Water Properties

Answer these questions.

1. What is a unique property of water?

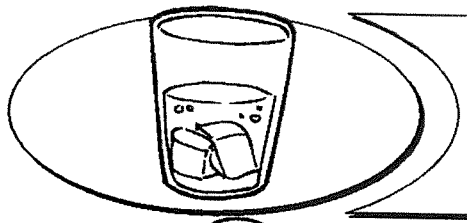
_____

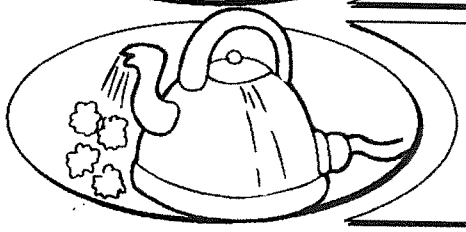
_____

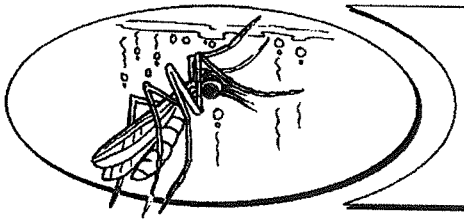
2. Use the text to help complete the missing words.

Water molecules are _____ apart in a _____ and gas and _____ together in a _____. This explains why you _____ put your finger into a glass of water or through a cloud of _____ but not through an iceblock!

3. The artist has drawn these pictures incorrectly! Explain what is wrong with each illustration and why it could not happen.







4. (a) Explain the term 'universal solvent'.

_____

_____

(b) Why is water being a 'universal solvent' important to our health?

_____

_____

5. Find an antonym in the text for these words.

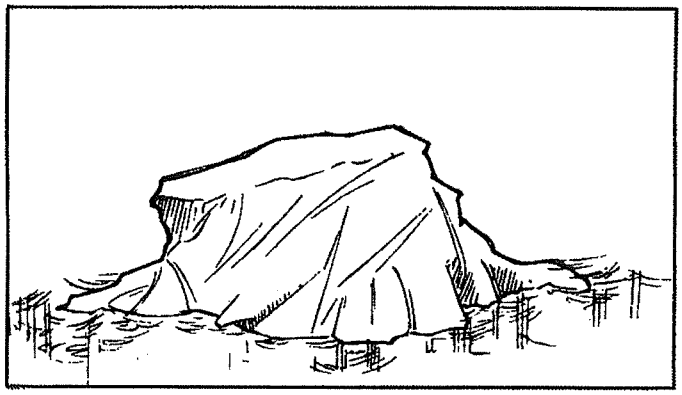
(a) intentionally	_____	(b) unusual	_____
(c) together	_____	(d) thinner	_____
(e) visible	_____	(f) coastal	_____
(g) unfamiliar	_____	(h) artificial	_____

States of Water

Can you think of three different states (or forms) of water? (It is the only naturally-occurring substance that exists in these three forms at normal temperatures.) They are, of course, a *liquid*, a *solid* and a *gas*. The tiny parts of water, or 'molecules', are closest together in a solid, further apart in a liquid and further apart again in a gas. That's why you can push your hand through a cloud of steam—but will break your fingers if you try the same thing with an iceberg!

Liquid

This is the form of water we are most familiar with, as rain, rivers, lakes, oceans or in the water we drink from the tap or wash our clothes in.



Solid

'Solid' water is ice! Water turns to ice when the temperature drops below freezing point, or 0°C. Most of the world's freshwater is in the form of ice—at the north and south poles. Have you ever accidentally frozen a can of cool drink, to find it swollen and ready to burst at the seams? That's because water actually expands as it changes into a solid. This means it is less dense than water. If it wasn't, all your iceblocks would sit at the bottom of your glass—and icebergs would sink!

Gas

Water vapour is the invisible gas formed when water is heated above a certain temperature. The steam from the spout of a boiling kettle is just one form of this water vapour (but one you can usually see as it condenses quickly). Water vapour rises into the air in the process called evaporation.

Interesting Properties

Universal solvent

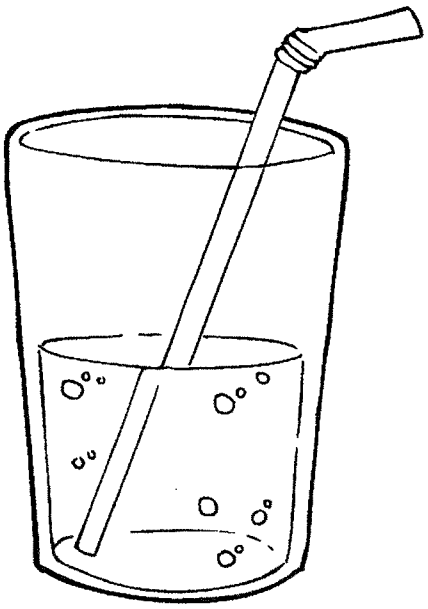
Water is called a 'universal solvent' because it is so good at dissolving so many different things. For example, ordinary seawater has been analysed and found to contain more than 80 separate, natural substances dissolved in it—including salt, carbon, iron and even gold! Water in your body contains many minerals and salts necessary for good health.

Hot or cold?

Water gains heat more slowly than the land, and gives up heat more slowly too. This is why places on the coast are generally cooler in summer and warmer in winter than those inland.

How dense!

Water is denser, or thicker, than air. In fact it is so thick it can bend light! What? You don't believe me? Half fill a glass with water. Now drop a straw in it so part of the straw is below the water and part above the surface. Look at the straw where it changes from air to water. What can you see?

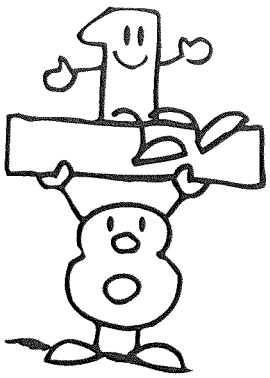


How tense!

Water has a high surface tension, which means it is difficult to break the surface 'skin' of water. This is why small insects can run across the water without breaking through the surface, or why you can float a needle on water. (Try it for yourself.)

Name _____

Ordering fractions



Estimate the order of each set of fractions, smallest to largest, by writing the letters from top to bottom.

Convert each fraction to one with the given common denominator.

Write the correct order. Compare with your estimated order.

1.

Estimated order					

A $\frac{2}{3} = \frac{\square}{24}$ B $\frac{3}{4} = \frac{\square}{24}$

C $\frac{1}{2} = \frac{\square}{24}$ D $\frac{5}{6} = \frac{\square}{24}$

E $\frac{3}{8} = \frac{\square}{24}$

Correct order					

2.

Estimated order					

A $\frac{3}{4} = \frac{\square}{20}$ B $\frac{1}{2} = \frac{\square}{20}$

C $\frac{1}{4} = \frac{\square}{20}$ D $\frac{4}{5} = \frac{\square}{20}$

E $\frac{7}{10} = \frac{\square}{20}$

Correct order					

3.

Estimated order					

A $\frac{3}{5} = \frac{\square}{30}$ B $\frac{5}{6} = \frac{\square}{30}$

C $\frac{1}{2} = \frac{\square}{30}$ D $\frac{2}{3} = \frac{\square}{30}$

E $\frac{11}{15} = \frac{\square}{30}$

Correct order					

4.

Estimated order					

A $\frac{2}{5} = \frac{\square}{100}$ B $\frac{7}{20} = \frac{\square}{100}$

C $\frac{3}{10} = \frac{\square}{100}$ D $\frac{1}{4} = \frac{\square}{100}$

E $\frac{8}{25} = \frac{\square}{100}$

Correct order					

Comparing fractions

For each pair, write equivalent fractions with the same denominator.

Write < or > between them.

1. $\frac{2}{3}$ $\frac{4}{6}$ > $\frac{1}{2}$ $\frac{3}{6}$

2. $\frac{1}{4}$ ○ $\frac{1}{3}$

3. $\frac{3}{5}$ ○ $\frac{1}{2}$

4. $\frac{3}{5}$ ○ $\frac{7}{10}$

5. $\frac{2}{3}$ ○ $\frac{4}{5}$

6. $\frac{1}{2}$ ○ $\frac{3}{4}$

7. $\frac{5}{6}$ ○ $\frac{3}{4}$

8. $\frac{3}{4}$ ○ $\frac{4}{5}$

9. $\frac{1}{3}$ ○ $\frac{5}{6}$

10. $\frac{5}{6}$ ○ $\frac{11}{12}$

11. $\frac{3}{4}$ ○ $\frac{5}{8}$

12. $\frac{5}{6}$ ○ $\frac{4}{9}$

Germany

1 Comprehension

(a) Why can many new buildings be seen in city centres? _____

_____

(b) What do you think would be the best thing and the worst thing about going to school in Germany?

_____

_____

(c) How many years ago did Germany become one nation again? _____

(d) Why are grapes grown successfully in the Rhine valley? _____

(e) Do you think that autobahns should have speed limits everywhere? Why/Why not?

_____

_____

2 Sentences

Choose the correct phrases to complete each sentence.


Frankfurters

(a) German foods, _____, apple strudel and pickled cabbage (sauerkraut) are famous _____.

(b) Germany's factories are among the world's leading producers _____ _____ used to make their expensive cars _____ or BMW.

(c) Many Germans travel _____ on Lufthansa, their national airline, which is based _____.

(d) Millions of classical music lovers still listen _____ of great German composers _____, Bach, Handel and Schubert.

to overseas countries
like Black Forest cake
around the world
of steel
to the music
in Frankfurt
like Porsche
like Beethoven

3 Retrieval Chart

Person	Birth	Birthplace	Interesting Fact
Johann Gutenberg			
Steffi Graf			
Ludwig van Beethoven			
Albert Einstein			
Karl Benz			
Jacob Grimm			

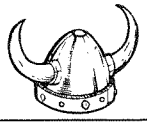
Did you know?
The inter-city express trains (known as 'ICE') introduced in the 1990s can travel at 250 km/h.

Did you know?
The Christmas tradition of Santa Claus bringing presents for children, and decorating trees with lights, began in Germany.

Germany

Population	*83.03 million (2001 est.)*
Capital	*Berlin*
Currency	*euro*
Official Language	*German*
Area	*357 000 km²*
Main religion	*Protestant/Roman Catholic*
Industries	*cars, steel, mining (coal, iron, potash, salt), wine*
Landmarks	*Black Forest, Brandenburg Gate, Rhine River*

The flag was adopted in 1949 and its official name is Bundesflagge (federal flag).



1 000 BC
Northern European tribes arrive in what is now Germany.

Germany is western Europe's richest country. Between 1949 and 1990, it was divided into East and West Germany, which were run as two very different countries – divided in some places by a wall!

Although half of Germany's land is used for crops or grazing animals, most farms are small so Germany has to import 30% of its food. Farmers grow cabbages, carrots, sugar beet, barley, hops and wheat, as well as grapes along the Rhine valley in the warmer south.

Many rural people live in wooden houses, but about 80% of the population live in cities or towns, often in huge apartment blocks. During World War II, some cities were partially destroyed, so many new buildings can be seen in the city centres. German cities attract thousands of workers from other European countries, so many are polluted and overcrowded. Trains, buses and modern trams are popular forms of transport, while more than 45 million cars use over 11 000 kilometres of highways called 'autobahns'. On some sections of the autobahns, there is no speed limit!

Most schools in Germany are state-run. They are coeducational, and students do not wear uniforms.

The primary school day is from 8.00 a.m. to 1.00 p.m., with only a short break. Once younger students have done their homework, their afternoons are free, but older students often return for special studies.

Germans enjoy camping or hiking in their forests or mountains, although many travel for their holidays. Germans enjoy travelling so much that there are more German tourists travelling abroad than from any other country. Germans are also keen sportspeople. They have produced world-class athletes and tennis champions.

The biggest Christian festival is 'Karneval' in February, which begins the fasting period of Lent. There are floats, parades, fireworks and special parades and parties for children. Many people wear grotesque masks, which were once worn to frighten away the rest of winter. A famous carnival is held in Cologne where over a million people watch floats and performers who dress up in comic uniforms or as caricatures of well-known politicians. Many festivals celebrate important events in farming communities, such as wine-harvests in grape-growing regions, and 'Oktoberfest', held each year in Munich.

700s
Most German peasant farmers become serfs.

1918
Allies defeat the Germans in World War I and the German Empire ends.

1945
Allies defeat Adolf Hitler's armies in World War II

1949
East and West Germany formed.

1950s
25% of workers are in agriculture, compared to 3% today.

1961
Berlin Wall built to prevent East Germans escaping to West Germany.

1990
Germany becomes one nation again.