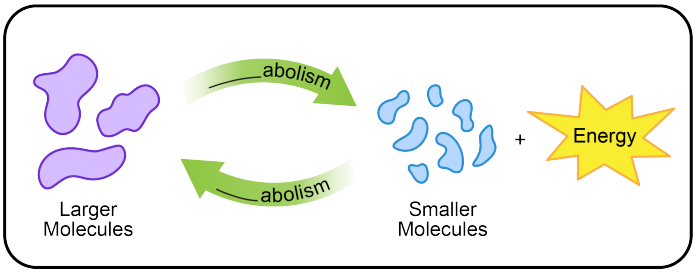
CONCEPT: INTRO TO METABOLISM

- Metabolism refers to _____ biochemical reactions that take place within an organism.
  - □ **Catabolism:** Reactions that _____ energy by _____ down molecules into smaller ones.
  - □ **Anabolism:** Reactions that _____ energy to _____ larger molecules from smaller ones.



EXAMPLE: Identify each of the following processes as anabolism (A) or catabolism (C).

a) ____ Trypsin in the small intestine converts proteins into smaller peptides.

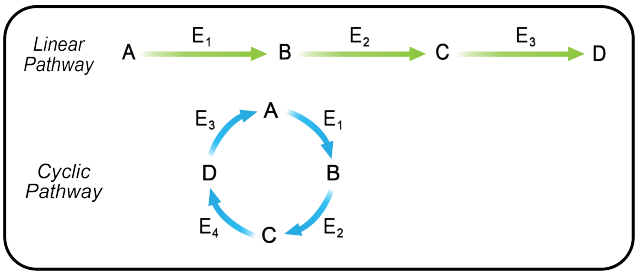
b) ____ Glucose is converted to glycogen for storage.

c) ____ Lipase in the stomach hydrolyzes lipids to fatty acids and glycerol.

d) ____ Amino acids in ribosomes are converted into proteins.

Metabolic Pathways

- Catabolism and anabolism take place through metabolic _____.
- **Recall:** A metabolic pathway is a sequence of interconnected biochemical reactions taking place in an organism.
  - □ Metabolic pathways can be _____ or _____.



EXAMPLE: Which one of the following statements about metabolic pathways is correct?

a) The product of the last reaction in a cyclic metabolic pathway is a reactant in the first reaction.

b) Catabolism always takes place through cyclic pathways.

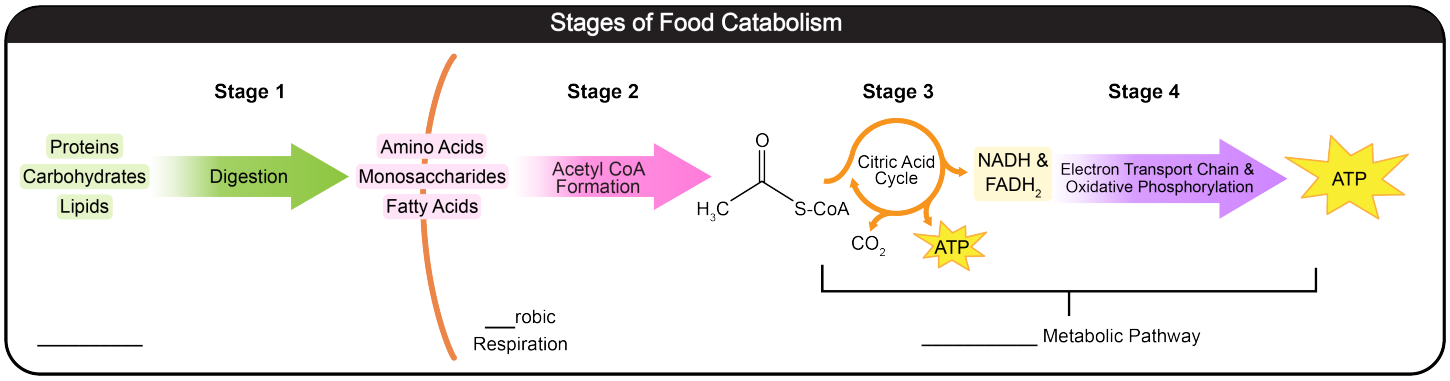
c) Linear catabolic pathways produce energy while cyclic catabolic pathways use energy.

d) The last reaction in some linear pathways can produce the starting material for the first reaction.

CONCEPT: INTRO TO METABOLISM

Stages of Catabolism

- Energy production through catabolism of food takes place in _____ stages.
- **Aerobic Respiration:** The predominant energy production pathway in the body; takes place in the presence of ____ gas.



- **Common Metabolic Pathway:** Stages 3 and 4 are _____ for the catabolism of all food types.

EXAMPLE: Which one of the following statements about the catabolism of food is incorrect?

a) Carbohydrates are oxidized in stage 1 to produce CO_2 and energy.

b) Acetyl CoA is the product of stage 2 catabolism.

c) The electron transport chain & oxidative phosphorylation is the last stage of food catabolism.

d) The citric acid cycle uses acetyl CoA to produce energy.

PRACTICE: Which one of the following catabolism stages produces NADH?

a) Electron transport chain

b) Glycogenolysis

c) Digestion

d) Citric acid cycle