READING PASSAGES · ANSWER KEY

VENUS

All 3 reading levels · Sample answers shown — accept reasonable variations

Teacher tip: Answers shown are model responses. Many comprehension questions can be correctly answered in multiple ways — the goal is to check that students can pull key ideas from the text in their own words. For Level 1, accept any answer that shows comprehension; phrasing doesn't need to match.

1 EMERGING — AGES 6–8 · 4 QUESTIONS — Venus: The Bright One

1. Why has Venus been called the "morning star" and the "evening star"?
   A: *Venus is the brightest planet in our sky, so people often see it just after sunset (evening star) or just before sunrise (morning star).*
2. What colour are Venus's clouds?
   A: *The clouds on Venus are pale yellow.*
3. Why is Venus hotter than Mercury, even though Mercury is closer to the Sun?
   A: *Venus is hotter than Mercury because its thick clouds trap heat like a blanket.*
4. What is strange about the way Venus spins?
   A: *Venus spins very slowly and the wrong way around — so on Venus the Sun rises in the west instead of the east.*

2 ON-GRADE — AGES 8–10 · 5 QUESTIONS — Venus: Earth's Hottest Twin

1. Why is Venus called Earth's "twin"? Name one big way the two planets are different.
   A: *Venus is almost exactly the same size as Earth — that's why people call it Earth's twin. But Venus has crushing air pressure, a hot toxic atmosphere, and a hellish surface, so it's actually very different from Earth.*
2. Why is Venus hotter than Mercury?
   A: *Venus has thick clouds of carbon dioxide that trap the Sun's heat in a runaway greenhouse effect, making it hotter than even Mercury.*
3. How does air pressure on Venus compare to air pressure on Earth?
   A: *Air pressure on Venus is about 90 times stronger than on Earth — like being deep underwater.*
4. How do a day and a year on Venus compare to each other?
   A: *A day on Venus (243 Earth days) is actually longer than a year on Venus (225 Earth days).*
5. What makes Venus easy to spot in the sky?
   A: *Venus is the third-brightest object in our sky, after the Sun and the Moon.*

3 ADVANCED — AGES 10–12 · 6 QUESTIONS — Venus: A Lesson in Climate

1. In what ways are Venus and Earth similar, and in what ways are they extremely different?
   A: *Similar: nearly the same size, mass, and density; both rocky planets with volcanoes, mountains, and craters. Different: Venus's surface is far hotter, has crushing atmospheric pressure, is shrouded in toxic clouds, and spins very slowly and backwards. (Accept reasonable answers.)*
2. Explain how the runaway greenhouse effect on Venus works.
   A: *Sunlight passes through the carbon dioxide clouds and heats the surface, but the heat cannot escape back into space because the dense atmosphere traps it. Trapped heat keeps building up, creating extreme temperatures.*
3. What did Soviet Venera probes accomplish, and what limited them?
   A: *Venera 13 and 14 (Soviet probes) successfully landed on Venus and sent back the only surface photographs ever taken. They survived only minutes to a few hours before being destroyed by the extreme heat and pressure.*
4. What does "retrograde rotation" mean, and how might scientists explain Venus's unusual spin?
   A: *Retrograde rotation means spinning in the opposite direction from most other planets. Scientists think a giant ancient impact may have flipped Venus, causing it to spin backwards.*
5. Where on Venus might Earth-like conditions actually be found?
   A: *About 50 kilometres above the surface, temperatures and pressures in Venus's upper atmosphere resemble those at Earth's surface — making it the most Earth-like region in the solar system after Earth itself.*
6. Why is studying Venus important for understanding Earth's future?
   A: *Venus may have once been habitable, with oceans, before a runaway greenhouse effect changed everything. Studying it helps us understand how habitable worlds can become uninhabitable — relevant to Earth's climate today.*