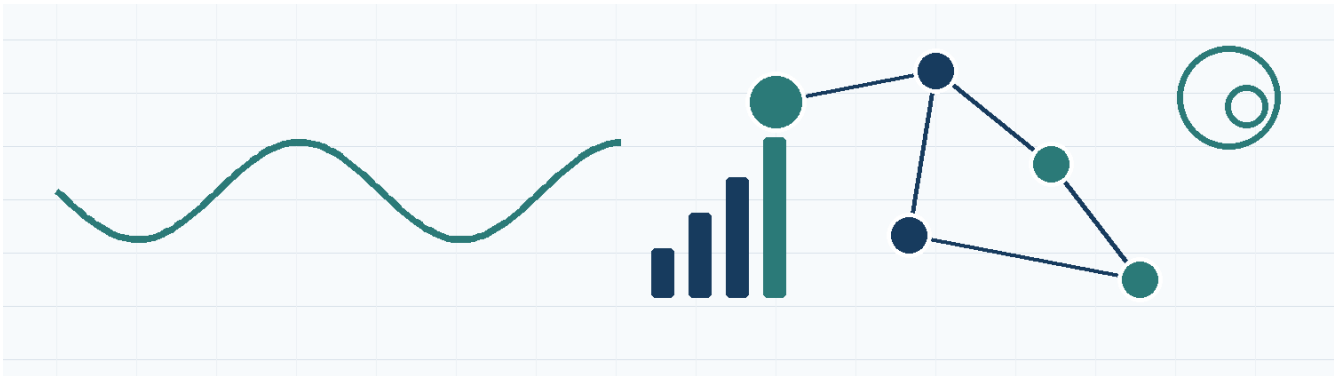


BEYOND PRINTABLES

SIXTH-FORM BIOLOGY

Year 11 to Year 12 Biology Transition

SUMMER SCIENCE TRANSITION



CORE

STUDENT BOOKLET

REUSABLE UNDATED

Independent retrieval, calculation, data interpretation and explanation.

30 weekday sessions | Cumulative retrieval | Visual and practical science

NAME _____

How to use this booklet

A subject-specific sixth-form transition covering biological molecules, cells, genetics, exchange, transport, ecology, statistics and practical biology.

THE DAILY RHYTHM

- 1 Retrieve** Recall prior science.
- 2 Vocabulary** Use precise terms.
- 3 Calculate / analyse** Work with numbers, graphs or models.
- 4 Investigate** Reason about methods and evidence.
- 5 Explain** Build a causal account.

CORE PATHWAY

- Independent retrieval and explanation
- Standard calculations and data interpretation
- Practical and evidence reasoning
- Balanced response space

WORKING AND RESPONSE SPACE

- Attempt each question before checking the answer book.
- Show equations, substitutions and units where required.
- Use the reasoning cards as written tasks or guided discussion.
- After checking, annotate or improve one answer above.



Five-a-Day Science

TODAY Complete independent retrieval, calculation, evidence reasoning and explanation about Biological molecules and monomers.

- 1

Name the monomers used to build proteins and polysaccharides.
- 2

Define monomer.
- 3

A polymer contains 240 monomer units and has a relative mass of 43,200. Calculate the mean relative mass per monomer.
- 4

Why should food-test samples be prepared at the same concentration?
- 5

Explain why a molecule’s structure affects its biological function.

MISCONCEPTION Correct the scientific flaw in this claim: All biological polymers are made from identical monomers.	REFLECT Which idea from Biological molecules and monomers would you teach first to a pupil who was new to the topic? Explain your choice.
KEY QUESTION Why does a molecule’s structure affect its biological function?	S / A / N Biological polymers are built from monomers.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Carbohydrates.

1

State one structural difference between starch and cellulose.

2

Define glycosidic bond.

3

A solution contains 3.6 g glucose in 200 cm³. Calculate concentration in g dm⁻³.

4

Why include a known glucose solution and distilled water in a Benedict's test?

5

Explain how glycogen structure supports rapid glucose release.

MISCONCEPTION Correct the scientific flaw in this claim: Cellulose and starch have the same function because both contain glucose.	REFLECT Which calculation decision mattered most today: equation, substitution, unit, conversion or rounding? Justify your choice.
KEY QUESTION How does glycogen structure support rapid glucose release?	S / A / N Increasing temperature always increases the biological or chemical rate being studied.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Lipids and membranes.

- 1State two functions of lipids in organisms.
- 2Define triglyceride.
- 3A lipid sample releases 76 kJ from 2.0 g. Calculate energy released per gram.
- 4Why must ethanol be handled away from flames during an emulsion test?
- 5Explain how phospholipid structure leads to bilayer formation in water.

MISCONCEPTION Correct the scientific flaw in this claim: All lipids are polymers.	REFLECT Which control, safeguard or recording choice in Question 4 has the greatest effect on evidence quality?
KEY QUESTION How does phospholipid structure lead to bilayer formation in water?	S / A / N A safer method can still produce useful scientific evidence.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Proteins and enzymes.

1

Describe the levels of protein structure from primary to tertiary.

2

Define peptide bond.

3

An enzyme converts 2.4 mmol substrate in 80 s. Calculate mean rate in mmol s⁻¹.

4

Why use a buffer in an enzyme-rate investigation?

5

Explain why a mutation can alter enzyme activity.

MISCONCEPTION Correct the scientific flaw in this claim: Denaturation always breaks peptide bonds.	REFLECT Write one observation that would strengthen today’s explanation and one that would make you reconsider it.
KEY QUESTION Why can a mutation alter enzyme activity?	S / A / N Increasing substrate or reactant concentration increases the rate.

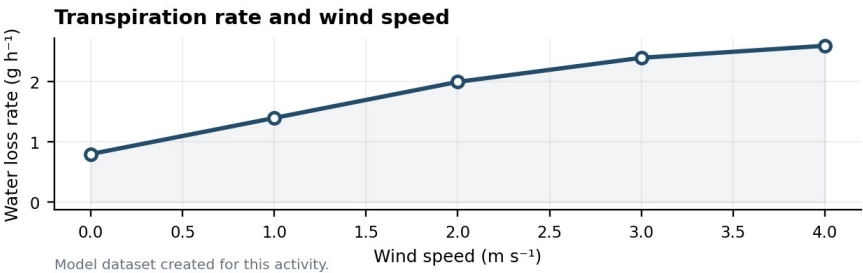
CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE



Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Water and inorganic ions.



1 Give two properties of water that are important in living organisms.

2 Define cohesion.

3 Use the graph. Calculate the overall change in water loss rate and describe the pattern.

4 Why should leaf area be measured when comparing water loss between plants?

5 Explain how hydrogen bonding contributes to water transport in xylem.

MISCONCEPTION

Correct the scientific flaw in this claim: Water is biologically useful only because it is a solvent.

REFLECT

How did today’s representation, number or observation change your understanding of Water and inorganic ions?

KEY QUESTION

How does hydrogen bonding contribute to water transport in xylem?

S / A / N

Every organic compound contains a carbon-hydrogen bond.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Eukaryotic and prokaryotic cells.

1

State two features of prokaryotic cells not found in typical animal cells.

2

Define ultrastructure.

3

A bacterium is 2.4 μm long and its image is 48 mm. Calculate magnification.

4

Why use a scale bar rather than a printed magnification value?

5

Explain one limitation of a simplified cell diagram.

MISCONCEPTION Correct the scientific flaw in this claim: All cells contain membrane-bound organelles.	REFLECT Which answer today contains a condition or boundary that prevents overclaiming? Explain why it matters.
KEY QUESTION What is one limitation of a simplified cell diagram?	S / A / N Eukaryotic cells contain a nucleus, while prokaryotic cells do not have a true nucleus.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Microscopy and resolution.

1

Distinguish magnification from resolution.

2

Define resolution.

3

Two structures are 0.40 μm apart. A microscope resolves 0.20 μm. How many resolution limits fit into the separation?

4

Why calibrate an eyepiece graticule for each objective lens?

5

Explain why increasing magnification without increasing resolution may not reveal more detail.

MISCONCEPTION Correct the scientific flaw in this claim: A larger image always contains more biological information.	REFLECT Identify one direct observation from today and one inference made from it.
KEY QUESTION Why may increasing magnification without increasing resolution not reveal more detail?	S / A / N Using a higher-resolution instrument improves the final conclusion.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Cell membranes and transport.

1

Name two membrane proteins and state a function of each.

2

Define fluid mosaic model.

3

A cell’s mass rises from 4.0 mg to 4.6 mg. Calculate percentage increase.

4

Why blot tissue before measuring mass in an osmosis investigation?

5

Explain why active transport requires ATP.

MISCONCEPTION Correct the scientific flaw in this claim: Diffusion stops when concentrations become equal.	REFLECT Which earlier science idea would combine most usefully with Cell membranes and transport? State the link.
KEY QUESTION Why does active transport require ATP?	S / A / N All cells produced by cell division are genetically identical.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Cell cycle and mitosis.

1

State the biological importance of mitosis.

2

Define mitosis.

3

A cell population doubles every 18 h. Starting with 250 cells, calculate the number after 54 h.

4

Why count cells in several microscope fields when estimating mitotic index?

5

Explain how loss of cell-cycle control can lead to a tumour.

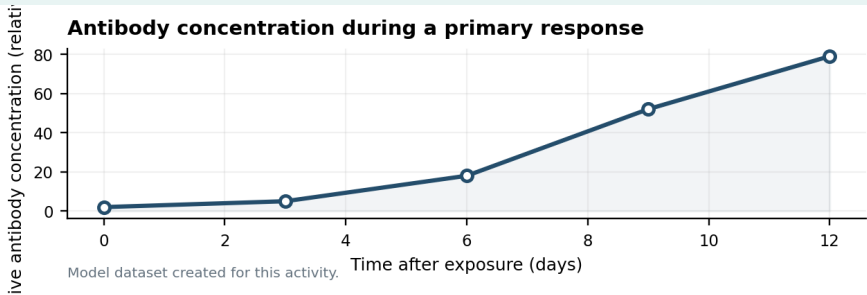
MISCONCEPTION Correct the scientific flaw in this claim: Mitosis creates genetic variation.	REFLECT Which answer today would be most vulnerable to poor measurement or unrepresentative sampling? Explain.
KEY QUESTION How can loss of cell-cycle control lead to a tumour?	S / A / N Mitosis produces genetically identical daughter cells for growth and repair.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Pathogens and immune response.



1

Outline the roles of phagocytes and lymphocytes.

2

Define antigen.

3

Use the graph. Calculate the overall change in relative antibody concentration and describe the pattern.

4

Why use a placebo control in a vaccine trial?

5

Explain why a secondary immune response is faster.

MISCONCEPTION Correct the scientific flaw in this claim: Antibiotics are effective against viruses.	REFLECT State the most defensible conclusion you can make about Pathogens and immune response, then add one boundary to it.
KEY QUESTION Why is a secondary immune response faster?	S / A / N Antigens are features that the immune system can recognise as foreign.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about DNA structure.

1

State the complementary base pairs in DNA.

2

Define nucleotide.

3

A DNA fragment contains 820 bases, of which 31% are adenine. Calculate the percentage that are cytosine.

4

Why should DNA samples be protected from nuclease contamination?

5

Explain how hydrogen bonding supports both stability and replication.

MISCONCEPTION Correct the scientific flaw in this claim: The two DNA strands have identical base sequences.	REFLECT Which idea from DNA structure would you teach first to a pupil who was new to the topic? Explain your choice.
KEY QUESTION How does hydrogen bonding support both stability and replication?	S / A / N DNA base pairs are held together by hydrogen bonds between complementary bases.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about DNA replication.

1

Name the enzymes that unwind DNA and join nucleotides.

2

Define semi-conservative replication.

3

A DNA molecule replicates for 5 cycles. How many molecules result from one original molecule?

4

Why include a no-template control in a DNA amplification experiment?

5

Explain why complementary base pairing supports accurate replication.

MISCONCEPTION Correct the scientific flaw in this claim: DNA polymerase can add nucleotides in either direction on a template.	REFLECT Which calculation decision mattered most today: equation, substitution, unit, conversion or rounding? Justify your choice.
KEY QUESTION Why does complementary base pairing support accurate replication?	S / A / N DNA replication uses complementary base pairing to copy the sequence.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Transcription.

1

State two differences between RNA and DNA.

2

Define transcription.

3

An mRNA contains 450 nucleotides in its coding region. How many codons does this represent?

4

Why measure expression relative to a reference gene?

5

Explain how transcription factors can alter gene expression.

MISCONCEPTION Correct the scientific flaw in this claim: Every gene is transcribed at the same rate in every cell.	REFLECT Which control, safeguard or recording choice in Question 4 has the greatest effect on evidence quality?
KEY QUESTION How can transcription factors alter gene expression?	S / A / N A change in DNA always changes the observable phenotype.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Translation and the genetic code.

- 1

State the roles of tRNA and ribosomes in translation.
- 2

Define codon.
- 3

A polypeptide contains 96 amino acids. Ignoring untranslated regions, how many coding bases are required?
- 4

Why use the same incubation conditions when comparing cell-free translation samples?
- 5

Explain why the genetic code is described as degenerate.

MISCONCEPTION Correct the scientific flaw in this claim: One codon can specify several amino acids.	REFLECT Write one observation that would strengthen today’s explanation and one that would make you reconsider it.
KEY QUESTION Why is the genetic code described as degenerate?	S / A / N Each mRNA codon usually specifies one amino acid during translation.

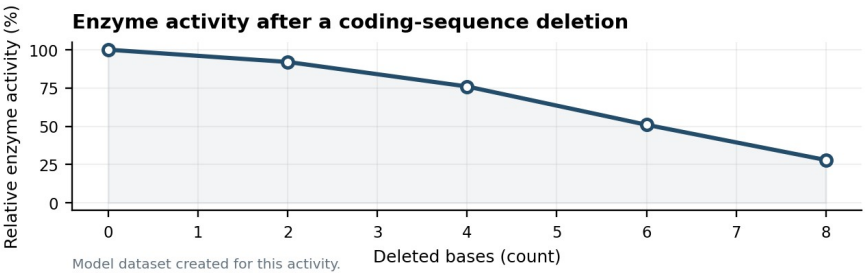
CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE



Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Mutations and protein function.



1 Distinguish substitution, insertion and deletion mutations.

2 Define mutation.

3 Use the graph. Calculate the overall change in relative enzyme activity and describe the pattern.

4 Why sequence several independent samples when investigating mutations?

5 Explain why a substitution may have no effect on protein sequence.

MISCONCEPTION

Correct the scientific flaw in this claim: Every mutation changes phenotype.

REFLECT

How did today’s representation, number or observation change your understanding of Mutations and protein function?

KEY QUESTION

Why may a substitution have no effect on protein sequence?

S / A / N

A mutation can change the amino-acid sequence and affect protein function.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Gas exchange surfaces.

- 1

State three adaptations of an efficient gas-exchange surface.
- 2

Define surface-area-to-volume ratio.
- 3

A cube has side 2 mm. Calculate its surface-area-to-volume ratio.
- 4

Why measure ventilation and gas concentration at the same time?
- 5

Explain why larger organisms require specialised exchange systems.

MISCONCEPTION Correct the scientific flaw in this claim: A large surface area alone guarantees rapid gas exchange.	REFLECT Which answer today contains a condition or boundary that prevents overclaiming? Explain why it matters.
KEY QUESTION What scientific explanation accounts for the fact that larger organisms require specialised exchange systems?	S / A / N A larger surface-area-to-volume ratio can make exchange faster.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Mass transport in mammals.

- 1

State the route of blood through the heart, lungs and body.
- 2

Define cardiac output.
- 3

Heart rate is 72 min^{-1} and stroke volume is 75 cm^3 . Calculate cardiac output in $\text{dm}^3\text{ min}^{-1}$.
- 4

Why should heart rate be measured after a standardised rest period?
- 5

Explain how arteries are adapted to high pressure.

MISCONCEPTION Correct the scientific flaw in this claim: Veins carry only deoxygenated blood.	REFLECT Identify one direct observation from today and one inference made from it.
KEY QUESTION How are arteries adapted to high pressure?	S / A / N The term cardiac output has exactly the meaning used in this session: heart rate multiplied by stroke volume.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Mass transport in plants.

1

State the roles of xylem and phloem.

2

Define transpiration.

3

A potometer bubble moves 42 mm in 7 min. Calculate mean speed.

4

Why is a potometer an indirect measure of transpiration?

5

Explain how wind can increase transpiration.

MISCONCEPTION Correct the scientific flaw in this claim: Water is pushed up xylem mainly by active transport.	REFLECT Which earlier science idea would combine most usefully with Mass transport in plants? State the link.
KEY QUESTION How can wind increase transpiration?	S / A / N Wind can increase transpiration by removing water vapour from around the leaf and maintaining a diffusion gradient.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Photosynthesis.

- 1

State the two broad stages of photosynthesis.
- 2

Define action spectrum.
- 3

A plant produces 18.0 cm³ oxygen in 12 min. Calculate rate.
- 4

Why use a range of light intensities rather than only two?
- 5

Explain why the rate may plateau at high light intensity.

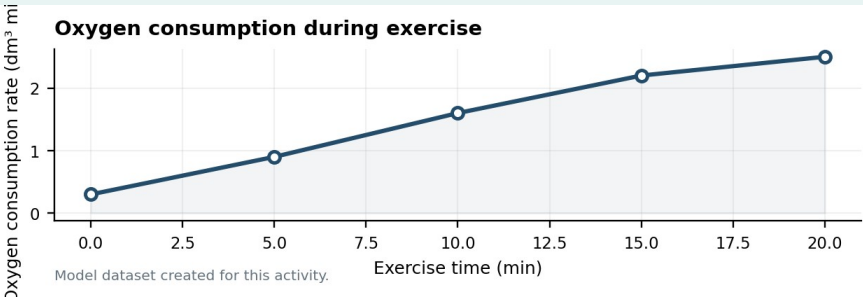
MISCONCEPTION Correct the scientific flaw in this claim: Increasing light intensity always increases photosynthesis rate.	REFLECT Which answer today would be most vulnerable to poor measurement or unrepresentative sampling? Explain.
KEY QUESTION Why may the rate plateau at high light intensity?	S / A / N Increasing substrate or reactant concentration increases the rate.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Respiration and ATP.



1 State the locations of glycolysis and the Krebs cycle.

2 Define oxidative phosphorylation.

3 Use the graph. Calculate the overall change in oxygen consumption rate and describe the pattern.

4 Why should temperature be controlled in a respirometer?

5 Explain why ATP is suited to immediate energy transfer.

MISCONCEPTION

Correct the scientific flaw in this claim: Respiration releases energy in one uncontrolled step.

REFLECT

State the most defensible conclusion you can make about Respiration and ATP, then add one boundary to it.

KEY QUESTION

Why is ATP suited to immediate energy transfer?

S / A / N

Increasing temperature always increases the biological or chemical rate being studied.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Biodiversity and conservation.

1

State two reasons for conserving biodiversity.

2

Define biodiversity.

3

A habitat contains 18 species before disturbance and 12 after. Calculate percentage decrease.

4

Why use the same sampling effort at all sites?

5

Explain why a conservation action may create trade-offs.

MISCONCEPTION Correct the scientific flaw in this claim: More individuals always means greater biodiversity.	REFLECT Which idea from Biodiversity and conservation would you teach first to a pupil who was new to the topic? Explain your choice.
KEY QUESTION Why may a conservation action create trade-offs?	S / A / N A conservation action can benefit one population while creating trade-offs for another.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Classification and phylogeny.

1

State one advantage of molecular data in classification.

2

Define phylogeny.

3

Two sequences share 186 of 200 bases. Calculate percentage similarity.

4

Why compare more than one gene when constructing a phylogeny?

5

Explain why classification systems can change.

MISCONCEPTION Correct the scientific flaw in this claim: Organisms that look similar must be most closely related.	REFLECT Which calculation decision mattered most today: equation, substitution, unit, conversion or rounding? Justify your choice.
KEY QUESTION Why can classification systems change?	S / A / N A high organism count means biodiversity is high.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Population sampling.

1

Distinguish random and systematic sampling.

2

Define quadrat.

3

Five 0.25 m² quadrats contain 8, 11, 9, 12 and 10 plants. Estimate mean density per m².

4

Why generate random coordinates before placing quadrats?

5

Explain one limitation of quadrat sampling for mobile organisms.

MISCONCEPTION Correct the scientific flaw in this claim: A larger sample always removes sampling bias.	REFLECT Which control, safeguard or recording choice in Question 4 has the greatest effect on evidence quality?
KEY QUESTION What is one limitation of quadrat sampling for mobile organisms?	S / A / N Increasing sample size improves an estimate only if the sampling method is unbiased.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Mark-release-recapture.

1

State three assumptions of mark-release-recapture.

2

Define mark-release-recapture.

3

40 organisms are marked. In a second sample of 50, 10 are marked. Estimate population size.

4

Why should marking not alter survival or recapture probability?

5

Explain how immigration would affect the estimate.

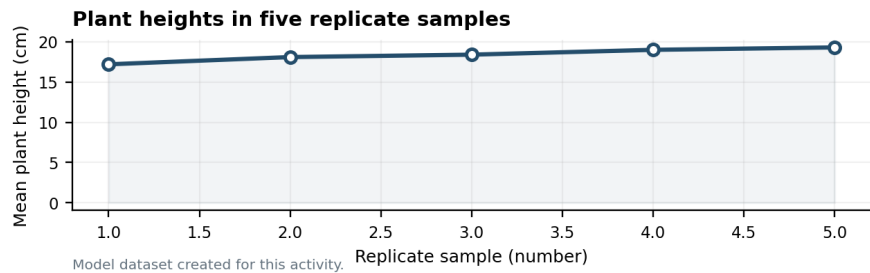
MISCONCEPTION Correct the scientific flaw in this claim: The estimate is exact because it uses an equation.	REFLECT Write one observation that would strengthen today’s explanation and one that would make you reconsider it.
KEY QUESTION How would immigration affect the estimate?	S / A / N Immigration can make a mark-release-recapture estimate less reliable because the population is no longer closed.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Variation and descriptive statistics.



1

State what a small standard deviation suggests.

2

Define standard deviation.

3

Use the graph. Calculate the mean mean plant height and the range of the repeated measurements.

4

Why report sample size alongside a mean and standard deviation?

5

Explain why overlapping ranges do not automatically prove there is no difference.

MISCONCEPTION Correct the scientific flaw in this claim: A precise mean proves measurements are accurate.	REFLECT How did today’s representation, number or observation change your understanding of Variation and descriptive statistics?
KEY QUESTION Why do overlapping ranges not automatically prove there is no difference?	S / A / N A larger sample usually gives a more reliable estimate of variation.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE



Five-a-Day Science

TODAY Complete independent retrieval, calculation, evidence reasoning and explanation about Experimental design in biology.

1 Distinguish a control variable from a control group.

2 Define confounding variable.

3 Three rates are 4.2, 4.6 and 4.4 units min⁻¹. Calculate the mean.

4 Why randomise the order of treatments?

5 Explain how blinding can reduce bias.

MISCONCEPTION Correct the scientific flaw in this claim: Repeating measurements makes every investigation valid.	REFLECT Which answer today contains a condition or boundary that prevents overclaiming? Explain why it matters.
KEY QUESTION How can blinding reduce bias?	S / A / N The term confounding variable has exactly the meaning used in this session: an uncontrolled factor associated with the independent variable that may affect the dependent variable.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE



Five-a-Day Science

TODAY Complete independent retrieval, calculation, evidence reasoning and explanation about Uncertainty and biological graphs.

1 State when a scatter graph is appropriate.

2 Define error bar.

3 A length is 24.0 ± 0.5 mm. Calculate percentage uncertainty.

4 Why should axes include quantities and units?

5 Explain why a line of best fit should not be forced through the origin without justification.

MISCONCEPTION Correct the scientific flaw in this claim: More decimal places always mean lower uncertainty.	REFLECT Identify one direct observation from today and one inference made from it.
KEY QUESTION Why should a line of best fit not be forced through the origin without justification?	S / A / N A systematic error can shift every result in the same direction.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Cells, molecules and energy.

1

Give one example of an emergent property in biology.

2

Define emergent property.

3

A cell transfers 48 kJ and stores 18 kJ usefully. Calculate efficiency.

4

Why compare several evidence types when evaluating a biological model?

5

Explain how membrane structure, enzymes and ATP can interact in active transport.

MISCONCEPTION Correct the scientific flaw in this claim: A biological explanation is complete once one component is named.	REFLECT Which earlier science idea would combine most usefully with Cells, molecules and energy? State the link.
KEY QUESTION How can membrane structure, enzymes and ATP interact in active transport?	S / A / N A change in DNA always changes the observable phenotype.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Genes, environment and phenotype.

1

State how genotype and environment can interact.

2

Define phenotype.

3

Trait means are 42 and 35 units. Calculate percentage difference relative to 35.

4

Why include genetically similar individuals in an environmental experiment?

5

Explain why a correlation between a gene variant and disease does not prove causation.

MISCONCEPTION Correct the scientific flaw in this claim: Phenotype is determined only by DNA sequence.	REFLECT Which answer today would be most vulnerable to poor measurement or unrepresentative sampling? Explain.
KEY QUESTION Why does a correlation between a gene variant and disease not prove causation?	S / A / N All cells produced by cell division are genetically identical.

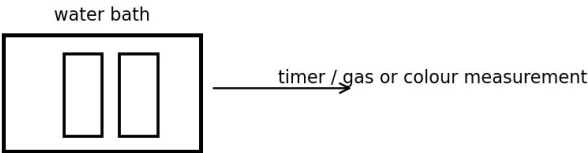
CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE



Five-a-Day Science

TODAY

Complete independent retrieval, calculation, evidence reasoning and explanation about Planning an enzyme investigation.



Simplified apparatus diagram - identify controls, measurements and safety requirements.

- 1

Write a testable question about temperature and catalase activity.
- 2

Define research question.
- 3

Oxygen volumes after 60 s are 28, 31 and 30 cm³. Calculate mean and range.
- 4

Identify one safety control and one validity control.
- 5

Write a conditional conclusion for a dataset that peaks at 35 °C.

MISCONCEPTION Correct the scientific flaw in this claim: The temperature giving the highest measured rate is always the enzyme’s exact optimum.	REFLECT State the most defensible conclusion you can make about Planning an enzyme investigation, then add one boundary to it.
KEY QUESTION What conditional conclusion is justified for a dataset that peaks at 35 °C?	S / A / N A safer method can still produce useful scientific evidence.

CHECK | ANNOTATE | IMPROVE ONE ANSWER ABOVE

Six-week transition check

Use evidence from completed sessions. Name examples rather than writing only “easy” or “hard”.

KNOWLEDGE I CAN NOW RETRIEVE
A REPRESENTATION I CAN INTERPRET
A CALCULATION HABIT I NOW USE
A PRACTICAL DECISION I CAN JUSTIFY
A MISCONCEPTION I CORRECTED
MY NEXT SCIENCE TARGET

RETRIEVE • REASON • EXPLAIN • IMPROVE