LESSON 10.4

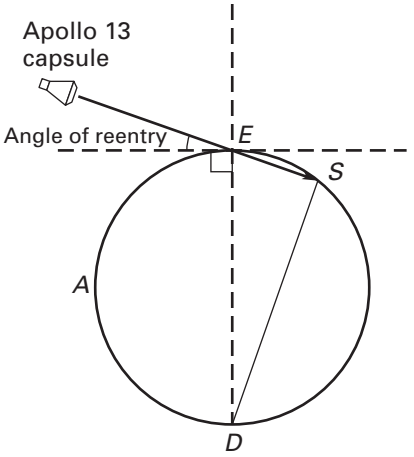
NAME _____ DATE _____

Interdisciplinary Application

For use with pages 621–627

Apollo 13

ASTRONOMY On April 11, 1970, the Apollo 13 spacecraft was launched on a mission to explore the moon. An explosion in an oxygen tank left the spacecraft with little oxygen and crippled navigational devices. The moon landing was aborted in order to salvage the ship and crew. To return safely to Earth, the space capsule needed to enter the atmosphere at an angle between 5.5° and 7.5°. A steeper angle would create more heat than could safely be dispersed by the heat shields. The ship and crew would be consumed in a fiery crash. A smaller angle would cause the ship to approach Earth on a tangent, skip off the atmosphere, and be hurled back into space. Careful planning and calculations by the NASA mission control staff enabled the Apollo crew to refine the reentry angle and splash down safely in the South Pacific on April 17, 1970.



In Exercises 1–5, use the diagram above where $\overline{ED}$ is the diameter of Earth.

1. Find the measure of $\angle ESD$.
2. Find the measure of $\overset{\frown}{DAE}$.
3. Find the measure of $\overset{\frown}{ES}$ if the measure of $\overset{\frown}{SD}$ is 167°.
4. Find the measure of $\angle EDS$ if the measure of $\overset{\frown}{ES}$ is 13°.
5. Find the angle of reentry for the Apollo 13 Space Capsule.

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