

TOPIC 1.8

Primary Productivity

SUGGESTED SKILL

 *Concept Explanation*

1.A

Describe environmental concepts and processes.



Required Course Content

ENDURING UNDERSTANDING

ENG-1

Energy can be converted from one form to another.

LEARNING OBJECTIVE

ENG-1.A

Explain how solar energy is acquired and transferred by living organisms.

ESSENTIAL KNOWLEDGE

ENG-1.A.1

Primary productivity is the rate at which solar energy (sunlight) is converted into organic compounds via photosynthesis over a unit of time.

ENG-1.A.2

Gross primary productivity is the total rate of photosynthesis in a given area.

ENG-1.A.3

Net primary productivity is the rate of energy storage by photosynthesizers in a given area, after subtracting the energy lost to respiration.

ENG-1.A.4

Productivity is measured in units of energy per unit area per unit time (e.g., kcal/m²/yr).

ENG-1.A.5

Most red light is absorbed in the upper 1m of water, and blue light only penetrates deeper than 100m in the clearest water. This affects photosynthesis in aquatic ecosystems, whose photosynthesizers have adapted mechanisms to address the lack of visible light.

AVAILABLE RESOURCES

- Classroom Resource > [AP Environmental Science Teacher's Guide](#)
- Classroom Resource > [Quantitative Skills in the AP Sciences \(2018\)](#)
- External Resource > [Environmental Literacy Council's AP Environmental Science Course Material](#)
- Classroom Resource > [Outdoor Education Experiences and AP Environmental Science](#)
- The Exam > [Chief Reader Report 2018, Q2](#)
- The Exam > [Samples and Commentary 2018, Q2](#)