Forces

WORKSHEET 5.4

Name _____ **Date** _____

Unit _____ **Lesson** _____

1. Write True or False and correct the false statements.

a) Upthrust is a non-contact, push force which pushes objects in the air and water up.
b) Upthrust is the opposite of gravity, gravity pulls an object down and upthrust pushes it up.
c) The mass and weight of an object influences the amount of upthrust.
d) Archimedes, an Ancient Greek scientist, discovered upthrust in his bath over 2000 years ago.
e) Archimedes discovered that the water an object uses has an upwards force.

2. Write a 'X' on the examples that occur because of upthrust.

- ☐ we can swim
- ☐ a hot air balloon rises
- ☐ a footballer kicks the ball
- ☐ a parachute rises and slows the fall
- ☐ boats don't sink
- ☐ a bottle floats
- ☐ a ball is thrown into a basket
- ☐ a leaf falls to the ground
- ☐ a sponge changes shape
- ☐ fruit floats in punch

3. Draw, label then write.

a) Draw a diagram of an object that floats on water. Label with force arrows ↑= upthrust, ↓= weight (the more arrows the more force). Explain why it floats.

b) Draw a diagram of an object that sinks. Label with force arrows ↑= upthrust, ↓= weight (the more arrows the more force). Explain why it sinks.

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Answer key

1. Write True or False and correct the false statements.

a) Upthrust is a non-contact, push force which pushes objects in the air and water up.
Upthrust is a contact, push force which pushes objects in the air and water up.

b) Upthrust is the opposite of gravity, gravity pulls an object down and upthrust pushes it up. True

c) The mass and weight of an object influences the amount of upthrust. False.
The mass and volume of an object influences the amount of upthrust.

d) Archimedes, an Ancient Greek scientist, discovered upthrust in his bath over 2000 years ago. True.

e) Archimedes discovered that the water an object uses has an upwards force. False.
Archimedes discovered that the water an object displaces has an upwards force.

2. Write a 'X' on the examples that occur because of upthrust.

- [x] we can swim
- [x] a hot air balloon rises
- [ ] a footballer kicks the ball
- [x] a parachute rises and slows the fall
- [x] boats don't sink
- [x] a bottle floats
- [ ] a ball is thrown into a basket
- [ ] a leaf falls to the ground
- [ ] a sponge changes shape
- [x] fruit floats in punch

3. Draw, label then write.

a) Draw a diagram of an object that floats on water. Label with force arrows ↑= upthrust, ↓= weight (the more arrows the more force). Explain why it floats.

↓
object
↑

Balanced forces. The weight of the _____ is equal to the upthrust.

b) Draw a diagram of an object that sinks. Label with force arrows ↑= upthrust, ↓= weight (the more arrows the more force). Explain why it sinks.

↓↓
object
↑

Unbalanced forces. The weight of the _____ is greater than the upthrust.

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