## Teacher Answer Key

### Case Study

1. Dendrochronology works well here because the dry desert conditions preserved the wooden beams with clear ring patterns. Other methods like potassium-argon require volcanic deposits (not present) and radiocarbon would only give a range, not an exact year.

2. Tree-ring dates tell you when the tree was cut, not when the wood was used in construction. The two older beams were likely salvaged from an earlier building, suggesting there was an occupation at the site over a hundred years before the room being excavated was built.

### Multiple Choice

1. *C*

2. *C*

3. *A*

### Matching

1-E, 2-D, 3-B, 4-A, 5-C

### Fill-in-the-Blank

1) 8000, 2) 1.25, 3) battleship

### Short Answer (Sample Responses)

Q1: Dendrochronology can give exact years because each tree ring represents one year and the pattern of wide and narrow rings is unique to each time period. It requires well-preserved wood from a species with an existing master chronology, so it does not work everywhere or on every type of wood.

Q2: East Africa has many volcanic formations near important fossil sites like Olduvai Gorge. When fossils are found between dated volcanic layers, scientists can bracket the age of the fossils with high confidence using potassium-argon dating on the surrounding rock.

Q3: Seriation is a relative method that arranges artifacts in order without giving calendar dates, while other methods provide absolute ages. Archaeologists might choose seriation when no organic material is available for radiocarbon dating, when the budget does not allow laboratory analysis, or when they need a preliminary chronology.