



## The National Orthodox School / Shmaisani

**Subject: science / Biology**

**Name:**

**Study sheet : Carbohydrate , Fat and energy**

**Date:**

**Grade-Section: 7 CS all sections**

*Objectives : Understand that animals eat food to obtain energy*

*Understand that animals use both carbohydrates and fat to store energy.*

### Which foods contain most energy?

Carbohydrates and lipids - the fats and oils - are the main foods providing animals, including humans, with the energy they need.

#### Sugars

Sugars such as glucose are small, soluble carbohydrate molecules. They often taste sweet. Sugars move quickly from your digestive system into your blood, giving you an energy boost. Fruits such as dates and bananas contain lots of sugar.

### SIMPLE CARBS

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## Starches

Foods such as bread, rice and pasta contain lots of starch. Starch is a carbohydrate made by plants from lots of sugar molecules. Starch must be broken down by your body, so the energy from starchy foods is released slowly. Plant roots and fruits, which often contain lots of starch, are eaten by many animals



BEANS



BROWN RICE



GREEN BANANAS



LENTILS



MUESLI CEREAL



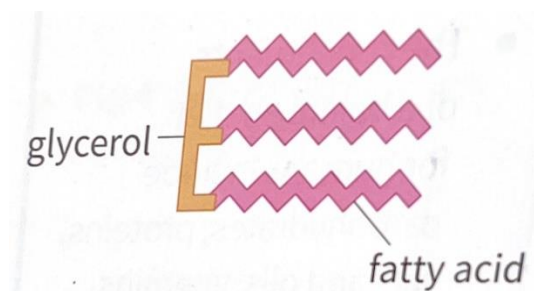
OATS



POTATOES

## Fats and oils

Fats and oils are energy-rich. **They contain much more energy per gram than carbohydrates.** Lipid molecules all have the same basic structure. Each fat or oil has a different set of fatty acids attached to the glycerol .



## How do we store energy?

Animals, including people, need energy all the time - but we do not eat all the time.

When we eat, we may take in more energy than we need. We can store energy for a time when we need energy but do not have food available.

### Human beings and other animals have two ways of storing energy:

- **Glycogen is a short-term carbohydrate energy store in our muscles and liver.** Like starch, glycogen is made up of lots of sugar molecules joined together. Glycogen is used in the body to give instant energy if the level of sugar in your blood gets low.
- **Fat is a long-term way of storing energy in the body.** If we eat more than we need, some of the excess food molecules are converted into fat and stored in special fat cells under the skin and around the organs of the body. If we do not get enough food, our body breaks down our fat stores to give the cells the energy they need.

### Questions :

1. State the main food types that animals consume for energy.

#### Carbohydrates and fat

2. Give one similarity and two differences between sugar and starch.

**Similarity : both are carbohydrates**

**Differences :**

**1. Starch is a big molecule**

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**Sugar is a small molecule .**

**2. Starch needs to be digested .**

**Sugar no need to digest it , it is absorbed directly .**

4. Explain why animals need energy stores in their bodies.

**Because they are not eating all the time so they need energy stores to release energy when not eating .**

6. Look at the following statements and use them to complete the table comparing the human storage molecules glycogen and fat.

- a. a short-term carbohydrate energy store
- b. broken down for energy over time if not enough food is eaten
- c. stored in special cells under the skin and around the body organs
- d. a long-term energy store
- e. used for quick, instant energy
- f. stored in our muscles and liver

Glycogen	Fat
a e , f	b c , d