# 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.

Pages 4–17
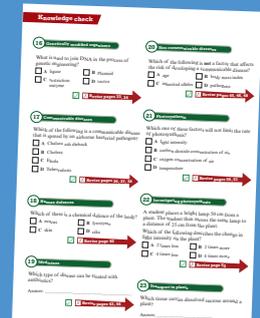
Make a plan

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.

Pages 18–19

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.
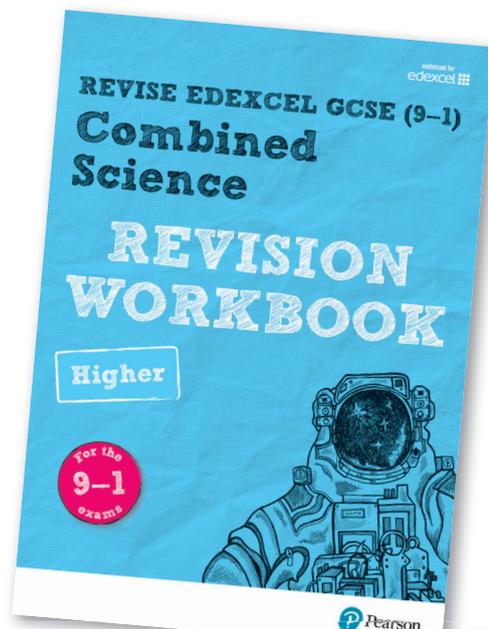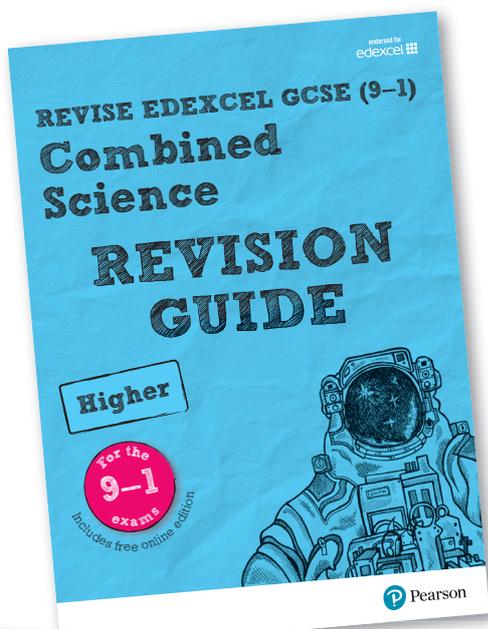
Your **Revision Guide** is packed with essential facts, key skills and worked examples to help you stay ahead of the game. Each page covers a single topic so you can stay organised, and the book covers your **whole course**, so once you're back up to speed you will be able to use it alongside your school 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 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 and animal cells, but not in bacterial cells?

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

☑ ☒ Revise pages 1, 2 →

2 Dealing with numbers

Write 2 µm in metres. Give your answer in standard form.

- ☐ **A** 2×10^{-2} m
- ☐ **B** 2×10^{-3} m
- ☐ **C** 2×10^{-6} m
- ☐ **D** 2×10^{-9} m

☑ ☒ Revise page 4 →

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

A piece of potato is placed in a solution with a higher solute concentration than the cytoplasm in its cells. Does its mass increase, decrease, or stay the same?

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 page 17**

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**

What links the two strands in a molecule of DNA?

- [ ] **A** bonds between sugars on each strand
- [ ] **B** bonds between phosphates on each strand
- [ ] **C** bonds between bases on each strand
- [ ] **D** no bonds, the strands just coil together

☑ ☒ **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**

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**

16 Genetically modified organisms

What is used to join DNA in the process of genetic engineering?

- ☐ **A** ligase
- ☐ **B** plasmid
- ☐ **C** restriction enzyme
- ☐ **D** vector

☑ ☒ **Revise pages 33, 34** ➤

17 Communicable diseases

Which of the following is a communicable disease that is spread by an airborne bacterial pathogen?

- ☐ **A** Chalara ash dieback
- ☐ **B** Cholera
- ☐ **C** Ebola
- ☐ **D** Tuberculosis

☑ ☒ **Revise pages 36, 37, 38** ➤

18 Human defences

Which of these is a chemical defence of the body?

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

☑ ☒ **Revise page 40** ➤

19 Medicines

Which type of disease can be treated with antibiotics?

Answer: ....

☑ ☒ **Revise pages 43, 44** ➤

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 45, 46, 48** ➤

21 Photosynthesis

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** ➤

22 Investigating photosynthesis

A student places a bright lamp 50 cm from a plant. The student then moves the same lamp to a distance of 25 cm from the plant.

Which of the following describes the change in light intensity on the plant?

- ☐ **A** 2 times less
- ☐ **B** 2 times more
- ☐ **C** 4 times less
- ☐ **D** 4 times more

☑ ☒ **Revise page 52** ➤

23 Transport in plants

Which tissue carries dissolved sucrose around a plant?

Answer: ....

☑ ☒ **Revise pages 53, 55** ➤

24 Stomata

Which of the following correctly describes the function of stomata?

- [ ] **A** Guard cells gain or lose water by diffusion.
- [ ] **B** Guard cells gain water and the stomata close.
- [ ] **C** Guard cells lose water and the stomata open.
- [ ] **D** Guard cells gain water and the stomata open.

☑ ☒ **Revise pages 54, 56**

25 Hormones and glands

Where are the sex hormones LH and FSH produced?

- [ ] **A** ovaries
- [ ] **B** testes
- [ ] **C** pituitary
- [ ] **D** thyroid

☑ ☒ **Revise page 58**

26 Negative feedback

Which of the following correctly describes a process in the regulation of thyroxine levels?

- [ ] **A** Low levels of thyroxine simulate TRH production.
- [ ] **B** Normal levels of thyroxine stimulate the release of TRH.
- [ ] **C** TSH acts on the pituitary to release thyroxine.
- [ ] **D** TSH is released from the hypothalamus when TRH levels rise.

☑ ☒ **Revise page 59**

27 Blood glucose

Which gland produces the hormones which control blood glucose concentration?

- [ ] **A** pancreas
- [ ] **B** thyroid
- [ ] **C** adrenal
- [ ] **D** pituitary

☑ ☒ **Revise page 63**

28 Causes of diabetes

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

Answer: ……………………

☑ ☒ **Revise page 64**

29 Exchange surfaces

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

Answer: ....

☑ ☒ **Revise pages 66, 67**

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 68**

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 69, 70**

32 Respiration

What is the product of anaerobic respiration in muscle cells?

Answer: ....

☑ ☒ **Revise pages 71, 72**

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 76, 77**

34 Interdependence

Which type of dependent relationship benefits both partner species?

Answer: ....

✓ ✗ **Revise pages 77, 78**

35 Fieldwork techniques

A student uses a 0.25 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.

Answer: ....

✓ ✗ **Revise pages 79, 80**

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 83, 84, 85**

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 87, 88**

2 Ionic equations

Silver nitrate solution reacts with sodium iodide solution to form a precipitate of silver iodide and sodium nitrate solution. What is the ionic equation for this reaction?

- [ ] **A** $AgNO_3(aq) + NaI(aq) \rightarrow AgI(s) + NaNO_3(aq)$
- [ ] **B** $Ag^+(aq) + NaI(aq) \rightarrow AgI(s) + Na^+(aq)$
- [ ] **C** $Ag^+(aq) + I^-(aq) \rightarrow AgI(s)$
- [ ] **D** $Na^+(aq) + NO3^-(aq) \rightarrow NaNO_3(aq)$

✓ ✗ **Revise page 89**

3 Atoms

In a sample of bromine, 50% of the atoms are ^{79}Br and 50% are ^{81}Br. What is the relative atomic mass of bromine in this sample?

Answer: ....

✓ ✗ **Revise pages 91, 92**

4 The periodic table

An element is placed in group 5, period 3 of the periodic table. What is its electronic configuration?

- [ ] **A** 3.5
- [ ] **B** 5.3
- [ ] **C** 2.8.5
- [ ] **D** 2.3.5

✓ ✗ **Revise pages 94, 95**

5 Ions and formulae

The formula of an ammonium ion is NH_4^+ and the formula of a sulfate ion is SO_4^{2-}. What is the formula of ammonium sulfate?

Answer: ....

✓ ✗ **Revise pages 96, 97**

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 98** ➤

7 Simple molecules

How many electrons are involved in one covalent bond?

Answer: ……………………

☑ ☒ **Revise pages 99, 100** ➤

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 101, 102** ➤

9 Relative formula mass

What is the relative formula mass of calcium phosphate, $Ca_3(PO_4)_2$?

(Relative atomic masses: O = 16, Ca = 40, P = 31)

Answer: ……………………

☑ ☒ **Revise page 105** ➤

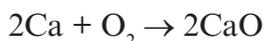**10 Empirical and molecular formulae**

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

Answer: ……………………

☑ ☒ **Revise page 106** ➤

11 Reacting masses

80 g of calcium reacts with excess oxygen to produce calcium oxide:

$$2Ca + O_2 \rightarrow 2CaO$$

Calculate the mass of calcium oxide which forms.

(Relative atomic masses: O = 16, Ca = 40)

Answer: …………………… g

☑ ☒ **Revise pages 107, 108** ➤

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 109** ➤

13 Mole calculations

How many atoms are there in 0.5 mol of nitrogen gas, N_2? (Avogadro's constant = 6.02×10^{23})

☐ **A** 3.01×10^{23} ☐ **B** 6.02×10^{23}

☐ **C** 1.204×10^{24} ☐ **D** 2.408×10^{24}

☑ ☒ **Revise page 110** ➤

14 Substances and states

Which of the following statements about pure water is **not** correct?

☐ **A** Energy is transferred to water molecules during boiling.

☐ **B** It melts over a range of temperatures.

☐ **C** It only contains water molecules.

☐ **D** Water particles are regularly arranged in the liquid state.

☑ ☒ **Revise pages 112, 113** ➤

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 114, 115**

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 116, 117**

17 Acids

The concentration of an aqueous solution of an acid is decreased by a factor of 100. What is the change in pH of the solution?

- [ ] **A** decrease by 1
- [ ] **B** decrease by 2
- [ ] **C** increase by 1
- [ ] **D** increase by 2

☑ ☒ **Revise pages 120, 121**

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 122, 123**

19 Titrations

A student obtained the following titres during a titration: 24.10 cm³, 24.05 cm³, 24.30 cm³, 24.15 cm³. Calculate the mean of the concordant titres.

Answer: ....

☑ ☒ **Revise pages 123, 125**

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 126**

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 128, 129**

22 Metal reactivity

When iron is added to copper sulfate solution, copper coats the iron. Which one of the following statements about this reaction is correct?

- [ ] **A** Copper is more reactive than iron.
- [ ] **B** Iron forms anions more readily than copper.
- [ ] **C** The oxidation reaction is: $Fe^{2+} + 2e^- \rightarrow Fe$
- [ ] **D** The reduction reaction is: $Cu^{2+} + 2e^- \rightarrow Cu$

☑ ☒ **Revise pages 132, 133, 134**

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 135, 136**

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 138, 139**

25 **Equilibria**

Sulfur dioxide reacts with oxygen to produce sulfur trioxide: $2O_2(g) + O_2(g) \rightleftharpoons 2SO_3(g)$

The forward reaction is exothermic. How can the yield of sulfur trioxide be increased?

☐ **A** add a suitable catalyst

☐ **B** reduce the oxygen concentration

☐ **C** increase the pressure

☐ **D** increase the temperature

✓ ✗ **Revise pages 141, 142**

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 143, 144**

27 **Displacement reactions**

Chlorine displaces bromine from aqueous potassium bromide. The half equations for this reaction are:

$Cl_2(aq) + 2e^- \rightarrow 2Cl^-(aq)$ and

$2Br^-(aq) \rightarrow Br_2(aq) + 2e^-$
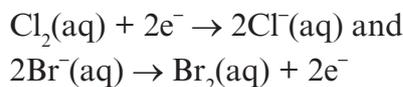
Which species is oxidised?

☐ **A** Cl_2 ☐ **B** Cl^-

☐ **C** Br^- ☐ **D** Br_2

✓ ✗ **Revise pages 145, 146**

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 147**

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 149, 150**

30 **Catalysts**

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

Answer: ....

✓ ✗ **Revise pages 149, 153**

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 152**

32 Calculating energy changes

Hydrogen reacts with chlorine to form hydrogen chloride:

$H–H + Cl–Cl \rightarrow 2(H–Cl)$

Calculate the energy change in this reaction.

(Bond energies in kJ mol^{-1}: H–H = 436, Cl–Cl = 243, H–Cl = 432)

☐ A -185 kJ mol^{-1} ☐ B $+185$ kJ mol^{-1}

☐ C -247 kJ mol^{-1} ☐ D $+247$ kJ mol^{-1}

☑ ☒ **Revise page 154**

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 158, 160**

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 157, 158**

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 160, 161**

36 The Earth's atmosphere

Which of the following correctly describes 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 163**

Physics

1 Significant figures

What is 135.06 written to 2 significant figures?

☐ **A** 130 ☐ **B** 135

☐ **C** 135.1 ☐ **D** 140

☑ ☒ **Revise page 166**

2 Standard form

Write 0.00318 in standard form.

Answer: ……………………

☑ ☒ **Revise page 166**

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 166**

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 167, 168**

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 169, 174**

6 Newton's laws

The engine of a 2000 kg car provides a forward thrust of 2.5 kN. The drag on the car is 0.5 kN. 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 172, 173**

7 Momentum

A 5 kg object is travelling at a velocity of 15 m/s. It is acted upon by a single constant force, which causes it to come to rest in 3 seconds. Calculate the size of the force.

Use the equation $F = \dfrac{(mv - mu)}{t}$

Answer: …………………… N

☑ ☒ **Revise pages 177, 178**

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 179, 180**

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. Which of the following statements about this process is correct?

☐ **A** Efficiency is greatly increased by insulating the lift.

☐ **B** The efficiency of the process is 45%.

☐ **C** The efficiency of the process is 55%.

☐ **D** The motor transfers energy to the lift by electricity.

✓ ✗ **Revise pages 182, 183**

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 184, 185**

11 Kinetic energy

A bus with a mass of 7000 kg travels at 10 m/s. Calculate its kinetic energy in kJ.

Answer: .... kJ

✓ ✗ **Revise page 186**

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 188**

13 Wave calculations

Some water waves travel at 1.5 m/s. Their frequency is 0.2 Hz. Calculate their wavelength.

Answer: .... m

✓ ✗ **Revise pages 189, 190, 192**

14 Refraction

What happens when waves pass from air into water at an angle other than the normal?

☐ **A** Their direction changes but not their speed.

☐ **B** Their speed and direction both change.

☐ **C** Their speed and direction do not change.

☐ **D** Their speed changes but not their direction.

✓ ✗ **Revise pages 191, 195**

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 194, 197**

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 196, 197**

17 Changes in atoms and nuclei

When an electron in an atom emits electromagnetic radiation, does it move into a higher energy level or into a lower energy level?

Answer: ....

☑ ☒ **Revise pages 198, 202, 206**

18 Subatomic particles

Which of the following particles has a charge of +1 and a relative mass of $\frac{1}{1840}$?

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

☑ ☒ **Revise pages 200, 203**

19 Atoms

The symbol for a certain atomic nucleus is $^{32}_{15}P$. What does this information tell you?

☐ **A** The nucleus contains 17 neutrons.
☐ **B** The nucleus contains 32 protons.
☐ **C** The atomic number is 32.
☐ **D** The nucleon number is 15.

☑ ☒ **Revise page 201**

20 Types of radiation

Which of the following types of radiation consists of particles and is the most ionising?

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

☑ ☒ **Revise page 203**

21 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 207, 208**

22 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 209**

23 Work, energy and power

A constant force of 10 N moves a box a distance of 4 m across the floor in 5 s. Calculate the power transferred.

☐ **A** 0.5 W ☐ **B** 12.5 W
☐ **C** 2 W ☐ **D** 8 W

☑ ☒ **Revise page 213**

24 Forces
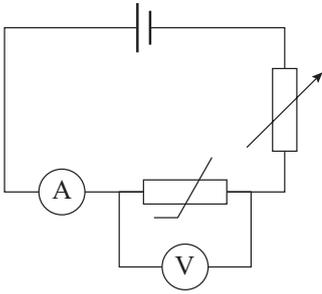
A 5 N force and a 12 N force act at right angles to each other. Calculate the size of the resultant force.

Answer: .... N

☑ ☒ **Revise pages 216, 217**

25 Circuit symbols

Name the two components that are connected in parallel in this circuit.

- ☐ **A** resistor and voltmeter
- ☐ **B** variable resister and ammeter
- ☐ **C** thermistor and voltmeter
- ☐ **D** variable resistor and filament lamp

☑ ☒ **Revise pages 219, 223** ➤

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 220, 221, 224** ➤

27 Energy and charge

Calculate the amount of energy transferred when 0.25 C of charge flows through a potential difference of 6.0 V.

Answer: .... J

☑ ☒ **Revise page 222** ➤

28 Resistance

A current of 0.4 A flows when a potential difference of 4.0 V is applied across two identical resistors connected in parallel. Calculate the resistance of each resistor.

- ☐ **A** 0.1 Ω
- ☐ **B** 0.2 Ω
- ☐ **C** 10 Ω
- ☐ **D** 5 Ω

☑ ☒ **Revise pages 223, 224** ➤

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 225, 226, 227** ➤

30 Energy and power

A 2.3 kW electric kettle is plugged into the mains electricity supply and works at its maximum power. Which of the following statements about this kettle is correct?

- ☐ **A** The resistance of the kettle is 23 Ω.
- ☐ **B** The resistance of the kettle is 230 kΩ.
- ☐ **C** A current of 0.01 A flows.
- ☐ **D** A current of 3.2 A flows.

☑ ☒ **Revise pages 228, 229** ➤

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 230, 231

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 233, 234

33 **Forces on current-carrying wires**

A wire of length 25 cm carries a current of 4.0 A and lies in a magnetic field of strength 1.0 mT. Calculate the force on the wire.

Use the equation $F = B \times I \times L$.

Answer: ………………… N

Revise page 237

34 **Transformers**

A transformer has 10 turns in its primary coil. Which statement about this transformer is correct?

- **A** It is a step-down transformer.
- **B** Its output current is halved if the input voltage is doubled.
- **C** Its output is increased by using d.c. instead of a.c.
- **D** Its output voltage is 10 V if its input voltage is 1 V.

Revise pages 237, 238

35 **Density**

A 7.85 kg cube of steel has side length 10 cm. Calculate its density in kg/m^3.

Answer: ………………… kg/m^3

Revise pages 241, 242, 246

36 **Temperature scales**

Convert 25 °C to Kelvin.

Answer: ………………… K

Revise page 245

37 **Energy and matter**

The specific heat capacity of gold is 130 J/kg °C and its specific latent heat of fusion is 63 000 J/kg. Which of the following statements about 100 g of gold is correct?

Use the equations $\Delta Q = m \times c \times \Delta\theta$ and $Q = m \times L$.

- **A** 26 J is needed to double its temperature.
- **B** 130 J is needed to increase its temperature from 20 °C to 40 °C.
- **C** 6300 J is needed to melt the gold.
- **D** 6300 J is needed to boil the gold.

Revise pages 243, 244

38 **Springs**

The spring constant of a spring is 50 N/m. The spring is extended by 0.20 m.

Which of the following is correct?

- **A** Work done on the spring = 0.5 × energy transferred
- **B** Force exerted on the spring = 2 N
- **C** Energy transferred = 0.5 × 50 × (0.20)^2 = 1 J
- **D** Force exerted on the spring = 250 N

Revise pages 248, 249

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, 35	☐
B5: Health, disease and the development of medicines	36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49	☐
B6: Plant structures and their functions	50, 51, 52, 53, 54, 55, 56, 57	☐
B7: Animal coordination, control and homeostasis	58, 59, 60, 61, 62, 63, 64, 65	☐
B8: Exchange and transport in animals	66, 67, 68, 69, 70, 71, 72, 73, 74, 75	☐
B9: Ecosystems and material cycles	76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86	☐
Chemistry		
C1: States of matter	112	☐
C2: Methods of separating and purifying substances	90, 113, 114, 115, 116, 117, 118, 119	☐
C3: Atomic structure	91, 92	☐
C4: The periodic table	87, 93, 94, 95	☐
C5: Ionic bonding	87, 96, 97, 98	☐
C6: Covalent bonding	99	☐
C7: Types of substance	100, 101, 102, 103, 104, 111	☐
C8: Acids	87, 88, 89, 90, 120, 121, 122, 123, 124, 125, 126, 127	☐
C9: Calculations involving masses	105, 106, 107, 108, 109, 110	☐
C10: Electrolytic processes	128, 129, 130, 131	☐
C11: Obtaining and using metals	132, 133, 134, 135, 136, 137, 138, 139, 140	☐

There is a Periodic Table on page 268 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	141, 142	☐
C13: Groups in the periodic table	88, 89, 143, 144, 145, 146, 147, 148	☐
C14: Rates of reaction	149, 150, 151	☐
C15: Heat changes in chemical reactions	152, 153, 154	☐
C16: Fuels	155, 156, 157, 158, 159, 160, 161, 162	☐
C17: Earth and atmospheric science	163, 164, 165	☐
Physics		
P1: Motion	167, 168, 169, 170, 171	☐
P2: Forces and motion	172, 173, 174, 175, 176, 177, 178, 179, 180, 181	☐
P3: Conservation of energy	182, 183, 184, 185, 186, 187, 214	☐
P4: Waves	188, 189, 190, 191, 192, 193	☐
P5: Light and the electromagnetic spectrum	194, 195, 196, 197, 198, 199	☐
P6: Radioactivity	200, 201, 202, 203, 204, 205, 206, 207, 208, 209, 210, 211, 212	☐
P7: Energy – forces doing work	183, 213, 214	☐
P8: Forces and their effects	183, 215, 216, 217, 218	☐
P9: Electricity and circuits	219, 220, 221, 222, 223, 224, 225, 226, 227, 228, 229, 230, 231, 232	☐
P10: Magnetism and the motor effect	233, 234, 235, 236	☐
P11: Electromagnetic induction	237, 238, 239	☐
P12: Particle model	240, 241, 242, 243, 244, 245, 246	☐
P13: Forces and matter	247, 248, 249, 250	☐

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 166 but are applied throughout the Revision Guide.

There is a Combined Science Equations list on page 269 of the Revision Guide.

Notes from the publisher
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Knowledge check answers

Biology

1	B	**10**	C	**19**	bacterial	**28**	20
2	C	**11**	genome	**20**	D	**29**	alveolus / alveoli
3	active site	**12**	red	**21**	C	**30**	D
4	decrease	**13**	C	**22**	D	**31**	B
5	D	**14**	B	**23**	phloem	**32**	lactic acid
6	C	**15**	B	**24**	D	**33**	B
7	myelin sheath	**16**	A	**25**	C	**34**	mutualism
8	D	**17**	D	**26**	A	**35**	400
9	D	**18**	B	**27**	A	**36**	B

Chemistry

1	D	**11**	112 g	**21**	B	**29**	C
2	C	**12**	C	**22**	D	**30**	reduces / decreases / lowers it
3	80	**13**	B	**23**	D		
4	C	**14**	B	**24**	life-cycle assessment / LCA	**31**	B
5	$(NH_4)_2SO_4$	**15**	C			**32**	A
6	C	**16**	0.3	**25**	C	**33**	A
7	Two / 2	**17**	D	**26**	C	**34**	C
8	C	**18**	A	**27**	C	**35**	A
9	310	**19**	24.10 cm^3	**28**	D	**36**	B
10	CH_2O	**20**	B				

Physics

1	D	**11**	350 kJ	**21**	Beta minus / β–	**31**	D
2	3.18×10^{-3}	**12**	D	**22**	C	**32**	A
3	D	**13**	7.5 m	**23**	D	**33**	0.001 N or 1×10^{-3} N
4	B	**14**	B	**24**	13 N		
5	30 m/s / 29.7 m/s	**15**	C	**25**	C	**34**	B
6	B	**16**	C	**26**	D	**35**	7850 kg/m^3
7	25 N	**17**	lower	**27**	1.5 J	**36**	298 K
8	B	**18**	C	**28**	D	**37**	C
9	B	**19**	A	**29**	B	**38**	C
10	C	**20**	A	**30**	A		