H He) hydrogen compounds (H2O CH4 NH3) rocks metals'

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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 128:

'When was the telescope invented by Galileo?', A. '1409', B. '1509', C. '1609', D. '1709'

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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 129:

'Mars has an atmosphere that is almost entirely carbon dioxide.Why isn't there a strong greenhouse effect keeping the planet warm?', A. 'Mars does not have enough internal heat to drive the greenhouse effect', B. 'Mars is too far from the sun for the greenhouse effect to work', C. 'the greenhouse effect requires an ozone layer which Mars does not have', D. 'the atmosphere on Mars is too thin to trap a significant amount of heat'

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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 130:

'You've made a scientific theory that there is a force between all objects. This forcce has both a dark and light side. When will your theory be proven correct?', A. 'When you and many other Jedi have tested the hypothesis', B. 'Jean-Luc Skywalker drops Yoda during the day and he falls to the ground proving your theory.', C. 'You can never prove your theory to be correct only "yet to be proven wrong."', D. 'After you've repeated your experiment many times'

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Answer Option 1:

Final Answer: D

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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 131:

'Why do Uranus and Neptune have blue methane clouds but Jupiter and Saturn do not?', A. 'Methane does not condense into ice in the warmer atmospheric temperatures of Jupiter and Saturn.', B. 'Methane did not exist in the solar nebula at the radii of Jupiter and Saturn when the planets formed.', C. 'The relatively slow rotation of Uranus and Neptune allows methane to migrate to higher levels in the atmosphere and condense into clouds.', D. 'Methane reacts with the abundant ammonia clouds in Jupiter and Saturn and is removed from the atmosphere.'

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Answer Option 1:

Final Answer: A

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Answer Option 2:

Final Answer: C

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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: C

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Answer Option 6:

Final Answer: A

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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 132:

'All of the following have been cited as evidence for the Giant Impact Hypothesis except:', A. 'The relative size of the Moon to the size of Earth is large compared to most planets and their moon.', B. 'Most rocks on the Moon's surface are older than those on the Earth's surface.', C. 'The Moon has a much smaller iron core than the Earth even considering its size.', D. 'The Moon was once entirely molten.'

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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 133:

'Why do scientists think Mars was once warmer and wetter?', A. 'Mars shows evidence of significant volcanism which implies that the climate was once warmer and therefore wetter', B. 'early observations showed what appeared to be changing vegetation patterns and canals indicating the presence of water', C. 'there are many geologic features on Mars that are difficult to explain unless liquid water was once stable at the surface', D. 'all planets tend to begin with warm wet climates and gradually become cold and dry with smaller planets cooling faster than larger 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 134:

'How do astronomers think Jupiter generates its internal heat?', A. 'nuclear fusion in the core', B. 'by contracting changing gravitational potential energy into thermal energy', C. 'internal friction due to its high rotation rate', D. 'chemical processes'

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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 135:

'Which one of these constellations is not located along the Milky Way in the sky?', A. 'Perseus', B. 'Cygnus', C. 'Scorpius', D. 'Leo'

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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 136:

'From shortest to longest wavelength which of the following correctly orders the different categories of electromagnetic radiation?', A. 'infrared visible light ultraviolet X rays gamma rays radio', B. 'radio infrared visible light ultraviolet X rays gamma rays', C. 'gamma rays X rays visible light ultraviolet infrared radio', D. 'gamma rays X rays ultraviolet visible light infrared radio'

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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 137:

'Approximately how long does it take Pluto to orbit the Sun once?', A. '150 years', B. '200 years', C. '250 years', D. '300 years'

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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: B

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Answer Option 6:

Final Answer: B

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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 138:

'Mars might be a place for future human explorations. However humans can not breathe on the surface of Mars because the atmosphere consists mostly of ...', A. 'Nitrogen', B. 'Argon', C. 'Methane', D. 'CO2'

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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 139:

'Which of the jovian planets have rings?', A. 'Neptune', B. 'Uranus', C. 'Saturn', 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 140:

'Besides large astronomical objects astrophysicists are also interested in small particles from space. Which one of these particles has the weakest interactions with other particles?', A. 'μ Muons', B. 'Antiparticles', C. 'ν Neutrinos', D. 'π Pions'

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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 141:

'Approximately how old is the surface of Venus?', A. '750 million years.', B. '2 billion years.', C. '3 billion years.', D. '4.5 billion years.'

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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: D

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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: D

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Answer Option 8:

Final Answer: C

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Answer Option 9:

Final Answer: D

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Question 142:

'Why do jovian planets bulge around the equator that is have a "squashed" appearance?', A. 'Their large systems of moons and rings gravitationally attract the mass around the equator more.', B. 'They are much more massive than the terrestrial planets.', C. 'Their rapid rotation flings the mass near the equator outward.', D. 'Their internal heat sources exert a pressure against the sides of the 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 143:

'How do astronomers think Jupiter generates its internal heat?', A. 'through exothermic chemical reactions converting chemical potential energy into thermal energy', B. 'nuclear fusion', C. 'by contracting changing gravitational potential energy into thermal energy', D. 'internal friction due to its rapid rotation rate and differential rotation'

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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: D

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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: D

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Question 144:

'What defines the habitable zone around a star?', A. 'the region around a star where liquid water can potentially exist on planetary surfaces', B. 'the region around a star where humans can survive', C. 'the region around a star where the ultraviolet radiation does not destroy organisms on a planetary surface', D. 'the region around a star where life exists'

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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 145:

'Why are Cepheid stars relevant for astronomers?', A. 'To measure interstellar mass.', B. 'To measure galactic distances.', C. 'To measure galactic energy-density.', D. 'To measure interstellar density.'

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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 146:

'What is the so-called bolometric luminosity in astronomy?', A. 'The luminosity integrated over vertically polarized wavelengths.', B. 'The luminosity integrated over horizontally wavelengths.', C. 'The luminosity integrated over visible wavelengths.', D. 'The luminosity integrated over all wavelengths.'

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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 147:

'Radio telescopes are crucial for astronomical observations. Which one of these well-known radio telescopes has the largest parabolic antenna?', A. 'Green Bank Telescope', B. 'Arecibo Telescope', C. 'Yevpatoria RT-70 Telescope', D. 'Effelsberg Telescope'

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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 148:

'Find the best approximation for the surface temperature of the Sun:', A. '6000 K', B. '7000 K', C. '9000 K', D. '13000 K'

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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 149:

'Previous IAAC rounds featured Proxima/Alpha Centauri as closes star(system) to the Earth. Which one is the second closest star(system)?', A. 'Wolf 359', B. 'Sirius', C. '61 Cygni', D. 'Barnard's Star'

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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

****

Answer Option 6:

Final Answer: D

****

Answer Option 7:

Final Answer: D

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Answer Option 8:

Final Answer: D

****

Answer Option 9:

Final Answer: D

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Question 150:

'How are planetary rings made?', A. 'From the dismantling of small moons by impacts', B. 'From fragments of planets ejected by impacts', C. 'From dust grains that escape from passing comets', D. 'From accretion within the solar nebula at the same time the planets formed'

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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

****

Answer Option 5:

Final Answer: A

****

Answer Option 6:

Final Answer: A

****

Answer Option 7:

Final Answer: A

****

Answer Option 8:

Final Answer: A

****

Answer Option 9:

Final Answer: A

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Question 151:

'The lunar maria are:', A. 'ancient heavily cratered highlands', B. 'dark lavas inside volcanic calderas', C. 'dark lavas filling older impact basins', D. 'the bright regions on the Moon'

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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

****

Answer Option 6:

Final Answer: C

****

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 152:

'One astronomical unit (AU) is equal to approximately ...', A. '130 million km', B. '150 million km', C. '170 million km', D. '190 million km'

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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

****

Answer Option 4:

Final Answer: B

****

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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