Date **Understand buoyancy**

1) What is a force?

2) What influences whether an item will float or sink?

3) What does it mean for an object to have 'buoyancy'?

4) What is displacement?

5) What is upthrust?

6) What needs to happen in order for an object to float?

7) What is density?

8) What does it mean that water is denser than air?

9) What is relative density?

10) For an object to float, does it need to have a higher density or a lower density than the gas or the liquid that it is placed in?

11) What happens when the density of an object is equal density of the gas or liquid that it is placed in?

12) Why does an apple float in water, while a steel ball sinks?

13) How are large, steel ships able to float?

14) Why is helium used in balloons to make them rise in the air?

Extension

1) Why might adding salt to water make it easier for items to float in it?

2) A submarine has a ballast tank that it can fill with air or with water. What would a submarine do to sink? What would it do to rise closer to the surface?

3) Why does a helium balloon fall when it is burst?

Name: _____ Date: _____

Understand buoyancy

1) A force is _____

2) _____ influence whether an item will float or sink.

3) If an object has buoyancy, this means that _____

4) Displacement is _____

_____

5) Upthrust is _____

_____

6) In order for an object to float _____

_____

7) Density is _____

8) Water being denser than air means _____

_____

9) Relative density is _____

_____

10) For an object to float _____

_____

11) When the density of an object is equal to the density of the gas or liquid that it is placed in _____

12) An apple floats, while a steel ball sinks because _____

_____

13) Large, steel ships are able to float because _____

14) Helium is used in balloons because _____

Answers

1) A force is a push or a pull.

2) Forces influence whether an item will float or sink.

3) If an object has buoyancy, this means that it will float.

4) Displacement is when an object is placed into a liquid or a gas and pushes it aside.

5) Upthrust is the force that is generated when water or gas molecules are displaced by an object.

6) In order for an object to float, the upthrust needs to be equal to the weight of the object.

7) Density is a measure of the amount of matter (stuff) in an object relative to its size.

8) Water being denser than air means that matter is more tightly packed together in water than in air / that water is heavier than air.

9) Relative density is the density of one object compared to the density of the liquid or the gas that it is placed in.

10) For an object to float it needs to have a lower density than (or equal density to) the gas or liquid that it is placed in.

11) When the density of an object is equal to the density of the gas or liquid that it is placed in, the object will float.

15) An apple floats, while a steel ball sinks, because an apple is less dense than water, whereas a steel ball is denser than water.

12) Large, steel ships are able to float because they are hollow and contain air.

13) Helium is used in balloons because it is less dense than air.

Extension

1) Adding salt to water might make it easier for items to float in it because salt water is denser than fresh water.

2) To sink, a submarine would fill its ballast tanks with water; to float, a submarine would fill its ballast tanks with air.

3) A helium balloon falls when it bursts because the helium escapes and is replaced by air.