Answer Key – Sample Answers

ELC-5097

Sample answers are provided because student responses to the research questions will vary.

North America

1. The captain might note the thick sea ice and freezing weather and decide to stay close to the coast or wait for warmer season. In the journal, he could describe huge icebergs, frozen ship decks, and concern about supplies. He might explain turning back because the ice was too dangerous (as Hudson ultimately did). The entry would mix facts about location (e.g., "Hudson Bay") with feelings of awe or fear at the Arctic landscape.
2. Sacagawea was a Shoshone woman who could speak the language of people they met and recognized plants along the way. A student's comic might show Lewis and Clark sharing peace gifts with a tribe, guided by Sacagawea. In one scene she might identify edible berries or calm fears about the expedition. The story highlights how her knowledge of local tribes and the land allowed the explorers to get food and safe passage, showing collaboration between cultures.
3. The map would trace Cartier's ship's path around the Gulf of Saint Lawrence. Student might color the known coastlines in green and the unexplored waters in blue. They might draw a ship icon where Cartier stopped and a question mark at the end of the route to show he didn't find a passage. On the map one could label "Newfoundland" or "St. Lawrence River" with arrows and maybe include icons (like trees or fish) to show natural features he documented.
4. A poem might describe "palm trees swaying" and "gentle waves," reflecting what sailors saw. For example: "White sails cutting ocean blue, Unknown Island rising into view. Birds unknown in morning light, new grasses glowing warm and bright." This answer shows excitement and wonder. In the song or poem, the sailor might mention hearing the ocean and feeling warm breeze, painting a sensory picture of the Bahamas after the long ocean voyage.
5. The archaeologist might look for Norse-style building foundations (like turf houses) or a longhouse ruin. They could find iron tools, nails, or axes typical of Vikings. Other clues would be Viking artifacts such as a cloak pin or a carved wooden bowl. Student might mention finding a cross or chip from an iron sword. These discoveries would show where Europeans (Norse) lived before other settlers arrived.

6. A modern ship has GPS, radar, and engines, while Hudson's ship had only sails and a compass or sextant. In the past, sailors wrote logs by candlelight; today they might use computers. Daily routines like eating and sleeping aboard remain (everyone still eats and sleeps on board). Both crews need to measure weather, keep watch, and navigate, but now we have weather forecasts and radio, unlike the explorers who relied on stars and word-of-mouth weather predictions.

South America

1. In the Amazon rainforest, Humboldt might find giant trees, orchids, colorful birds, and insects. Students might list jaguars, toucans, or rubber trees as examples. Humboldt's notes on these species could later help scientists understand biodiversity (as they indeed did when he "explore[d] and describe[d] the botanical geography" of South America). For example, knowing which plants grow at different altitudes in the Andes helps modern biologists study climate zones, showing how his work set the foundation for ecology.
2. he entry might describe tall mountains, stone cities like Cuzco, and farms on hillsides. The writer could express amazement at a grand city of Inca temples ("We gaze upon palaces built of shining stone"). They might note strange foods like potatoes and maize they encounter. The diary could say they feel both awe and fear of the powerful Inca. Since Pizarro did conquer the Incas, the student might also hint at future conflict ("We plan to meet the emperor; questions about his gold fill our minds"), reflecting how the Spanish were drawn by wealth (which led to the Inca's downfall).
3. On the Amazon, you would see massive kapok trees, vines hanging like curtains, and lots of green undergrowth. You might spot exotic animals like brightly colored macaws, giant river otters, or a slithering anaconda. There would be endless sounds of birds and insects. Unlike Europe's forests, this jungle has steamy heat, constant humidity, and animals (like parrots or jaguars) that European sailors had never seen before, emphasizing how explorers learned new natural history on such journeys.
4. f you find very similar plants or fossils on both continents, it suggests they were once joined. For example, the fossil plant Glossopteris is found in both South America and Africa. Humboldt was among the first to suggest such a connection because certain mountain ranges and tropical species looked alike across the ocean. If a student says, "There are freshwater fish found in both Amazon and West Africa rivers," this also hints continents were together. Noticing these biological similarities supports the idea of continental drift.
5. The story could show Humboldt and an assistant finding a strange flower that glows at night. The scientist might be thrilled and sketch it in a notebook. In the final panel, they realize the plant's bright color might ward off insects or attract pollinators (students can invent details). The sample answer explains that scientists record new discoveries to share with the world, similar to how Humboldt

catalogued many species. The glowing flower symbolizes how exploration expands scientific knowledge.

6. Knowing the Amazon's exploration history helps us understand changes over time. For instance, when Europeans first arrived, indigenous communities had different lives; today some areas face deforestation. Learning about explorers like Orellana reminds us that outsiders impacted the region (sometimes negatively). A student might note that recording history helps protect cultures – historians might say, "We use stories and old maps to respect native people's land rights today." It could also teach about environmental changes: early journals might show forests before roads and towns, helping scientists see what's changed.

Europe

1. You might ask, "What do the cities look like? What foods or jewels did you see?" Marco Polo might describe markets of silk and spices, or paper being made. Hearing these stories, you would realize Europe is connected to faraway lands, and goods like spice or silk exist beyond the Mediterranean. The student's answer could say this news makes merchants think about trading routes to Asia. Marco Polo's tales inspire imagination: suddenly people in Europe picture deserts, the Great Wall, or exotic animals, expanding their view of the world.
2. The first map (before Columbus) might be Earth with only Europe, Asia, and Africa (and a blank Americas). After Magellan, the second map adds the Americas and shows the Pacific. The student should label "Pacific Ocean" since Magellan's voyage proved the world's oceans are connected (his crew found a westward route to Asia). The answer would note that previously unknown continents (North and South America) appear, and round Earth is confirmed by circumnavigation. Magellan's expedition helps Europeans see Earth as one globe, so new oceans and lands are drawn.
3. The dialogue might start with the child asking, "Are there big monkeys? Do people live there?" The explorer could answer, "Yes, strange long-tailed monkeys swing in the trees, and the people here wear colorful clothes." The sample could include lines like, "They taught us to plant corn and tobacco," showing cultural exchange. This answer shows curiosity about everyday life in the New World. Facts from 1492 voyage: The explorer might say he saw villages by the sea and named the island "San Salvador", making the encounter vivid and human.
4. The student might explain the compass: a magnetized needle that always points north. This helped sailors know direction even on cloudy days. For example, Captain Cook used a compass and a sextant (an instrument to measure angles between stars and horizon) to determine latitude. The answer should explain simply: by measuring stars, sailors knew how far north or south they were. This scientific method made long voyages across unknown oceans possible.
5. If drawing Columbus's landing in the Caribbean, a student might sketch a sandy beach with tropical trees and ships offshore. They would label it "San Salvador,

1492” because Columbus named it after saints. In the explanation they would say they drew palm trees and indigenous people to reflect local environment. This shows how artists captured new landscapes. The answer connects the image to facts: Columbus did first land in Bahamas, so the art includes those features.

6. The Renaissance of Exploration was when Europeans began many voyages by sea. For example, after Vasco da Gama sailed around Africa to India, Europe got spices and silk much cheaper and faster. Students might say this “started a whole new era” for trade. Life changed because new goods (like sugar, tea, porcelain) arrived in Europe, making people’s diets and homes different. Maps became more accurate, and people knew the world was round (as the timeline notes, it became “evident that the world was indeed round”). This answer highlights historical impact on European economies and knowledge.

Africa

1. Livingstone wanted to find new trade routes and spread medicine and Christianity. As a doctor, he could help sick people, which might make locals more open to trusting him. The answer might say he treated smallpox or malaria victims. For instance, by offering medicine or simple treatments, the local communities would see him as a friend rather than a conqueror. The student could note that this helped him explore further inland safely and learn local languages and customs.
2. Explorers often named places after their sponsors or symbols of home. Livingstone named the falls “Victoria” to honor Queen Victoria. The student could point out that local people had their own names (like “Mosi-oa-Tunya”). Changing a name can make a place famous worldwide but may erase local heritage. The answer explains that naming affects perceptions: to Europeans it became a royal gift, while for locals it was always a sacred waterfall. This introduces cultural and historical perspective.
3. One could look for plant life or green patches, since plants often grow near water. The student might suggest digging in places where camels often gather, because animals know where to find water. Another idea is to use a simple dowsing rod (though its accuracy is debated). The answer might note using a compass or stars to navigate around oases. By tying to timeline, one could say people like Hassanein studied old caravan routes to find hidden springs.
4. The story might describe the elephant seeing strange rectangular objects (cameras) and hearing unfamiliar noises (rifle shots). The elephant might perceive humans feeding strange foods or trying to communicate. The answer shows empathy and imagination: maybe the elephant thinks “These noisy creatures come in search of water and curiosities.” This engages artistic and narrative skill. It also touches on environment: the elephant notices changes in its habitat as explorers arrive.
5. In the Sahara, an explorer needs lots of water, light clothing for heat, and shelter from sandstorms (like a tent and goggles). In the Congo rainforest, they’d need waterproof gear, mosquito net, and machete to clear brush. The student might note

that in the desert you pack sunblock and sand sails, while in the jungle you take malaria medicine and flip-flops to cross streams. This answer shows understanding of geography and science: deserts are hot and dry, jungles are wet and full of insects.

6. A historian might find notes on local tribes, sketches of plants or animals, and maps with travel routes. There might be descriptions of meeting chiefs or observing wildlife. The answer should point out that these documents give us first-hand information about 19th century Africa, much of which had never been written in Europe. For example, they might contain early maps of the interior or notes on languages spoken. Such journals are valuable because they are primary sources that teach us about history, geography, and cultures at the time.

Asia

1. Their journeys were religious pilgrimages, so they traveled mostly on foot or by caravan, not on ships. Unlike soldiers, they often avoided conflict and focused on learning. The student might explain that they wanted to compare scriptures to improve Chinese Buddhism. When they returned, they translated books and taught new ideas. For example, Fa Xian brought back hundreds of Buddhist works. They shared knowledge to educate others and unify Buddhism in China, showing cultural exchange rather than conquest.
2. A historian would look for Mongol writings, maps of empire boundaries, or accounts from conquered peoples. For instance, old manuscripts in Persia or China might describe Mongol rule. Artifacts like coins minted under his empire or letters he sent to other rulers would show trade and communication. The student could note that studying Mongolian military gear or temple ruins tells us about cultural blending. These sources help us see how far Genghis's empire spread and how it influenced different regions of Asia.
3. ZThe artist might sketch a bustling port in Southeast Asia or East Africa, with Zheng He's big "treasure ships" next to local boats. They could draw exotic animals on deck (like ostriches or giraffes). The answer should mention people of different cultures exchanging goods – perhaps diplomats, local merchants, and sailors together. Citing Zheng He's purpose, the student might include banners of the Ming Dynasty and trade goods (silk, porcelain) to show cultural exchange.
4. You might carry silk, spices (like pepper or cinnamon), and tea from China. The challenges would include crossing deserts (like the Gobi or Taklamakan), where you'd need camels and water. You'd also travel through mountains (like the Himalayas or Pamirs), which are cold and high. The student could mention language barriers or bandits on the route. This shows how geography (mountains, deserts) and commerce (valuable cargo) shaped Asian-Europe trade.
5. Take gunpowder, which was invented in China. The answer might say that Marco Polo and others saw fireworks or weapons using gunpowder. They could have brought recipes or small samples back to Europe. Europeans then experimented

and eventually made cannons. The student should explain that merchants and monks moved such ideas, and trade caravans carried recipes and molds along the Silk Road, illustrating how Asian science influenced Europe.

6. The brochure might have a map showing Zheng He's route from China to India. The description of Calicut could say, "Warm, tropical climate with monsoon rains. Local people trade spices like black pepper and colorful textiles." Pictures could include Indian elephant, spice markets, and the Taj Mahal-like style (though it was built later). For Mogadishu: "Warm coastal city with Arabian influence. Known for gold trade and Somali sailors." This answer shows integration of geography, history, and art by presenting factual climate and culture details for that period, inspired by Zheng He's voyages.

Oceania

1. The drawing or description might include eucalyptus trees and kangaroos on red soil, with a long coastline and tall cliffs (as Cook saw). Cook's records mention the east coast of Australia. The student might say they see unfamiliar flowers and hear kookaburras laughing. By noting bright sun and sandy beaches, the answer shows the distinct scenery. This combines art (drawing) with geography (Australian coast).
2. Students might ask: "What do you call this land in your language? What kind of food do you hunt or gather? How do you travel between islands?" The answer shows curiosity and respect for indigenous knowledge. They might also ask about homes or clothing. These questions blend cultural anthropology and history. By asking about language and traditions, the student acknowledges that the Aboriginal people had a rich culture before Europeans arrived.
3. The student could draw major constellations like the Southern Cross, which Polaris (North Star) is not visible in the southern Pacific, or show how the Sun's shadow moves (sundial) to tell direction. Captain Cook's crew used the sextant and chronometer later on, but earlier Polynesians used stars. The answer might say they tracked the angle of a known star above the horizon at night to stay on course. This combines science (astronomy) with history, showing how explorers navigated.
4. he letter might say, "Dear friend, I write from the deck of the Resolution in sight of fresh land. We have anchored by tall mountains and verdant forests. Today we saw curious huts and people with feathered capes. The weather is warm and the sea is calm. These islands are unlike any I've seen; the air smells sweet with flowers. Cook's journals confirm this as Hawaii. I am sending sketches of palm trees and the harbor to show you." This answer uses vivid detail and refers to Cook's landing (Hawaii, 1778) to show authenticity.
5. A student might use a wooden or cardboard hull shape and cloth sails. They'd explain that long, narrow hulls were good for cutting through waves, and tall masts held square sails to catch wind on open seas. The ships had a sturdy keel and were designed to store fresh water and food. This answer covers math and engineering

(model building) by considering balance, capacity, and sail shape needed for the vast Pacific voyages.

Arctic

1. The map would show Nordenskiöld's route from Europe, north of Siberia, back to Europe. It passes the top of Asia and then back (as he "navigated around the north coast of Asia"). The Northeast Passage was important because it was a shorter sea route to China and India than going around Africa. The student's map highlights the Arctic Ocean and probably labels places like "Vega Strait." This answer connects geography (new routes) with history.
2. One crew member might argue, "We've seen no land for weeks; the ice is thick. If we go on, we risk being trapped." Another could say, "But if we turn back we fail and get nothing." This dialogue would include facts about Hudson's situation (e.g., freezing temperatures and dwindling food). By using plausible arguments (some want to find passage, some fear ice), the answer integrates historical events (Hudson's mutiny due to harsh conditions).
3. Today explorers use GPS for precise location, so they know exactly when they reach the Pole. They also have insulated Gore-Tex gear, lightweight down parkas, snowmobiles or ice-breaking planes, and weather forecasting (Peary had wooden sleds and compass). The answer should mention that these tools (satellites and modern polar gear) make travel faster and safer. Modern explorers might even use drones or satellites to study polar ice, which Peary couldn't. This comparison shows scientific advancement.
4. In Arctic winter, the sun barely rises and temperatures can drop below –30°C. Animals like polar bears grow thicker fur and seals hibernate under ice. People build insulated homes (like igloos) and wear heavy furs. Explorers must pack high-calorie food and heaters, and know to travel when there is daylight. The answer notes adaptations (fat layers, hibernation) and survival skills (sleds, fur clothing). By explaining both nature and human coping, it covers science and practical life.
5. The story might describe large wooden ships with tall masts appearing through ice fog. The Inuit might say the visitors were pale, weak from cold, and spoke strange words. They might emphasize how Inuit hunters had keen knowledge of the land. For example, the storyteller could say, "When Hudson's men met us, they were hungry for seal meat," showing how indigenous knowledge was crucial. This narrative shows cultural perspective and respect for local expertise.

Antarctica

1. Amundsen took a smaller team and used dogs for sleds, choosing a route with good dog sledding snow. Scott had more men and used ponies (and some motor sledges) which didn't work well in deep snow. Many students might conclude that Amundsen's plan was better because dogs could pull longer distances and he

learned survival from Indigenous knowledge (he learned from Arctic explorers too). The answer should note that planning and experience with cold weather were crucial, so Amundsen's strategy (which succeeded) shows effective preparation.

2. The diary might say: "Our tent flaps howl as we cross the endless white plateau. I step out and feel the crunch of snow under heavy boots. Each morning I record temperature (–30°C) and search for frozen meteorites on the ice. We eat concentrated food and huddle in sleeping bags. I am amazed by the silence and the vast black sky. Finally, we spot the American flag already at the Pole; this means Amundsen reached it first." This answer combines factual elements (Scott arrived second) with sensory descriptions.
3. Everest is a high mountain (8,848 m) with thin air, while Antarctica is flat ice at sea level or a plateau. Everest climbers need oxygen tanks due to altitude; Antarctic explorers deal with extreme cold and crevasses on ice. Everest has solid rock mountains; Antarctica has snow and ice fields. The answer might say Everest climbers face avalanches and altitude sickness, but Antarctica's challenges are blizzards and the risk of frostbite everywhere. Both are cold and remote, but one is about height, the other about latitude.
4. The base camp would have insulated cabins, possibly raised on stilts to avoid snow drifts. It would include solar panels and generators for electricity (though solar is limited in winter). There would be a wind turbine to exploit high winds. A greenhouse or supply of fresh vegetables would be ideal for nutrition. Students might draw tunnels connecting buildings to shelter from wind. This answer applies engineering and biology (food needs) to survive the harsh Antarctic environment.
5. Both have little rain, but Antarctica's moisture is locked in ice instead of sand. The student could say Antarctica is extremely cold and snowy, whereas the Sahara is hot and sandy. Similarities: few plants grow, and travel is hard. Differences: in Antarctica, it's freezing, so water is ice; in Sahara it's scorching heat and sand dunes. Animals in Antarctica (like penguins) have thick blubber, while desert animals (like camels) have fat humps. This shows scientific understanding of climate and ecosystems.

Ocean

1. The drawing might be bright: colorful coral, schools of orange clownfish, green sea turtles, and maybe a manta ray gliding by. In deep-sea scene, student could draw dark water with glowing anglerfish, or a submarine light revealing a blobfish. The description might mention corals of many shapes and a reef teeming with fish. The answer should reflect Cousteau's interests: maybe a sea turtle or a scuba diver in the corner, showing an underwater landscape full of biodiversity.
2. Modern submarines have thick hulls to resist water pressure and carry oxygen tanks or use machinery to let people breathe underwater. Diving suits are either hard shells or thick neoprene rubber that keep water out and provide air through tanks. The student might explain: "When you dive, you wear a tank of compressed air and

a suit to keep you warm. The submersible's shape pushes water away so it won't be crushed by pressure." This answer connects Cousteau's Aqua-Lung with current tech and basic physics.

3. For example, studying the Gulf Stream (a warm Atlantic current) is important because it affects climate. The student could say, "The Gulf Stream carries warm water from the tropics to Europe, keeping Europe milder. If we understand it, we can predict weather patterns." This answer uses science (geography of oceans) to show cross-disciplinary thinking. Another example: learning about the Mariana Trench could teach about extremophile lifeforms and Earth's geology.
4. The story might say: "I drift quietly through warm blue water. Suddenly, a strange metal creature with glowing eyes appears above me. I see a human inside making bubbles. The diver's flashlight shows my shell's reflection – I see stripes I've never noticed before! The turtle might be curious or cautious, hearing clicks of a camera. This answer demonstrates creative thinking and uses descriptive language about the diver's equipment and the turtle's reaction.
5. The timeline/map should start in Spain, cross the Atlantic to Brazil, through the Strait of Magellan at South America's tip, then across the Pacific (where they ran out of food on Guam), and finally around Africa back to Spain. A major challenge was starvation during the Pacific crossing (many died of scurvy). The answer explains that only one ship returned with 18 of 237 men. This covers both the route and a key difficulty (mutiny or scurvy) faced by Magellan's crew.
6. The collage might include a 16th-century galleon (like Magellan's *Victoria*), a world map with sea routes drawn, old compasses or a sextant image, and animals like dolphins or whales. The student should explain each: the ship shows early navigation, the map shows routes of discovery, and sea animals reflect what explorers studied. They might also add Cousteau's red hat or a blue planet Earth image. The answer ties art (collage) with historical and scientific symbols of ocean exploration.

Space

1. The entry might say: "July 20, 1969: My heart pounds as I look out of the lander footlockers down onto the Sea of Tranquility. The Moon's surface is gray and powdery. In my helmet I can see Earth rising above the horizon, a blue marble. I'm nervous and excited, proud for everyone back home. Stepping down, I will move as slowly and carefully as a ballet dancer in space." This answer reflects Armstrong's emotion and the historic event.
2. First, gravity in space is almost zero, so astronauts float; they have to anchor themselves with straps. Second, eating is tricky: they use food that won't spill (like tortillas and sealed packages) and sometimes add water to powdered food. Third, sleeping: there are no beds, so astronauts sleep in sleeping bags attached to a wall or ceiling to keep from floating away. Students might also mention the need for

exercise to keep muscles strong. This answer uses science and daily life examples to illustrate adaptations.

3. What features would you give it?
   Sample Answer: On a cold, icy moon like Europa, the student might invent a pale, fish-like creature that swims under ice. It could have bioluminescent lures to see in the dark (like deep-sea creatures). On Mars, an plant might be low to the ground with thick leaves to hold water. The answer explains adaptations: “This Mars plant has red pigment to capture more sunlight in weak sun.” This combines art/creativity with science (life adaptations to environment).
4. Seeing dried-up river channels would tell us that Mars once had flowing water on its surface. The student should say this means Mars might have been warm and wet long ago. It could hint that conditions were once suitable for life. They might connect to Earth by saying, “On Earth, where there are riverbeds, there are usually fish or plants, so maybe Mars had something similar.” This answer shows how space exploration uses evidence to learn about planets.
5. Scientist: “What color is the sky where you are?” Astronaut: “On the Moon, the sky is black all the time, even in daylight, because there’s no atmosphere.” Scientist: “Are there any footprints or equipment you can describe?” Astronaut: “Yes, I can see the flag we planted and our rover tracks in the gray dust.” This dialogue combines curiosity and factual answers, showing communication. It teaches about conditions on other worlds (no atmosphere means black sky, etc.).