

Y9 Science Exam 2017

Revision Tips and Checklists



- ✓ You will take 1 exam paper
- ✓ It will last for 90 minutes
- ✓ It has questions from Biology, Chemistry and Physics
- ✓ You will need a calculator
- ✓ In the exam you will get an equation sheet and a periodic table
(see back of booklet)
- ✓ You will need to **REVISE**



Biology Revision Checklist

I can explain why animals have specialised cells.	I can use use osmosis to explain the effect of placing plant tissue in salt or sugar solutions.
I can compare the structure of a specialised and general animal cell.	I can write a suitable plan to investigate into the effect of salt or sugar solutions on plant tissue.
I can write an explanation of how animal cells are adapted.	I can explain why active transport is important for living organisms.
I can compare the structure of a specialised and generalised plant cell.	I can explain the differences between diffusion, osmosis, and active transport.
I can draw a scientific drawing of a root hair cell observed using a light microscope.	I can describe the adaptations of specialised plant cells.
I can predict which way substances will move across a cell membrane.	I can state the differences between osmosis and diffusion.
I can explain why surface area affects the rate of diffusion.	I can use ideas about osmosis to explain why maintaining constant internal conditions in living organisms is important.

Chemistry Revision Checklist

I can describe the basic structure of an atom.	I can explain in detail, including diagrams, the difference between a pure element, mixture and compound.
I can name and give the chemical symbol of the first 20 elements in the periodic table.	I can explain why mass is conserved in a chemical reaction.
I can describe familiar chemical reactions with balanced symbol equations including state symbols.	I can balance given symbol equations.
I can explain the difference between a compound and a mixture.	I can explain how the chemical properties of a mixture relate to the chemical it is made from.
I can describe different separation techniques.	I can describe the process of fractional distillation.
I can explain the main processes occurring in paper chromatography.	I can describe the differences between the plum pudding and the nuclear model of the atom.
I can explain how evidence from scattering experiments changed the model of the atom.	I can describe atoms using the atomic model.
I can explain why atoms have no overall charge.	I can use atomic number and mass numbers of familiar atoms to determine the number of each subatomic particle.
I can describe isotopes using the atomic model.	I can use atomic number and mass numbers of familiar ions to determine the number of each subatomic particle.
I can explain why ions have a charge.	I can write the standard electronic configuration notation from a diagram for the first 20 elements.
I can explain why elements in the same group react in a similar way.	

Physics Revision Checklist

I can describe and name different energy forms and stores	I can analyse energy transfers to identify useful and less useful energy transfers.
I can describe changes in energy stores in terms of the process that causes the change.	I can investigate the factors that affect frictional forces.
I can use the law of conservation of energy in straightforward situations.	I can calculate the efficiency of a range of energy transfers.
I can describe changes in energy stores in terms of useful and wasted energy	I can use the law of conservation of energy to explain why efficiency can never be greater than 100%.
I can describe the action of frictional forces on objects and the associated heating effect.	I can describe the processes that waste energy in electrical devices.
I can use an equation for work done to calculate distances or size of forces.	I can rank electrical devices in terms of their power.
I can describe the effect of different gravitational field strength on the gravitational potential energy store changes of a system.	I can compare mains-powered and battery-powered devices.
I can calculate the gravitational potential energy store of a system using the mass, gravitational field strength, and height.	I can calculate the energy transferred by an electrical device.
I can describe energy changes that involve a heating effect as opposed to movement of an object.	I can calculate the efficiency of a device from power ratings.
I can calculate the kinetic energy store of an object.	I can find the wasted power of a device.
I can calculate the elastic potential energy store of a stretched spring.	I can state the relationship between the energy stored in a spring and the kinetic energy store of an object launched from it

Physics Equations to Revise

$\text{work done, } W \text{ (joules, J)} = \text{force applied, } F \text{ (newtons, N)} \times \text{distance moved along the line of action of the force, } s \text{ (metres, m)}$
$\text{change in object's gravitational potential energy store (joules, J)} = \text{weight (newtons, N)} \times \text{change of height (metres, m)}$
$\text{change of gravitational potential energy store, } \Delta E_p \text{ (joules, J)} = \text{mass, } m \text{ (kilograms, kg)} \times \text{gravitational field strength, } g \text{ (newtons per kilogram, N/kg)} \times \text{change of height, } \Delta h \text{ (metres, m)}$
$\text{kinetic energy, } E_k \text{ (joules, J)} = \frac{1}{2} \times \text{mass, } m \text{ (kilograms, kg)} \times \text{speed}^2, v^2 \text{ (metres per second, m/s)}^2$
$\text{elastic potential energy, } E_e \text{ (joules, J)} = \frac{1}{2} \times \text{spring constant, } k \text{ (newtons per metre, N/m)} \times \text{extension}^2, e^2 \text{ (metres, m)}^2$
$\text{efficiency} = \frac{\text{useful output energy transferred by the device (J)}}{\text{total input energy supplied to the device (J)}}$
$\text{efficiency} = \frac{\text{useful power out}}{\text{total power in}} (\times 100\%)$
$\text{power, } P \text{ (watts, W)} = \frac{\text{energy transferred to appliance, } E \text{ (joules, J)}}{\text{time take for energy to be transferred, } t \text{ (seconds, s)}}$

You will **not** get all these equations in the exam – see exam equations sheet at back of booklet.

General Revision Tips

Revision is key to making the most out of your science exams. As well as your exercise book and tips from your teacher, you can use a number of other methods for successful revision.

BBC Bitesize (www.bbc.co.uk/education)

This great website has now been updated for the new science GCSEs. Clear, detailed notes, quizzes, videos and mini-tests.

SAM Learning (www.samlearning.com)

Your teacher will have set you SAM learning tasks specifically for the exam. Use these to revise key concepts. You will need to log-on using the details in your planner.

Revision Guides

You can purchase revision guides from all good book shops or from online retailers. If you are thinking of buying one – make sure it covers the content for the exam board AQA and follows the Trilogy course.

Revision Apps

Revision apps such as Flashcardlet and Quizlet can be downloaded to smartphones and tablets. You can make revision flashcards and test yourself.

