Forces Practice

1 Write down three things a force can do to an object.

(a)

(b)

(c)

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2 Is each sentence always true (**AT**), sometimes true (**ST**) or false (**F**)?

Sentence	**AT / ST / F**
You can hear forces.	
You need a force to make something longer.	
You can see the effects of all forces.	
You need a force to change the direction of motion.	
You can feel forces.	
You need a force to stop something falling.	

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3 Match the forces in the table to the thing you see which tells you the force is there.

What you see		**Force**
A train stops at a station.		Rotating blades make a lift force.
A parachute slows a skydiver.		Foot provides a contact force called a normal reaction.
A football speeds up when kicked.		Water provides an upthrust force.
You stand on the floor.		Brakes provide a force.
A submarine rises to the surface.		Floor provides a support force called a normal reaction.
A helicopter is able to hover.		Drag force pushes upwards. (also called air resistance)

4 Do you need a force to do these things? How did you decide?

(a) Stop a moving car,

(b) Throw a basketball,

(c) Compress air for a tyre,

(d) Stretch a spring, making it longer

(e) Float on water,

(f) Hold a car still on a flat road,

(g) Drive a van up a hill at a steady speed,

(h) Hold a weight above your head.

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5 Fill in the table with the names and directions of the forces.
For the missing force names, choose from this list:

Drag, **Driving force**, **Friction**, **Lift**, **Normal reaction**, **Upthrust** and **Weight**.

For the directions choose from **upwards**, **downwards**, **forwards** (in the direction of motion) and **backwards** (against motion). Direction labels can be used more than once, once or not at all.

Example	**Name of force**	**Direction**
Force of gravity		
Force from engine		
Force which stops things slipping		
Force from wings		
Support force from the floor		
Floating force		
Force slowing a ball in flight		

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6 When drawing a force diagram,

(a) should force arrows point towards or away from the object?

(b) what does a long force arrow mean?

7 When drawing a force diagram,

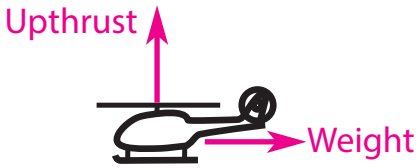
(a) must the diagram be to scale?

(b) can you draw a cat like this?

8 The diagram shows a hovering helicopter.

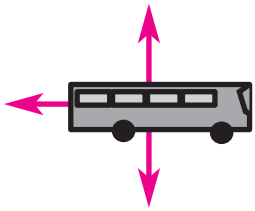
(a) What is wrong with this diagram?

(b) Make a better diagram

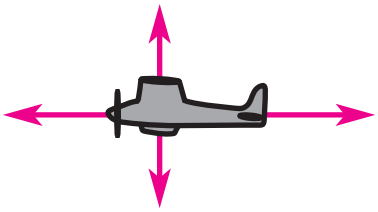


9 Label the forces on the diagrams.

(a) A bus stopping



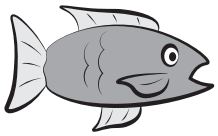
(b) An aeroplane flying



10 Draw force arrows on the objects. Use longer arrows for stronger forces.

(a) A basketball being thrown.

(b) A stationary fish in water.



11 Weight is a non-contact force. What does this mean?

12 Name two other non-contact forces.

(a)

(b)