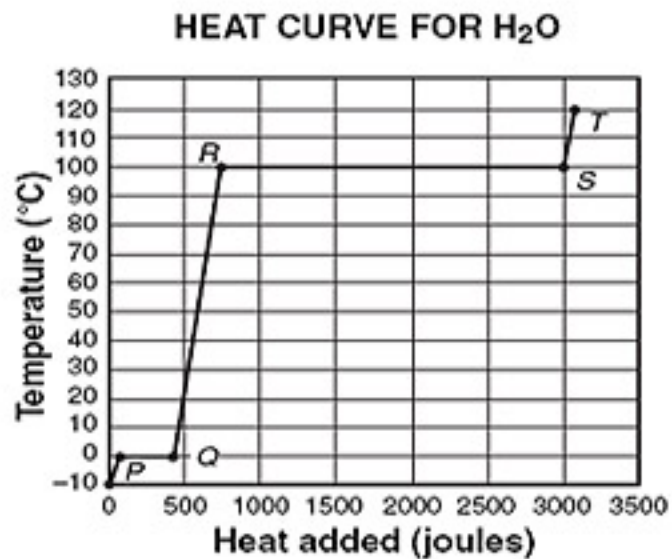


- 1 The graph below shows a heating curve for water ( $\text{H}_2\text{O}$ ) in degrees Celsius ( $^{\circ}\text{C}$ ).



Which line segment on the heating curve identifies where water changes from a liquid into a gas?

- A.  $\overline{PQ}$
- B.  $\overline{QR}$
- C.  $\overline{RS}$
- D.  $\overline{ST}$

- 1** The correct answer is C ( $\overline{RS}$ ).

Strand: A—The Nature of Matter

Benchmark: SC.A.1.4.3 The student knows that a change from one phase of matter to another involves a gain or loss of energy. (Also assesses SC.B.1.4.3 knows that temperature is a measure of the average translational kinetic energy of motion of the molecules in an object.)

Knowledge of phase changes and energy transfer is needed to answer this question. The heating curve shows the changes in phase as heat is added to solid water (ice). Water changes from liquid to gas at its boiling point  $100^{\circ}\text{C}$ . This phase change is shown in the diagram by  $\overline{RS}$ .

#### Distractor Rationale

- A.  $\overline{PQ}$  represents water at  $0^{\circ}\text{C}$ . At this temperature, water changes from a solid to a liquid.
- B.  $\overline{QR}$  represents water between  $0^{\circ}\text{C}$  and  $100^{\circ}\text{C}$ . In this temperature range, water exists in the liquid state.
- D.  $\overline{ST}$  represents water above  $100^{\circ}\text{C}$ . At this temperature, water exists as a gas.