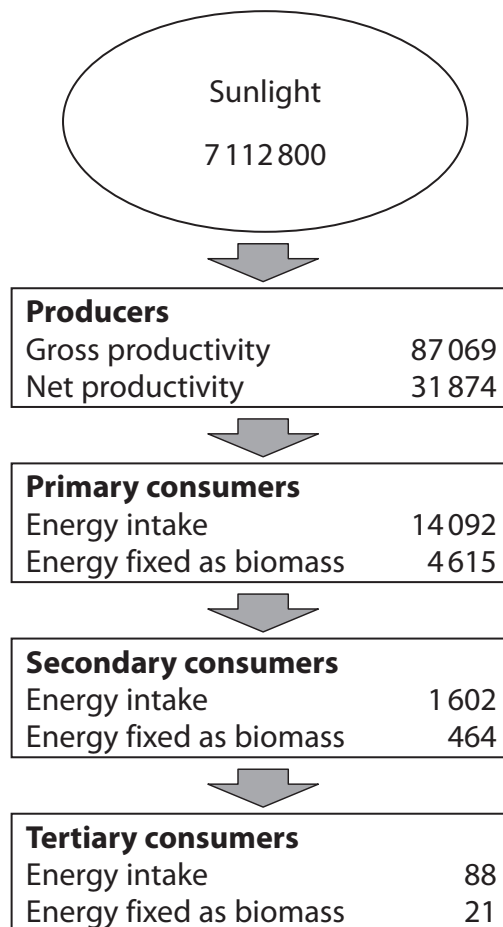


- 2 Silver Springs is a state park in Florida. The photograph shows one of the many waterways in this state park.



- (a) Energy flow through this ecosystem has been studied. The results are shown in the flow chart. All values are given in  $\text{kJ m}^{-2} \text{yr}^{-1}$ .



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- (i) Calculate how much energy is lost through respiration by the primary consumers. (1)

Answer .....  $\text{kJ m}^{-2}\text{yr}^{-1}$

- (ii) The table gives details of energy transfers at the different trophic levels.

Trophic level	Energy fixed as biomass / $\text{kJ m}^{-2}\text{yr}^{-1}$	Transfer efficiency (%)
Producers	31 874	
Primary consumers	4615	14.5
Secondary consumers	464	
Tertiary consumers	21	4.5

Calculate the efficiency of energy transfer between primary consumers and secondary consumers.

(1)

..... %

- (iii) The efficiency of photosynthesis can be measured as the percentage of energy from sunlight that is converted to gross primary productivity (GPP).

Which of the following shows the percentage efficiency of photosynthesis in this ecosystem?

(1)

- A 1.2%
- B 12%
- C 36.6%
- D 55.8%



