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.

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.
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

Answer: A

2 Dealing with numbers

Write 2 μm in metres. Give your answer in standard form.
- A $2 \times 10^{-2}$ m
- B $2 \times 10^{-3}$ m
- C $2 \times 10^{-4}$ m
- D $2 \times 10^{-9}$ m

Answer: A

3 Enzyme activity

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

Answer: ............................................................................

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: ............................................................................

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

Answer: ............................................................................

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.

Answer: .............................................................................
7 Neurones
Which part of a neurone insulates it from other neurones?
Answer: .................................................................

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

9 Meiosis
In which cells does meiosis take place?
A all body cells
B embryonic stem cells
C gametes
D gamete-producing cells

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

11 Genetic terms
What word describes the entire DNA of an organism?
Answer: .................................................................

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: .................................................................

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

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

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
Knowledge check

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.

25 Hormones and glands

Where are the sex hormones LH and FSH produced?

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

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.

27 Blood glucose

Which gland produces the hormones which control blood glucose concentration?

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

28 Causes of diabetes

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

Answer: ………………………

29 Exchange surfaces

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

Answer: ……………………………………………………………

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

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

32 Respiration

What is the product of anaerobic respiration in muscle cells?

Answer: ……………………………………………………………
Knowledge check

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

Answer:.................................

34 Interdependence

Which type of dependent relationship benefits both partner species?

Answer: .........................................................

35 Fieldwork techniques

A student uses a 0.25 m² quadrat to estimate the number of daisies in a 50 m² field. The mean number of daisies in a quadrat is 2. Estimate the total number of daisies in the field.

Answer: .................................

36 Nutrient cycles

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

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

Answer: .........................................................

Chemistry

1 Formulae and equations

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

- A 2H + O → H₂O
- B H₂ + O → H₂O
- C H₂ + O₂ → 2H₂O
- D 2H₂ + O₂ → 2H₂O

Answer: .................................

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 AgNO₃(aq) + NaI(aq) → AgI(s) + NaNO₃(aq)
- B Ag⁺(aq) + NaI(aq) → AgI(s) + Na⁺(aq)
- C Ag⁺(aq) + I⁻(aq) → AgI(s)
- D Na⁺(aq) + NO₃⁻(aq) → NaNO₃(aq)

Answer: .................................

3 Atoms

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

Answer: .................................

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

Answer: .................................

5 Ions and formulae

The formula of an ammonium ion is NH₄⁺ and the formula of a sulfate ion is SO₄²⁻. What is the formula of ammonium sulfate?

Answer: .................................
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

7 Simple molecules

How many electrons are involved in one covalent bond?

Answer: 

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.

9 Relative formula mass

What is the relative formula mass of calcium phosphate, Ca₃(PO₄)₂?
(Relative atomic masses: O = 16, Ca = 40, P = 31)

Answer: 

10 Empirical and molecular formulae

The molecular formula of a compound is C₆H₄O₇. What is the empirical formula of this compound?

Answer: 

11 Reacting masses

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

\[ 2\text{Ca} + \text{O}_2 \rightarrow 2\text{CaO} \]

Calculate the mass of calcium oxide which forms.
(Relative atomic masses: O = 16, Ca = 40)

Answer: 

12 Solutions

A solution is made by dissolving 5.0 g of potassium hydroxide in 100 cm³ of water. What is the concentration of the solution formed in g/dm³?
- A 0.50
- B 20
- C 50
- D 200

13 Mole calculations

How many atoms are there in 0.5 mol of nitrogen gas, N₂? (Avogadro’s constant = 6.02 × 10²³)
- A 3.01 × 10²³
- B 6.02 × 10²³
- C 1.204 × 10²⁴
- D 2.408 × 10²⁴

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.
Knowledge check

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

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: ……………………

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

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

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.

20 Solubility rules
Which of the following is an insoluble salt?
- A ammonium nitrate
- B barium sulfate
- C potassium chloride
- D sodium carbonate

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

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: Fe²⁺ + 2e⁻ → Fe
- D The reduction reaction is: Cu²⁺ + 2e⁻ → Cu
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.

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: ....................................................................

25 Equilibria

Sulfur dioxide reacts with oxygen to produce sulfur trioxide: \(2\text{O}_2(g) + \text{O}_2(g) \rightleftharpoons 2\text{SO}_3(g)\)
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

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

27 Displacement reactions

Chlorine displaces bromine from aqueous potassium bromide. The half equations for this reaction are:
\[\text{Cl}_2(aq) + 2\text{e}^- \rightarrow 2\text{Cl}^-(aq)\]
\[2\text{Br}^-(aq) \rightarrow \text{Br}_2(aq) + 2\text{e}^-\]

Which species is oxidised?
- A  \(\text{Cl}_2\)
- B  \(\text{Cl}^-\)
- C  \(\text{Br}^-\)
- D  \(\text{Br}_2\)

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.

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.

30 Catalysts

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

Answer: .....................................................................
Knowledge check

31 Energy changes
Which of the following describes an exothermic change?

- Energy
  - A: given out decreases
  - B: given out increases
  - C: taken in decreases
  - D: taken in increases

32 Calculating energy changes
Hydrogen reacts with chlorine to form hydrogen chloride:

\[ \text{H–H} + \text{Cl–Cl} \rightarrow 2(\text{H–Cl}) \]

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\(^{-1}\)

33 Hydrocarbons
Which of these formulae represents a hydrocarbon?

- A: C\(_3\)H\(_8\)
- B: CH\(_2\)Cl
- C: C\(_2\)H\(_6\)O
- D: NaHCO\(_3\)

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

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.

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.
**Physics**

1. **Significant figures**

What is 135.06 written to 2 significant figures?

- A 130
- B 135
- C 135.1
- D 140

2. **Standard form**

Write 0.00318 in standard form.

Answer: .....................

3. **Units**

What is 76 A converted to mA?

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

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.

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

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
- C 1.25 m/s
- D 1.5 m/s

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 \(F = \frac{(mv – mu)}{t}\)

Answer: ..................... N

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, 169, 170, 172, 173, 176, 178, 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 55%.

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

B The efficiency of the process is 45%.

10 Energy resources

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

☐ B hydroelectricity

☐ C nuclear fuel

D tidal power

C nuclear fuel

11 Kinetic energy

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

Answer: …………………… kJ

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

D water surface waves and seismic S waves

13 Wave calculations

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

Answer: …………………… m

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.

B Their speed and direction both change.

15 Electromagnetic spectrum

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

☐ A gamma rays

☐ C radio waves

D X-rays

C radio waves

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

☐ C ultraviolet

☐ D visible light

C ultraviolet

14
When an electron in an atom emits electromagnetic radiation, does it move into a higher energy level or into a lower energy level?

Answer: ..........................................................

---

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

---

The symbol for a certain atomic nucleus is $^{15}_{32}$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.

---

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

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

---

This nuclear equation is incomplete:

$^{39}_{15}$N $\rightarrow$ $^{20}_{8}$O + ........

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

Answer: ..........................................................

---

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

---

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
Knowledge check

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

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.

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

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

29 Circuit components

Which statement about the resistance of LDRs and thermists 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.

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.

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

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.

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

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.

35 Density

A 7.85 kg cube of steel has side length 10 cm. Calculate its density in kg/m³.

Answer: …………………… kg/m³

36 Temperature scales

Convert 25 °C to Kelvin.

Answer: …………………… K

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.

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
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.

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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.

<table>
<thead>
<tr>
<th>Unit / topic</th>
<th>Revision Guide / Workbook pages</th>
<th>Revise?</th>
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<tbody>
<tr>
<td><strong>Biology</strong></td>
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<tr>
<td>B1: Overarching concepts in Biology</td>
<td>1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12</td>
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<td>B2: Cells and control</td>
<td>1, 13, 14, 15, 16, 17, 18, 19</td>
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<td>B3: Genetics</td>
<td>20, 21, 22, 23, 24, 25, 26, 27, 28</td>
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<td>B4: Natural selection and genetic modification</td>
<td>29, 30, 31, 32, 33, 34, 35</td>
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<td>B5: Health, disease and the development of medicines</td>
<td>36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49</td>
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<td>B6: Plant structures and their functions</td>
<td>50, 51, 52, 53, 54, 55, 56, 57</td>
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<td>B7: Animal coordination, control and homeostasis</td>
<td>58, 59, 60, 61, 62, 63, 64, 65</td>
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<td>B8: Exchange and transport in animals</td>
<td>66, 67, 68, 69, 70, 71, 72, 73, 74, 75</td>
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<tr>
<td>B9: Ecosystems and material cycles</td>
<td>76, 77, 78, 79, 80, 81, 82, 83, 84, 85, 86</td>
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<td><strong>Chemistry</strong></td>
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<td>C1: States of matter</td>
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<tr>
<td>C2: Methods of separating and purifying substances</td>
<td>90, 113, 114, 115, 116, 117, 118, 119</td>
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<td>C3: Atomic structure</td>
<td>91, 92</td>
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<tr>
<td>C4: The periodic table</td>
<td>87, 93, 94, 95</td>
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<tr>
<td>C5: Ionic bonding</td>
<td>87, 96, 97, 98</td>
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<td>C6: Covalent bonding</td>
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<td>C7: Types of substance</td>
<td>100, 101, 102, 103, 104, 111</td>
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<td>C8: Acids</td>
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<td>C9: Calculations involving masses</td>
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<td>C10: Electrolytic processes</td>
<td>128, 129, 130, 131</td>
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<tr>
<td>C11: Obtaining and using metals</td>
<td>132, 133, 134, 135, 136, 137, 138, 139, 140</td>
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</table>

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.

<table>
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<tr>
<th>Unit / topic</th>
<th>Revision Guide / Workbook pages</th>
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<tbody>
<tr>
<td><strong>Chemistry (continued)</strong></td>
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<tr>
<td>C12: Reversible reactions and equilibria</td>
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<td>C13: Groups in the periodic table</td>
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<td>C14: Rates of reaction</td>
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<td>C17: Earth and atmospheric science</td>
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<td>P1: Motion</td>
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<td>P12: Particle model</td>
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<td>P13: Forces and matter</td>
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</table>

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.
## Knowledge check answers

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