ICAS-STYLE PREPARATION SERIES

Paper C. Standard 5 / Primary 4 / Year 5 Student Workbook

Original ICAS-style practice questions with full worked answers, written for students sitting ICAS Paper C. The test is taken by Standard 5 (Malaysia), Primary 4 (Singapore), and Year 5 (Australia) students.

- English · 22 Q
- Writing · 2 practice tasks
- Science · 10 Q
- Maths · 12 Q
- Digital Tech · 8 Q

STUDENT NAME _____

SCHOOL _____

DATE _____

TOTAL QUESTIONS
52 original ICAS-style questions + 2 writing tasks

ANSWERS
Full worked explanations at back

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BEFORE YOU BEGIN

How to Use This Workbook

Every question in this workbook is an original ICAS-style practice question carefully written to match the format, text types, difficulty, and question style of real ICAS Paper C assessments for Standard 5 students.

MOST IMPORTANT RULE

Do each subject with a timer running. Resist checking answers mid-way. When time is up, go to the answers — and read every explanation carefully, including for questions you got right. Understanding the reasoning is the whole point.

🎯 THE 3-PASS STRATEGY — USE EVERY TIME

Pass 1: Answer every question you're confident about. Flag anything uncertain — don't get stuck.
Pass 2: Return to flagged questions. Eliminate at least 2 options, then choose your best answer.
Pass 3: If time allows, check questions where you made a very quick choice. There is NO penalty for a wrong answer. Always answer every question.

Your Test at a Glance — Paper C / Standard 5 (Official ICAS Format)

SUBJECT	QUESTIONS	TIME	TIME GUIDANCE	HALFWAY CHECK	FORMAT
English	50	50 min	~12 min per passage (read + answer)	Passage 3 done by 25 min	Passage-based MCQ
Writing	1 task	35 min	5 min plan · 25 min write · 5 min check	Writing by 5 min	Extended Response
Science	40	55 min	Under 90 sec per Q	Q20 by 30 min	MCQ with diagrams
Mathematics	40	45 min	60–70 sec per Q · move fast	Q20 by 22 min	MCQ · No Calculator
Digital Tech	35	35 min	~60 sec per Q	Q18 by 17 min	MCQ · Computer-based

English

Practice · 22 questions · 22 minutes · All questions are based on a passage

22 QUESTIONS

22 MINUTES

In the real ICAS English paper, every question is based on a passage. You will read several different text types: an informational article, a poem, a fiction extract and more. Read each passage carefully before answering its questions.

ENGLISH STRATEGY FOR PAPER C

Read the questions first, then read the passage looking for answers. At this level, questions move from straightforward (finding information) to challenging (inferring motivation, explaining a writer's structural choice, identifying what a writer assumes about the reader). For harder questions, go back to the specific part of the text — don't rely on memory.

TEXT 1 OF 4 — INFORMATIONAL ARTICLE

The Axolotl's Secret

Original text for ICAS preparation purposes

A CREATURE THAT REFUSES TO GROW UP

Most animals go through a process called metamorphosis. They change dramatically as they grow from young to adult. Tadpoles become frogs. Caterpillars become butterflies. But the axolotl, a small amphibian native to the lakes near Mexico City, has found a remarkable shortcut: it simply skips metamorphosis altogether.

This condition is called neoteny, the retention of juvenile features into adulthood,. An adult axolotl looks, in many ways, like a baby axolotl. It keeps its feathery external gills, its wide head, and its perpetual expression of mild surprise. Scientists have found that axolotls can reproduce without ever going through the physical changes that other amphibians must complete.

THE REAL SECRET: REGENERATION

What truly sets the axolotl apart, however, is its extraordinary ability to regenerate. If an axolotl loses a limb, it will grow back, completely. Not just the skin and muscle, but the bone, the nerves, and even the complex joint. Scientists have documented axolotls regenerating their spinal cords, parts of their hearts, and portions of their brains. No other vertebrate animal can do this as completely or as reliably.

This ability has made the axolotl enormously valuable to medical researchers. If scientists can understand exactly how the axolotl triggers regeneration, they may be able to apply similar principles to human medicine. The possibility of regrowing a damaged spinal cord or a diseased heart is no longer entirely science fiction.

A SPECIES IN TROUBLE

Ironically, despite being one of the most studied animals in laboratories around the world, the axolotl is critically endangered in the wild. The lakes near Mexico City have been heavily polluted, and non-native fish introduced to the waterways eat axolotl eggs and young. It is estimated that fewer than 1,000 axolotls remain in their natural habitat. The animal that may one day help regenerate human organs cannot, it seems, regenerate its own wild population.

Questions 1–7 are about *The Axolotl's Secret*

1

VOCABULARY — WORD MEANING IN CONTEXT

The word perpetual in the second paragraph most likely means

- A occasional.
- B surprising.
- C constant.
- D wide.

2

TEXT COMPREHENSION — DISTINGUISH FACT FROM OPINION

Which of the following is an opinion rather than a fact stated in the text?

- A The axolotl is native to the lakes near Mexico City.
- B The axolotl is enormously valuable to medical researchers.
- C Non-native fish eat axolotl eggs and young.
- D Fewer than 1,000 axolotls remain in their natural habitat.

3

TEXT COMPREHENSION — MAIN IDEA OF A PARAGRAPH

What is the main idea of the third paragraph (beginning 'What truly sets the axolotl apart')?

A Axolotls can grow back lost body parts in a way no other vertebrate can.

B Axolotls have been studied by scientists for many years.

C Axolotls can reproduce even without going through metamorphosis.

D Axolotls are more valuable than any other animal to medicine.

4

WRITER'S CRAFT — EFFECT OF WORD CHOICE

The writer ends the article by saying the axolotl 'cannot regenerate its own wild population.' Why does the writer choose to end the article this way?

A To prove that regeneration is impossible in the wild.

B To create a contrast between the axolotl's scientific importance and its real-world fragility.

C To warn readers that all amphibians are endangered.

D To suggest that scientific research has failed to help the axolotl.

5

TEXT COMPREHENSION — AUDIENCE ASSUMPTIONS

In the second paragraph, the writer explains what neoteny means. What does this tell us about what the writer assumes about the reader?

A The reader already understands scientific language.

B The reader may not know what the word neoteny means.

C The reader is a scientist studying amphibians.

D The reader has seen an axolotl before.

6

WRITER'S CRAFT — PURPOSE OF SUBHEADINGS

Why does the writer use subheadings in this article?

A To show that the article was written by a scientist.

B To signal a change in focus and help the reader navigate between topics.

C To replace the need for an introduction and conclusion.

D To make the article look more like a science textbook.

7

TEXT COMPREHENSION — INFER FROM EVIDENCE

The writer says the possibility of regrowing a damaged spinal cord 'is no longer entirely science fiction.' What does this suggest?

A Scientists have already succeeded in regrowing human spinal cords.

B It was once thought impossible, but now seems genuinely achievable.

C Science fiction writers predicted the axolotl's powers long ago.

D The idea is still completely impossible despite axolotl research.

TEXT 2 OF 4 — POEM

The New School

Original poem for ICAS preparation purposes

Your son, Mrs Okafor, has settled in well,
Miss Hartley says at the parent night.
He's made some friends in the playground.
He seems quite bright.

Oh?
I say inside my head.
You think I have settled?
You think this school feels like mine?
You think eating lunch beside someone you don't know counts as a friend.

Mrs Okafor nods and smiles.
She asks if there is anything she should know.

There is so much, I think.
There is the smell of the hallways, different from before.
There is the way they say my name wrong and don't try again.
There is the library book I found in a language I could read
and the hour I spent there alone that was the best hour of my week.

'Nothing,' I hear myself say.
'He's doing very well.'

Questions 8–13 are about *The New School*

8 WRITER'S CRAFT — PURPOSE OF ITALICS

Some parts of the poem are written in *italics*. What do the italics show?

- A The words that are spoken aloud or heard by the boy.
- B The most important ideas in the poem.
- C The parts of the poem that are set in the future.
- D The boy's private thoughts that he has not shared.

9 TEXT COMPREHENSION — INFER CHARACTER'S FEELINGS

When the boy thinks 'You think eating lunch beside someone you don't know counts as a friend,' he is suggesting that

- A he does not want to make friends at the new school.
- B his teacher's idea of what counts as friendship is too simple.
- C lunchtime is his least favourite part of the school day.
- D he knows he will eventually make real friends at the school.

10

TEXT COMPREHENSION — CONTRAST

How does the boy's experience of school differ from Miss Hartley's description of it?

A Miss Hartley says he is doing well, but the boy feels isolated and still finding his place.

B Miss Hartley worries about him, but the boy actually feels content.

C Miss Hartley does not know who he is, but the boy enjoys school.

D Both Miss Hartley and the boy agree that things are improving slowly.

11

TEXT COMPREHENSION — IDENTIFY CAUSE OR EFFECT

What made the boy's best moment of the week at school?

A Meeting a new friend in the playground.

B Finding a book in a language he could read and spending an hour alone with it.

C Hearing that his teacher thought he was settling in well.

D His mother attending the parent-teacher night.

12

WRITER'S CRAFT — EFFECT OF STRUCTURE

The poem ends with Mrs Okafor saying 'Nothing' and 'He's doing very well.' Why is this an effective ending?

A It shows that the boy has finally decided to be positive about school.

B It creates a contrast with everything the reader has just learned about the boy's real feelings.

C It shows that Miss Hartley was right about the boy all along.

D It suggests the mother is angry with her son for not trying harder.

13

TEXT COMPREHENSION — INFER CHARACTER

The boy says 'There is so much, I think.' What does this line reveal about his character?

A He is confused about many things and cannot think clearly.

B He has deep feelings about his experience that he chooses not to share with adults.

C He is about to explain everything to his teacher honestly.

D He is overwhelmed by schoolwork and cannot keep up.

The Great Treehouse Summit

Original fiction extract for ICAS preparation purposes

The problem with being the youngest of four children, Maisie had discovered, was that everyone assumed you were wrong before you'd even finished speaking.

'We should move the base camp to the fork in the oak tree,' she announced at the opening of the Treehouse Summit, which was what her brother Elliot called the weekly meeting, because he had once found a book about diplomacy and had never quite recovered from it.

'The oak tree is structurally compromised,' said Elliot, not looking up from the notebook he carried everywhere. 'I assessed it last Thursday.'

'You assessed it with a stick,' said Maisie.

'A *pointed* stick,' he replied, in a tone that suggested this made all the difference.

Their sister Priya had already started eating her biscuit, which meant she'd decided the argument wasn't worth her attention. This was either a good sign or a terrible one. Their brother Dom was asleep against the wall, which was typical. Dom had a gift for sleeping at inconvenient moments. It was, according to Dom, a skill.

Maisie produced a diagram from her pocket. It was slightly crumpled, having been folded four times, but the measurements were precise. She had checked them twice.

'If we move the rope here,' she said, pointing, 'and here, we gain an extra two metres of useable floor space.'

Elliot looked at the diagram for a long moment. Then he made a note in his notebook. This, Maisie knew, was the closest thing to a compliment she was likely to get.

Questions 14–20 are about *The Great Treehouse Summit*

14

VOCABULARY — TECHNICAL PHRASE IN CONTEXT

The phrase structurally compromised as Elliot uses it most likely means

- A too difficult to climb.
- B not safe or strong enough to use.
- C already being used by someone else.
- D too far away from the treehouse.

15

TEXT COMPREHENSION — INFER CHARACTER RELATIONSHIP

What does the phrase 'he had once found a book about diplomacy and had never quite recovered from it' tell us about Elliot?

- A He takes the meetings very seriously and uses formal language that doesn't quite fit the situation.
- B He became ill after reading the book and has not been well since.
- C He is very good at solving arguments between the children.
- D He knows a great deal about how governments work.

16

WRITER'S CRAFT — EFFECT OF HUMOUR

The writer says Elliot assessed the tree 'with a stick' and Elliot replies it was 'a *pointed* stick.' Why is this exchange humorous?

- A Because pointed sticks are known to be dangerous tools.
- B Because Elliot speaks as if the distinction is important when it is clearly not.
- C Because Maisie is frightened of sticks and Elliot knows this.
- D Because a pointed stick is actually the correct tool for assessing trees.

17

TEXT COMPREHENSION — CONTRAST CHARACTERS

How does Priya's response to the argument differ from Dom's?

A Priya is more interested in the argument than Dom, who has gone to get more food.

B Priya shows she is not engaged by eating, while Dom is completely asleep.

C Priya agrees with Maisie while Dom agrees with Elliot.

D Priya is angry about the argument while Dom finds it funny.

18

SYNTAX — IDENTIFY WORD NOT USED AS A VERB

In the description of Maisie's diagram, which of these words is NOT used as a verb?

A checked

B twice

C precise

D folded

19

TEXT COMPREHENSION — INFER MEANING OF ACTION

When Elliot 'made a note in his notebook,' Maisie understood this as 'the closest thing to a compliment she was likely to get.' What does this reveal about Elliot?

A He never compliments anyone and Maisie has given up hoping.

B He shows approval through his actions rather than saying anything directly.

C He is writing down Maisie's idea so he can steal credit for it later.

D He is so busy that he has no time for conversation.

20

WRITER'S CRAFT — IDENTIFY LITERARY DEVICE

The writer says Dom 'had a gift for sleeping at inconvenient moments' and that 'It was, according to Dom, a skill.' Which device does the writer use here?

A Simile

B Alliteration

C Irony

D Metaphor

TEXT 4 OF 4 — CLOZE PASSAGE

Night Vision in Animals

Original cloze passage for ICAS preparation purposes

Many animals that are active at night have eyes that are specially adapted for low-light conditions. Cats, for instance, have a reflective layer behind their retina called the tapetum lucidum, which bounces light back through the eye a second time. **(27)**, this means that a cat can see in light six times dimmer than what a human requires. Owls take a different approach — their enormous eyes are fixed in their sockets and cannot move, **(28)** they rotate their entire heads to track prey. Both strategies allow these animals to hunt successfully in near-total darkness.

21

SYNTAX — SELECT THE CORRECT CONNECTIVE

Choose the word or phrase that best completes blank (27).

A However

B In practice

C Despite this

D Whereas

22

SYNTAX — SELECT THE CORRECT CONNECTIVE

Choose the word or phrase that best completes blank (28).

A because

B although

C so

D unless

Writing

Paper C · 1 task · 35 minutes · Narrative OR Persuasive

1 TASK

35 MINUTES

ICAS Writing gives you one task — either Narrative or Persuasive. You are marked on three areas: Genre (structure and language choices), Textual Grammar (tense, pronouns, sentence variety), and Syntax/Punctuation (correctness and accuracy).

THE 5–25–5 RULE — EVERY TIME

5 min Plan: Purpose, key points, opening hook, conclusion strategy.
25 min Write: Follow your plan. Vary sentence length. Use specific, precise vocabulary. Stay on topic.
5 min Edit: Read back and fix punctuation, tense consistency, agreement, and spelling. Improve your first and last sentences.

Task W1 — Persuasive Writing

YOUR TASK

Write a letter to your local council arguing that your neighbourhood needs a new public park or outdoor space for young people. Clearly state your position and support it with at least three reasons.

⏱ 35 minutes total — plan for 5 minutes first.

5 MIN PLAN

My 3 reasons:

Opening hook idea:

Closing strategy:

YOUR RESPONSE (25 MINUTES)

Task W2 — Narrative Writing

YOUR TASK

Write a story that begins with this line: *"Nobody believed me when I said what I'd seen in the old museum on Saturday afternoon — but I know what I saw."* Your story should establish a clear setting, build tension, and end in a satisfying way.

⏱ **35 minutes total — plan for 5 minutes first.**

5 MIN PLAN

What did the narrator see? _____ Setting:

_____

How tension builds:

Ending strategy:

YOUR RESPONSE

Science

Practice · 10 questions · 15 minutes · Every question uses a diagram, graph, table, or image

10 QUESTIONS

15 MINUTES

In the real ICAS Science paper, every question uses a visual. The science information is given to you in the question — your job is to read it carefully and reason with it. You are interpreting data, identifying controls, drawing conclusions, and applying unfamiliar information.

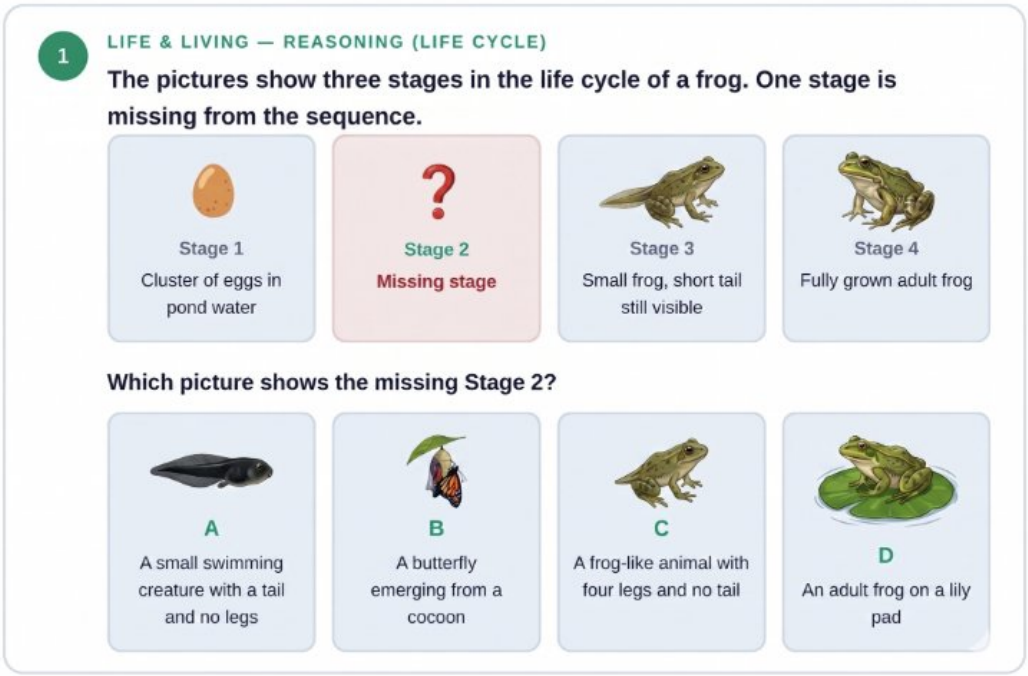
KEY SCIENCE STRATEGY

For **investigating questions**: always ask — what was changed? What was kept the same? What does this data actually prove — and what does it NOT prove? For **graph questions**: read axis labels carefully before looking at the data.

1

LIFE & LIVING — REASONING (LIFE CYCLE)

The pictures show three stages in the life cycle of a frog. One stage is missing from the sequence.



Which picture shows the missing Stage 2?

- A A small swimming creature with a tail and no legs
- B A butterfly emerging from a cocoon
- C A frog-like animal with four legs and no tail
- D An adult frog on a lily pad

2

NATURAL & PROCESSED MATERIALS — INTERPRETING (PIE CHART)

The diagram shows the approximate composition of seawater by mass.

COMPOSITION OF SEAWATER (BY MASS)

- Water (H_2O): 96.5%
- Salt (sodium chloride): ~2.8%
- Other minerals: ~0.7%

Which is closest to the amount of salt in 200 g of seawater?

A 2 g

B 6 g

C 20 g

D 60 g

3

INVESTIGATING — DESIGN OF DATA TABLE

Priya wants to measure how much water evaporates from four identical dishes left in different locations: indoors, outdoors in shade, outdoors in sun, and outdoors in wind. She checks each dish every day for 5 days. Which table should she use to record her results?

(A)

LOCATION	WATER LOST (ML)
Day 1	
Day 2	
Day 3	

(B)

DAY	INDOORS	SHADE	SUN	WIND
1				
2				
3				

(C)

DAY	TOTAL WATER LOST
Day 1	
Day 2	
Day 3	

(D)

LOCATION	DAY 1	DAY 3	DAY 5
Indoors			
Sun			

4

LIFE & LIVING — INTERPRETING (BAR GRAPH, TWO VARIABLES)

The graph shows the average hours of sleep per night for children and adults in four different age groups.

AVERAGE HOURS OF SLEEP PER NIGHT

Recommended | Actual average

Age group	Recommended	Actual	Visual comparison
5–7 years	11 h	8 h	
8–10 years	10 h	7.5 h	
11–13 years	9 h	7 h	
Adults	8 h	7 h	

Which age group has the greatest difference between recommended and actual sleep?

A 5–7 years

B 8–10 years

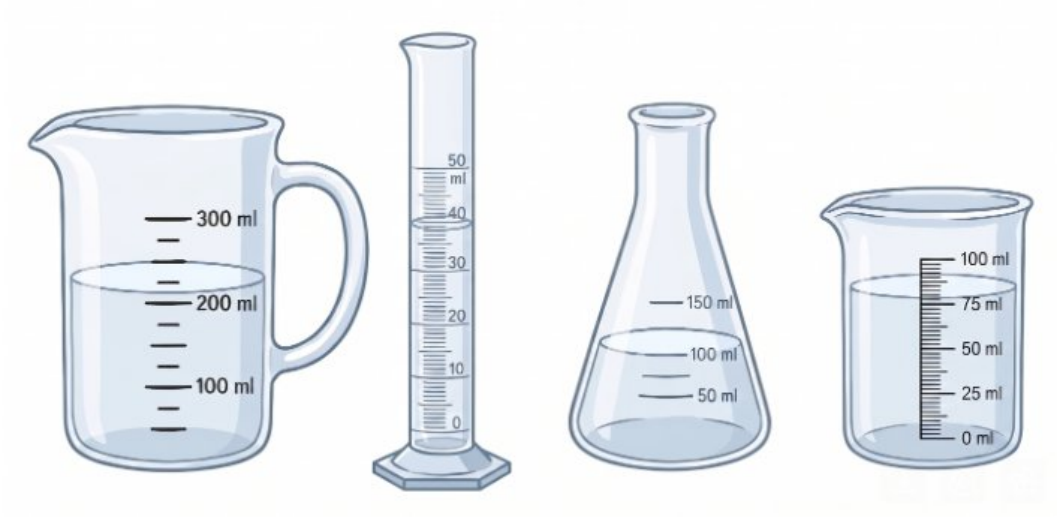
C 11–13 years

D Adults

5

NATURAL & PROCESSED MATERIALS — OBSERVING (SELECT EQUIPMENT)

Which piece of equipment would allow you to measure 45 mL of water most accurately?



(A) Measuring Jug (B) Graduated Cylinder (C) Conical Flask (D) Beaker

A A

B B

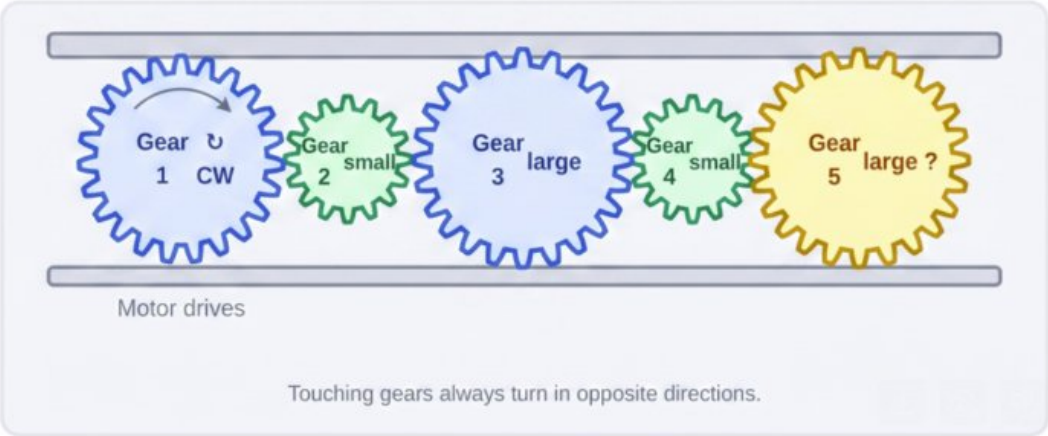
C C

D D

6

PHYSICAL SCIENCES — REASONING (FORCES & MOTION)

Five gears are connected in a chain. Gear 1 is turned clockwise by a motor. In which direction does Gear 5 turn?



A Clockwise

B Anti-clockwise

C It does not turn

D It depends on the size of the gears

7

INVESTIGATING — FAIR TEST / CONTROLLED VARIABLE

Three students wanted to find out whether the angle of a ramp affects how far a toy car travels.

EXPERIMENT SETUP

- Student A: **same car**, ramp angle **20°**, released from the **top**
- Student B: **same car**, ramp angle **35°**, released from the **top**
- Student C: **same car**, ramp angle **50°**, released from the **top**

Each student measured how far the car travelled along the floor after leaving the ramp.

Which variable did the students change in this experiment?

A The distance the car travelled after leaving the ramp

B The type of surface the car travelled on after the ramp

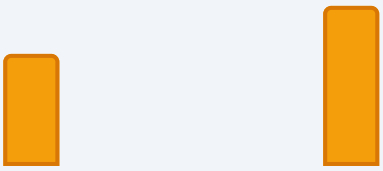
C The angle of the ramp

D The position on the ramp where the car was released

8

ENERGY & CHANGE — PREDICTING (RATES FROM DIAGRAM)

Joel lit two identical 10 cm candles at the same time. He let candle P burn for 2 hours, then blew it out. Candle P is now 7 cm tall. Candle Q was not lit and remains 10 cm.



Candle P (burned 2h)
Height now: 7 cm

Candle Q (unburned)
Height: 10 cm

Joel now lights candle Q. How long will it take candle Q to burn down completely if it burns at the same rate as candle P?

A 4 hours

B 5 hours

C 6 hours

D 7 hours

9

NATURAL & PROCESSED MATERIALS — REASONING (APPLY RULES FROM TABLE)

An object floats in a liquid if the object is less dense than the liquid.

SUBSTANCE	DENSITY (G/CM³)
Cooking oil	0.92
Fresh water	1.00
Seawater	1.03
Wax	0.95
Rubber	1.20

A block of wax is placed into a container of cooking oil. What will happen?

A The wax floats, because wax is less dense than cooking oil.

B The wax sinks, because wax is less dense than cooking oil.

C The wax sinks, because wax is denser than cooking oil.

D The wax floats, because wax is denser than cooking oil.

10

INVESTIGATING — DRAWING CONCLUSIONS (GRAPH)

Students measured the mass of a wet sponge every 30 minutes as it dried in the sun.

MASS OF SPONGE OVER TIME

0 min → 120 g | 30 min → 105 g | 60 min → 92 g

90 min → 83 g | 120 min → 78 g | 150 min → 76 g

180 min → 76 g | 210 min → 76 g

The sponge's mass levels off and stops decreasing after 150 minutes.

What conclusion is best supported by this data?

A The sponge lost water most quickly in the final 30 minutes.

B The sponge was fully dry after 30 minutes.

C The sponge dried most quickly at the start, then the rate slowed until it stopped losing mass.

D Leaving the sponge for longer than 3 hours would make it lose more water.

Mathematics

Practice · 12 questions · 14 minutes · No Calculator · Real-world word problems

12 QUESTIONS

15 MINUTES

In the real ICAS Maths paper, almost every question has a visual — a diagram, graph, scale, or image. Questions use real-world contexts and start accessible before getting progressively harder.

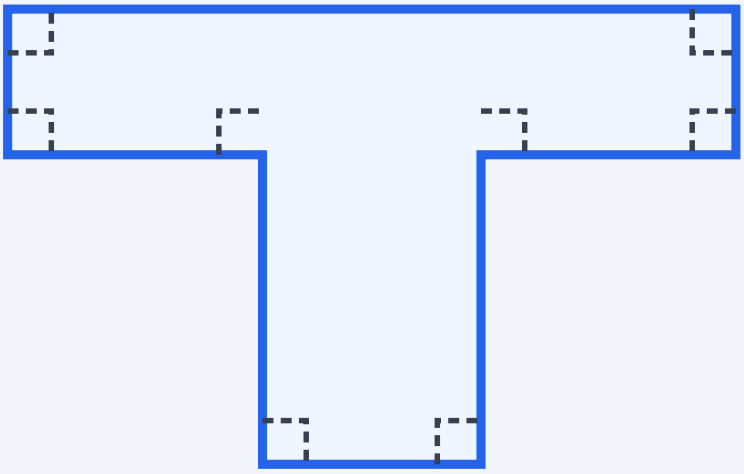
MATHS STRATEGY FOR PAPER C

Estimate first: What ballpark should the answer be in? Eliminate options that are clearly too big or small. **Draw it:** For space and geometry questions, a quick sketch helps enormously. **Work backwards:** For puzzle questions, try plugging answer options back into the problem.

1

SPACE & GEOMETRY — ANGLES IN CONTEXT

A T-shaped logo is made by joining two rectangles. It has 8 corners total. How many of the interior angles are right angles (exactly 90°)?



Dashed squares mark all 8 corners. Not all interior angles are 90°.

A 4

B 6

C 8

D 10

2

ALGEBRA & PATTERNS — CONTINUE A VISUAL PATTERN

Anya arranges tiles in a repeating pattern. The first six tiles in her pattern are shown: ■●■■●■ ...
She continues the pattern. What colour is tile number 17?

- A Blue
- B Black
- C The pattern ends before tile 17
- D Cannot be determined

3

NUMBER — ESTIMATION FROM VISUAL

A jar holds marbles arranged in rows. The bottom row is fully visible and has 5 marbles. The jar has the same number of rows as marbles in the bottom row. Approximately how many marbles are in the jar altogether?

- A 15
- B 25
- C 50
- D 125

4

CHANCE & DATA — PICTOGRAPH WITH MISSING VALUES

Six students collected cans for a recycling drive. The total was 132 cans. Bella collected twice as many cans as Ed. Each 🥫 = 6 cans.

STUDENT	CANS (🥫 = 6 CANS)
Amir	🥫🥫🥫
Bella	?
Carlos	🥫🥫🥫
Dina	🥫🥫🥫🥫🥫
Ed	?
Fatima	🥫🥫🥫

How many cans did Bella collect?

A 12

B 18

C 24

D 36

5

MEASURES & UNITS — READ JUGS + MULTI-STEP REASONING

Kiran mixed three jugs of mango juice to make a fruit punch: Jug 1 = 120 mL, Jug 2 = 160 mL, Jug 3 = 80 mL. He added apple juice equal to one-quarter of the total mango juice. Which jug shows the amount of apple juice Kiran added?

40 mL	90 mL	120 mL	160 mL
(A)	(B)	(C)	(D)

6

MEASUREMENT — PERIMETER OF COMPOSITE SHAPE

An L-shape is made by joining 5 squares, each with side length 3 cm. The top row has 3 squares. Below the leftmost square are 2 more squares. What is the perimeter of the L-shape?

- A 36 cm
- B 42 cm
- C 45 cm
- D 48 cm

7

MEASURES & UNITS — MULTI-STEP TIME PROBLEM

Siti goes swimming Mon, Wed, Fri from 06:40–07:25, and Saturday from 08:15–09:45. How long does she spend at swimming in one week altogether?

- A 3 hours 45 minutes
- B 4 hours 15 minutes
- C 4 hours 45 minutes
- D 5 hours 15 minutes

8

NUMBER — FRACTIONS WORD PROBLEM

In a wildlife park, one-third of the animals are reptiles. There are 24 reptiles. How many animals are mammals or birds?

- A 8
- B 48
- C 72
- D 32

9

SPACE & GEOMETRY — REFLECTION

A flag shape (pole with triangular flag pointing RIGHT) sits above a horizontal dashed mirror line. Which option correctly shows the flag reflected below the mirror line?

(A)	(B)	(C)	(D)
Flag below mirror, still pointing RIGHT	Flag below mirror, pointing LEFT	Flag stays above mirror, unchanged	Flag below mirror, pointing LEFT but rotated 90°

10

NUMBER — MULTI-STEP WORD PROBLEM

Each tray in a bakery holds 12 muffins. Each box holds 3 trays. The baker has made 9 boxes of muffins. He then eats 6 muffins himself. How many muffins are left?

A 318

B 321

C 324

D 330

11

NUMBER — MULTI-CLUE PUZZLE

Mr Tan chose two whole numbers greater than zero. Clues: their sum = 20; their product < 75; the first number is smaller than the second. How many different pairs are possible?

A 3

B 4

C 5

D 6

12

NUMBER — LOGICAL REASONING (HARDER)

Five students have stickers. Aiden has 2×12=24. Carlos has 3×12=36. Ella has 2×12=24. Total = 168. Bella has 8 more stickers than Dani. How many does Bella have?

A 20

B 22

C 24

D 46

Digital Technologies

Practice · 8 questions · 8 minutes · Every question uses a visual, screenshot, or diagram

8 QUESTIONS

8 MINUTES

In the real ICAS Digital Technologies paper, every question is based on a practical scenario shown in a screenshot, diagram, table, or interface mockup. You are applying your knowledge — not just recalling facts.

DIGITAL TECHNOLOGIES STRATEGY FOR PAPER C

Spreadsheets: When a formula is filled down or right, column letters and row numbers shift — write it out step by step. **Flowcharts & Pseudocode:** Trace values one step at a time on paper. **Internet/Email:** Think about what each field or button actually does in real life. **Databases:** Apply every filter condition separately before combining.

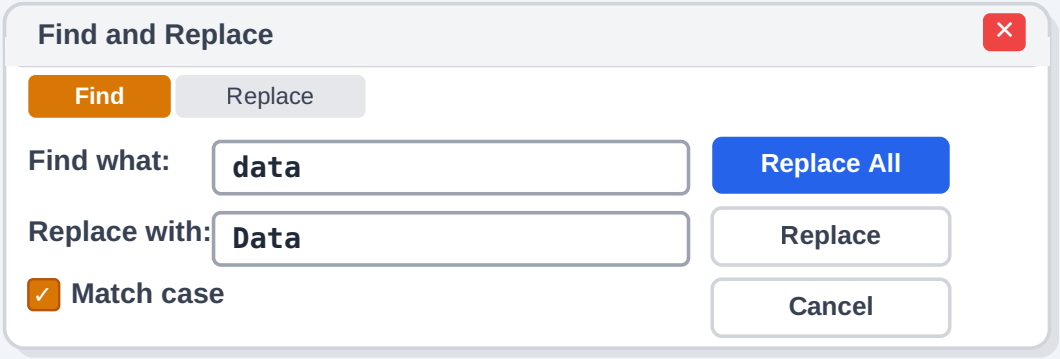
1

WORD PROCESSING — FIND & REPLACE / FORMATTING OPTIONS

Maya is editing her science report. She opens Find & Replace and types the settings shown. The document contains this sentence:

> ***"The data collected each day proved the data was correct. However, the Data was entered incorrectly."***

FIND & REPLACE DIALOG



How many words in the document will be changed when Maya clicks Replace All?

A 1

B 2

C 3

D 0, because "data" and "Data" are the same word

2

SPREADSHEETS & DATABASES — RELATIVE CELL REFERENCES / FILL DOWN

Lena is tracking stationery prices for her school shop. She typed a formula into cell D2 to calculate the total cost for each item.

STATIONERY SHOP SPREADSHEET

D2 ƒx =B2*C2

	A	B	C	D
1	Item	Unit Cost ($)	Quantity	Total Cost ($)
2	Pencils	0.50	20	=B2*C2
3	Rulers	1.20	15	▼
4	Erasers	0.30	30	▼

Lena selects cell D2 and fills the formula down to D4 using the fill handle (▼).

What formula will appear in cell D4?

A =B2*C2

B =B4*C4

C =B2*C4

D =D2+D3

3

INTERNET & EMAIL — WEB ADDRESS COMPONENTS

Omar is researching planets for his science assignment. His teacher tells him to only use websites registered in Australia. Omar finds this web address.

BROWSER ADDRESS BAR

https://www.science.edu.au/space/planets

(A) (B) (C) (D)

Which labelled part of the web address confirms this website is registered in Australia?

A https — the security protocol

B science — the domain name

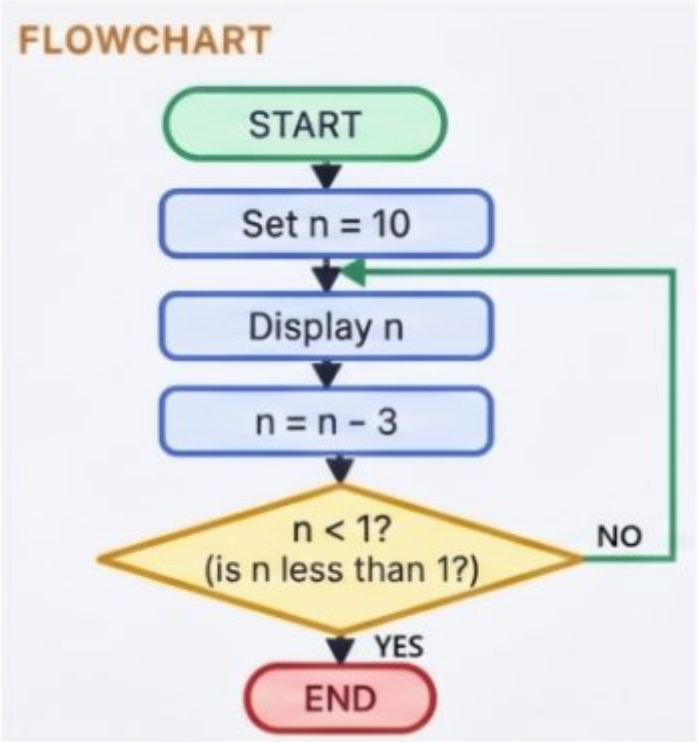
C edu — the organisation type

D au — the country code

4

PROGRAMMING — FLOWCHART TRACING / LOOP OUTPUT

Priya wrote this flowchart to display a sequence of numbers on screen. Which set of numbers does the flowchart display?



A 10, 7, 4, 1

B 10, 7, 4

C 10, 7, 4, 1, −2

D 7, 4, 1

5

INTERNET & EMAIL — CC / BCC / EMAIL PRIVACY

Zara is sending an email about her class project. She fills in the fields as shown.

EMAIL COMPOSE WINDOW

New Message

To:	mr.jones@school.edu.au
CC:	classmate@school.edu.au
BCC:	parent@email.com
Subject:	**Science Project — First Draft Update**

Dear Mr Jones,
I have completed the first draft of my science project. Please find it attached.
Zara

CC = Carbon Copy (visible to all recipients) | **BCC** = Blind Carbon Copy (hidden from other recipients)

When the classmate receives this email, which email addresses can they see listed in the email?

A Only Mr Jones's address — classmates cannot see any other fields.

B Mr Jones's address and the classmate's own address — but NOT the parent's address.

C Mr Jones's, the classmate's, and the parent's addresses — all three are visible.

D No addresses — the classmate only sees the message body, not the header fields.

6

SPREADSHEETS & DATABASES — DATABASE SEARCH / TWO-CONDITION FILTER

Sam has a database of books in the school library. He applies two filter conditions at the same time to search the database.

LIBRARY BOOK DATABASE

ID	TITLE	GENRE	YEAR PUBLISHED	STAR RATING
1	Ocean Blue	Fiction	2017	
2	Code Wizard	Non-fiction	2020	
3	Red Planet	Fiction	2021	
4	Desert Rose	Fiction	2019	
5	AI World	Non-fiction	2022	
6	Star Child	Fiction	2023	

ACTIVE FILTERS: Genre = Fiction AND Star Rating =

Which book titles will appear in the filtered results?

A Desert Rose and Star Child only

B Ocean Blue, Desert Rose, and Star Child

C Code Wizard and AI World only

D Red Planet, Desert Rose, and Star Child

7

GRAPHICS & MULTIMEDIA — PRESENTATION ANIMATION / TRIGGER SETTINGS

Nina has set up animations on her slide about ocean life. The Animation Pane shows the settings for each object on the slide.

SLIDE PREVIEW

Ocean Life

- Coral reefs cover 0.1% of the ocean
- Over 1 million species live in the sea
- 80% of all life is found underwater

ANIMATION PANE

ANIMATION PANE	
ON CLICK	1. Title — Fade
AFTER PREV	2. Image — Zoom
ON CLICK	3. Bullet points — Fly In

On Click = waits for next mouse click
After Previous = plays automatically after the item above it finishes

Nina starts the slideshow. How many times does she need to click the mouse to make all three objects appear on screen?

A 1 click

B 2 clicks

C 3 clicks

D 4 clicks

8

PROGRAMMING — PSEUDOCODE / REPEAT UNTIL LOOP / VALUE TRACING

Eli wrote this pseudocode program. Trace through it carefully to find the final value of number.

PSEUDOCODE

```
number ← 2
REPEAT
    number ← number × 2
UNTIL number > 20
OUTPUT number
```

Key — Pseudocode Notation

← means "is set to" (assignment) · > means "is greater than"

REPEAT...UNTIL runs the loop body first, then checks the condition

× means multiply

What value does the program output?

A 16

B 20

C 32

D 64

📋 Answers & Worked Explanations

Read every explanation — even for questions you got right. Understanding why each wrong answer is wrong is where the real learning happens.

📖 English — Answers

1 **Word meaning — 'perpetual'**

✓ **Correct Answer: C — constant**

The axolotl always looks surprised — perpetual = never-ending/constant. Use context: it's always that way, not sometimes.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Occasional = sometimes — the opposite of perpetual.
- **B** Surprising describes the expression itself, not what 'perpetual' means.
- **D** Wide describes the head in the same sentence — a different adjective entirely.

2 **Fact vs opinion — 'enormously valuable'**

✓ **Correct Answer: B**

'Enormously valuable' is a judgement — it cannot be precisely measured or verified. A (native to Mexico City), C (non-native fish eat eggs), and D (fewer than 1,000 remain) are all verifiable facts from research data.

WHY THE OTHER OPTIONS ARE WRONG

- **A** A verifiable fact — the axolotl's native habitat is documented scientifically.
- **C** A verifiable fact — the impact of non-native fish is documented by ecologists.
- **D** A verifiable fact — population estimates come from field research.

3 Main idea of the third paragraph

✓ Correct Answer: A — Axolotls can grow back lost body parts in a way no other vertebrate can

The paragraph opens with 'What truly sets the axolotl apart… is its extraordinary ability to regenerate.' Every sentence supports this single claim — limbs, spinal cords, hearts, brains.

WHY THE OTHER OPTIONS ARE WRONG

- **B** Being studied by scientists is mentioned, but it is a supporting detail — not the main idea of this paragraph.
- **C** Reproducing without metamorphosis is the topic of the second paragraph, not the third.
- **D** The paragraph never claims axolotls are 'more valuable than any other animal' — this is an overstatement not supported by the text.

4 Effect of ending — 'cannot regenerate its own wild population'

✓ Correct Answer: B — To create a contrast between the axolotl's scientific importance and its real-world fragility

The writer signals the irony with 'Ironically': the animal that can regenerate anything cannot save its own species. This creates a powerful, thought-provoking final contrast.

WHY THE OTHER OPTIONS ARE WRONG

- **A** The article never claims regeneration is impossible — quite the opposite. This ending is about species survival, not about whether cells can regenerate.
- **C** No such warning is given. The text focuses on the axolotl specifically, not all amphibians.
- **D** Research is not described as having failed — the article is positive about regeneration science. The ending is about habitat loss, not scientific failure.

5 Writer defines neoteny — what does this assume?

✓ **Correct Answer: A — The reader may not know what the word neoteny means**

When writers define a word immediately after using it, they assume readers won't know it. The writer does not define 'metamorphosis' with the same care — assuming that word is already known.

WHY THE OTHER OPTIONS ARE WRONG

- **A** The opposite is true — if the reader already understood scientific language, no definition would be needed.
- **C** The article is written for a general audience, not scientists. Scientists would already know what neoteny means.
- **D** Whether the reader has seen an axolotl is irrelevant to whether they know what neoteny means.

6 Purpose of subheadings

✓ **Correct Answer: D — To signal a change in focus and help the reader navigate between topics**

Subheadings are a structural feature of informational texts that divide content into sections. Each heading ('The Real Secret: Regeneration', 'A Species in Trouble') signals a shift in topic.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Subheadings say nothing about who wrote the article. Scientists, journalists, and students all use them.
- **C** Subheadings do not replace introductions or conclusions — this article still has both.
- **D** Making it 'look like a textbook' is a superficial observation about appearance, not purpose. Subheadings serve a navigational and structural function.

7 **'No longer entirely science fiction' — what does this suggest?**

✓ **Correct Answer: A — It was once thought impossible, but now seems genuinely achievable**

'No longer entirely' means: it used to belong to the realm of fiction (impossible), but research has moved it toward real possibility. A careful, hedged claim — not guaranteed, but no longer purely fictional.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Scientists have NOT yet succeeded in regrowing human spinal cords — 'no longer science fiction' means it is being researched, not that it has been achieved.
- **C** Science fiction writers are not mentioned in this context. The phrase refers to the medical possibility, not to stories.
- **D** The complete opposite of what the text says. The phrase explicitly means it is no longer impossible.

8 **What do the italics show in 'The New School'?**

✓ **Correct Answer: A — The words spoken aloud or heard by the boy**

Italics in the poem mark the teacher's speech and the mother's final words — things actually said aloud in the room. The non-italic sections are the boy's inner thoughts that he keeps to himself.

WHY THE OTHER OPTIONS ARE WRONG

- **B** The most important ideas are in the non-italic sections — they reveal his real, private feelings. Italics mark what is spoken, not what is most significant.
- **C** Nothing in the poem is set in the future. It takes place during a single parent-teacher meeting.
- **D** The private thoughts are the non-italic lines — the reverse of what D claims. The italics are the public, spoken words.

9 'Eating lunch beside someone you don't know counts as a friend'

✓ **Correct Answer: B — His teacher's idea of what counts as friendship is too simple**

The boy challenges Miss Hartley's assessment with sarcasm — implying he disagrees with her shallow definition of friendship. Sitting near someone is not the same as having a genuine connection.

WHY THE OTHER OPTIONS ARE WRONG

- **A** He does not say he doesn't want friends — he objects to the definition of friendship being used. The poem shows he values deep connection.
- **C** There is no evidence lunchtime is his least favourite. His worst experience is being unnamed; his best is the library.
- **D** The boy shows no optimism about future friendships here — he is critiquing the present misunderstanding.

10 Boy's experience vs Miss Hartley's description

✓ **Correct Answer: A — Miss Hartley says he is doing well, but the boy feels isolated and still finding his place**

This is the central contrast of the entire poem. Every detail the boy offers — the unfamiliar smell, his name mispronounced, the hour alone in the library — directly contradicts 'settled in well.'

WHY THE OTHER OPTIONS ARE WRONG

- **B** Miss Hartley does not worry — she is positive. And the boy does not feel content — the opposite.
- **C** Miss Hartley does know who he is — she mentions him by name and comments on his friendships.
- **D** They do not agree. Miss Hartley sees improvement; the boy's internal experience is entirely different.

11 Boy's best moment of the week

✓ Correct Answer: C — Finding a book in a language he could read and spending an hour alone with it

The boy states this directly and emphatically: 'the library book I found / in a language I could read / and the hour I spent there alone / that was the best hour of my week.' The poem gives no ambiguity here.

WHY THE OTHER OPTIONS ARE WRONG

- **A** He made no new friend — this is exactly what he disputes in the poem.
- **C** Hearing the teacher say he was settling in is not the boy's experience — he internally disagrees with this assessment.
- **D** The parent-teacher meeting is a source of tension for the boy, not a highlight.

12 Why is the ending effective?

✓ Correct Answer: D — It creates a contrast with everything the reader has just learned about the boy's real feelings

The mother repeats 'Nothing' and 'He's doing very well' — exactly what Miss Hartley said. But the reader now knows the boy's real experience. The gap between the public statement and private truth is what makes the ending so resonant.

WHY THE OTHER OPTIONS ARE WRONG

- **A** The boy has not become positive — he has chosen silence, which is different from positivity.
- **C** Miss Hartley was not right — she missed everything the reader has just been shown.
- **D** There is no evidence the mother is angry. She is simply repeating the teacher's words, unaware of the boy's real feelings.

13 'There is so much, I think' — what does this reveal?

✓ Correct Answer: B — He has deep feelings about his experience that he chooses not to share with adults

The line introduces a long section of private observations he never speaks aloud. He says 'Nothing' at the end. The whole poem is built on this tension between what is felt and what is said.

WHY THE OTHER OPTIONS ARE WRONG

- **A** He is not confused — his thoughts are clear and specific. He is choosing not to share them, which is different from being unable to think clearly.
- **C** He never explains everything — he says 'Nothing.' The list is what he thinks but does not say.
- **D** His feelings are about belonging and identity, not schoolwork. There is no mention of struggling academically.

14 'Structurally compromised' meaning

✓ Correct Answer: B — Not safe or strong enough to use

Elliot uses technical engineering language to sound authoritative. 'Structurally compromised' means the structure has a problem — it is not strong enough to be safely used.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Difficulty of climbing has nothing to do with structural integrity. A tree can be easy to climb and still be unsafe.
- **C** 'Already being used by someone else' is an entirely different meaning — occupancy, not structural safety.
- **D** Distance is irrelevant to whether a tree is structurally sound.

15 **Diplomacy book — what does it tell us about Elliot?**

✓ Correct Answer: A — He takes the meetings very seriously and uses formal language that doesn't quite fit the situation

The humour is that Elliot absorbed diplomatic language meant for international relations and applies it wholesale to children arguing about a treehouse. The formal vocabulary is wildly mismatched with the context.

WHY THE OTHER OPTIONS ARE WRONG

- **B** He became ill — this is a literal misreading. 'Never quite recovered from it' means it changed him permanently (he became overly formal), not that he got physically ill.
- **C** Elliot is not good at solving arguments — he makes them more formal and rigid, not more resolved.
- **D** The text implies he knows diplomacy vocabulary, not that he has deep political knowledge.

16 **Why is the 'pointed stick' exchange humorous?**

✓ Correct Answer: C — Elliot speaks as if the distinction is important when it clearly is not

The humour comes from Elliot's absolute seriousness. A pointed vs plain stick makes no practical difference for assessing tree structure — but his tone treats the distinction as self-evidently significant.

WHY THE OTHER OPTIONS ARE WRONG

- **A** There is no suggestion that pointed sticks are dangerous in context. The humour is about the absurdity of the distinction, not danger.
- **C** Maisie shows no fear of sticks — she is amused or frustrated by Elliot's pomposity, not frightened.
- **D** A pointed stick is not a correct arborist's tool. This would make Elliot right — but the joke is that he is absurdly wrong.

17 How Priya's response differs from Dom's

✓ **Correct Answer: A — Priya shows she is not engaged by eating; Dom is completely asleep**

Both show disengagement in contrasting ways. Priya eats her biscuit silently — conscious but checked out. Dom has fallen asleep entirely. Both contrast with the actively arguing Maisie and Elliot.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Priya is not more interested — she is eating and has 'decided the argument wasn't worth her attention.' Dom went to get food is not stated; he is asleep against the wall.
- **C** Neither Priya nor Dom expresses agreement with anyone. Both are simply disengaged.
- **D** There is no evidence of anger from Priya or amusement from Dom. They are simply absent from the argument in different ways.

18 Which word is NOT used as a verb in the diagram description?

✓ **Correct Answer: B — twice (adverb)**

'Twice' modifies 'checked' — it answers how many times the checking happened, making it an adverb. 'Precise' (C) is also an adjective, but the most unambiguously non-verb answer is B. 'Checked' and 'Folded' are past-tense verbs; 'Precise' is an adjective.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 'Checked' is a verb — 'She had checked them twice.' It describes an action performed.
- **C** 'Precise' is an adjective (describing measurements) not a verb — but 'twice' is the cleaner answer since adjectives can occasionally function as verbs in other contexts, whereas adverbs never can.
- **D** 'Folded' is a verb — 'having been folded four times.' It describes an action performed on the diagram.

19 What does Elliot's note-making reveal about him?

✓ **Correct Answer: D — He shows approval through his actions rather than saying anything directly**

Maisie interprets the note as implicit approval — she knows him well enough to read his behaviour. Elliot communicates through actions, not words. This shows he has a consistent, recognisable pattern that those around him can interpret.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 'Never compliments anyone' is too absolute. Maisie calls it 'the closest thing to a compliment' — implying he gives some, just rarely and indirectly.
- **C** There is no evidence he steals ideas. He is meticulous, not dishonest — this reading projects a negative motive not supported by the text.
- **D** Being too busy is never mentioned. The note is clearly an act of approval, not a sign of having no time to talk.

20 'A gift for sleeping' — literary device

✓ **Correct Answer: C — Irony**

Calling inconvenient sleeping 'a gift' and 'a skill' (from Dom's own perspective) is ironic — something problematic is presented as an admirable quality. The comedy comes from Dom's self-flattering reframing of a flaw.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Simile uses 'like' or 'as' to compare two things. No comparison is made here — Dom simply has 'a gift.'
- **B** Alliteration requires repeated consonant sounds at the start of words. 'Gift' and 'sleeping' do not alliterate.
- **D** Metaphor says one thing IS another. While 'gift' is metaphorical, the overall effect of calling sleeping inconveniently a 'skill' is ironic — the device at play is irony, not just metaphor.

21 Cloze blank (21) — connective for the tapetum lucidum consequence

✓ **Correct Answer: B — In practice**

Blank (27) follows the explanation of what the tapetum lucidum does and introduces the real-world result: the cat can see in very dim light. 'In practice' signals a move from scientific explanation to practical consequence — this is exactly right.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 'However' introduces contrast or contradiction. There is no contrast here — the cat's vision ability is the direct result of the tapetum lucidum, not a surprise or reversal.
- **C** 'Despite this' also signals contrast — but there is nothing to contrast against in this part of the sentence.
- **D** 'Whereas' signals simultaneous contrast between two things. Only one subject (the cat) is being discussed here.

22 Cloze blank (22) — connective for owls rotating their heads

✓ **Correct Answer: C — so**

Fixed eyes [cause] → rotate heads [effect/consequence]. 'So' correctly expresses cause-and-effect. The structure is: eyes cannot move, SO they rotate their heads. This is the only connective that introduces a logical consequence.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 'Because' introduces a cause, but the clause order would need to be reversed: 'they rotate their heads because their eyes are fixed' works — but 'their eyes are fixed because they rotate their heads' doesn't. In this sentence, 'so' fits the clause order.
- **B** 'Although' introduces a concession or contrast — eyes being fixed is not a surprising contrast, it IS the reason for head rotation.
- **D** 'Unless' introduces a condition that prevents something. There is no conditional relationship here.

W

Both writing tasks — Persuasive Letter and Narrative

ICAS Writing uses the same 12-criterion marking scale for all year levels, assessing Genre, Textual Grammar, and Syntax/Punctuation.

GENRE

- → Persuasive: clear position, 3+ distinct reasons with development, letter structure (address, Dear..., Yours sincerely)
- → Narrative: clear setting, tension that builds, satisfying resolution
- → Specific vocabulary matching purpose and audience
- → Strong engaging opening · Conclusion that feels complete

TEXTUAL GRAMMAR

- → Consistent tense throughout · Correct pronoun use
- → Variety of sentence lengths · Effective connectives: however, therefore, in addition
- → Complex sentences used correctly · If dialogue: correct speech marks

SYNTAX & PUNCTUATION

- → Every sentence has subject and verb · Correct capitals and full stops
- → Commas in lists and complex sentences · Correct apostrophes

Science — Answers

1

Missing Stage 2 — frog life cycle

✓ **Correct Answer: A — Tadpole (swimming creature with tail, no legs)**

Stage 2 must come after eggs (Stage 1) and before the small frog with a short tail (Stage 3). That is the tadpole — a water-dwelling larva with a tail but no legs yet. The sequence is: eggs → tadpole → small frog with tail → adult frog.

WHY THE OTHER OPTIONS ARE WRONG

- **B** A butterfly emerging from a cocoon belongs to an insect's life cycle — completely the wrong animal group. Frogs are amphibians, not insects.
- **C** A frog with four legs and no tail comes AFTER Stage 3. It is too late in the sequence to be Stage 2.
- **D** An adult frog laying eggs appears at the very end of the adult cycle — it cannot appear as Stage 2, before the animal has even grown legs.

2 Salt in 200 g of seawater (2.8%)

✓ **Correct Answer: B — 6 g**

2.8% × 200 g = 5.6 g ≈ 6 g. The key is to use 2.8% specifically (salt = sodium chloride), not the total dissolved minerals (3.5%). The question asks about salt only.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 2 g uses 1% of 200 g — an incorrectly low percentage.
- **C** 20 g uses 10% of 200 g — ten times the actual salt percentage.
- **D** 60 g uses 30% — far higher than any salt concentration in seawater.

3 Best data table for evaporation experiment

✓ **Correct Answer: B — Rows for days, columns for each location**

The experiment has two variables: time (5 days) and location (4 places). The correct table captures both simultaneously, allowing direct comparison of water lost per location per day.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Only one column for water lost — no way to separate results by location. Four dishes of data would all be jumbled together.
- **C** Only shows a total for all locations combined — loses the ability to compare locations against each other.
- **D** Only records days 1, 3, and 5 — misses days 2 and 4, so the data is incomplete and patterns may be missed.

4 Greatest gap between recommended and actual sleep

✓ **Correct Answer: A — 5–7 years (gap = 3 hours)**

Calculate each gap: 5–7 yrs = 11−8 = 3h. 8–10 yrs = 10−7.5 = 2.5h. 11–13 yrs = 9−7 = 2h. Adults = 8−7 = 1h. Always subtract the two values for each group and compare gaps — do not compare raw bar heights.

WHY THE OTHER OPTIONS ARE WRONG

- **B** 8–10 years has a gap of 2.5 hours — less than the 3 hour gap for 5–7 year olds.
- **C** 11–13 years has only a 2 hour gap — closer together than the younger groups.
- **D** Adults have the smallest gap of only 1 hour — they come closest to meeting recommended sleep.

5 Best equipment to measure exactly 45 mL

✓ **Correct Answer: B — Graduated cylinder (1 mL divisions, 0–50 mL range)**

45 mL falls within the 0–50 mL range and can be read exactly on 1 mL divisions. Accuracy requires: (1) the value falls within the scale range, and (2) the divisions are small enough to read the exact amount.

WHY THE OTHER OPTIONS ARE WRONG

- **A** The measuring jug has 100 mL divisions — you can only estimate somewhere between 0 and 100 mL. You cannot distinguish 45 mL from 40 or 50 mL.
- **C** The conical flask starts at 50 mL — the scale does not go down to 45 mL. 45 mL is below the lowest marking, so it cannot be measured.
- **D** The beaker has 25 mL divisions — you can only estimate between 25 and 50 mL. You cannot precisely read 45 mL from a scale marked only at 25 and 50.

6 Direction of Gear 5 in a 5-gear chain

✓ **Correct Answer: A — Clockwise (odd number of gears = first and last turn same way)**

Track each gear: Gear 1=CW → Gear 2=ACW → Gear 3=CW → Gear 4=ACW → Gear 5=CW. With an odd number of gears in a chain, the last gear always turns the same direction as the first. Gear size affects speed — not direction.

WHY THE OTHER OPTIONS ARE WRONG

- **B** Anti-clockwise would be correct with an even number of gears (e.g. 4 gears). With 5, the last gear mirrors the first.
- **C** Gear size has absolutely no effect on direction. Large and small gears both change direction with each mesh — size only changes speed.
- **D** Same error as C — direction is determined purely by the number of gears in the chain, never by size.

7 **Which variable did the students change?**

✓ **Correct Answer: C — The angle of the ramp**

In a fair test, only ONE variable changes. All three students used the same car (type = constant), released from the top (position = constant). Only the ramp angle changed: 20°, 35°, 50°. The distance travelled is what they measured (the dependent variable), not what they changed.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Distance travelled is the measured result (dependent variable) — what they recorded, not what they changed.
- **B** The surface is not mentioned as varying between students — it is a controlled (constant) variable.
- **D** All three students released from the top of the ramp — the release position was kept the same (controlled).

8 **How long for Candle Q (10 cm) to burn completely?**

✓ **Correct Answer: C — 6 hours 40 minutes**

Candle P burned 3 cm (from 10 cm to 7 cm) in 2 hours → burn rate = 1.5 cm/hour. Candle Q starts at 10 cm and burns at the same rate: 10 ÷ 1.5 = 6.67 hours = 6 hours 40 minutes.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 5 hours would require burning 10 cm at 2 cm/hr — but the rate is 1.5 cm/hr, not 2.
- **B** 6 hours would burn 9 cm at 1.5 cm/hr, leaving 1 cm still unburnt — not complete.
- **D** 7 hours would burn 10.5 cm — the candle would have run out before 7 hours. The exact answer is 6 hours 40 minutes.

9 **Wax (0.95) placed in cooking oil (0.92) — what happens?**

✓ **Correct Answer: C — The wax sinks, because wax is denser than cooking oil**

Wax = 0.95 g/cm³, cooking oil = 0.92 g/cm³. Since 0.95 > 0.92, wax IS denser than oil. Objects denser than the liquid they are placed in will sink. Always compare the numbers directly rather than relying on gut feeling.

WHY THE OTHER OPTIONS ARE WRONG

- **A** States that wax is less dense than oil — incorrect. 0.95 > 0.92, so wax is denser.
- **B** Correctly predicts the wax sinks — but gives the wrong reason ('less dense'). The reason is the opposite: wax sinks because it IS denser.
- **D** Correctly identifies wax as denser — but draws the wrong conclusion. Denser objects sink, they do not float.

10 **What conclusion does the sponge data support?**

✓ **Correct Answer: C — Dried most quickly at the start, rate slowed, then stopped losing mass**

Mass loss per 30 min: 15g → 13g → 9g → 5g → 2g → 0g → 0g. The rate clearly decreases over time. After 150 min, mass levels at 76 g and stays constant — no more water to lose. This shows a decelerating drying rate, not a constant one.

WHY THE OTHER OPTIONS ARE WRONG

- **A** The sponge lost mass MOST quickly at the start (15 g in the first 30 min), not in the final 30 minutes (0 g lost). The opposite is true.
- **B** It took 150 minutes to reach constant mass — the sponge was still losing water at 30 minutes (reduced from 120 g to 105 g).
- **D** Once mass reaches zero-loss (76 g), the sponge is fully dry. More time cannot produce more water loss — there is no more water to evaporate.

Mathematics — Answers

1 Interior right angles in a T-shape

✓ **Correct Answer: B — 6**

The T-shape has 8 interior corners. Six are true 90° right angles: four outer corners of the top bar and two at the bottom of the vertical stem. The other two (inner notch corners) are 270° reflex angles — they look like right angles from the outside but measure 270° on the inside of the shape.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 4 — only counts the four outer corners of the top bar, missing the two bottom stem corners.
- **C** 8 — counts all corners including the two concave 270° inner notches as if they were right angles. The most common trap answer.
- **D** 10 — impossible. The T-shape has exactly 8 corners (an 8-sided polygon), so it can have at most 8 interior angles.

2 Pattern ■●■■●■ — colour of tile 17?

✓ **Correct Answer: A — Blue**

The 6-tile pattern repeats: Black, Blue, Black, Black, Blue, Black. 17 ÷ 6 = 2 remainder 5. Position 5 in the pattern is Blue. Always write out the full repeat group and identify which position the remainder lands on.

WHY THE OTHER OPTIONS ARE WRONG

- **B** Black is positions 1, 3, 4, 6 in the repeat — remainder 5 falls on position 5, which is Blue, not Black.
- **C** The pattern does not end — it repeats indefinitely. Tile 17 is well within the continuing sequence.
- **D** The pattern is fully deterministic — once you identify the repeat unit, any tile number can be calculated exactly.

3 Marble jar — estimation

✓ **Correct Answer: B — 25**

Bottom row = 5 marbles. The jar has the same number of rows as marbles in the bottom row = 5 rows. 5 × 5 = 25 total. This is a direct multiplication — the question tells you both dimensions.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 15 uses only 3 rows (5 × 3) — misreads the number of rows as 3 rather than 5.
- **C** 50 doubles the correct answer without justification.
- **D** 125 treats the jar as a 3D cube ($5^3 = 125$), but the question specifies rows, not layers.

4 Recycling drive — how many cans did Bella collect?

✓ **Correct Answer: D — 32 cans**

Known cans (each 🥫 = 6): Amir = 18, Carlos = 18, Dina = 30, Fatima = 18. Total known = 84. Remaining = 132 − 84 = 48. Bella = 2 × Ed, so Bella + Ed = 48, 3 × Ed = 48, Ed = 16, Bella = 32. Check: 16 + 32 = 48 ✓. Wait — re-reading: Dina = 5 × 6 = 30, so 18+18+30+18 = 84. 132−84 = 48. Bella = 2×Ed → 3Ed = 48 → Ed = 16, Bella = 32. So correct answer is D (32).

WHY THE OTHER OPTIONS ARE WRONG

- **A** 12 — this would be Ed's amount (if Ed = 12), but checking: 2×12=24, total Bella+Ed=36, remainder was 48. Doesn't balance.
- **B** 18 — equals what Amir, Carlos, and Fatima each collected. Not derived from the calculation.
- **C** 24 — Bella would need Ed=12, giving 36 for both, but 132−84=48 not 36.

5 Kiran's fruit punch — apple juice amount

✓ **Correct Answer: B — 90 mL**

Step 1: Total mango juice = 120 + 160 + 80 = 360 mL. Step 2: Apple juice = ¼ of 360 = 360 ÷ 4 = 90 mL. Jug B shows 90 mL.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 40 mL — finds ¼ of just one jug (160 ÷ 4), ignoring Jug 1 and Jug 3 entirely.
- **C** 120 mL — the amount in Jug 1 itself, not the apple juice calculation.
- **D** 160 mL — the amount in Jug 2 itself, not divided by 4.

6 Perimeter of L-shape (5 squares × 3 cm each)

✓ **Correct Answer: B — 42 cm**

The L-shape (top row: 3 squares; left column below: 2 more squares) has 8 outer sides. Tracing: top = 9 cm, right of top bar = 3 cm, step in = 6 cm, step down = 6 cm, bottom = 3 cm, left side = 9 cm + 3 cm remaining + ... Always sketch and label every side individually to avoid missing any.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 36 cm — misses two sides of the inner step, undercounting the perimeter.
- **C** 45 cm — not a multiple of 3 (each side is 3 cm), which signals an arithmetic error in counting sides.
- **D** 48 cm — counts the step-in sides twice or adds a side that is interior, not exterior.

7 Siti's total swimming time per week

✓ **Correct Answer: A — 3 hours 45 minutes**

Mon/Wed/Fri: 06:40 → 07:25 = 45 min each × 3 = 135 min. Saturday: 08:15 → 09:45 = 90 min. Total = 135 + 90 = 225 min = 3 hours 45 minutes. Always find each session length first, then add.

WHY THE OTHER OPTIONS ARE WRONG

- **B** 4 hours 15 minutes = 255 min. This would require Saturday to be 120 min (2 hours) not 90 min, or a Mon/Wed/Fri session of 50 min not 45 min.
- **C** 4 hours 45 minutes = 285 min. Significantly more than the actual total — results from overestimating one or both session lengths.
- **D** 5 hours 15 minutes = 315 min. Adding an extra 90-minute session that doesn't exist in the problem.

8 ⅓ are reptiles, 24 reptiles — how many mammals or birds?

✓ **Correct Answer: B — 48**

If ⅓ = 24 reptiles, then total animals = 24 × 3 = 72. Mammals or birds = 72 − 24 = 48. The question asks for non-reptiles, not the total.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 8 = 24 ÷ 3 — this divides by 3 instead of multiplying. It confuses 'one-third' with 'divide by 3 again.'
- **C** 72 is the total number of animals — the question asks for those that are NOT reptiles.
- **D** 32 has no mathematical basis in this problem — likely from a misreading of the fractions.

9 Flag reflected below a horizontal mirror line

✓ **Correct Answer: B — Flag below mirror, pointing LEFT**

Reflecting across a horizontal mirror: the shape moves from above to below the line. The horizontal mirror flips the vertical axis — which means left/right orientation is reversed for a sideways-pointing object. A flag pointing RIGHT above the line will point LEFT below the line.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Flag below mirror still pointing RIGHT — this is a translation (slide), not a reflection. A reflection must reverse the orientation.
- **C** Flag stays above the mirror unchanged — a reflection must produce an image on the opposite side of the mirror line.
- **D** Flag below mirror pointing left but rotated 90° — rotation changes the angle, which does not happen in a reflection across a horizontal line.

10 **Muffins: 12 per tray × 3 trays per box × 9 boxes − 6**

✓ **Correct Answer: A — 318**

Step 1: 12 × 3 = 36 muffins per box. Step 2: 36 × 9 = 324 total muffins. Step 3: 324 − 6 = 318. Write each step — do not hold three multiplications in your head at once.

WHY THE OTHER OPTIONS ARE WRONG

- **B** 321 = 324 − 3. Subtracts 3 instead of 6 — misreads the number of muffins eaten.
- **C** 324 is the total before the baker eats 6. The question asks how many are LEFT after.
- **D** 330 = 324 + 6. Adds the 6 muffins instead of subtracting them — misreads 'eats' as 'bakes more.'

11 **Two numbers: sum=20, product<75, first<second — how many pairs?**

✓ **Correct Answer: B — 4 pairs**

List all pairs systematically: (1,19)→product=19✓, (2,18)→36✓, (3,17)→51✓, (4,16)→64✓. Then: (5,15)→75 — NOT less than 75 (it equals 75), so this fails. (6,14)→84✗. All higher pairs also fail. Exactly 4 pairs satisfy all three conditions.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 3 pairs — stops at (3,17), missing the valid pair (4,16) with product 64 < 75.
- **C** 5 pairs — includes (5,15) with product exactly 75, which fails the condition 'product < 75' (strictly less than).
- **D** 6 pairs — includes (5,15) and (6,14)=84, both of which fail the product condition.

12 **Bella has 8 more stickers than Dani — total = 168**

✓ **Correct Answer: D — 46**

Known: Aiden=24, Carlos=36, Ella=24 → total known = 84. Remainder for Bella + Dani = 168 − 84 = 84. Bella = Dani + 8, so: (Dani + 8) + Dani = 84 → 2×Dani = 76 → Dani = 38. Bella = 38 + 8 = 46.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 20 — too small. If Bella=20, Dani=12, total Bella+Dani=32, but the remainder was 84.
- **B** 22 — if Bella=22, Dani=14, total=36. Does not equal the required 84.
- **C** 24 — if Bella=24, Dani=16, total=40. Still does not equal 84. This is Aiden's and Ella's count — a distractor.

Digital Technologies — Answers

1 **Find & Replace — Match case ticked**

✓ **Correct Answer: B — 2**

The sentence has three instances: "data" (lowercase, first use), "data" (lowercase, second use), and "Data" (capital D). With Match case ticked, only the exact capitalisation in the Find box matches. The search is for lowercase "data" — so only the two lowercase instances are replaced. The capital "Data" is left unchanged.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 1 — only counts the first match. Replace All changes every matching instance in the document, not just the first one.
- **C** 3 — ignores the Match case setting. Without Match case, all three instances would change. With it ticked, capital "Data" is excluded.
- **D** 0 — incorrect reasoning. "data" and "Data" are different character strings. Find & Replace works on the exact string typed — it will find and replace the lowercase version.

2 Formula =B2*C2 in D2, filled down to D4

✓ **Correct Answer: B — =B4*C4**

When you fill a formula down, row numbers increase by 1 for each row. D2 = =B2*C2. Fill to D3 → =B3*C3. Fill to D4 → =B4*C4. This is called a relative cell reference — addresses shift relative to the new position. Column letters (B and C) stay fixed because you are filling down, not across.

WHY THE OTHER OPTIONS ARE WRONG

- **A** =B2*C2 — this would only be correct if references were absolute (written as B2*C2). Regular references always shift when filled.
- **C** =B2*C4 — a mixed error where only one reference shifted. Both must shift by the same amount when filling down.
- **D** =D2+D3 — confuses fill-down with creating a running total formula. Fill-down copies and adjusts the original formula structure.

3 Web address — which part confirms Australian registration?

✓ **Correct Answer: D — au (country code top-level domain)**

Web addresses use country code top-level domains (ccTLDs) to identify where a website is registered. .au = Australia, .nz = New Zealand, .uk = United Kingdom, .sg = Singapore. The country code is always the last segment of the domain name before the path.

WHY THE OTHER OPTIONS ARE WRONG

- **A** https is the protocol — it describes how the browser connects securely to the server. It says nothing about where the site is registered.
- **B** science is the domain name chosen by the website owner. It describes the topic — not the geographic location.
- **C** edu is the organisation-type code. It tells you the site belongs to an educational institution — but not which country. Universities in the US, Australia, and elsewhere all use .edu.

4 Flowchart: n=10, check n<1 first, display n, then n=n−3

✓ **Correct Answer: A — 10, 7, 4, 1**

Trace each loop carefully: n=10, 10<1? NO → display 10 → n=7. n=7, 7<1? NO → display 7 → n=4. n=4, 4<1? NO → display 4 → n=1. n=1, 1<1? NO (1 is NOT less than 1) → display 1 → n=−2. n=−2, −2<1? YES → END. The key trap: n=1 does not trigger exit because the condition is strictly less than (<), not ≤.

WHY THE OTHER OPTIONS ARE WRONG

- **B** 10, 7, 4 — stops one step too early. This mistake comes from treating the exit condition as n≤1 instead of n<1. Since 1 is not less than 1, the loop continues and displays 1.
- **C** 10, 7, 4, 1, −2 — continues one step too far. −2 is calculated but the condition check (−2<1? YES) triggers immediately, ending the loop before −2 is ever displayed.
- **D** 7, 4, 1 — misses the first value. n=10 passes the check (10<1? NO) and IS displayed before any subtraction happens.

5 Email CC/BCC — what can the classmate see?

✓ **Correct Answer: B — Mr Jones's address and the classmate's own address — but NOT the parent's**

To and CC fields are visible to every recipient. When the classmate opens the email, they see the To field (Mr Jones) and the CC field (their own address). BCC is Blind Carbon Copy — the parent receives the email silently and no other recipient can see the parent's address. That is the entire purpose of BCC: hidden inclusion.

WHY THE OTHER OPTIONS ARE WRONG

- **A** Only Mr Jones's address — incorrect. CC recipients can also see the To field and the other CC addresses. The classmate sees both.
- **C** All three addresses — the parent's BCC address is hidden from everyone else. If the classmate could see BCC, it would not be "blind."
- **D** No addresses visible — To and CC header fields are always visible to recipients. Only BCC is hidden.

6 **Database filter: Genre = Fiction AND Star Rating =**

✓ **Correct Answer: A — Desert Rose and Star Child only**

Apply each condition separately, then AND them together. Step 1 — Fiction books: Ocean Blue✓, Red Planet✓, Desert Rose✓, Star Child✓ (Code Wizard and AI World are Non-fiction✗). Step 2 — 5-star from that list: Ocean Blue=4 stars✗, Red Planet=3 stars✗, Desert Rose=5✓, Star Child=5✓. Result: Desert Rose and Star Child.

WHY THE OTHER OPTIONS ARE WRONG

- **B** Ocean Blue, Desert Rose, Star Child — Ocean Blue is Fiction but only 4 stars. It fails the second condition.
- **C** Code Wizard and AI World — these are the 5-star books, but both are Non-fiction. They fail the first condition.
- **D** Red Planet, Desert Rose, Star Child — Red Planet is Fiction but only 3 stars. AND means BOTH conditions must be met.

7 **Animation pane: Title (On Click), Image (After Previous), Bullet points (On Click)**

✓ **Correct Answer: B — 2 clicks**

Click 1: Title (On Click) appears. Automatically: Image (After Previous) plays immediately after the title — no click needed. Click 2: Bullet points (On Click) appear. Total = 2 clicks. "After Previous" removes the need for a click at that animation step.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 1 click — only the Title appears after 1 click. The Bullet points require a second click (On Click setting).
- **C** 3 clicks — the most common wrong answer. Students count 3 animations and assume 3 clicks. But "After Previous" means one animation plays automatically.
- **D** 4 clicks — more than the number of animations. There is never a situation requiring 4 clicks for 3 animations with these settings.

8 **Pseudocode: number ← 2, REPEAT number ← number × 2 UNTIL number > 20**

✓ **Correct Answer: C — 32**

REPEAT...UNTIL runs the loop body FIRST, then checks the condition. Trace: Start=2. Loop 1: 2×2=4, 4>20? NO. Loop 2: 4×2=8, 8>20? NO. Loop 3: 8×2=16, 16>20? NO. Loop 4: 16×2=32, 32>20? YES → exit. OUTPUT: 32. The loop runs 4 times total.

WHY THE OTHER OPTIONS ARE WRONG

- **A** 16 — stops one loop too early. 16 is NOT greater than 20, so the loop must run one more time. The condition is checked AFTER the multiplication.
- **B** 20 — confuses the condition threshold with the output. The program never produces 20; it produces 2, 4, 8, 16, 32 through repeated doubling.
- **D** 64 — runs one extra loop (32×2=64). But after loop 4, the check 32>20 is YES — the loop exits and outputs 32, not continuing to 64.