Y7 Cycle 2 Science Scholar's Guide

Oxford Spires Academy

Full Name: _____
Tutor Group: _____
Science Class: _____
Science Teacher(s): _____

Science Y7

Cycle 2

The Knowledge Organisers contain all the knowledge you need to learn. Below is what you need to be able to do.

7.3 Forces and Motion	7.4 Reproduction
Illustrate a journey with changing speed on a distance-time graph, and label changes in motion. Describe how the speed of an object varies when measured by observers who are not moving, or moving relative to the object	Explain whether substances are passed from the mother to the foetus or not. Use a diagram to show stages in development of a foetus from the production of sex cells to birth. Describe causes of low fertility in male and female reproductive systems.
Draw a force diagram for a problem involving gravity. Deduce how gravity varies for different masses and distances. Compare your weight on Earth with your weight on different planets using the formula. weight (N) = mass (kg) x gravitational field strength (N/kg)	Identify key events on a diagram of the menstrual cycle
Describe factors which affect the size of frictional and drag forces.	Describe the main steps that take place when a plant reproduces successfully. Identify parts of the flower and link their structure to their function.
Describe how materials behave as they are stretched or squashed. Describe what happens to the length of a spring when the force on it changes.	Suggest how a plant carried out seed dispersal based on the features of its fruit or seed. Explain why seed dispersal is important to survival of the parent plant and its offspring.
Assessment & Reteach	Assessment & Reteach

7.3 Forces

Know

When the resultant force on an object is zero, it is in equilibrium

When an object is in equilibrium, it will not move, or it will keep moving at constant speed in a straight line.

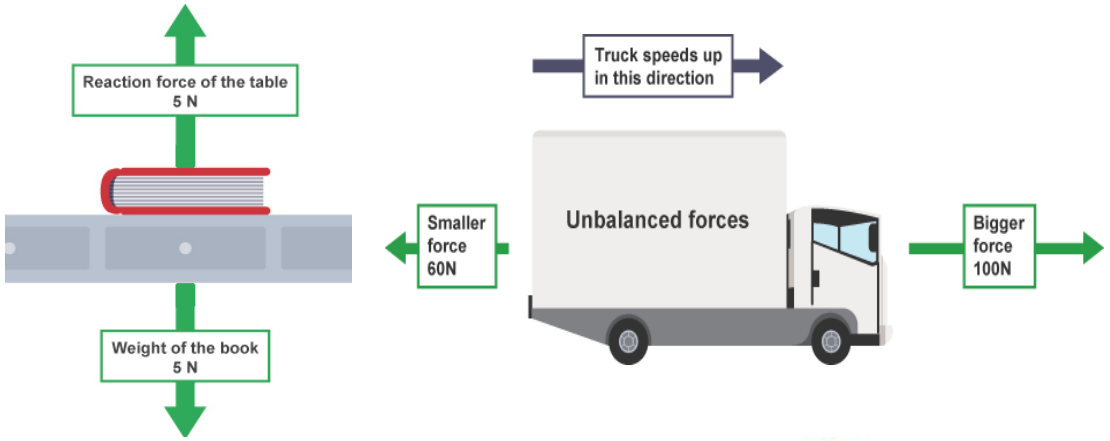
One effect of a force is to change an object's form, causing it to be stretched or compressed.

In some materials, the change in size is proportional to the force applied.

Mass and weight are different but related.

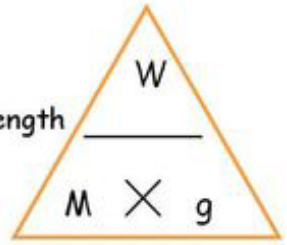
Mass is a property of the object.

Weight depends upon mass but also on gravitational field strength.



Weight = Mass x Gravitational Field Strength

(in N) (in kg) (in N/kg)



Facts

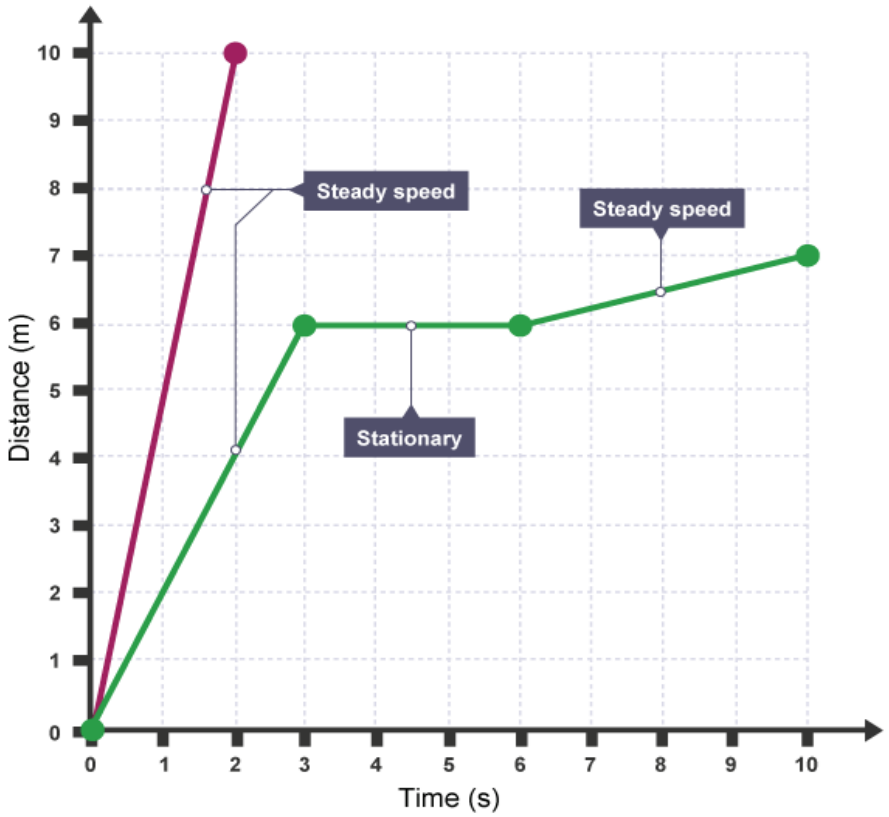
On Earth, g = 10 N/kg.

On the moon, g = 1.6 N/kg.

Key Word	Meaning
Weight	The force of gravity on an object (N).
Non-contact force	One that acts without direct contact.
Mass	The amount of stuff in an object (kg).
Gravitational field strength, g	The force from gravity on 1 kg (N/kg).
Equilibrium	State of an object when opposing forces are balanced.
Deformation	Changing shape due to a force.
Linear relationship	When two variables are graphed and show a straight line which goes through the origin, and they can be called directly proportional.
Newton	Unit for measuring forces (N).
Resultant force	Single force which can replace all the forces acting on an object and have the same effect.
Friction	Force opposing motion which is caused by the interaction of surfaces moving over one another. It is called 'drag' if one is a fluid.
Tension	Force extending or pulling apart.
Compression	Force squashing or pushing together.
Contact force	One that acts by direct contact

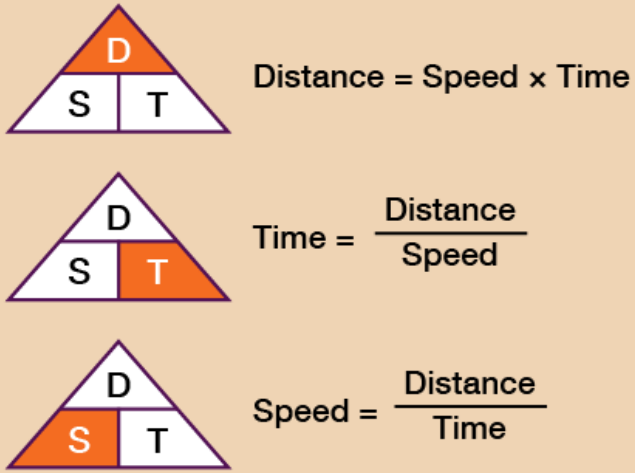
7.3 Motion

Know
If the overall, resultant force on an object is non-zero, its motion changes and it slows down, speeds up or changes direction.



Facts
A straight line on a distance-time graph shows constant speed, a curving line shows acceleration.
The higher the speed of an object, the shorter the time taken for a journey.

Key Word	Meaning
Speed	How much distance is covered in how much time.
Average speed	The overall distance travelled divided by overall time for a journey.
Relative motion	Different observers judge speeds differently if they are in motion too, so an object's speed is relative to the observer's speed.
Acceleration	How quickly speed increases or decreases.

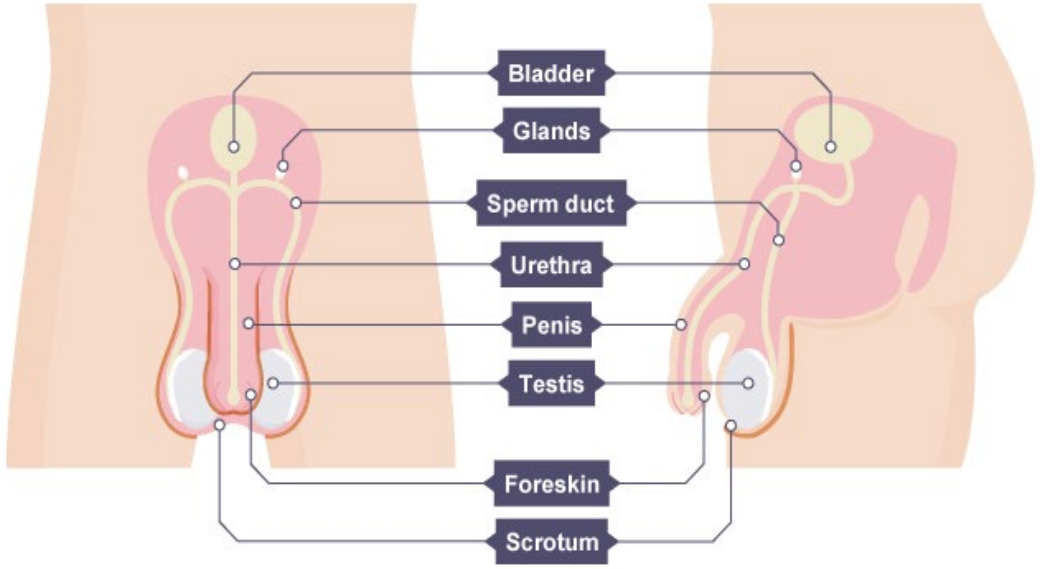


7.4 Human Reproduction 1

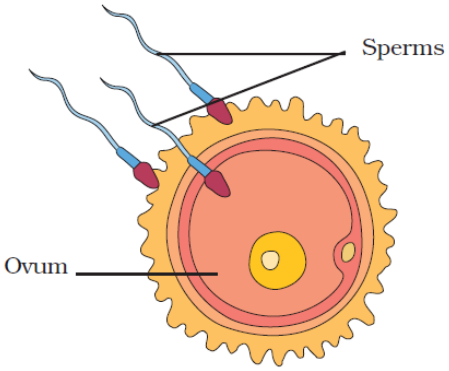
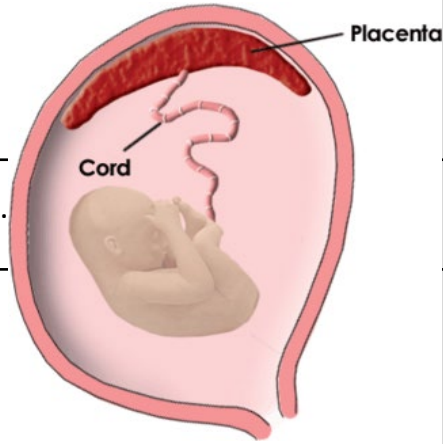
Know

The menstrual cycle prepares the female for pregnancy and stops if the egg is fertilised by a sperm. The developing foetus relies on the mother to provide it with oxygen and nutrients, to remove waste and protect it against harmful substances

Diagram for male reproductive organs



Testes	Organ where sperm are produced.
Penis	Organ which carries sperm out of the male's body

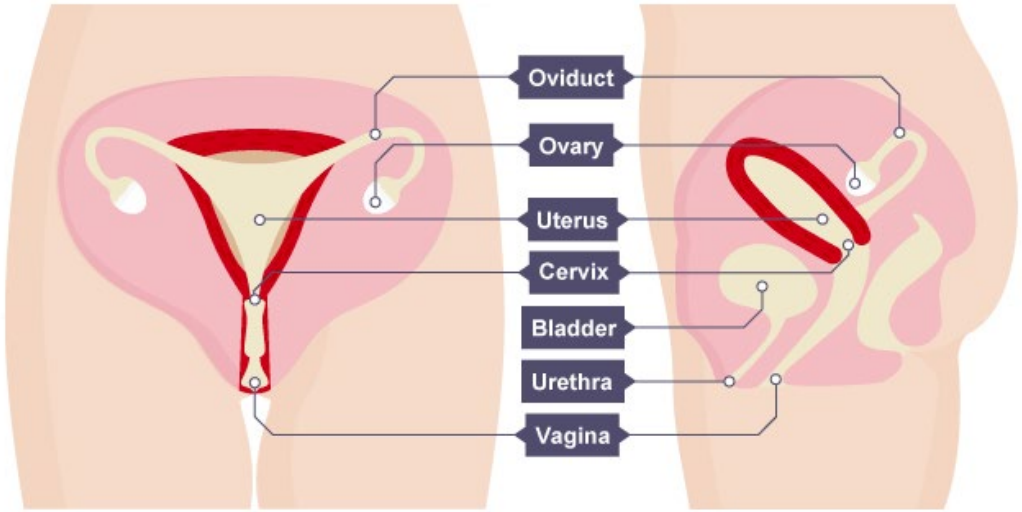
Key Word	Meaning
Gamete	The male gamete (sex cell) in animals is a sperm, the female an egg.
Fertilisation	Joining of a nucleus from a male and female sex cell. 
Foetus	The developing baby during pregnancy.
Gestation	Process where the baby develops during pregnancy
Placenta	Organ that provides the foetus with oxygen and nutrients and removes waste substances. 
Amniotic fluid	Liquid that surrounds and protects the foetus.
Umbilical cord	Connects the foetus to the placenta

7.4 Human Reproduction 2

Know

The menstrual cycle prepares the female for pregnancy and stops if the egg is fertilised by a sperm. The developing foetus relies on the mother to provide it with oxygen and nutrients, to remove waste and protect it against harmful substances

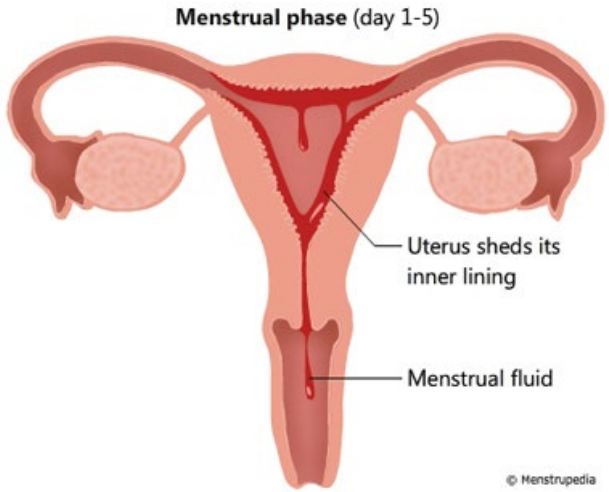
Diagram for Female reproductive organs



Fact

The menstrual cycle lasts approximately 28 days. If an egg is fertilised it settles into the uterus lining.

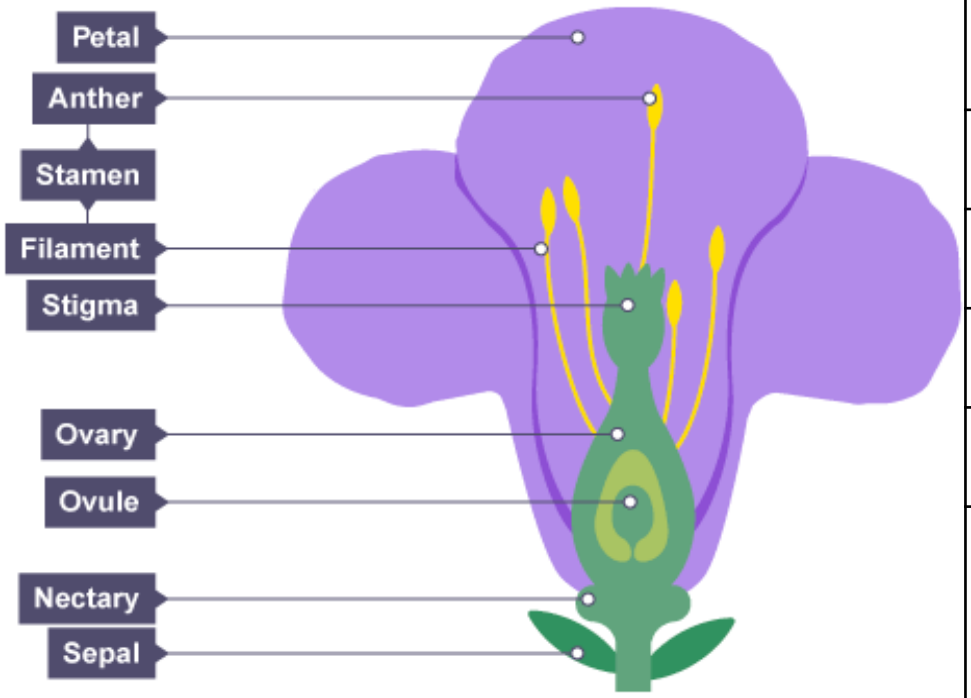
Key Word	Meaning
Gamete	The male gamete (sex cell) in animals is a sperm, the female an egg.
Fertilisation	Joining of a nucleus from a male and female sex cell.
Vagina	Where the penis enters the female's body and sperm is received
Ovary	Organ which contains eggs
Oviduct	or fallopian tube: Carries an egg from the ovary to the uterus and is where fertilisation occurs.
Uterus/womb	Where a baby develops in a pregnant woman
Ovulation	Release of an egg cell during the menstrual cycle, which may be met by a sperm.
Menstruation	Loss of the lining of the uterus during the menstrual cycle.



7.4 Plant Reproduction

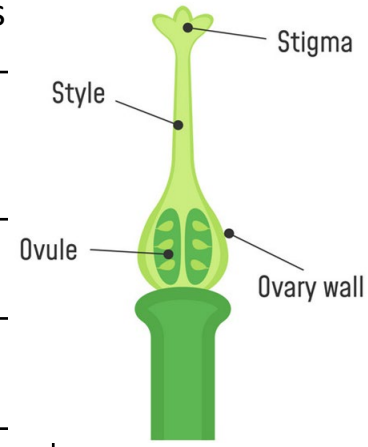
Know
Plants have adaptations to disperse seeds using wind, water or animals. Plants reproduce sexually to produce seeds, which are formed following fertilisation in the ovary.

Fact
Flowers contain the plant's reproductive organs.
Pollen can be carried by the wind, pollinating insects or other animals.



Key Word	Meaning
Pollen	Contains the plant male sex cells found on the stamens
Carpel	The female part of the flower, made up of the stigma where the pollen lands, style and ovary.
Ovules	Female sex cells in plants found in the ovary.
Seed	Structure that contains the embryo of a new plant
Fruit	Structure that the ovary becomes after fertilisation, which contains seeds.
Petals	Usually brightly coloured to attract insects
Sepals	Protect the unopened flower
Stamen	Male parts of the flower (anther with filament)
Anther	Produces pollen (male sex cells)
Pollination	Transfer of pollen from the male part of the flower to the female part of the flower on the same or another plant.
Fertilisation	Joining of a nucleus from a male and female sex cell.

Structure of carpel



Structure of stamen