

Review - Section 3A

1) What is petroleum?

Petroleum is a fossil fuel made of many different hydrocarbons. It is formed by dead plants that were covered up by dirt and then pressurized and heated over millions of years.

2) Where does petroleum come from?

Petroleum comes from underground reservoirs. Some of the sources are in large underground caves, while others are found in a rock called oil shale.

3) How is petroleum used?

Petroleum is refined and mostly used as fuels, and can be processed into plastics and other materials. Examples of fuels that come from petroleum include gasoline, kerosene, diesel fuel, jet fuel, candle wax.

4) Describe some disadvantages to producing and using petroleum products.

Producing petroleum products and using petroleum products end up producing pollutants and greenhouse gases, which affect the air quality and potentially the climate.

5) What are hydrocarbons?

Compounds that are made of hydrogen and carbon. The simplest form is an alkane, with single bonds connecting the carbon atoms.

6) Explain how distillation can be used to separate liquids from each other?

Distillation uses heat to separate liquids with different boiling points. If two liquids are mixed together, then you can heat the mixture to the first substance's boiling point. As it boils, you can send it down a condenser and turn it back into a liquid. Once you've collected all of the first distillate, you can up the temperature and get the next substance in the mixture to its boiling point and boil it. Repeat this process for as many substances in your mixture.

7) What is a carbon footprint?

A carbon footprint measures the amount of greenhouse gases produced by you due to the activities you do, the food you eat, the fuels you burn, etc. Anything that produces carbon dioxide.

8) How can you change your carbon footprint?

Eat less processed food, burn less fuel by combining trips or carpooling, heat/cool your home differently.

9) What is viscosity?

Viscosity is the friction that occurs as molecules of a liquid flow past one another. It is essentially how "sticky" a liquid is. The higher the viscosity, the slower the flow.

10) List 2 substances with low viscosities and 2 substances with high viscosities.

Water and vegetable oil have low viscosity. Motor oil and honey have high viscosity.

13) What is the formula for density?

$D = m/v$

14) What are intermolecular forces?

Intermolecular forces are the forces, or "glue", that holds liquids and solids together. The "glue" attracts one molecule to another molecule within a liquid or solid and holds them together.

15) How do intermolecular forces affect boiling points? Viscosity? Density?

The higher the intermolecular, the higher the boiling point, the higher the viscosity and the higher the density.

16) What are alkanes? What is the formula for alkanes?

Alkanes are carbon/hydrogen compounds connected by single bonds. The general formula for alkanes is C_nH_{2n+2}

17) List the prefixes for alkanes, from 1 carbon to 10 carbons.

1	meth-	6	hex-
2	eth-	7	hept-
3	prop-	8	oct-
4	but-	9	non-
5	pent-	10	dec-

18) What is the molecular formula for a 5-carbon alkane? 10-carbon alkane? 500-carbon alkane?

C_5H_{12} ; $C_{10}H_{22}$; $C_{500}H_{1002}$

19) How do the number of carbon atoms in a molecule affect the boiling point of that molecule?

The more carbon atoms in the alkane, the higher the boiling point

20) What are isomers? Draw some examples.

Isomers are two compounds that have the same molecular formula, but their structure, or the way they are put together, is different. Examples:

