

Bumper Quiz



Student study guide

Read the question.
Choose your route.
Race to the answer.

Maths · English · Science

18 topic packs · 360 questions · five questions per game

Use this guide before and after playing. Build a method you can explain, then use another race to practise it.

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Choose your pack

Each subject has six progressively more demanding packs. Pack titles describe content, not an age guarantee. Read the prerequisites and inspect the full question list before selecting a session.

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How a game works

Read, then drive

Select a subject and a topic. Five questions are drawn without repeats from its 20-question bank; answer locations are shuffled. Read during the seven-second countdown, then drive during the 32-second race. The six-second reveal gives feedback before the next question.

Answers are signs around the arena. Drive into the bay for your chosen answer; there is no answer-card click. Obstacles and other bumper cars make route choice matter. Your first submitted answer is saved, so think before entering a bay.

Controls and comfort

Use W/A/S/D or the arrow keys to drive. Space brakes. Q and E look left and right; mouse dragging looks around. Try the controls before assessing knowledge. Select a lower graphics quality if motion is uneven, mute sound if helpful and take breaks if the first-person view feels uncomfortable.

Points and company

Correct finishers receive 10, 8, 6, 4, 2 and 1 points for first to sixth. Incorrect answers receive zero. The overall leaderboard adds points across the five questions. Driving and response time affect position; points alone do not measure understanding.

Play solo with computer cars, or create a session and share its six-character code. Up to six players can join the same session; the host starts it. Online sessions need a reachable multiplayer server. A local preview address only works where that server is available.

Aim to explain your choice after the race. You can improve your reasoning even when another driver reaches the bay first.

Addition & subtraction

MATHS · PACK 1 · 20 QUESTIONS

What you practise

Mental addition and subtraction, including three-digit numbers.

Prior knowledge: Counting and place value.

Key terms

sum, difference, place value, inverse.

A useful approach

Break a calculation into tens and ones; estimate its size before calculating. Check a subtraction by reversing it with addition.

Before playing

Which place value changes first when you add across a ten? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Compare a partitioning method with a compensation method. Which was easier to explain? Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

Your notes

My method · a useful term · something I want to check

Try again: replay this pack and compare how confidently you can explain a choice. New questions may test a different part of the same topic.

Multiplication & division

MATHS · PACK 2 · 20 QUESTIONS

What you practise

Times tables to 12×12 , related division facts and remainders.

Prior knowledge: Addition and subtraction.

Key terms

factor, product, quotient, remainder.

A useful approach

Connect equal groups with repeated addition. Use a known multiplication fact to check a division; decide what a remainder means in the question.

Before playing

How can one multiplication fact help with a division? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain how you checked that a remainder was sensible. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Fractions, decimals & percentages

MATHS · PACK 3 · 20 QUESTIONS

What you practise

Common fraction-decimal equivalents, percentage conversions and percentages of quantities.

Prior knowledge: Multiplication and division.

Key terms

numerator, denominator, decimal, percentage.

A useful approach

Keep track of the whole. Translate between forms before comparing them, and estimate whether a percentage of a quantity should be larger or smaller than that quantity.

Before playing

What does the whole represent in a percentage question? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Describe a conversion method you could use again without memorising that example. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Patterns & early algebra

MATHS · PACK 4 · 20 QUESTIONS

What you practise

Arithmetic sequences, missing values, substitution and collecting like terms.

Prior knowledge: Arithmetic and multiplication.

Key terms

sequence, term, variable, coefficient.

A useful approach

Look for a constant difference in a sequence. Substitute carefully into expressions, and keep like terms together when simplifying.

Before playing

What evidence supports a proposed pattern? Write or sketch an idea below. You do not need to rush your preparation.

After playing

How did you distinguish an expression from an equation? Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Equations & graphs

MATHS · PACK 5 · 20 QUESTIONS

What you practise

Linear equations, substitution, gradients and y-intercepts.

Prior knowledge: Expressions, signed numbers and basic coordinates.

Key terms

equation, gradient, intercept, coordinate.

A useful approach

Preserve equality when solving an equation. Connect the coefficient and constant in a linear rule with features of its graph; substitute to check a point.

Before playing

What must stay balanced when you transform an equation? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain why a proposed coordinate fits or does not fit a rule. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Advanced mathematics

MATHS · PACK 6 · 20 QUESTIONS

What you practise

Function evaluation, natural logarithms, the power rule and definite integrals.

Prior knowledge: Algebra, powers, functions and introductory calculus.

Key terms

function, logarithm, derivative, integral.

A useful approach

Identify which operation a question requests before manipulating symbols. Track powers and bounds, and distinguish a rate of change from an accumulated quantity.

Before playing

How do you recognise function evaluation compared with differentiation? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Which assumption or rule did your method require? Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

Your notes

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Words & spelling

ENGLISH · PACK 1 · 20 QUESTIONS

What you practise

Common spellings and the meanings of everyday vocabulary.

Prior knowledge: Reading short words and sentences.

Key terms

spelling, meaning, synonym, antonym.

A useful approach

Read the whole word and its context. Compare letter order and sound patterns without assuming that similar sounding words have identical spellings.

Before playing

Which parts of a word help you remember its spelling? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Describe a word whose meaning became clearer after checking its context. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Sentences & punctuation

ENGLISH · PACK 2 · 20 QUESTIONS

What you practise

Word classes, complete sentences, capitals, apostrophes and end punctuation.

Prior knowledge: Reading simple sentences.

Key terms

noun, verb, sentence, apostrophe.

A useful approach

Find the action and who or what performs it. Check whether a sentence expresses a complete thought, then consider how punctuation marks its purpose.

Before playing

How can punctuation change how a sentence is read aloud? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain one punctuation decision without just naming the symbol. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Grammar & vocabulary

ENGLISH · PACK 3 · 20 QUESTIONS

What you practise

Tense, agreement, clauses, prefixes, suffixes and sentence structure.

Prior knowledge: Word classes and basic punctuation.

Key terms

tense, agreement, clause, prefix.

A useful approach

Identify the main clause and check that verbs agree with their subjects. Use prefixes and suffixes as clues, then confirm meaning in context.

Before playing

What changes when the time of a sentence changes? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Describe a grammar rule and a sentence in which it matters. Choose one uncertain moment.

Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Reading & inference

ENGLISH · PACK 4 · 20 QUESTIONS

What you practise

Short-text comprehension, evidence-based inference and recognising purpose.

Prior knowledge: Fluent reading of short sentences.

Key terms

inference, evidence, purpose, context.

A useful approach

Separate what a passage states from what it suggests. Choose an interpretation supported by details rather than a possibility based only on experience.

Before playing

What is the difference between a clue and a guess? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Which detail supported your interpretation, and what remained uncertain? Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Literary techniques

ENGLISH · PACK 5 · 20 QUESTIONS

What you practise

Figurative language, imagery, irony, tone and narrative techniques.

Prior knowledge: Reading comprehension and inference.

Key terms

imagery, metaphor, irony, tone.

A useful approach

Look at how language works as well as what it says. Compare literal meaning, figurative associations and the effect on the reader.

Before playing

How could a writer create a mood without naming the emotion? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain the effect of a technique, rather than only identifying its name. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Critical language analysis

ENGLISH · PACK 6 · 20 QUESTIONS

What you practise

Rhetoric, ambiguity, assumptions, bias and evidence-based interpretations.

Prior knowledge: Literary techniques and confident close reading.

Key terms

rhetoric, ambiguity, assumption, bias.

A useful approach

Identify a claim, its supporting evidence and any hidden assumptions. Notice ambiguous wording and distinguish persuasive force from reliable support.

Before playing

What would you need to know before accepting a persuasive claim? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Offer another interpretation and explain which evidence would distinguish it. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Living things & materials

SCIENCE · PACK 1 · 20 QUESTIONS

What you practise

Organisms, habitats, food chains and observable properties of everyday materials.

Prior knowledge: Observation and everyday vocabulary.

Key terms

organism, habitat, material, property.

A useful approach

Observe features and sort by a stated property. Distinguish living things, their surroundings and the materials used to make everyday objects.

Before playing

What evidence would help you sort an unfamiliar object or organism? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain a classification using an observable feature. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

Your notes

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Everyday science

SCIENCE · PACK 2 · 20 QUESTIONS

What you practise

States of matter, simple forces, light, sound and basic circuits.

Prior knowledge: Everyday materials and simple observation.

Key terms

solid, liquid, force, circuit.

A useful approach

Connect everyday observations to simple scientific models. Notice changes in motion, state or energy transfer, and trace a complete circuit rather than isolated components.

Before playing

Which observations suggest a change of state rather than a new substance? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain a familiar event using a scientific term from the pack. Choose one uncertain moment.

Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Cells, particles & energy

SCIENCE · PACK 3 · 20 QUESTIONS

What you practise

Cell structures, particle models, energy stores and transfers.

Prior knowledge: Basic living things, materials and circuits.

Key terms

cell, particle, store, transfer.

A useful approach

Move between scales carefully: cell structures, particles and whole objects describe different models. Follow energy transfers without treating energy as a material that disappears.

Before playing

When is a particle model useful, and what does it leave out? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain a model and identify one limit to that model. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Scientific relationships

SCIENCE · PACK 4 · 20 QUESTIONS

What you practise

Food webs, chemical reactions, forces, motion and graph relationships.

Prior knowledge: Cells, particles and energy.

Key terms

reaction, net force, speed, gradient.

A useful approach

Choose the relevant relationship, check units and interpret what a graph measures. Link biological and chemical changes to evidence rather than a familiar label alone.

Before playing

What do the axes of a graph tell you before you interpret its shape? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Compare a numerical calculation with a verbal explanation of the same relationship. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

Your notes

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Applied science

SCIENCE · PACK 5 · 20 QUESTIONS

What you practise

Genetics, quantitative chemistry, circuits and experimental design.

Prior knowledge: Scientific relationships and basic algebra.

Key terms

allele, mole, resistance, variable.

A useful approach

Use symbolic relationships with units and interpret results in context. Distinguish genetic probabilities from guarantees and measurement variability from systematic error.

Before playing

What does a probability predict about a group rather than one individual? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Explain how you would check a calculation or improve an investigation. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Advanced science

SCIENCE · PACK 6 · 20 QUESTIONS

What you practise

Enzyme inhibition, reaction kinetics, thermodynamics and statistical evidence.

Prior knowledge: Senior-school biology, chemistry, physics and probability.

Key terms

kinetics, entropy, inhibition, null model.

A useful approach

Identify the model and its assumptions. Distinguish rate from thermodynamic favourability, and statistical evidence from claims about certainty or causation.

Before playing

Can a favourable process be slow? What would you need to explain? Write or sketch an idea below. You do not need to rush your preparation.

After playing

Name an assumption behind one conclusion and describe what would weaken it. Choose one uncertain moment. Describe the method you would use next time; do not simply memorise which side of the arena held an answer.

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Reflect, replay, explain

A short reflection

Choose one question that made you slow down. What did it ask you to do? Which term, clue or relationship mattered? Describe a check you could apply to a new question of the same kind.

Compare two runs

Record the pack name, one idea you used confidently and one idea to revisit. A second run draws fresh questions and moves the answers. Compare your method and confidence rather than only your points.

Useful words across subjects

Evidence: information supporting a conclusion. **Inference:** an interpretation drawn from clues.

Model: a simplified representation used to explain something. **Variable:** a quantity or feature that can change. **Check:** a separate way to test whether a conclusion is sensible. **Assumption:** something taken as a starting point for reasoning.

Make a connection

How might checking a calculation resemble checking an interpretation or a scientific claim? Explain the similarity and one important difference. Ask a partner to question your reasoning respectfully.

Your next step can be practice, a question for your teacher or a different explanation. A race result is one moment, not a label for your ability.