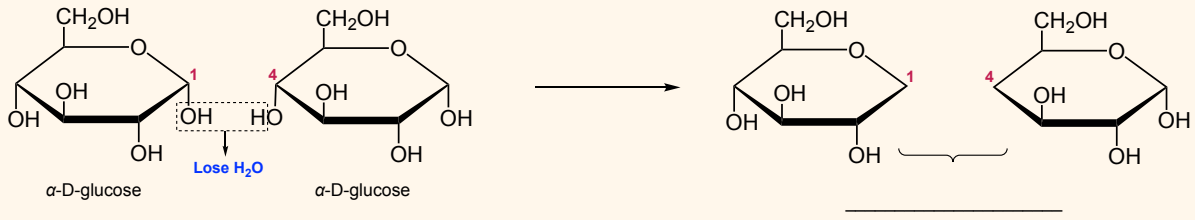
CONCEPT: GLYCOSIDIC LINKAGE

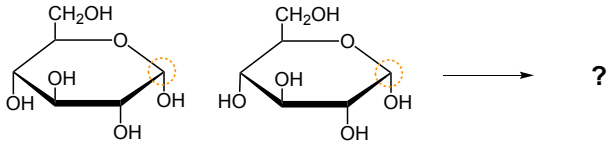
Glycosidic Linkage Formation

- An _____ bond between a sugar's anomeric carbon and another monosaccharide.
  - □ Formed via _____ (loss of water).
  - □ **Glycoside Linkage Formation:** _____ + _____ → _____

Glycosidic Linkage Formation



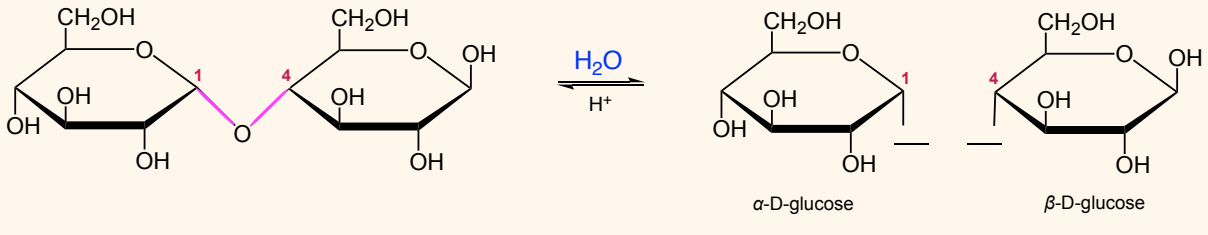
EXAMPLE: Provide the structure of the disaccharide formed when the hydroxyl groups of the highlighted carbons undergo a dehydration reaction.



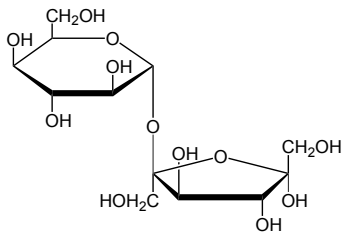
Hydrolysis of Glycosidic Linkage

- Under this reaction a glycosidic linkage is hydrolyzed into ___ monosaccharide units.
  - □ **Recall**: hydrolysis is a reaction that breaks down a molecule through addition of _____.
    - Both sugar carbons regain their _____ groups.

Hydrolysis of Glycosidic Linkage



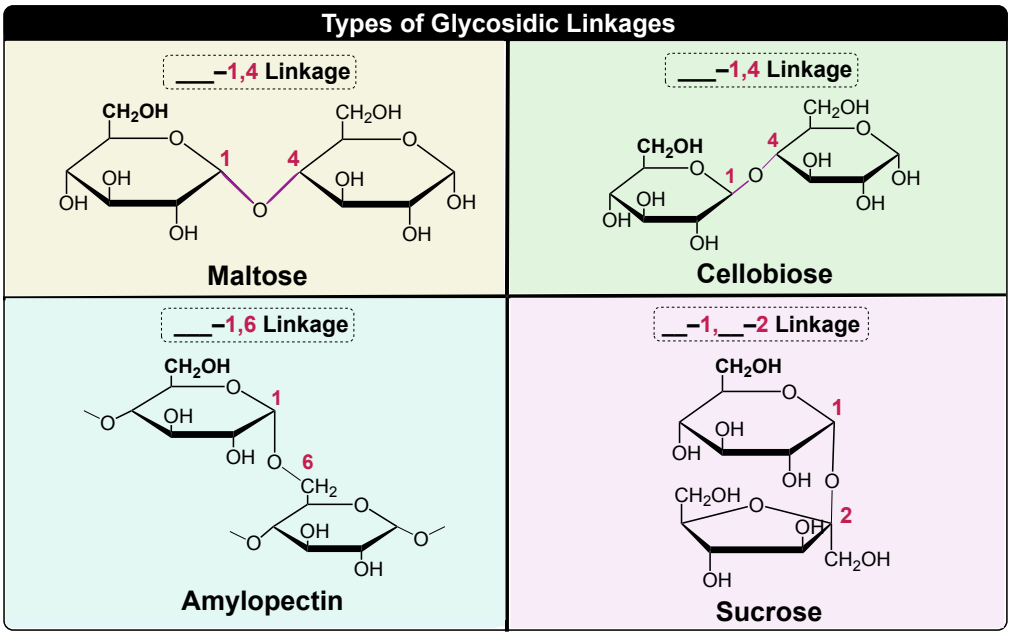
EXAMPLE: Provide the monosaccharide units produced by hydrolysis of the following disaccharide.



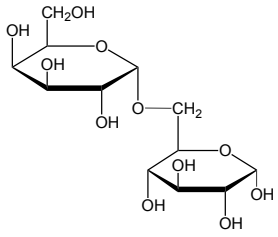
CONCEPT: GLYCOSIDIC LINKAGE

Alpha vs Beta Linkages

- This type of linkage created is always defined by the linked _____ hydroxyl group.
  - □ Alpha (α) and beta (β) linkages are defined in the _____ way as cyclic monosaccharides.
  - □ **Exception:** Sucrose possesses _____ linked anomeric hydroxyl groups and so _____ must be named.



EXAMPLE: Melibiose represents a disaccharide that is several magnitudes sweeter than table sugar. Determine the type of glycosidic linkage connecting its two monosaccharide units.



PRACTICE: Lactulose represents a man-made disaccharide that possesses a β-1,4 glycosidic linkage. Determine the two monosaccharide units created from its hydrolysis.