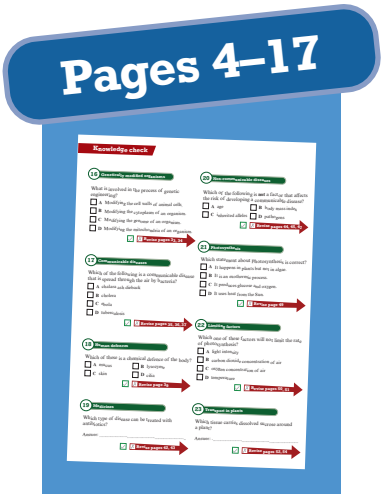
Get back on track

The COVID-19 pandemic has been disruptive for students of all ages around the world. And if you're preparing for your GCSEs then it's especially important that you catch up on any work you've missed. This pack is designed to help you revise and practise any topics you might need a reminder on, and stay on track for success in your Pearson Edexcel Combined Science GCSE course.

Time for a check-up

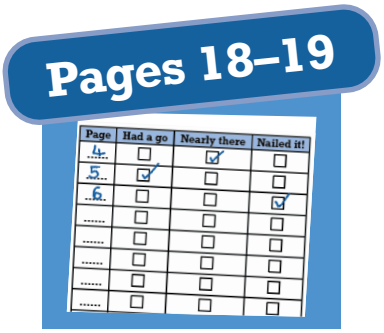
Take the **Knowledge check** diagnostic self-test to help you identify which topics and skills you need to recap. The questions in this test focus on key skills and core knowledge that you will need to know to succeed in the rest of your GCSE course, and in your exams.

You can mark your own work using the **answers** on the back cover (page 24) of this booklet. If you struggle with any of the questions, just add the Revision Guide page numbers for that question to your custom catch-up plan on page 18. Then you can revise and practise that topic and build your confidence.



Make a plan

Create your own custom **Catch-up plan** by entering the page numbers you need to revise in this table. You can use the tick boxes to track your progress, and there is space to add any extra notes from your teacher or tutor.

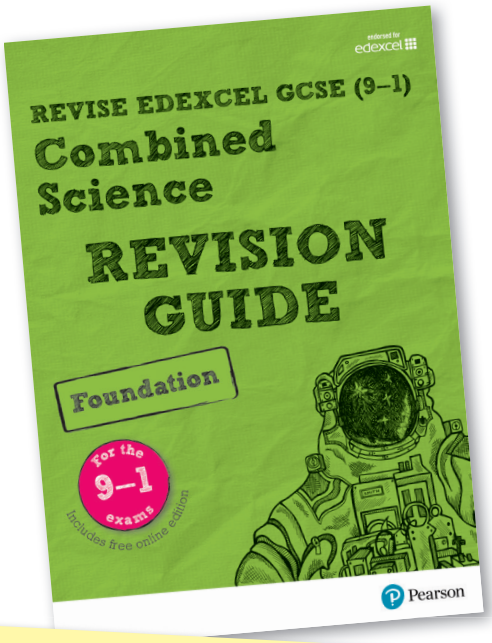


Stress-free studying

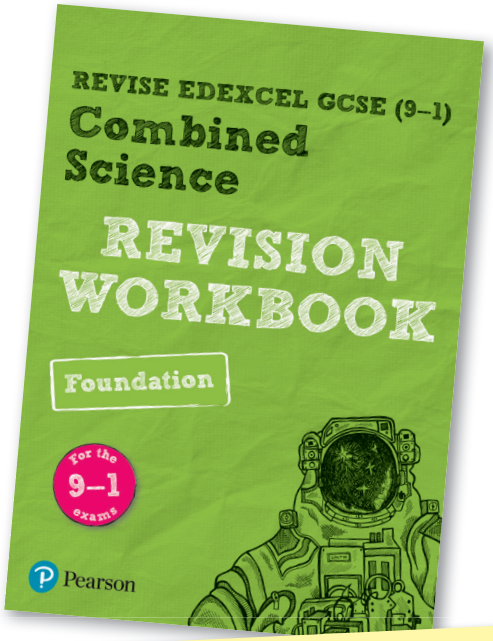
Here are a few top tips from our experts to stay healthy and sane when things get busy!

- Set yourself simple targets, like reviewing a couple of pages of the Revision Guide in a 20-minute study session.
- Phone a friend! If you're struggling with a topic, ask one of your friends if they've figured it out and can explain it to you.
- Find a quiet space at home or at school – use headphones if it helps you to concentrate.
- Put your phone on silent, and try not to get distracted by TV or the internet.
- Drink plenty of water, get plenty of sleep, take breaks and stay active!

Once you have identified your target topics and created your catch-up plan, it's time to break open the books and get revising. The Revision Guide and Revision Workbook in your pack have matching page numbers to help you find your way around quickly and easily.



Your **Revision Guide** is packed with essential facts, key skills and worked examples to help you stay ahead of the game. Each page covers a single topic so you can stay organised, and the book covers your **whole course**, so once you're back up to speed you will be able to use it alongside your school work, and to revise for your exams.



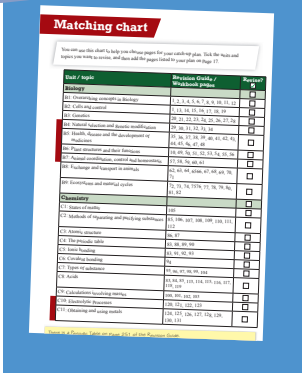
Check that you have nailed each topic by practising some exam-style questions on the corresponding page in the **Revision Workbook**. There are **guided questions** which give you part of the working, and hints and tips to help you get started. And when the exams are a bit closer, you can use the **exam-style practice papers** to check that you are exam-ready.

Find your catch-up topics

If you know which topics you want to revise, you can use the **Matching chart** to find the corresponding Revision Guide and Workbook pages. Your teacher or tutor might be able to tell you which topics you missed, or you might recognise them from the work you did at home during lockdown.

Tick the units or topics you want to revise, then add those page numbers to your catch-up plan on page 18.

Pages 20–21



Knowledge check

You can use the diagnostic self-test on the next 14 pages to help you create your own customised catch-up plan. Each question checks a different key skill or piece of core knowledge from your GCSE course. If you feel that you need more help with that topic or skill, add the page numbers shown in the arrows to your catch-up plan.

A bit at a time

There are a total of 110 questions in this knowledge check. Have a go at them in chunks. When you have done a batch of questions, check your answers on the back cover (page 24) of this booklet. Then take a break or come back and try some more in another study session!

Biology

1 Cells

Which structure is found in plant cells but not in animal cells?

- ☐ **A** cell membrane
- ☐ **B** nucleus
- ☐ **C** ribosome
- ☐ **D** vacuole

☑ ✗ Revise pages 1, 2

2 Microscopes

What is the magnification of a microscope when using a ×5 eyepiece and a ×40 objective?

- ☐ **A** ×8
- ☐ **B** ×20
- ☐ **C** ×100
- ☐ **D** ×200

☑ ✗ Revise pages 3, 5

3 Enzyme activity

Which part of an enzyme molecule is damaged by extremes of temperature or pH, preventing the enzyme from working properly?

Answer: .....

☑ ✗ Revise pages 7, 8

4 Transport

Which type of transport across cell membranes needs energy from respiration?

Answer: .....

☑ ✗ Revise pages 10, 11

5 Mitosis

In which part of the cell cycle does a new nuclear membrane form around each group of chromosomes?

- ☐ **A** anaphase
- ☐ **B** metaphase
- ☐ **C** prophase
- ☐ **D** telophase

☑ ✗ Revise page 13

6 Growth

The mass of a baby boy is at the 90th percentile. Which of the following statements is true?

- ☐ **A** 10% of baby boys are lighter than this baby.
- ☐ **B** 90% of baby boys are heavier than this baby.
- ☐ **C** 90% of baby boys are lighter than this baby.
- ☐ **D** 90% of baby boys are the same weight as this baby.

☑ ✗ Revise pages 14, 15

7 Neurones

Which part of a neurone insulates it from other neurones?

Answer: .....

Revise pages 17, 19

8 Reflex arcs

In which direction do nerve impulses travel through neurones in a reflex arc?

- A motor → relay → sensory
- B relay → sensory → motor
- C sensory → motor → relay
- D sensory → relay → motor

Revise page 18

9 Meiosis

In which cells does meiosis take place?

- A all body cells
- B embryonic stem cells
- C gametes
- D gamete-producing cells

Revise page 20

10 DNA

How many different bases does a DNA molecule have?

- A one
- B two
- C three
- D four

Revise page 21

11 Genetic terms

What word describes the entire DNA of an organism?

Answer: .....

Revise page 21

12 Inheritance

If R is the allele for red flowers and r is the allele for white flowers, what colour will the flowers be for a plant that is Rr?

Answer: .....

Revise pages 23, 24, 25

13 Evolution

What causes natural selection?

- A humans choosing which organisms to breed
- B evolution
- C variation in survival due to the environment
- D genetic variation between species

Revise pages 29, 30

14 Kingdoms and domains

What type of analysis led to the suggestion of a classification system based on three domains, rather than five kingdoms?

- A behavioural
- B genetic
- C microscopic
- D phenotypic

Revise page 31

15 Selective breeding

Which of the following is a feature of selective breeding of wheat?

- A wheat plants evolve into new species
- B desirable characteristics are inherited
- C genetic engineering occurs
- D new genes are introduced

Revise page 32

Knowledge check

16 Genetically modified organisms

What is involved in the process of genetic engineering?

- ☐ **A** Modifying the cell walls of animal cells.
- ☐ **B** Modifying the cytoplasm of an organism.
- ☐ **C** Modifying the genome of an organism.
- ☐ **D** Modifying the mitochondria of an organism.

☑ ✗ Revise pages 33, 34

17 Communicable diseases

Which of the following is a communicable disease that is spread through the air by bacteria?

- ☐ **A** chalara ash dieback
- ☐ **B** cholera
- ☐ **C** ebola
- ☐ **D** tuberculosis

☑ ✗ Revise pages 35, 36, 37

18 Human defences

Which of these is a chemical defence of the body?

- ☐ **A** mucus
- ☐ **B** lysozyme
- ☐ **C** skin
- ☐ **D** cilia

☑ ✗ Revise page 39

19 Medicines

Which type of disease can be treated with antibiotics?

Answer: .....

☑ ✗ Revise pages 42, 43

20 Non-communicable diseases

Which of the following is **not** a factor that affects the risk of developing a communicable disease?

- ☐ **A** age
- ☐ **B** body mass index
- ☐ **C** inherited alleles
- ☐ **D** pathogens

☑ ✗ Revise pages 44, 45, 47

21 Photosynthesis

Which statement about photosynthesis is correct?

- ☐ **A** It happens in plants but not in algae.
- ☐ **B** It is an exothermic process.
- ☐ **C** It produces glucose and oxygen.
- ☐ **D** It uses heat from the Sun.

☑ ✗ Revise page 49

22 Limiting factors

Which one of these factors will not limit the rate of photosynthesis?

- ☐ **A** light intensity
- ☐ **B** carbon dioxide concentration of air
- ☐ **C** oxygen concentration of air
- ☐ **D** temperature

☑ ✗ Revise pages 50, 51

23 Transport in plants

Which tissue carries dissolved sucrose around a plant?

Answer: .....

☑ ✗ Revise pages 52, 54

24 Transpiration

The loss of water vapour from plants is controlled by small structures on the surfaces of leaves. What are these structures called?

Answer: .....

Revise pages 52, 53

25 Hormones and glands

Where are the sex hormones LH and FSH produced?

- A ovaries
- B testes
- C pituitary
- D thyroid

Revise page 57

26 The menstrual cycle

What is the release of an egg from an ovary called?

- A fertilisation
- B menstruation
- C ovulation
- D regulation

Revise page 58

27 Blood glucose

Which gland produces the hormones which control blood glucose concentration?

- A pancreas
- B thyroid
- C adrenal
- D pituitary

Revise page 59

28 Causes of diabetes

Calculate the BMI of a person who is 2.0 m tall and weighs 80 kg.

Use the formula BMI = $\frac{\text{mass (kg)}}{(\text{height (m)})^2}$

Answer: .....

Revise pages 60, 61

29 Exchange surfaces

In humans, which structure has a large surface area for gas exchange between the air and blood?

Answer: .....

Revise pages 62, 63

30 The blood

Which blood component is a major component of the immune system?

- A plasma
- B platelets
- C red blood cells
- D white blood cells

Revise page 64

31 The circulatory system

Which chamber of the heart has the thickest muscular wall and pumps blood to most of the body?

- A left atrium
- B left ventricle
- C right atrium
- D right ventricle

Revise pages 65, 66

Knowledge check

32 Respiration

What is the product of anaerobic respiration in muscle cells?

Answer: .....

Revise pages 67, 68

33 Biotic and abiotic factors

Which one of the following is a biotic factor of the environment?

- A light sensitivity
- B competition
- C temperature
- D water availability

Revise pages 72, 73

34 Interdependence

Which type of dependent relationship benefits both species involved?

- A competition
- B mutualism
- C parasitism
- D predation

Revise page 74

35 Fieldwork techniques

A student uses a 1 m^2 quadrat to estimate the number of daisies in a 50 m^2 field. The mean number of daisies in a quadrat is 2. Estimate the total number of daisies in the field.

- A 25
- B 50
- C 100
- D 200

Revise pages 75, 76

36 Nutrient cycles

Which group of organisms causes decay of dead plants and animals?

- A pathogens
- B decomposers
- C parasites
- D animal vectors

Revise pages 79, 80, 81

Chemistry

1 Formulae and equations

Hydrogen and oxygen react to form water. What is the balanced equation for this reaction?

- A $2H + O \rightarrow H_2O$
- B $H_2 + O \rightarrow H_2O$
- C $H_2 + O_2 \rightarrow 2H_2O$
- D $2H_2 + O_2 \rightarrow 2H_2O$

Revise pages 83, 84

2 Subatomic particles

The relative mass of a proton is 1 and its relative charge is +1. Which of the following is correct?

- A The relative charge of a neutron is 0.
- B The relative charge of an electron is +1.
- C The relative mass of a neutron is 0.
- D The relative mass of an electron is –1.

Revise page 86

3 Atoms

The atomic number of an atom is 15 and its mass number is 32. Which row correctly shows the numbers of protons, neutrons and electrons in this atom?

	Protons	Neutrons	Electrons
☐ **A**	15	15	17
☐ **B**	17	15	17
☐ **C**	15	32	15
☐ **D**	15	17	15

☑ ✗ **Revise page 87**

4 The periodic table

An element is placed in group 2, period 3 of the periodic table. What is its electronic configuration?

☐ **A** 2.3 ☐ **B** 3.2

☐ **C** 2.8.3 ☐ **D** 2.8.2

☑ ✗ **Revise pages 89, 90**

5 Ions and formulae

The formula of calcium ion is Ca^{2+} and the formula of a hydroxide ion is OH^-. What is the formula of calcium hydroxide?

Answer: .....

☑ ✗ **Revise pages 91, 92**

6 Ionic compounds

When do ionic compounds conduct electricity?

☐ **A** in aqueous solution only

☐ **B** in the solid state only

☐ **C** in aqueous solution and when molten

☐ **D** in the solid state and when molten

☑ ✗ **Revise page 93**

7 Simple molecules

How many electrons are involved in one covalent bond?

Answer: .....

☑ ✗ **Revise pages 94, 95**

8 Carbon structures

Diamond, graphite and graphene are forms of carbon. Which feature do they have in common?

☐ **A** They are strong and flexible.

☐ **B** They contain delocalised electrons.

☐ **C** They contain many strong covalent bonds.

☐ **D** They have a layered structure.

☑ ✗ **Revise pages 96, 97**

9 Relative formula mass

What is the relative formula mass of sodium oxide, Na_2O?

(Relative atomic masses: O = 16, Na = 23)

Answer: .....

☑ ✗ **Revise page 100**

10 Empirical and molecular formulae

The molecular formula of a compound is $C_2H_4O_2$. What is the empirical formula of this compound?

Answer: .....

☑ ✗ **Revise page 101**

Knowledge check

11 Reacting masses

4 g of hydrogen reacts with oxygen to produce 36 g of water:

$2H_2 + O_2 \rightarrow 2H_2O$

What mass of oxygen is used in the reaction?

Answer: ..... g

Revise page 102

12 Solutions

A solution is made by dissolving 5.0 g of potassium hydroxide in 100 cm^3 of water. What is the concentration of the solution formed in g/dm^3?

- A 0.50
- B 20
- C 50
- D 200

Revise page 103

13 Particle theory

Which statement about the arrangement of particles in solids, liquids and gases is correct?

- A Particles are close together in liquids and gases.
- B Particles are close together in solids and liquids.
- C Particles are randomly arranged in solids and gases.
- D Particles are regularly arranged in solids and liquids.

Revise page 105

14 Distillation

During fractional distillation, is the fractionating column hottest at the bottom, or hottest at the top?

Answer: .....

Revise page 107

15 Separation methods

Which of the following is a method of preparing pure salt from a mixture of sand and salty water?

- A distillation then filtration
- B crystallisation then simple distillation
- C filtration then crystallisation
- D fractional distillation then crystallisation

Revise pages 107, 108

16 Investigating inks

During paper chromatography, the solvent travels 80 mm and a red spot travels 24 mm. Calculate the Rf value of the red spot.

Answer: .....

Revise pages 109, 110

17 Acids

Which ions are present in aqueous solutions of all acids?

- A Cl^-
- B H^+
- C Na^+
- D SO_4^{2-}

Revise page 113

18 Reactions of acids

Which of the following reacts with dilute sulfuric acid to form magnesium sulfate and hydrogen?

- A magnesium
- B magnesium carbonate
- C magnesium hydroxide
- D magnesium oxide

Revise pages 114, 115

19 Titrations

A tall piece of glassware with a tap at the bottom is used for titrations. What is its name?

Answer: .....

Revise pages 115, 117

20 Solubility rules

Which of the following is an insoluble salt?

- A ammonium nitrate
- B barium sulfate
- C potassium chloride
- D sodium carbonate

Revise page 118

21 Electrolysis

What is produced at the anode during the electrolysis of an aqueous solution of sodium sulfate?

- A hydrogen
- B oxygen
- C sodium
- D sulfur

Revise pages 120, 121

22 Metal reactivity

Four metals are arranged in order of decreasing reactivity from left to right: potassium, calcium, zinc, silver. Which atoms form cations most easily?

- A potassium atoms
- B calcium atoms
- C zinc atoms
- D silver atoms

Revise pages 124, 125, 126

23 Extracting metals

Which of the following statements about extracting iron and aluminium is correct?

- A Aluminium corrodes more easily than iron.
- B Aluminium is extracted by heating its oxide with carbon.
- C Iron is extracted from iron oxide by electrolysis.
- D Metals are extracted by reducing their oxides.

Revise pages 127, 128

24 Using and disposing of materials

What name is given to a 'cradle-to-grave' analysis of the impact of a product on the environment?

Answer: .....

Revise pages 129, 130

25 The Haber process

The Haber process makes ammonia. Which of the following statements about the Haber process is correct?

- A Iron is one of the reactants.
- B It happens at 450 °C.
- C It happens at 200 °C.
- D It happens at 450 atmospheres pressure.

Revise page 132

26 Groups 1 and 7

Which row correctly describes how reactivity changes going down groups 1 and 7?

	Group 1	Group 7
A	decreases	decreases
B	decreases	increases
C	increases	decreases
D	increases	increases

Revise pages 133, 134

Knowledge check

27 Reactions of group 7 elements

Hydrogen bromide dissolves in water to form a colourless solution. Is this solution acidic, or is it alkaline?

Answer: .....

Revise pages 135, 136

28 Group 0

What do the group 0 elements all have in common?

- ☐ **A** Their atoms have 8 electrons in their outer shells.
- ☐ **B** They are less dense than air.
- ☐ **C** They are flammable.
- ☐ **D** They have no tendency to transfer or share electrons.

Revise page 137

29 Reaction rates

What change increases the energy and frequency of collisions between reactant particles?

- ☐ **A** Increase in pressure.
- ☐ **B** Increase in surface area to volume ratio.
- ☐ **C** Increase in temperature.
- ☐ **D** Addition of a suitable catalyst.

Revise pages 139, 140

30 Catalysts

What effect does a catalyst have on the activation energy for a reaction?

Answer: .....

Revise pages 139, 143

31 Energy changes

Which of the following describes an exothermic change?

	Energy	Temperature
☐ **A**	given out	decreases
☐ **B**	given out	increases
☐ **C**	taken in	decreases
☐ **D**	taken in	increases

Revise page 142

32 Oil and its uses

Which of the following is a typical use of an oil fraction?

- ☐ **A** Bitumen for domestic heating.
- ☐ **B** Diesel oil for surfacing roads.
- ☐ **C** Kerosene as a fuel for some trains.
- ☐ **D** Fuel oil as a fuel for large ships.

Revise pages 144, 145

33 Hydrocarbons

Which of these formulae represents a hydrocarbon?

- ☐ **A** C_3H_8
- ☐ **B** CH_2Cl_2
- ☐ **C** C_2H_6O
- ☐ **D** $NaHCO_3$

Revise pages 147, 149

34 Combustion

Which two substances are produced during the incomplete combustion of a hydrocarbon, but are not produced during complete combustion?

- ☐ **A** carbon dioxide and carbon
- ☐ **B** carbon dioxide and water vapour
- ☐ **C** carbon monoxide and carbon
- ☐ **D** carbon monoxide and water vapour

Revise pages 146, 147

35 Fuels

Why is cracking carried out in oil refineries?

- ☐ **A** It balances the supply of fractions with demand.
- ☐ **B** It produces larger alkanes which are useful fuels.
- ☐ **C** It produces polymers to make alkenes.
- ☐ **D** It produces shorter alkanes which make polymers.

☑ ✗ Revise pages 149, 150

36 The Earth's atmosphere

Which of the following correctly describe changes to the atmosphere over time?

- ☐ **A** The amount of carbon dioxide increased when it dissolved in oceans.
- ☐ **B** Oceans formed when water vapour condensed.
- ☐ **C** The amount of nitrogen decreased.
- ☐ **D** The amount of oxygen decreased because of photosynthesis.

☑ ✗ Revise page 152

Physics

1 Significant figures

What is 435.06 written to 1 significant figure?

- ☐ **A** 400
- ☐ **B** 440
- ☐ **C** 435
- ☐ **D** 435.1

☑ ✗ Revise page 155

2 Standard form

Write 0.003 18 in standard form.

Answer: .....

☑ ✗ Revise page 155

3 Units

What is 76 A converted to mA?

- ☐ **A** 0.076 mA
- ☐ **B** 7.6 mA
- ☐ **C** 7600 mA
- ☐ **D** 76 000 mA

☑ ✗ Revise page 155

4 Speed and velocity

A cyclist travelled 0.9 km in 3 minutes. Which of the following statements must be correct?

- ☐ **A** The average speed was 3 m/s.
- ☐ **B** The average speed was 5 m/s.
- ☐ **C** The average velocity was 0 m/s.
- ☐ **D** The average velocity was 5 m/s.

☑ ✗ Revise pages 156, 157

5 Equations of motion

A coin is dropped down a 45 m well.
It accelerates in free fall from rest. Calculate the velocity of the coin when it hits the bottom of the well.

Use the equation $v^2 - u^2 = 2 \times a \times x$

Answer: ..... m/s

☑ ✗ Revise pages 158, 163

Knowledge check

6 Newton's first and second laws

The engine of a 2000 kg car provides a force in the forward direction of 2500 N. The drag on the car is 500 N in the backward direction. Calculate the acceleration of the car.

- ☐ **A** 0.25 m/s
- ☐ **B** 1 m/s^2
- ☐ **C** 1.25 m/s^2
- ☐ **D** 1.5 m/s^2

☑ ✗ Revise pages 161, 162

7 Newton's third law

Which one of the following is a feature of Newton's third law?

- ☐ **A** A book at rest on a table is an example of the third law.
- ☐ **B** Forces are balanced if they act in the same direction.
- ☐ **C** It applies to forces acting on different objects.
- ☐ **D** The forces involved must be non-contact forces.

☑ ✗ Revise page 165

8 Reaction times

Which equation is correct?

- ☐ **A** braking distance = thinking distance + stopping distance
- ☐ **B** stopping distance = thinking distance + braking distance
- ☐ **C** thinking distance = braking distance + stopping distance
- ☐ **D** stopping distance = braking distance – thinking distance

☑ ✗ Revise pages 166, 167

9 Energy transfers and efficiency

100 kJ is transferred by electricity to an electric motor, which transfers 45 kJ to move a lift to the next floor. Calculate the efficiency of this process.

- ☐ **A** 55%
- ☐ **B** 45%
- ☐ **C** 31%
- ☐ **D** 69%

☑ ✗ Revise pages 169, 170, 200

10 Energy resources

Which of the following is an example of a non-renewable energy resource?

- ☐ **A** bio-fuel
- ☐ **B** hydroelectricity
- ☐ **C** nuclear fuel
- ☐ **D** tidal power

☑ ✗ Revise pages 171, 172

11 Kinetic energy

A 5 kg bowling ball travels at 8 m/s. Calculate its kinetic energy in kJ.

Answer: ..... kJ

☑ ✗ Revise page 173

12 Types of wave

Which of the following gives two examples of transverse waves?

- ☐ **A** electromagnetic waves and seismic P waves
- ☐ **B** sound waves and electromagnetic waves
- ☐ **C** sound waves and seismic P waves
- ☐ **D** water surface waves and seismic S waves

☑ ✗ Revise page 175

13 Wave calculations

The frequency of some water waves is 0.2 Hz. Their wavelength is 7.5 m. Calculate the wave speed of these waves.

Answer: ..... m/s

☑ ✗ Revise pages 176, 177, 179

14 Refraction

What happens when waves pass from air into a transparent glass block at 45° to the normal?

- ☐ **A** They bend towards the normal as they leave the glass.
- ☐ **B** They bend towards the normal as they enter the glass.
- ☐ **C** They are all reflected back into the air.
- ☐ **D** They continue in the same direction.

☑ ✗ Revise pages 178, 182

15 Electromagnetic spectrum

Which of the following types of electromagnetic radiation has the lowest frequency?

- ☐ **A** gamma rays
- ☐ **B** microwaves
- ☐ **C** radio waves
- ☐ **D** X-rays

☑ ✗ Revise pages 181, 183

16 Using electromagnetic radiation

Which of the following types of electromagnetic radiation is used to disinfect water but can damage eyes and skin cells?

- ☐ **A** infrared
- ☐ **B** microwaves
- ☐ **C** ultraviolet
- ☐ **D** visible light

☑ ✗ Revise pages 183, 185

17 Subatomic particles

Which of the following particles both have a charge of +1?

- ☐ **A** electron and positron
- ☐ **B** neutron and proton
- ☐ **C** electron and proton
- ☐ **D** proton and positron

☑ ✗ Revise pages 186, 188, 189

18 Isotopes

Chlorine has two natural isotopes. Which row correctly compares the numbers of particles in the atoms of these two isotopes?

	Protons	Neutrons	Electrons
☐ **A**	same	different	same
☐ **B**	different	same	different
☐ **C**	same	same	different
☐ **D**	different	different	same

☑ ✗ Revise page 187

19 Types of radiation

Which of the following types of radiation does **not** consist of particles?

- ☐ **A** alpha
- ☐ **B** beta
- ☐ **C** gamma
- ☐ **D** neutron

☑ ✗ Revise page 189

20 Decay

This nuclear equation is incomplete:

$^{20}_{7}N \rightarrow {}^{20}_{8}O + ...$

Name the type of radiation that will complete and balance this equation.

Answer: .....

☑ ✗ Revise pages 193, 194

21 Half-life

The half-life of iodine-131 is 8 days. How long will it take for the activity of this isotope to decrease from 80 Bq to 5 Bq?

- ☐ **A** 16 days
- ☐ **B** 24 days
- ☐ **C** 32 days
- ☐ **D** 40 days

☑ ✗ Revise page 195

Knowledge check

22 Work

A constant force of 10 N moves a box 4 m across the floor. Calculate the work done on the box.

- ☐ **A** 40 J
- ☐ **B** 6 J
- ☐ **C** 2.5 J
- ☐ **D** 0.4 J

☑ ✗ **Revise page 199**

23 Energy and power

A kettle transfers 400 kJ of energy in 200 s. Calculate the power of this kettle.

Answer: ..... W

☑ ✗ **Revise page 199**

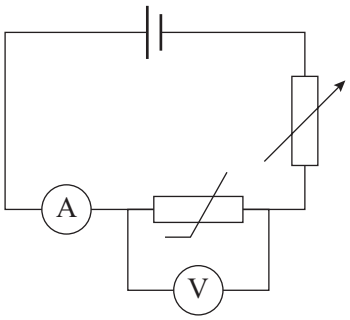
24 Forces

Which of the following is a contact force?

- ☐ **A** electrostatic
- ☐ **B** friction
- ☐ **C** gravitational
- ☐ **D** magnetic

☑ ✗ **Revise page 201**

25 Circuit symbols



What is the name of the component that is connected in parallel with the voltmeter in this circuit?

- ☐ **A** fixed resistor
- ☐ **B** variable resister
- ☐ **C** thermistor
- ☐ **D** diode

☑ ✗ **Revise pages 202, 203**

Answers to the Knowledge check are on the back cover (page 24) of this booklet

26 Current and potential difference

What would you connect to a circuit to find the resistance of a component?

- ☐ **A** An ammeter and a voltmeter in parallel with the component.
- ☐ **B** An ammeter and a voltmeter in series with the component.
- ☐ **C** An ammeter in parallel and a voltmeter in series with the component.
- ☐ **D** An ammeter in series and a voltmeter in parallel with the component.

☑ ✗ **Revise pages 203, 204, 207**

27 Energy and charge

Calculate the amount of energy is transferred when 2.0 C of charge flows through a potential difference of 6.0 V.

Answer: ..... J

☑ ✗ **Revise page 205**

28 Resistance

A current of 2 A flows through a 5 Ω resistor. Calculate the potential difference across the resistor.

- ☐ **A** 0.4 V
- ☐ **B** 2.5 V
- ☐ **C** 3 V
- ☐ **D** 10 V

☑ ✗ **Revise pages 206, 207**

29 Circuit components

Which statement about the resistance of LDRs and thermistors is correct?

- ☐ **A** It does not depend on the temperature of a thermistor.
- ☐ **B** It decreases in an LDR as the light intensity increases.
- ☐ **C** It increases in a thermistor as the temperature increases.
- ☐ **D** It increases in an LDR as the light intensity increases.

☑ ✗ **Revise pages 208, 209, 210**

30 Energy and power

Calculate the electrical power when a current of 0.5 A flows through a 10 Ω resistor.

- ☐ **A** 0.05 W
- ☐ **B** 2.5 W
- ☐ **C** 5 W
- ☐ **D** 50 W

☑ ✗ Revise page 212

31 Mains electricity

Which of the following correctly describes two features of the UK mains electricity supply?

- ☐ **A** It is a.c. at 230 Hz.
- ☐ **B** It is d.c. at 50 Hz.
- ☐ **C** It is supplied at 230 Hz and 50 V.
- ☐ **D** It is supplied at 50 Hz and 230 V.

☑ ✗ Revise pages 213, 214

32 Magnetism

Which statement about magnetic fields is correct?

- ☐ **A** They are circular around straight current-carrying wires.
- ☐ **B** They are represented by field lines going from S to N.
- ☐ **C** They are stronger outside a solenoid than inside.
- ☐ **D** They are uniform around bar magnets.

☑ ✗ Revise pages 216, 217

33 Transformers

A transformer has 10 turns in its primary coil and 50 turns in its secondary coil. The input voltage is 12 V. What is the output voltage?

Answer: V

☑ ✗ Revise page 219

34 States of matter

Name the process by which a solid changes directly into a gas.

Answer: .....

☑ ✗ Revise page 221

35 Density

A cube of steel weighs 7.85 kg. Its volume is 0.001 m^3. Calculate its density in kg/m^3.

Answer: ..... kg/m^3

☑ ✗ Revise pages 222, 223, 227

36 Energy and matter

The specific heat capacity of gold is 130 J/kg °C. Calculate the amount of energy needed to raise the temperature of a 100 g gold block by 5 °C. Use the equation $\Delta Q = m \times c \times \Delta\theta$

- ☐ **A** 65 J
- ☐ **B** 6.5 J
- ☐ **C** 65 kJ
- ☐ **D** 2600 J

☑ ✗ Revise pages 224, 225

37 Temperature scales

Convert 25 °C to Kelvin.

Answer: ..... K

☑ ✗ Revise page 226

38 Springs

The spring constant of a spring is 50 N/m. The spring is extended by 0.20 m. Calculate the force exerted on the spring.

- ☐ **A** 4×10^{-3} N
- ☐ **B** 1 N
- ☐ **C** 10 N
- ☐ **D** 250 N

☑ ✗ Revise pages 229, 230

My catch-up plan

Use this page to make your own customised catch-up plan. Write down all the pages that you plan to revise, then use the tick boxes to track your progress.

Page	Had a go	Nearly there	Nailed it!
......	☐	☐	☐
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Page	Had a go	Nearly there	Nailed it!
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Notes

Use this page to make any other catch-up notes you need. You could list topics that you know you need extra help with, or make a note of any facts or definitions you are struggling to remember. Or you could use it to record dates and times of catch-up sessions, extra tutorials or study periods.

Matching chart

You can use this chart to help you choose pages for your catch-up plan. Tick the units and topics you want to revise, and then add the pages listed to your plan on page 18.

Unit / topic	Revision Guide / Workbook pages	Revise? ☑
Biology		
B1: Overarching concepts in Biology	1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12	☐
B2: Cells and control	1, 13, 14, 15, 16, 17, 18, 19	☐
B3: Genetics	20, 21, 22, 23, 24, 25, 26, 27, 28	☐
B4: Natural selection and genetic modification	29, 30, 31, 32, 33, 34	☐
B5: Health, disease and the development of medicines	35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48	☐
B6: Plant structures and their functions	10, 49, 50, 51, 52, 53, 54, 55, 56	☐
B7: Animal coordination, control and homeostasis	57, 58, 59, 60, 61	☐
B8: Exchange and transport in animals	62, 63, 64, 6566, 67, 68, 69, 70, 71	☐
B9: Ecosystems and material cycles	72, 73, 74, 7576, 77, 78, 79, 80, 81, 82	☐
Chemistry		
C1: States of matter	105	☐
C2: Methods of separating and purifying substances	85, 106, 107, 108, 109, 110, 111, 112	☐
C3: Atomic structure	86, 87	☐
C4: The periodic table	83, 88, 89, 90	☐
C5: Ionic bonding	83, 91, 92, 93	☐
C6: Covalent bonding	94	☐
C7: Types of substance	95, 96, 97, 98, 99, 104	☐
C8: Acids	83, 84, 85, 113, 114, 115, 116, 117, 118, 119	☐
C9: Calculations involving masses	100, 101, 102, 103	☐
C10: Electrolytic processes	120, 121, 122, 123	☐
C11: Obtaining and using metals	124, 125, 126, 127, 128, 129, 130, 131	☐

There is a Periodic Table on page 251 of the Revision Guide.

If your school follows the Pearson Edexcel scheme of work, have a look at the topics with a red stripe next to them. You might have missed some of these topics between spring half term and the summer holiday. You can also check with your teacher to find out exactly which topics you should have covered during lockdown.

Unit / topic	Revision Guide / Workbook pages	Revise? ☑
Chemistry (continued)		
C12: Reversible reactions and equilibria	132	☐
C13: Groups in the periodic table	84, 133, 134, 135, 136, 137, 138	☐
C14: Rates of reaction	139, 140, 141	☐
C15: Heat changes in chemical reactions	142, 143	☐
C16: Fuels	144, 145, 146, 147, 148, 149, 150, 151	☐
C17: Earth and atmospheric science	152, 153, 154	☐
Physics		
P1: Motion	156, 157, 158, 159, 160	☐
P2: Forces and motion	161, 162, 163, 164, 165, 166, 167, 168	☐
P3: Conservation of energy	169, 170, 171, 172, 173, 174	☐
P4: Waves	175, 176, 177, 178, 179, 180	☐
P5: Light and the electromagnetic spectrum	181, 182, 183, 184, 185	☐
P6: Radioactivity	186, 187, 188, 189, 190, 191, 192, 193, 194, 195, 196, 197, 198	☐
P7: Energy – forces doing work	170, 199, 200	☐
P8: Forces and their effects	170, 201	☐
P9: Electricity and circuits	202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212, 213, 214, 215	☐
P10: Magnetism and the motor effect	216, 217, 218	☐
P11: Electromagnetic induction	219, 220	☐
P12: Particle model	221, 222, 223, 224, 225, 226, 227	☐
P13: Forces and matter	228, 229, 230, 231	☐

Knowledge and application of Specification points 1.1, 1.2, 1.3 and 1.4 (Key concepts of physics) are covered in the Revision Guide on page 155 but are applied throughout the Revision Guide.

There is a Combined Science Equations List on page 252 of the Revision Guide.

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Knowledge check answers

Biology

1 D
2 D
3 active site
4 active transport
5 D
6 C
7 myelin sheath
8 D
9 D
10 D
11 genome
12 red
13 C
14 B
15 B
16 C
17 D
18 B
19 bacterial
20 D
21 C
22 C
23 phloem
24 stomata / stoma / guard cell
25 C
26 C
27 A
28 20
29 alveolus / alveoli
30 D
31 B
32 lactic acid
33 B
34 B
35 C
36 B

Chemistry

1 D
2 A
3 D
4 D
5 $Ca(OH)_2$
6 C
7 Two / 2
8 C
9 62
10 CH_2O
11 32 g
12 C
13 B
14 at the bottom
15 C
16 0.3
17 B
18 A
19 burette
20 B
21 B
22 A
23 D
24 life-cycle assessment / LCA
25 B
26 C
27 acidic
28 D
29 C
30 reduces / decreases / lowers it
31 B
32 D
33 A
34 C
35 A
36 B

Physics

1 A
2 3.18×10^{-3}
3 D
4 B
5 30 m/s
6 B
7 C
8 B
9 B
10 C
11 160 kJ
12 D
13 1.5 m/s
14 D
15 C
16 C
17 D
18 A
19 C
20 Beta minus / β–
21 C
22 A
23 2 kW / 2000 W
24 B
25 C
26 D
27 12 J
28 D
29 B
30 B
31 D
32 A
33 60 V
34 sublimation
35 7850 kg/m^3
36 A
37 298 K
38 C

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