

CLASS 8

SCIENCE

NCERT SOLUTIONS

NCERT Solutions for Class 8 Science Chapter 13: Our Home: Earth, A Unique Life Sustaining Planet – Curiosity

Chapter 13 of the Class 8 NCERT Curiosity textbook is titled "Our Home: Earth, A Unique Life Sustaining Planet". It explores what makes Earth uniquely habitable — its distance from the Sun, atmosphere, magnetic field, size and gravity, plate tectonics — along with geodiversity, biodiversity, climate change and h...

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Chapter 13 of the Class 8 NCERT Curiosity textbook is titled “**Our Home: Earth, A Unique Life Sustaining Planet**”. It explores what makes Earth uniquely habitable — its distance from the Sun, atmosphere, magnetic field, size and gravity, plate tectonics — along with geodiversity, biodiversity, climate change and human impact. These Class 8 Science Chapter 13 solutions are also useful as quick revision notes before exams.

Original, independently checked solutions to the chapter’s in-text questions and full “Keep the Curiosity Alive” exercise are below.

In-Text Questions

Q1. What makes the Earth unique for living beings to grow and survive?

Solution: Earth’s habitability comes from a rare combination of factors: its distance from the Sun (about 150 million km) places it in the “habitable zone” where temperatures allow liquid water to exist; its atmosphere (rich in nitrogen and oxygen) supports breathing and is shielded by the ozone layer against harmful UV radiation; a strong magnetic field protects the atmosphere from being stripped away by solar wind; plate tectonics recycle nutrients and help regulate climate; and Earth’s size and gravity are just right to hold onto a breathable atmosphere without crushing life. The Moon also stabilises Earth’s axial tilt, giving predictable seasons.

Q2. Is temperature or distance from the Sun the only factor that makes Earth habitable?

Solution: No. While Earth’s position in the Sun’s habitable zone is important for liquid water, habitability also depends on a protective atmosphere, a magnetic field shielding against solar wind, active geology (plate tectonics), a stable rotation and axial tilt, and the right size/gravity and chemical composition to hold onto air and water.

Q3. What would happen if Earth were too small or too big?

Solution: A **smaller** Earth would have weaker gravity and struggle to hold onto a dense atmosphere, leading to low pressure (liquid water couldn’t stay stable) and poor protection from radiation — similar to Mars. A **larger** Earth would have stronger gravity that could trap an overly thick, oppressive atmosphere (like Venus), possibly causing extreme heat and pressure. Either way, the delicate balance needed for liquid water, breathable air and stable climate would likely be lost.

Keep the Curiosity Alive — Full Exercise Solutions

Q1. What is one major reason Mars cannot currently support life like Earth? (i) It has too many volcanoes. (ii) It is too close to the Sun. (iii) It lacks a thick atmosphere and liquid water. (iv) Its magnetic field is too strong.

Solution: **(iii) It lacks a thick atmosphere and liquid water.** (*Note: some published answer keys mislabel this as option (ii) — the correct option letter for this statement, as listed, is (iii); we’ve corrected the labelling here.*)

Q2. Which of these is an example of geodiversity? (i) A variety of birds chirping in a forest. (ii) Different landforms like mountains, valleys and deserts. (iii) Changing weather during monsoons. (iv) Number of different types of fish in a pond.

Solution: **(ii) Different landforms like mountains, valleys, and deserts.** (Geodiversity refers to diversity in non-living geological features; options (i) and (iv) describe biodiversity, and (iii) describes weather, not geology.)

Q3. If Earth were smaller with the same density, what might happen to its atmosphere? (i) It would become thicker and hotter. (ii) It would escape into space due to weaker gravity. (iii) It would become frozen. (iv) It

would cause stronger winds.

Solution: (ii) It would escape into space due to weaker gravity. A smaller planet of the same density has less mass and hence weaker gravitational pull, which is less able to hold gas molecules from escaping to space.

Q4. In sexual reproduction, why are offspring different from their parents? (i) They grow in different climates. (ii) They eat different food. (iii) They acquire new instructions after birth. (iv) They get mixed instructions (genes) from both parents.

Solution: (iv) They get mixed instructions (genes) from both parents. Sexual reproduction combines genetic material from two parents, producing offspring with a unique mix of inherited traits.

Q5. Tiny green plants are seen growing in cracks on a school wall after the monsoon. Where did the seeds come from, and what conditions helped them grow?

Solution: The seeds were likely carried there by wind, birds, or insects (e.g. a bird may have dropped a seed while perching, or the wind blew a light seed into the crack). The monsoon rain provided the water needed for germination; the crack likely trapped some dust/soil offering nutrients; and available sunlight and air supported photosynthesis and respiration, letting the sheltered, moist microhabitat sustain plant growth.

Q6. A city recently cut down a large forest patch to build roads and buildings. Discuss the possible effects on local climate, biodiversity, and water.

Solution: Climate: fewer trees means less carbon dioxide absorption and less shade, which can raise local temperatures; it may also disrupt rainfall patterns since trees release water vapour that helps form clouds. **Biodiversity:** loss of habitat threatens the plants and animals that depended on the forest, disrupting food chains. **Water:** deforestation weakens the water cycle (trees help retain soil moisture and encourage rainfall), and can cause soil erosion that pollutes nearby water bodies with sediment.

Q7. A friend says: “Earth has always had climate changes in the past, so today’s global warming is nothing new.” How would you respond?

Solution: While it’s true Earth has had natural climate shifts before (like ice ages), today’s warming is different because it’s being driven primarily by human activity — burning fossil fuels releases large amounts of greenhouse gases (carbon dioxide, methane) that intensify the greenhouse effect. This is causing much faster warming, melting ice caps, rising sea levels and more extreme weather than natural, slower past changes. Along with biodiversity loss and pollution (the “triple planetary crisis”), current change requires urgent human action, unlike past natural cycles.

Q8. If Earth’s magnetic field suddenly disappeared, what problems could arise for life?

Solution: Without the magnetic field, high-energy solar wind and cosmic particles would hit the atmosphere directly, likely eroding the ozone layer and letting more harmful UV radiation reach the surface (raising risks like skin damage/cancer for humans and harming plants/animals). Over time the atmosphere itself could be gradually stripped away, reducing oxygen levels and destabilising climate. Satellites and communication systems would also become vulnerable to unshielded radiation.

Q9. Designing a new human settlement on Mars: name three things you’d need to recreate from Earth, and identify the hardest one to replicate.

Solution: Three essentials: (1) **liquid water** — for drinking, growing food and life processes; (2) a **breathable atmosphere** — an oxygen-rich, correctly pressured air supply, since Mars’ atmosphere is thin and mostly carbon dioxide; (3) **temperature control** — Mars averages around -60°C , far colder than Earth. The **hardest to replicate is the breathable atmosphere:** Mars’ atmosphere is roughly 100 times thinner than Earth’s, so generating and maintaining enough oxygen at the right pressure, while preventing leaks, is a major ongoing engineering challenge compared to transporting/extracting water or building insulated, temperature-controlled habitats.

Q10. A village has seen rising temperatures and unpredictable rainfall in recent years. What could be causing this, and how could the village adapt (two strategies)?

Solution: Likely causes: broader climate change from rising greenhouse gas emissions, possibly worsened by local deforestation or land-use changes reducing moisture retention. **Adaptation strategies:** (1) rainwater harvesting and efficient/drip irrigation to store and use unpredictable rainfall wisely; (2) shifting to drought-resistant crop varieties and sustainable farming practices suited to higher temperatures and less reliable water.

Q11. If Earth had no atmosphere at all, how would it affect life, temperature, and water?

Solution: Life: most organisms need oxygen to breathe, and without the ozone layer, harmful UV radiation would damage living cells directly. **Temperature:** without the greenhouse effect trapping heat, Earth would lose warmth to space and become extremely cold overall, with wild day-night temperature swings (very hot in direct sunlight, freezing at night) — similar to the Moon. **Water:** without atmospheric pressure, liquid water would evaporate or freeze rather than stay liquid, and the water cycle (evaporation, clouds, rainfall) would stop entirely.

Q12. Discuss five examples of vegetative propagation.

Solution: Vegetative propagation is asexual reproduction where new plants grow from parts (stems, roots, leaves) of a parent plant: (1) **Money plant** — a stem cutting with a node grows roots in water or soil. (2) **Potato** — “eyes” (buds) on a sprouted potato grow into new plants when planted. (3) **Ginger** — a rhizome piece with a bud develops into a new plant. (4) **Sugarcane** — stem cuttings with nodes are planted to grow new sugarcane (it rarely reproduces by seed). (5) **Bamboo** — sections of stem or rhizome, when planted, grow into new bamboo plants.

Why This Chapter Matters

Understanding exactly which factors (distance from Sun, atmosphere, magnetic field, size/gravity, geology) make Earth habitable helps explain why other planets like Mars and Venus can't currently support life, and builds the foundation for later chapters on climate change, biodiversity and sustainability across Class 9-10 science and geography.

Class 8 Science Chapter 13 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the [Class 8 Science Chapter 13 Extra Questions](#) and [Class 8 Science Chapter 13 Revision Notes](#) for quick revision and extra practice.