

The Tree That Ate Air

More ratio, conversion, atom-accounting, and carbon-cycle math using living systems as the context.

[conversions] [ratios] [atom accounting] [QUESTIONS ONLY] [PRINT-FRIENDLY]

NAME	PERIOD	DATE
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QUESTIONS ONLY - Practice independently or with a group. Use the class sheet as a model, but solve these numbers yourself.

PART A

A growing ratio

A seedling gains 240 g of dry mass while absorbing 600 g of water.

- 1 Write the dry-mass-to-water ratio in simplest form.

- 2 If another seedling absorbs 1,000 g of water at the same ratio, how much dry mass does it gain?

PART B

Count the inventory

A simplified photosynthesis model uses 6 CO₂ molecules and 6 H₂O molecules to make 1 glucose molecule and 6 O₂ molecules.

- 1 How many oxygen atoms are in the 6 CO₂ molecules?

- 2 How many total molecules are on the reactant side?

The Tree That Ate Air - continued

PART C

Calorie math

A leaf stores 18 kJ of chemical energy per gram of new tissue. A tree makes 250 g of new tissue.

1 How many kJ are stored?

2 If 20% is used for growth and 80% remains stored, how many kJ remain?

PART D

A tree in CO₂

A tree removes 22 kg of CO₂ each year. One kilogram equals 1,000 g.

1 Convert the yearly removal to grams.

2 How much CO₂ would 15 identical trees remove in one year?
