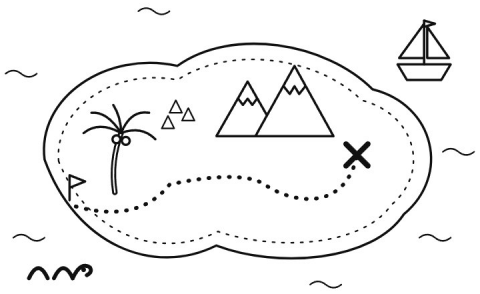
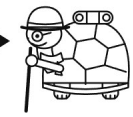
EXPLORER SKILLS FOR EVERY SUBJECT

The Badge Collection



"Hello, I'm Professor Moss, and I'll be guiding you through these challenges with my friends Pip and Dash. Every subject in the test is inspired by lessons you already do at primary school. We are interested in **how you think** in new situations, not how much you can remember. There are no extra facts or tips that a tutor can help you memorise!"



BEFORE YOU START · EXPLORER'S NOTES

✓ These practice questions will **NOT** be on the real test. They show you different styles of question.

✓ The real questions might be easier or harder than these.

✓ There may be questions from some or all of these subjects.

✓ Any subject can have multiple choice **or** short written answers, or both.

✓ Use a **black pen** and the answer-sheet rules from the Field Journal (page 7).

✓ Have fun! Each badge is a chance to try something new.

✓ **Start with your Explorer's Field Journal**, then collect your badges here – in any order you like.

Look out for the same signs as your Field Journal: ✎ writing activity · ⏱ timed challenge · ⚑ answers at the back (for grown-ups)

HOW TO EARN A BADGE

1. Read the **habits** and tick the ones you already do
2. Follow Professor Moss through the **example question**
3. Try at least one **Campfire Challenge**
4. Colour in your **badge**!

My badge tracker

COLOUR AND DATE EACH ONE WHEN YOU EARN IT



Reading Detective



Number Pathfinder



Experiment Investigator



Code Cracker



History Hunter



World Explorer



Innovation Engineer



Creative Maker



Sound Explorer



Movement Maestro



Language Lover

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VOCABULARY VALLEY

Thinking like a Reading Detective



Pip: "A tricky word isn't *a* wall – it's *a* clue! Detectives don't give up on it, they investigate."

1 Habits of a great Reading Detective

TICK THE ONES YOU DO

- ☐ **I get curious about new words.** An unfamiliar word is *a* puzzle to solve.
- ☐ **I look for clues nearby,** in the sentences before and after.
- ☐ **I think about similar words** I already know (*visible* → vision, invisible).
- ☐ **I can explain *a* word** in my own words.
- ☐ **I reread the sentence** – and any tricky section – slowly.
- ☐ **I use the context:** what is happening in the story at that moment?
- ☐ **I test my meaning** by putting the word into *a* different sentence. Does it still make sense?

2 Example question

SHORT ANSWER

What item shows the directions north, south, east and west?

A ☐ O ☐ P ☐ ☐ S shows the directions north, south, east and west.



MOSS WORKS IT OUT

① Count the boxes: 7, so it's a 7-letter word.
② Find the clues: directions, north, south… explorers use one of these!
③ MAP? Only 3 letters, so no. COMPASS has 7 letters ✓
④ Write it in CAPITALS, one letter in each box.

Campfire Challenges

① **Vocabulary Treasure Hunt.** ✎ ⚑ Work out what each **bold** word means from the clues around it. Write your guess, then check in *a* dictionary.

*The explorers **trudged** through the **murky** swamp, **famished** after six hours without food. When they finally stopped, Dash gulped down his sandwich **ravenously**.*

WORD	MY GUESS	THE CLUE THAT HELPED	DICTIONARY ✓
trudged			
murky			
famished			
ravenously			

② **Word Detective.** ✎ Find **3 new words** in your own reading book. For each one, write how you worked out what it must mean – *then* check in *a* dictionary.

MY WORD	HOW I WORKED OUT WHAT IT MEANS	DICTIONARY ✓

THE EVIDENCE TRAIL

Thinking like a Reading Detective



Pip: "Good detectives don't just guess – they can point to the clue that proves it."

1 Habits of a great Reading Detective

TICK THE ONES YOU DO

- ☐ **I read between the lines (infer).** What does the author want me to work out?
- ☐ **I look for the author's clues** – word choices, actions, feelings.
- ☐ **I pick out the important details** and don't get lost in small ones.
- ☐ **I can explain a character's actions** – why did they do that?
- ☐ **I can summarise a paragraph** in a sentence or two.
- ☐ **I find evidence.** I ask: "What in the text supports my answer?"
- ☐ **I spot patterns,** like repeated words or ideas.
- ☐ **I think about who the text is for** and why it was written.
- ☐ **I can work out unfamiliar words** from the clues around them.

2 Example question

MULTIPLE CHOICE

Fabien is drafting some new ideas for a story for a 4-year-old. Which of the following is the best choice for his story?

A The feral dog ran uncontrollably into the dense woods, leaping effortlessly over fallen branches. The terrified hare that was his target darted unexpectedly into the impenetrable brambles.

B The happy dog ran and ran. He had a long tongue that stuck out the side of his mouth. He was a bit out of breath but was happy to be free in the field.

C The boy ran as fast as he could. His tear-stained face was battered by the howling wind. He repeatedly screamed his dog's name into the storm, hoping in vain that his canine friend would appear.

D With the slightest hint of dawn, while the early birds do cheep and the cockerels do crow, the jolly farmer sets about his routine; his trusted furry companion never far from his side.



MOSS WORKS IT OUT

① Underline the key clue: a 4-year-old. So: simple words, short sentences, a happy feeling. ② A uses hard words (feral, impenetrable) ✗ ③ C is scary and sad ✗ ④ D is one long, tricky sentence ✗ ⑤ B is simple, short and cheerful → B ✓

Campfire Challenges

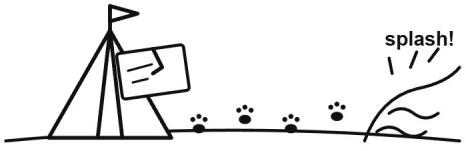
① **Fact or Inference?** ✎ ⚑ Write **F** if the text says it, or **I** if you worked it out.

Pip's boots were caked in mud and she was shivering. She wrapped both hands around a steaming mug.

STATEMENT	F / I
Pip's boots are muddy.	
Pip is cold.	
Pip has been walking somewhere wet.	
Pip is holding a mug.	
Pip is glad to be back at camp.	

② **Clues and Questions.** ✎ ⚑ Who do you think took the map? Which clues are your evidence?

When the crew woke up, the treasure map had gone. Muddy paw prints led from the tent to the river. Dash's sandwich was missing too – and Moss had heard a splash in the night.



My theory: _____

My evidence: _____

A question I'd ask: _____

NUMBER PATHFINDER: BASE CAMP

Thinking like a Problem Solver



Moss: "Every mountain is climbed one step at a time. Strong base-camp skills make the summit much easier!"

1 Habits of a great Number Pathfinder

TICK THE ONES YOU DO

- ☐ **I know my number facts quickly** – times tables, number bonds, halves and doubles.
- ☐ **I estimate first** so I know roughly what the answer should be.
- ☐ **I spot patterns** in numbers.
- ☐ **I read the question twice** and decide which of add (+), subtract (−), multiply (×) or divide (÷) I need.
- ☐ **I understand place value** – what each digit is worth (the 3 in 352 is 300).
- ☐ **I can use more than one strategy** – counting on, column method, rounding and adjusting.
- ☐ **I ask: does my answer make sense?**

2 Example question

SHORT ANSWER

Max has £20. He buys a book priced £6.99, some felt tip pens priced £3.50 and a drawing pad priced £2.99. How much change will he receive?

£ ☐ . ☐☐

MOSS WORKS IT OUT

① Estimate: £7 + £3.50 + £3 = about £13.50, so change is about £6.50.
② Calculate: £6.99 + £3.50 + £2.99 = £13.48
③ £20.00 − £13.48 = **£6.52** ④ Check: £13.48 + £6.52 = £20 ✓ and it's close to my estimate ✓
⑤ Fill the boxes: 6 . 5 2

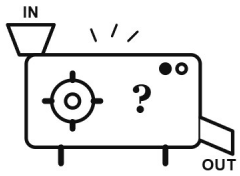
Moss's shortcut: £6.99 is £7 − 1p and £2.99 is £3 − 1p, so £13.50 − 2p = £13.48. Is there another method? There usually is!

Campfire Challenges

① **Estimation Station.** ✎ ⚑ Guess first, then count. How close were you?

ESTIMATE…	MY GUESS	REAL ANSWER	HOW CLOSE?
Books on one shelf at home			
Steps (stairs) in your house			
Sweets or pasta pieces that fit in a jar			

② **Mystery Rule Machine.** ✎ ⚑ What does the machine do to each number?



MACHINE 1	IN	5	12	9	7	20	Rule:
	OUT	10	24	18			
BONUS	IN	3	5	10	4		Rule:
	OUT	7	11	21		15	
TRICKY!	IN	2	4	6	10		Rule:
	OUT	5	11	17		23	

③ **Does it make sense?** ✎ ⚑ Dash rushed these. **Don't work them out yet!** Round the numbers to estimate first, and write it under the sum. Dash's answer close to yours? ✓ Nowhere near? ✗

Moss: 302 + 297 = 5,099? Estimate: 300 + 300 = 600. Nowhere near! ✗ *Bonus: find the real answers.*

49 + 32 = 81	198 + 403 = 1,601	6 × 51 = 306	2,005 − 998 = 1,007	25 × 4 = 1,000

NUMBER PATHFINDER: THE SUMMIT

Thinking like a Problem Solver

Moss: "The summit is where problems have more than one step. Steady feet – one step at a time!"

1 Habits of a great Number Pathfinder

TICK THE ONES YOU DO

- ☐ **I keep going with a challenge** – being stuck is part of the climb.
- ☐ **I jot my working down** on the question booklet so I don't lose my place.
- ☐ **I ask: is there another method?** and use it to check.
- ☐ **I check units and boxes** – £ or p? cm or m? How many digits fit?
- ☐ **I can compare fractions** – which is bigger?
- ☐ **I break multi-step problems** into smaller steps and do one at a time.
- ☐ **I try calculations with more complex numbers** – bigger numbers, decimals and fractions.
- ☐ **I know the difference between area and perimeter** – inside or around.
- ☐ **I can use my times tables** quickly and accurately.
- ☐ **I can solve multi-step problems,** one step at a time.

2 Example question

MULTIPLE CHOICE

Pip ate $\frac{3}{4}$ of a pizza. Dash ate $\frac{5}{8}$ of a pizza the same size. Who ate more?

A Pip **B** Dash **C** They ate the same **D** You can't tell

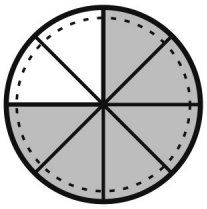
MOSS WORKS IT OUT

① Estimate: $\frac{3}{4}$ and $\frac{5}{8}$ are both more than a half.

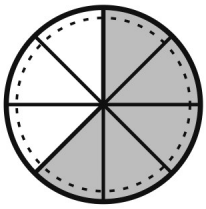
② Make the bottom numbers the same: $\frac{3}{4} = \frac{6}{8}$.

③ Compare: $\frac{6}{8}$ is more than $\frac{5}{8}$.

④ Check with a drawing → **A** ✓



Pip: 3/4 = 6/8



Dash: 5/8

Campfire Challenges

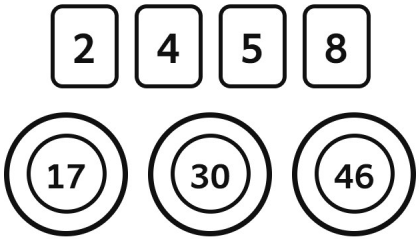
① **Number Target.** Use the number cards **2, 4, 5 and 8** to make each target number. In each calculation, you can use each card **once or not at all**. Use + − × ÷, and work **one step at a time**.

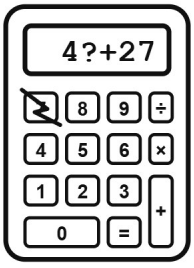
Example: Target 13 → 8 + 5 = 13 ✓

Target 17: _____

Target 30: _____

Target 46: _____





② **Broken Calculator.**

a) The **7** key is broken. How could you still work out **47 + 27**? Find two ways.

Way 1: _____ Way 2: _____

b) Find the missing digits: **☐3 + 2☐ = 70**

c) Harder: **6 × ☐ = 4☐** – there are **two** answers. Can you find both?

EXPERIMENT INVESTIGATOR

Thinking like a Scientist



Pip: "I love noticing things – but a scientist also tests them to find out if they're true!"

1 Habits of a great Scientist

TICK THE ONES YOU DO

- ☐ **I observe carefully** – I look, listen and measure.
- ☐ **I make predictions** before I test.
- ☐ **I can read results** from tables or graphs.
- ☐ **I use evidence** to explain my answer.
- ☐ **I ask questions** like "What would happen if...?"
- ☐ **I test fairly** – I change only ONE thing and keep everything else the same.
- ☐ **I notice patterns** in my results.
- ☐ **I change my mind** when the evidence shows something new.

2 Example question

MULTIPLE CHOICE

Grace is planning an experiment in a dark room to investigate how distance from a light source affects shadows. Which of these is most likely to be some of her instructions?

A Bring one tape measure, one object and a torch. Draw a table with two columns to record results.
B Bring two different rulers and a large object. Repeat the experiment ten times.
C Use three different objects, estimate distances and ignore any unexpected results.
D Use one ruler to measure distance. Repeat the experiment at different times of day and with different lights.



MOSS WORKS IT OUT

① What is she changing? Only the distance. ② Fair test: keep the object and the light the same.
③ C changes the object and only estimates ✗ D changes the light ✗ B has no light source at all ✗
④ A keeps everything the same, measures accurately and records in a table → A ✓

Campfire Challenges

① **Predict and Test.** ✎ ⚑ Put three ice cubes in three places: a sunny windowsill, a shady spot, and a bowl in the fridge. Predict the order they will melt in, then check every 10 minutes.

PLACE	MY PREDICTION (1ST, 2ND, 3RD)	WHAT HAPPENED	RIGHT?
Sunny windowsill			
Shady spot			
Fridge			

What did you keep the same to make it a fair test? _____

② **Quick-fire: Electricity.** ✎ ⚑ Pip's bulb will not light because there is a gap between two wires. What must the circuit be for the bulb to light?

It must be ☐☐M P☐E☐E.

③ **Quick-fire: Sound.** ✎ ⚑ Dash taps a drum. Its skin moves back and forth very quickly to make the sound. What is the skin doing?

The skin ☐I B☐A☐E S.

Top tip: The boxes are never a spelling test – the given letters and the number of boxes are there to help you.

CODE CRACKER

Thinking like a Computer

Dash: "Computers do EXACTLY what you tell them – even if it's silly! So every step has to be right."

1 Habits of a great Code Cracker

TICK THE ONES YOU DO

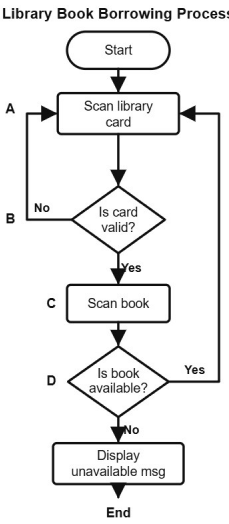
- ☐ **I break big problems** into smaller parts.
- ☐ **I think logically,** one step after another, in the right order.
- ☐ **I design a solution first** – a list of steps or a flowchart.
- ☐ **I test my ideas** again and again.
- ☐ **I spot and fix errors (bugs)** without giving up.
- ☐ **I'm creative** – there's often more than one way to solve it.

2 Example question

MULTIPLE CHOICE

Simon is writing an algorithm on his computer for a library book borrowing process. The process is not working. Look at the flowchart – which element is causing a problem ('bug')?

A 'Scan library card'
B 'Is card valid?'
C 'Scan book'
D 'Is book available?'



MOSS WORKS IT OUT

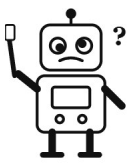
① Follow the arrows with your finger, just like a computer would.
② Card not valid → scan it again. That's sensible.
③ Book available → ...back to the start?! The book never gets borrowed!
④ The 'Yes' arrow from D should lead to a new box called 'Lend book', then End → D ✓

Campfire Challenges

① **Robot Instructions.** ✎ Write step-by-step instructions to make a jam sandwich. A grown-up must follow them **exactly** as written – no guessing! Did your "robot" make the sandwich, or did something silly happen? Fix your bugs and try again. *Write your first go on rough paper at home.*

WHAT MY GROWN-UP GOT WRONG	WHAT I CHANGED IN MY INSTRUCTIONS

② **Find the Bug.** ✎ ⚑ These instructions for brushing your teeth have **two** bugs. Find them, then write the fixed version.



1 Brush your teeth for two minutes.
2 Pick up your toothbrush.
3 Put toothpaste on the toothbrush.
4 Turn on the tap and rinse your brush.
5 Repeat step 1 forever.

	THE BUG	WHY IS IT A BUG?
Bug 1		
Bug 2		

HISTORY HUNTER

Thinking like a Historian

Moss: "I'm 103, so I remember quite a lot of history! But even I need evidence to know what really happened."

1 Habits of a great Historian

TICK THE ONES YOU DO

- ☐ **I ask questions about the past** – who, what, when, where, why?
- ☐ **I compare sources** to see if they agree.
- ☐ **I think about cause and consequence** – why did it happen, and what happened next?
- ☐ **I use evidence carefully** and ask: who made this, and when?
- ☐ **I recognise different viewpoints** – people saw things differently.
- ☐ **I'm sceptical of assumptions** – I don't believe something just because someone says it.

2 Example question

MULTIPLE CHOICE

Karan is researching an event that took place hundreds of years ago in his back garden. Which of the following is NOT a piece of evidence that would be useful for him to study?

A Ancient pottery that was dug up from the garden last year.
B Quotes in a diary from people who lived in the house at the time.
C A painting of the back garden on the day the event happened.
D A letter written by a local librarian ten years ago who thinks she knows what happened.

MOSS WORKS IT OUT

① Ring the trap word: NOT. I'm looking for the least useful one.
② A, B and C all come from the time of the event ✗
③ D was written hundreds of years later by someone who wasn't there — and she only thinks she knows → D ✓

Campfire Challenges



① Old Photograph Detective. ✎ ⚑ Look closely at the photograph.

I CAN TELL...	I CAN'T TELL...	I'D LIKE TO ASK...

② Chronology Line. ✎ ⚑ Number these from 1 (oldest) to 6 (newest). You don't need to know any dates – just think it through!

Next March	Your parents are born	Electric lights are first used in homes	You start school	Your grandparents are born	You are born
☐	☐	☐	☐	☐	☐

🔍 **Historian's clue:** *Grandma says that when she was born, her house already had electric lights.*

③ Quick-fire. ✎ ⚑ In the past, children often had to work in grand houses instead of going to school. What were these children known as?

They were known as ☐ E R ☐ A ☐ ☐ ☐ .

WORLD EXPLORER

Thinking like a Geographer



Pip: "Every place on Earth is different – a geographer asks *why*."

1 Habits of a great Geographer

TICK THE ONES YOU DO

- ☐ **I use maps, graphs and images confidently** to spot features.
- ☐ **I compare places** – what's the same and what's different?
- ☐ **I understand the difference** between natural and human features or processes.
- ☐ **I notice patterns** in the world, like where people live or where rivers flow.
- ☐ **I ask why places are different.**

2 Example question

MULTIPLE CHOICE

Ella wants to find out how a river changes from where it starts to where it reaches the sea. Which is the BEST way to find out?

A Look at one photo of the river where it meets the sea.
B Measure the width and speed of the river at several places along it.
C Ask a friend what they think.
D Read a story set beside a river.



MOSS WORKS IT OUT

① Key words: how it changes along the river — so I need to compare different places.
② One photo shows only one place ✗ ③ Opinions and stories aren't measurements ✗
④ B gathers evidence at many points so you can compare → B ✓

Campfire Challenges

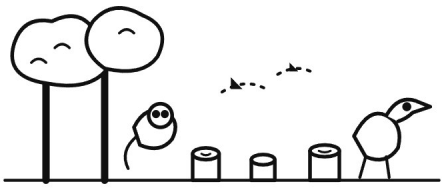
① **Fieldwork Planner.** ✎ ⚑ Tom is doing fieldwork to evaluate the impact a newly built road is having on a village. Which of these is NOT a useful fieldwork method for him to carry out?

A Sketch a map of key natural and manmade features.
B Questionnaire of residents who do not live in the village.
C Noise measurements using a sound level meter.
D Rainfall and temperature measurements.

Tip: use Moss's steps – ring the trap word first!

② **Rainforest Rescue.** ✎ ⚑ Many trees are cut down in a rainforest where lots of animals live. What are the animals likely to need to do?

They are likely to have to ☐ E A ☐ ☐ the rainforest.



③ **Two Places.** ✎ ⚑ Compare two places you have visited, like a geographer would.

Place 1: _____ Place 2: _____

LOOK AT...	SIMILAR	DIFFERENT
Weather and climate		
Natural features (hills, rivers, coast)		
Human features (buildings, roads)		
Transport and getting around		

INNOVATION ENGINEER

Thinking like a Designer

Dash: "My first bridge fell down. My second wobbled. My third held a pile of books! Testing makes designs better."

1 Habits of a great Designer

TICK THE ONES YOU DO

- ☐ **I think about who will use my creation** and what they need.
- ☐ **I think creatively** and sketch more than one idea.
- ☐ **I learn from mistakes** – a design that fails tells me what to change.
- ☐ **I solve real problems** – my design makes something easier or better.
- ☐ **I test my ideas** and improve them.
- ☐ **I evaluate and refine** – what works, and what would make it even better?

2 Example question

MULTIPLE CHOICE

Priya is designing a lunchbox for a 5-year-old. Which feature matters MOST for this user?

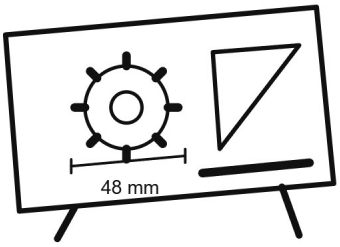
A A complicated combination lock.
B Easy-open clips that small hands can use.
C A built-in calculator.
D Heavy metal sides.

MOSS WORKS IT OUT

① Who is the user? A 5-year-old. ② What do they need? Something light, safe and easy to open.
③ A is too hard ✗ C isn't needed ✗ D is too heavy ✗ → B ✓

Campfire Challenges

① **Engineer's Choice.** ✎ ⚑ Anke is an engineer. She is drawing her 5th and final technical design for a new car engine part. Which of the following is the best choice for her drawing?



A Digital drawing on computer software with precise measurements.
B Hand drawing with a basic outline and some parts named.
C Digital drawing on computer software from one particular angle.
D Hand drawing with suggestions of different materials to use for manufacture.

*Hint: it's her **final** design for a **car engine part**. What does a factory need to make it exactly right?*

② **Design Studio.** ✎ Sketch and label your own lunchbox for an explorer. Who is it for? What problem does it solve? How would you test it?

Which **materials** would you choose for each part, and why?

CREATIVE MAKER

Thinking like an Artist

Pip: "Artists are super-noticers – they spot colour, shape and light that other people walk straight past."

1 Habits of a great Artist

TICK THE ONES YOU DO

- ☐ **I observe closely** – colour, shape, light and shadow.
- ☐ **I think about the time and place** that the artist created this piece of art.
- ☐ **I reflect and improve** – what would I change next time?
- ☐ **I consider the effect** of different materials and techniques.
- ☐ **I appreciate other people's work** and can say what I like about it.

2 Example question

MULTIPLE CHOICE

Which change would make a painting of a stormy sea feel more dramatic?

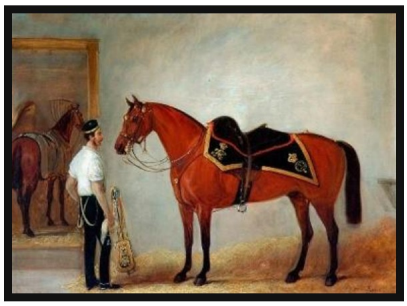
A Use pale pastel colours and soft lines.
B Use dark colours, strong contrast and swirling brushstrokes.
C Make the painting very small.
D Add a smiling sun in the corner.

MOSS WORKS IT OUT

① The key word is dramatic. ② Pastels and a smiling sun feel calm and happy ✗
③ Size doesn't change the mood ✗
④ Dark colours, contrast and movement feel stormy → **B** ✓

Campfire Challenge

Gallery Detective. John looks at four different paintings at an Art Gallery and makes notes about each of them.



Painting 1



Painting 2



Painting 3



Painting 4

John thinks that paintings 1 and 4 are by the same artist. Which is the main reason that this is a sensible suggestion for him to make?

A They are both realistic ('figurative') rather than abstract.
B They use colour and light/shade in a similar way.
C They both have the same signature.
D They both focus on animals and people.

Hint: look at painting 2 as well. Which reasons are true for that one too?



SOUND EXPLORER

Thinking like a Musician



Dash: "I used to just play LOUD and FAST. Now I listen first – and it sounds so much better!"

1 Habits of a great Musician

TICK THE ONES YOU DO

- ☐ **I listen carefully** – to the beat, the tune and the other players.
- ☐ **I recognise patterns** – repeated rhythms, choruses and tunes.
- ☐ **I listen to how different instruments sound together.**
- ☐ **I work well with others** in a band, choir or group.
- ☐ **I express feelings and ideas** – fast, slow, loud, soft, happy, sad – and notice the effect music has on me.

2 Example question

MULTIPLE CHOICE

Mia's class is singing a song together. One group keeps finishing before everyone else. What should they do?

A Sing louder.
B Listen carefully to the beat and the other groups.
C Sing even faster so they finish first.
D Stop singing.



MOSS WORKS IT OUT

① The problem is timing — they're out of time with everyone else.
② Louder (A) or faster (C) won't fix timing ✗ ③ Stopping (D) isn't performing ✗
④ Listening keeps everyone together → B ✓

Campfire Challenges

① **Sad Birthday?** ✎ ⚑ Johann wants to make the song 'Happy Birthday' feel sadder. Which change is most likely to work?

A Make it faster and louder.
B Make it slower and softer.
C Change the name of the person in the song.
D Clap along to the beat.



② **Try it out!** ✎ Hum 'Happy Birthday' in each way below. Which sounds saddest?

I TRIED IT...	HAPPY, SAD OR THE SAME?	SADDEST? ✓
Very quietly		
Very slowly		
Slowly **and** quietly		
Fast and loud		

MOVEMENT MAESTRO

Thinking like an Athlete



Dash: "Being fast is fun – but the best athletes also practise, play fair and pick themselves up when they fall."

1 Habits of a great Athlete

TICK THE ONES YOU DO

- ☐ **I show determination** and give my best effort.
- ☐ **I respect others** – teammates, opponents and referees.
- ☐ **I stay active** every day.
- ☐ **I challenge myself** to try new sports and skills.
- ☐ **I practise regularly** to get better.
- ☐ **I work as a team** and encourage others.
- ☐ **I learn from setbacks** – losing shows me what to practise next.

2 Example question

MULTIPLE CHOICE

In a team relay race, what matters MOST at the baton changeover?

A Running backwards.
B Clear communication.
C Wearing matching socks.
D Shouting at the other team.



MOSS WORKS IT OUT

① Key words: relay and changeover — two runners must pass the baton.
② Socks (C) don't change the result ✗ Running backwards (A) and shouting (D) don't help ✗
③ Calling "Hand!" tells your teammate exactly when to pass → **B** ✓

Campfire Challenges

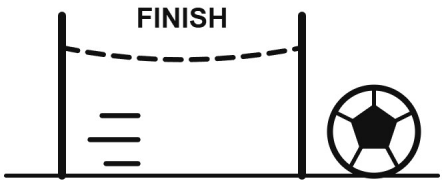
① **Sprint Skills.** ✎ ⚑ Children are running an individual sprinting race in a straight line. Which of these is most important to practise if they are to perform well?

A Wearing bright clothes.
B Co-ordination.
C Tactics.
D Balance.

Hint: two answers might look tempting. Think about what your arms and legs are doing in a sprint.

② **Football Facts.** ✎ ⚑ In football, what parts of your body are you mainly allowed to use to move the ball?

You mainly use your ☐ E E ☐ .



③ **Personal Best.** ✎ ⚑ Amir wants to know if his standing long jump is improving. What is the best way to find out?

A Ask a friend if he looks better.
B Measure his jump the same way each week and compare the distances.
C Jump once and see if it feels good.
D Watch a video of an Olympic long jumper.



LANGUAGE LOVER

Thinking like a Linguist



Moss: "You don't need to know a language to crack it – you need to spot its patterns. Every language has rules, like a code."

1 Habits of a great Linguist

TICK THE ONES YOU DO

- ☐ **I have a go,** even if I'm not sure.
- ☐ **I spot patterns** – word endings, word order, how numbers are built.
- ☐ **I see mistakes as part of learning.**
- ☐ **I listen carefully** to how words sound.
- ☐ **I build my vocabulary bit by bit** – a few new words at a time.
- ☐ **I'm curious about other cultures** and how people live and speak.

2 Example question

SHORT ANSWER

In the made-up language **Zib**: ***zib nara*** = red ball · ***zib tolo*** = blue ball · ***kek nara*** = red hat

What is "blue hat"? ☐☐☐ ☐☐☐☐



MOSS WORKS IT OUT

① Find what repeats: zib appears with "ball" both times → zib = ball.
② nara appears with "red" both times → nara = red. So kek = hat and tolo = blue.
③ Spot the word order: the thing comes first, then the colour → **KEK TOLO** ✓

Campfire Challenge

Code-breaker: Savea. ⚑ This is a made-up language called 'Savea'. The table shows the names of some numbers. Can you complete the names for **5**, **17** and **30**?

1	Sam
2	Lun
3	Mit
4	Den
5	_ _ _
6	Bas
7	Wol

8	Act
9	Zop
10	Bon
12	Bon do Lun
17	Bon do _ _ _
19	Bon do Zop

20	Mas
25	Mas do ven
30	_ _ _ I Bon
36	Bas Mas I Bon
38	Act Mas I Bon
50	Bon Ven

5 = ☐☐☐ **17** = Bon do ☐☐☐ **30** = ☐☐☐ I Bon

Moss's hint: look at 25 and 50 to find the 5. Then compare 12 and 19 to see how "do" works.

Answer Key · Part 1

PAGES 2–6

Each answer has its reason and the most likely **wrong turn** to talk through. Praise the reasoning as much as the answer.

QUESTION	ANSWER	WHY	WATCH OUT FOR…
P.2 ENGLISH 1 · VOCABULARY VALLEY			
Compass	**COMPASS**	Shows north, south, east and west; 7 letters fills the 7 boxes, and O, P and S are given.	MAP: it shows places, not directions, and has only 3 letters. The box count is the check.
Treasure Hunt	Meanings that fit the clues	trudged = walked slowly and heavily; murky = dark and hard to see through; famished = very hungry ("six hours without food"); ravenously = very hungrily ("gulped").	Guessing from the sound of the word. Ask: "Which words told you?"
Word Detective	Open	Any 3 new words, each with the clues used to work out its meaning, then a dictionary check.	Looking the word up first instead of working it out from the sentence.
P.3 ENGLISH 2 · THE EVIDENCE TRAIL			
Fabien's story	**B**	The reader is 4: B has simple words, short sentences and a happy mood.	A or D because they "sound like better writing". Best means best for the audience. C is upsetting for a 4-year-old.
Fact or Inference?	**F, I, I, F, I**	Facts are in the text; inferences are worked out from clues.	"Pip is cold" feels like a fact, but the text only says shivering (she could be scared). "Back at camp" is never mentioned.
Clues and Questions	Open	Any theory backed by clues: paw prints → animal; splash → river.	A theory with no evidence. Ask "What made you think that?"
P.4 MATHS 1 · BASE CAMP			
Max's change	**£6.52**	£6.99 + £3.50 + £2.99 = £13.48; £20 − £13.48 = £6.52.	£7.52 or £6.48 from exchanging slips; the estimate (about £6.50) catches these.
Mystery Rule	**× 2**: 7 → 14, 20 → 40	Doubling works for every pair: 5 → 10, 12 → 24, 9 → 18.	"Add 5" works for 5 → 10 only. Test a rule on every pair.
Does it make sense?	a ✓ b ✗ c ✓ d ✓ e ✗	Estimates: a 50 + 30 = 80; b 200 + 400 = 600 (really 601); c 6 × 50 = 300; d 2,000 − 1,000 = 1,000; e 25 × 4 is about 100 (really 100).	Working each sum out in full instead of estimating first; or marking d wrong because 1,007 isn't exactly 1,000 – close is the point.
Bonus machine	**× 2, then + 1**: 4 → 9, 7 → 15	3 → 6 → 7; 5 → 10 → 11; 10 → 20 → 21. Work backwards for 15: 15 − 1 = 14, 14 ÷ 2 = 7.	"Add 4" fits the first pair only. Estimation Station is open.
Tricky machine	**× 3, then − 1**: 10 → 29, 8 → 23	2 → 6 → 5; 4 → 12 → 11; 6 → 18 → 17. Backwards: 23 + 1 = 24, 24 ÷ 3 = 8.	"Add 3" works for 2 → 5 only. Test the rule on every pair.
P.5 MATHS 2 · THE SUMMIT			
Pizza fractions	**A** (Pip)	3/4 = 6/8, which is more than 5/8.	B, because 5 and 8 are "bigger numbers". The bottom number says how small the slices are, not how much was eaten.
Number Target	17: 8 + 5 + 4 30: 5 × 4 = 20, 20 + 8 = 28, 28 + 2 = 30 46: 5 × 8 = 40, 40 + 4 = 44, 44 + 2 = 46	Other routes are fine, e.g. 8 − 2 = 6, 6 × 5 = 30. One step at a time keeps it within Year 5 (order of operations is Year 6).	Using a card twice, or writing it as one long line (5 × 4 + 8 + 2), which needs order of operations.
Broken Calculator	a) 74 b) 43 + 27 c) 6 × 7 = 42 and 6 × 8 = 48	a) e.g. 46 + 1 + 26 + 1, or 50 − 3 + 30 − 3. b) The ones must add to 10 (3 + 7), then 40 + 20 + 10 = 70.	Stopping after one answer in c), when the question says there are two.
P.6 SCIENCE · EXPERIMENT INVESTIGATOR			
Grace's shadows	**A**	A fair test changes one thing (distance), measures it accurately and records results in a table.	B, because "repeat ten times" sounds scientific, but it has no light source so it can't test shadows. D changes the light.
Electricity	**COMPLETE**	Electricity only flows round a complete circuit with no gaps; 8 letters, with M, P, E and E given.	CLOSED or JOINED: the right idea, but they don't fit the boxes.
Sound	**VIBRATES**	Sounds are made when something vibrates; 8 letters, with I, B, A, E and S given.	SHAKES or MOVES: close in meaning, but they don't fit the boxes.
Predict and Test	Sun → shade → fridge	More heat, faster melting. Fair test: same-sized cubes, checked at the same times.	Changing two things at once (different-sized cubes).

Answer Key · Part 2

PAGES 7–14

QUESTION	ANSWER	WHY	WATCH OUT FOR…
P.7 COMPUTING · CODE CRACKER			
Simon's flowchart	**D**	When the book IS available, the 'Yes' arrow goes back to the start, so the book is never lent.	A, because an arrow points back to it. The faulty decision is D; B's loop is sensible.
Find the Bug	Order; endless loop	Bug 1 (wrong order): step 1, brushing, comes before picking up the brush. Bug 2 (endless loop): step 5 never stops.	Spotting only the order bug. A loop that never ends is a bug too.
P.8 HISTORY · HISTORY HUNTER			
Karan's evidence	**D**	Written long after by someone who wasn't there and only *thinks* she knows. A, B and C come from the time of the event.	C, because a painting "isn't real evidence". Painted on the day, it is a useful primary source.
Chronology	Left to right: **6, 3, 1, 5, 2, 4**	Lights → grandparents → parents → you → school → next March. Parents are born before their children; Grandma's clue is evidence that electric lights came first.	Putting "next March" in the middle, or guessing instead of using the clue.
Grand houses	**SERVANTS**	Children worked as servants in large houses; 8 letters, with E, R and A given.	MAIDS or WORKERS: sensible ideas, but the boxes and given letters rule them out.
Old photograph	Open	Separate what you can SEE from what you GUESS.	Stating guesses as facts.
P.9 GEOGRAPHY · WORLD EXPLORER			
Ella's river	**B**	Measuring at several points along the river lets you compare how it changes.	A: one photo is evidence, but of one place only.
Tom's fieldwork	**B**	People who don't live in the village can't describe the road's impact on it.	D: weather seems unrelated, but new roads can change drainage and flooding.
Rainforest	**LEAVE**	With their habitat gone, animals must leave to find food and shelter; 5 letters, with E and A given.	MOVE (4 letters) or MIGRATE (7): close in meaning, but they don't fit the boxes.
Two Places	Open	Sensible similarities and differences, e.g. both near a river; one hillier or busier.	Listing feelings ("it was fun") instead of geographical features.
P.10 DESIGN & TECHNOLOGY · INNOVATION ENGINEER			
Priya's lunchbox	**B**	The user is 5: light, safe and easy to open matters most.	Choosing the "coolest" feature rather than the user's need.
Anke's drawing	**A**	A final technical design must be exact so a factory can make the part: precise digital measurements.	D: material ideas belong in early designs. B is a first sketch; C shows one angle.
Design Studio	Open	Materials chosen for a reason linked to the user, e.g. plastic is light and waterproof; a metal clip is strong.	Choosing a material without a reason, or one that doesn't suit the job.
P.11 ART · CREATIVE MAKER			
Stormy sea	**B**	Dark colours, strong contrast and movement create drama.	C: size doesn't change the mood.
John's paintings	**B**	1 and 4 share a warm, natural palette, soft light and the same glossy shading on the chestnut horses.	A and D are also true of painting 2. C: no signature is visible.
P.12 MUSIC · SOUND EXPLORER			
Mia's class	**B**	The problem is timing; listening to the beat and the other groups keeps everyone together.	C: speeding up makes the timing problem worse.
Johann's song	**B**	Tempo (speed) and dynamics (volume) change the mood: slower and softer sounds sadder.	A does the opposite (sounds excited). C changes the words, not the music; D adds a beat, not a mood.
P.13 PE · MOVEMENT MAESTRO			
Relay changeover	**B**	A clear call ("Hand!") tells the incoming runner when to pass, so the baton isn't dropped or slowed down.	Thinking it's only about running fast.
Sprint skills	**B** (co-ordination)	Sprinting relies on co-ordinating fast arm and leg actions (opposite arm and leg together) and a quick start.	D (balance) is tempting, but a straight sprint has no turning. Tactics (C) suit team games.
Football	**FEET**	Players mainly kick, dribble and pass with their feet.	LEGS or HEAD: 4 letters, but the given E, E rule them out.
Personal Best	**B**	Measuring the same way each week is a fair comparison, so Amir can see real improvement.	A and C are opinions or feelings, not measurements; D shows someone else's jump, not Amir's.
P.14 LANGUAGES · LANGUAGE LOVER			
Zib	**KEK TOLO**	zib = ball, nara = red, so kek = hat and tolo = blue. The thing comes before the colour.	TOLO KEK: using English word order.
Savea	5 = **VEN** 17 = Bon do **WOL** 30 = **MAS** I Bon	25 = Mas do ven (20 + 5), so 5 = ven. "do" = plus, so 17 = Bon do Wol. 36 = Bas Mas I Bon (6 + 20 + 10), so 30 = Mas I Bon.	"Mit Bon" (3 × 10). The pattern builds 30 from 20 and 10, not from 3 lots of 10.