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AQA Questions matter | Oak National Academy

STRIDE INTO THE FUTURE OF ASSESSMENT

Teacher Companion Guide

Proportions

STRIDE Maths

Table of Contents

Overview

Stride is a new offering from AQA which is designed to empower students and quickly identify and close their knowledge gaps in mathematics. Designed to help students starting their GCSEs – either for the first time or as a resit – the tests are accessible for all and adapt to students' knowledge, delivering the right amount of challenge.

Our new maths tests will allow teachers to pinpoint gaps in their students' conceptual knowledge - saving them time and empowering students, who will understand how to improve. They're fully funded for schools and colleges, easy to use for teachers and engaging for students.

The five short tests, created with the Key Stage 1 and 2 and Key Stage 3 guidance in mind, focus on key areas of maths that experts have identified as the most impactful for GCSE success. They come with personalised learning and next steps to allow students to develop in both knowledge and confidence.

Rationale

We know that maths is a hierarchical subject, with knowledge being built upon foundational maths which underpins the new concept. We have analysed data from hundreds of thousands of exam questions and found that even though content is first encountered in the early stages of a learner's schooling, a significant proportion of learners answer questions on the foundations of maths incorrectly.

With this in mind, we want to empower teachers to take control of their classrooms and provide a nurturing environment in which gaps within key prerequisite understanding are identified and corrective instruction is deployed, filling the gaps and ensuring that more complex content can be taught, safe in the knowledge that learners have the underlying knowledge required to be successful in their lessons, and thrive in the GCSE examinations.

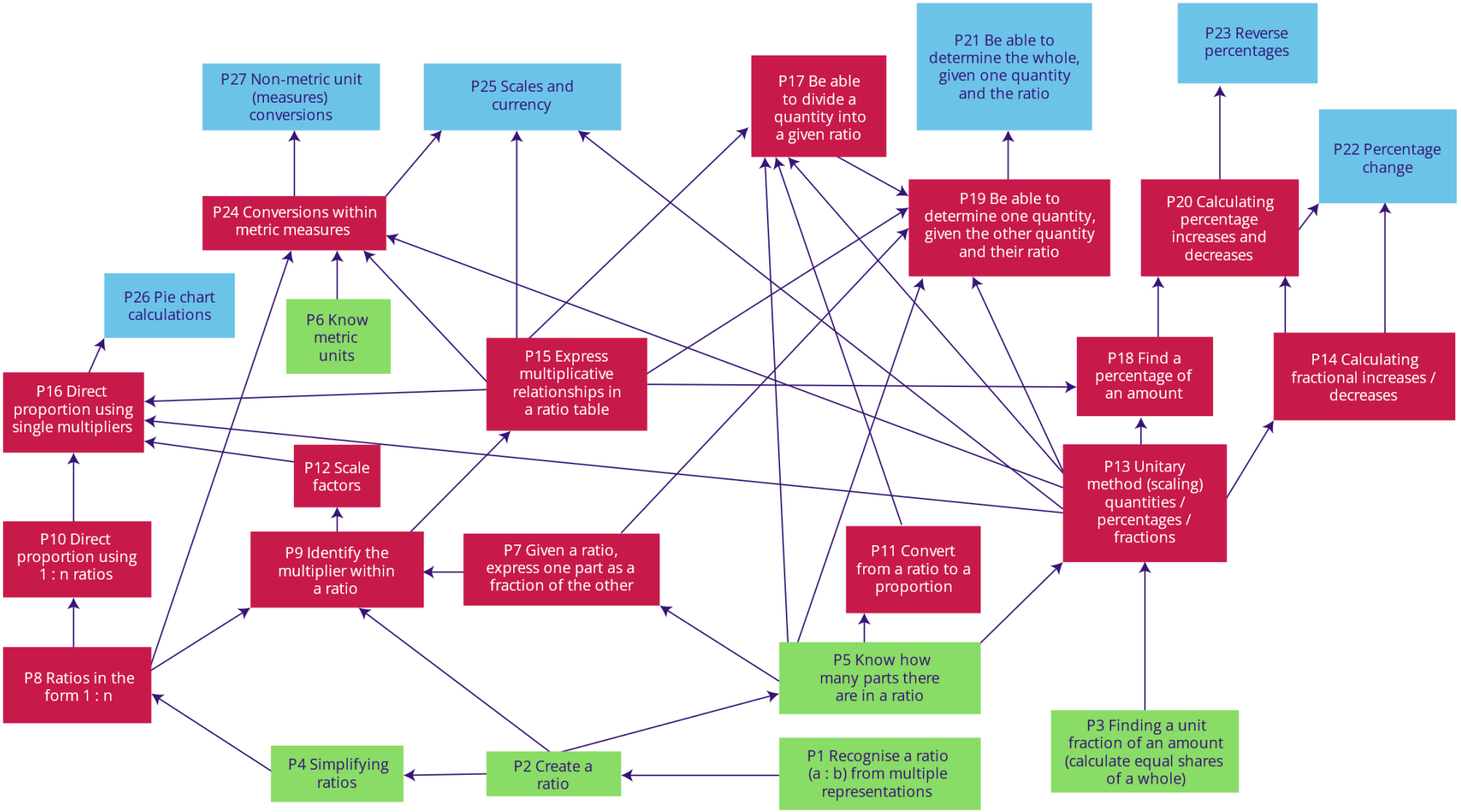
Key features

The Concept Map for Proportions, shown on the next page, highlights the interconnectedness of the ideas which sit in the Proportions test, with two key nodes which underpin the higher order knowledge within the knowledge space.

P13 Unitary Method is a key node, feeding in to no fewer than seven successors, and P15 Express Multiplicative Relationships in a Ratio Table acts as a predecessor for six other nodes within the map. If learners develop expertise within these two key areas, their chances of success within the Proportions strand of the curriculum will be increased greatly, as it can be seen that these ideas work in tandem to underpin the ideas in direct proportion, conversions with units and currencies, and working with ratio problems.

Concept Map

3. Proportions



P1 Recognise a ratio (a : b) from multiple representations

What is being tested	Learners are being tested on their understanding of unequal sharing in a variety of representations.
Learning Objectives	P1.1 Match two-part ratios with their visual representation P1.2 Match two-part ratios with bar diagrams P1.3 Identify three-part ratios from worded scenarios P1.4 Match three-part ratios with their visual representation P1.5 Match three-part ratios with bar diagrams
Predecessors	None
Successors	P2 Create a ratio
KS2 & KS3 Guidance	Learners are introduced to the idea of ratio in Year 6 (page 305, KS1 and KS2 guidance), and work with formal ratio notation in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Ratio language and notation

P2 Create a ratio

What is being tested	Learners are being tested on their ability to construct a ratio, drawing on their understanding of unequal sharing.
Learning Objectives	P2.1 Identify two-part ratios from a worded problem P2.2 Identify ratios that correspond with a comparison of two quantities P2.3 Recognise part-to-part ratios P2.4 Describe ratio
Predecessors	P1 Recognise a ratio (a : b) from multiple representations
Successors	P4 Simplifying ratios P5 Know how many parts there are in a ratio P9 Identify the multiplier within a ratio
KS2 & KS3 Guidance	Learners construct ratios in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Ratio language and notation

P3 Finding a unit fraction of an amount (calculate equal shares of a whole)

What is being tested	Learners are being tested on their understanding of equal sharing, using fraction notation.
Learning Objectives	P3.1 Describe a unit fraction P3.2 Distinguish between unit fractions and those that are not unit fractions P3.3 Know that dividing by the denominator will find a unit fraction of an amount P3.4 Find equivalent calculations of dividing an amount by unit fractions (divide by denominator)
Predecessors	None
Successors	P13 Unitary method (scaling) quantities/percentages/fractions
KS2 & KS3 Guidance	Learners are introduced to unit fractions as operators in Year 3 (page 124, KS1 and KS2 guidance).
Oak National Academy Resources	Checking and securing finding a fraction of a given amount Deepening understanding with fractions of a given amount

P4 Simplifying ratios

What is being tested	Learners are being tested on their understanding of scaling, simplifying ratios.
Learning Objectives	P4.1 Find simplified ratios by identifying common factors P4.2 Categorise ratios based on their simplest form P4.3 Match equivalent ratios with visual representations
Predecessors	P2 Create a ratio
Successors	P8 Ratios in the form 1 : n
KS2 & KS3 Guidance	Learners work with ratio in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Ratio language and notation

P5 Know how many parts there are in a ratio

What is being tested	Learners are being tested on their ability to identify the number parts that represent the 'whole', given a ratio.
Learning Objectives	P5.1 Identify the number of parts in a ratio P5.2 Identify the number of parts that represent the 'whole' in a given ratio P5.3 Match ratios to their number of parts
Predecessors	P2 Create a ratio
Successors	P7 Given a ratio, express one part as a fraction of the other P11 Convert from a ratio to a proportion P13 Unitary method (scaling) quantities/percentages/fractions
KS2 & KS3 Guidance	Learners work with ratio in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Dividing a quantity into a given ratio Determining the whole Determining the part

P6 Know metric units

What is being tested	Learners are being tested on their ability to recognise and recall common metric units of measure.
Learning Objectives	P6.1 Match metric equivalents for length P6.2 Recognise metric equivalents for weight P6.3 Order measures of length P6.4 Order measures of weight P6.5 Order measures of capacity P6.6 Recognise metric equivalents for capacity
Predecessors	None
Successors	P24 Conversions within metric measures
KS2 & KS3 Guidance	Learners begin to recognise metric units of measure throughout mathematics in KS1 and KS2.
Oak National Academy Resources	Checking understanding of place value in metric units Securing understanding of place value in metric units Checking understanding of ordering and comparing numbers Securing understanding of ordering and comparing numbers

P7 Given a ratio, express one part as a fraction of another

What is being tested	Learners are being tested on their understanding of ratios as fractions.
Learning Objectives	P7.1 Write one part of a ratio as a fraction of the other part P7.2 Write each part of a ratio as a fraction of the other part P7.3 Match fractions to the correct parts of a ratio
Predecessors	P5 Know how many parts there are in a ratio
Successors	P9 Identify the multiplier within a ratio P19 Be able to determine one quantity, given the other quantity and their ratio
KS2 & KS3 Guidance	Learners work with ratio in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Expressing multiplicative relationships as ratios and fractions

P8 Ratios in the form 1 : n

What is being tested	Learners are being tested on their ability to scale ratios such that one value represents a unit.
Learning Objectives	P8.1 Identify a correct conversion of a ratio to the form 1 : n P8.2 Write a ratio in the form 1 : n P8.3 Calculate an amount using a 1 : n ratio
Predecessors	P4 Simplifying ratios
Successors	P9 Identify the multiplier within a ratio P10 Direct proportion using 1 : n ratios P24 Conversions within metric measures
KS2 & KS3 Guidance	Learners are exposed to the idea of 'for 1 part that a has, b has…' in Year 7 (KS3, page 101) and formalise this notation during their KS3 study.
Oak National Academy Resources	Ratio language and notation

P9 Identify the multiplier within a ratio

What is being tested	Learners are being tested on their understanding of the scaling between the parts of a ratio, giving this as a multiplier.
Learning Objectives	P9.1 Recognise the multiplier, given a ratio P9.2 Identify ratios that have a given multiplier P9.3 Find the multiplier, given a ratio
Predecessors	P2 Create a ratio P7 Given a ratio, express one part as a fraction of the other P8 Ratios in the form 1 : n
Successors	P12 Scale factors P15 Express multiplicative relationships in a ratio table
KS2 & KS3 Guidance	Learners work with ratio tables and identifying multipliers within ratios in Year 7 (page 100, KS3 guidance).
Oak National Academy Resources	Checking understanding of multiplicative relationships Securing understanding of ratio as a multiplicative relationship Multiplicative relationships in context

P10 Direct proportion using 1 : n ratios

What is being tested	Learners are being tested on their understanding of scaling as a unit ratio.
Learning Objectives	P10.1 Recognise the result of a conversion from km to miles P10.2 Recognise the result of a conversion from inches to cm P10.3 Recognise the result of a conversion from kg to lbs
Predecessors	P8 Ratios in the form 1 : n
Successors	P16 Direct proportion using single multipliers
KS2 & KS3 Guidance	Learners convert between related units in Year 7 (page 98, KS3 guidance).
Oak National Academy Resources	Checking understanding of place value in metric units Securing understanding of place value in metric units Place value in imperial units Checking understanding of ordering and comparing numbers Securing understanding of ordering and comparing numbers Describing more conversions with ratio Problem solving with place value

P11 Convert from a ratio to a proportion

What is being tested	Learners are being tested on their ability to re-write a ratio as a linear equation.
Learning Objectives	P11.1 Convert two-part ratios into proportions P11.2 Describe proportion P11.3 Convert three-part ratios into proportions
Predecessors	P5 Know how many parts there are in a ratio
Successors	P17 Be able to divide a quantity into a given ratio
KS2 & KS3 Guidance	Learners begin to identify multipliers within ratios in Year 7 (page 100, KS3 guidance).
Oak National Academy Resources	Multiplicative relationships presented graphically Scaling diagrams for multiplicative relationships Multiplicative relationships and direct proportion

P12 Scale factors

What is being tested	Learners are being tested on their understanding of scaling, recognising that scale factors greater than one increase a value, and scale factors between zero and one decrease a value.
Learning Objectives	P12.1 Describe scale factor P12.2 Match the descriptions with numerical scale factors P12.3 Recognise which scale factors increase a quantity P12.4 Recognise which scale factors decrease a quantity P12.5 Calculate a scale factor using inverse operation P12.6 Categorise scale factors based on their effect on the original amount
Predecessors	P9 Identify the multiplier within a ratio
Successors	P16 Direct proportion using single multipliers
KS2 & KS3 Guidance	Learners work with scaling in Upper KS2, extending on this idea in Year 9 (page 212, KS3 guidance).
Oak National Academy Resources	Introduction to enlargements

P13 Unitary method (scaling) quantities/percentages/fractions

What is being tested	Learners are being tested on their ability to use the unitary method when scaling quantities, percentages and fraction.
Learning Objectives	P13.1 Know that sharing 100% into 100 parts equals 1% P13.2 Calculate the value of one item, given the multiple value of the same item P13.3 Calculate a given percentage of a two-digit integer by first finding 1% P13.4 Select the correct method to find a common fraction of an amount by first finding the unit fraction of the amount P13.5 Calculate the value of multiple items by first finding the value of one item
Predecessors	P3 Finding a unit fraction of an amount (calculate equal shares of a whole) P5 Know how many parts there are in a ratio
Successors	P14 Calculating fractional increases/decreases P16 Direct proportion using single multipliers P17 Be able to divide a quantity into a given ratio P18 Find a percentage of an amount P19 Be able to determine one quantity given the other quantity and their ratio P24 Conversions within metric measures P25 Scales and currency
KS2 & KS3 Guidance	Learners first encounter the unitary method in Year 6 (KS1 and KS2, page 306) and use this method throughout Key Stage 3.
Oak National Academy Resources	Expressing one number as a percentage of another Finding a percentage with a multiplier

P14 Calculating fractional increases/decreases

What is being tested	Learners are being tested on their ability to apply fractional increases and decreases.
Learning Objectives	P14.1 Calculate a fractional increase of an integer amount by multiplying by a mixed fraction P14.2 Match bar diagrams with the fractional increase they represent P14.3 Match bar diagrams with the fractional decrease they represent P14.4 Recognise the correct mixed fraction multiplier of a fractional increase P14.5 Recognise the correct common fraction multiplier of a fractional decrease P14.6 Calculate a fractional decrease of an integer amount by multiplying by a common fraction
Predecessors	P13 Unitary method (scaling) quantities/percentages/fractions
Successors	P20 Calculating percentage increases and decreases P22 Percentage change
KS2 & KS3 Guidance	Learners build on their knowledge of fractions and the unitary method to explore multiplicative relationships in Year 7 (KS3, page 100).
Oak National Academy Resources	Deepening understanding of multiplication with fractions Dividing a whole number by a fraction

P15 Express multiplicative relationships in a ratio table

What is being tested	Learners are being tested on their understanding of a multiplicative relationships when ratios are represented in a table.
Learning Objectives	P15.1 Find the missing values in a ratio table P15.2 Know that a proportion is the equality of two ratios P15.3 Calculate missing quantities for ratios with integer multipliers using equality of ratios P15.4 Calculate missing quantities for ratios with decimal multipliers to one decimal place using equality of ratios P15.5 Apply a ratio table to percentage problems
Predecessors	P9 Identify the multiplier within a ratio
Successors	P16 Direct proportion using single multipliers P17 Be able to divide a quantity into a given ratio P18 Find a percentage of an amount P19 Be able to determine one quantity, given the other quantity and their ratio P24 Conversions within metric measures P25 Scales and currency
KS2 & KS3 Guidance	Learners begin to identify multipliers within ratios in Year 7 (page 100, KS3 guidance).
Oak National Academy Resources	Dividing a quantity into a given ratio Determining the whole Determining the part

P16 Direct proportion using single multipliers

What is being tested	Learners are being tested on their ability to apply proportional change using a multiplier.
Learning Objectives	P16.1 Apply a given scale factor to a quantity using multiplication P16.2 Calculate missing quantities using single multipliers P16.3 Calculate proportions of ingredients needed, based on a recipe P16.4 Calculate missing quantities in real-life scenarios using single multipliers
Predecessors	P10 Direct proportion using 1 : n ratios P12 Scale factors P13 Unitary method (scaling) quantities/percentages/fractions P15 Express multiplicative relationships in a ratio table
Successors	P26 Pie chart calculations
KS2 & KS3 Guidance	Learners work with scaling in Upper KS2, extending on this idea in Year 9 (page 212, KS3 guidance).
Oak National Academy Resources	Multiplicative relationships and direct proportion Graphing direct proportion Direct proportion in context

P17 Be able to divide a quantity into a given ratio

What is being tested	Learners are being tested on their ability to divide quantities in a specified ratio, drawing on their understanding of unequal sharing.
Learning Objectives	P17.1 Calculate the value of one part of a whole divided in a given ratio P17.2 Find an amount shared in a given ratio, given the value of 1 part P17.3 Find an amount shared in a given ratio with two parts P17.4 Find an amount shared in a given ratio with three parts
Predecessors	P5 Know how many parts there are in a ratio P11 Convert from a ratio to a proportion P13 Unitary method (scaling) quantities/percentages/fractions P15 Express multiplicative relationships in a ratio table
Successors	None
KS2 & KS3 Guidance	Learners are introduced to the idea of ratio in Year 6 (page 305, KS1 and KS2 guidance), and work with formal ratio notation in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Dividing a quantity into a given ratio

P18 Find a percentage of an amount

What is being tested	Learners are being tested on their ability to calculate percentages of a specified amount.
Learning Objectives	P18.1 Match percentages to their multipliers P18.2 Find a percentage of an amount using a ratio table P18.3 Find a percentage of a number in terms of another number where the percentage is > 100%
Predecessors	P13 Unitary method (scaling) quantities/percentages/fractions P15 Express multiplicative relationships in a ratio table
Successors	P20 Calculating percentage increases and decreases
KS2 & KS3 Guidance	Learners calculate percentages of a specified amount in Year 8 (page 160, KS3 guidance).
Oak National Academy Resources	Expressing one number as a percentage of another Finding a percentage with a multiplier

P19 Be able to determine one quantity, given the other quantity and their ratio

What is being tested	Learners are being tested on their understanding of scaling within a ratio, finding one quantity when given another.
Learning Objectives	P19.1 Find a quantity, given the other quantity, and find their ratio using a ratio table P19.2 Identify a quantity, given the other quantity and their ratio P19.3 Calculate a quantity, given the other quantity and their ratio
Predecessors	P5 Know how many parts there are in a ratio P7 Given a ratio, express one part as a fraction of the other P13 Unitary method (scaling) quantities/percentages/fractions P15 Express multiplicative relationships in a ratio table P17 Be able to divide a quantity into a given ratio
Successors	P21 Be able to determine the whole, given one quantity and the ratio
KS2 & KS3 Guidance	Learners are introduced to the idea of ratio in Year 6 (page 305, KS1 and KS2 guidance), and work with formal ratio notation in Year 7 (page 101, KS3 guidance).
Oak National Academy Resources	Determining the part

P20 Calculating percentage increases and decreases

What is being tested	Learners are being tested on their ability to apply increases and decreases to amounts using percentages.
Learning Objectives	P20.1 Match percentage increase with single multipliers P20.2 Match percentage decrease with single multipliers P20.3 Identify the percentage increase that is represented by the bar diagram P20.4 Identify the percentage decrease that is represented by the bar diagram P20.5 Calculate a percentage increase using a single multiplier P20.6 Calculate a percentage decrease using a single multiplier
Predecessors	P14 Calculating fractional increases/decreases P18 Find a percentage of an amount
Successors	P22 Percentage change P23 Reverse percentages
KS2 & KS3 Guidance	Learners encounter the idea of percentage change in Year 8 (page 160, KS3 guidance).
Oak National Academy Resources	Increase by a percentage Decrease by a percentage

P21 Be able to determine the whole, given one quantity and the ratio

What is being tested	Learners are being tested on their ability to calculate the value of the 'whole', given a ratio and the value of one part.
Learning Objectives	P21.1 Find the whole, given one quantity and a 1 : n ratio, using a ratio table P21.2 Identify the whole, given one quantity and the ratio, using a ratio table P21.3 Calculate the whole, given one quantity and the ratio, using a ratio table
Predecessors	P19 Be able to determine one quantity, given the other quantity and their ratio
Successors	None
KS2 & KS3 Guidance	Learners are introduced to the idea of ratio in Year 6 (page 305), and work with formal ratio notation in Year 7 (page 101).
Oak National Academy Resources	Determining the whole

P22 Percentage change

What is being tested	Learners are being tested on their ability to calculate a percentage change, given the original and new values, as well as to calculate the original and new values given a percentage change.
Learning Objectives	P22.1 Identify the original value from a worded problem P22.2 Identify the new value from a worded problem P22.3 Calculate the percentage change, given the original and new values
Predecessors	P14 Calculating fractional increases/decreases P20 Calculating percentage increases and decreases
Successors	None
KS2 & KS3 Guidance	Learners encounter the idea of percentage change in Year 8 (page 160, KS3 guidance).
Oak National Academy Resources	Finding the percentage change

P23 Reverse percentages

What is being tested	Learners are being tested on their understanding of percentages, working inversely to find the 'whole' given a scaled value.
Learning Objectives	P23.1 Identify the initial and final value from a worded question P23.2 Identify the correct division for reversing a percentage increase between 10% and 100% P23.3 Identify the correct division for reversing a percentage decrease between 10% and 100% P23.4 Identify the correct division for reversing a percentage increase between 0% and 10% P23.5 Identify the correct division for reversing a percentage decrease between 0% and 10% P23.6 Calculate the original value after a percentage increase has been applied P23.7 Calculate the original value after a percentage decrease has been applied
Predecessors	P20 Calculating percentage increases and decreases
Successors	None
KS2 & KS3 Guidance	Learners encounter the idea of percentage change in Year 8 (page 160, KS3 guidance).
Oak National Academy Resources	Finding the original amount after an increase Finding the original amount after a decrease

P24 Conversions within metric measures

What is being tested	Learners are being tested on their ability to convert between common metric units of measure.
Learning Objectives	P24.1 Convert from g to kg P24.2 Convert from grams to kilograms using a ratio table P24.3 Find the number of millimetres in a given number of metres, with a ratio table P24.4 Recognise the correct conversion from cm to km P24.5 Recognise metric conversions P24.6 Recognise the correct conversion from m to mm
Predecessors	P6 Know metric units P8 Ratios in the form 1 : n P13 Unitary method (scaling) quantities/percentages/fractions P15 Express multiplicative relationships in a ratio table
Successors	P25 Scales and currency P27 Non-metric unit (measures) conversions
KS2 & KS3 Guidance	Learners begin converting between metric measures in Year 5 (page 229, KS1 and KS2 guidance).
Oak National Academy Resources	Securing understanding of place value in metric units

P25 Scales and currency

What is being tested	Learners are being tested on their ability to apply their understanding of scaling to currencies.
Learning Objectives	P25.1 Calculate real life distances using a map and its scale P25.2 Identify how to calculate a real-life distance using a map and its scale P25.3 Calculate real life measurements using a scaled drawing P25.4 Convert £ to € (1 : n) P25.5 Convert € to £ (n : 1) P25.6 Identify a suitable scale for a scaled drawing, given real-life measurements P25.7 Identify the scale of a map, given real life measurements
Predecessors	P13 Unitary method (scaling) quantities/percentages/fractions P15 Express multiplicative relationships in a ratio table P24 Conversions within metric measures
Successors	None
KS2 & KS3 Guidance	Learners work with multiplicative relationships in Year 7 (page 99, KS3 guidance).
Oak National Academy Resources	Multiplicative relationships in context Describing exchange rates with ratio Describing more conversions with ratio

P26 Pie chart calculations

What is being tested	Learners are being tested on their ability to interpret data represented in, and construct, pie charts.
Learning Objectives	P26.1 Recognise the number of degrees for one unit in a pie chart P26.2 Interpret data displayed in a pie chart P26.3 Calculate frequencies of categories using pie chart construction angles P26.4 Calculate angles required for categories to construct a pie chart P26.5 Calculate the number of degrees per category, given the number of degrees per unit
Predecessors	P16 Direct proportion using single multipliers
Successors	None
KS2 & KS3 Guidance	Students encounter pie charts in KS2 and build on this in Year 8 (page 167, KS3 guidance).
Oak National Academy Resources	Constructing pie charts

P27 Non-metric unit (measures) conversions

What is being tested	Learners are being tested on their ability to convert between common metric units of measure their corresponding Imperial units of measure.
Learning Objectives	P27.1 Find the number of miles, given the kilometres and a ratio table P27.2 Calculate the number of steps, given steps : 100 metres and a distance in km P27.3 Calculate pounds from kg, given the ratio 5 kg : 11 lb
Predecessors	P24 Conversions within metric measures
Successors	None
KS2 & KS3 Guidance	Learners work with multiplicative relationships in Year 7 (page 99, KS3 guidance).
Oak National Academy Resources	Describing more conversions with ratio Direct proportion in context

Contributors

AQA

We're an independent education charity, providing high quality assessments that are fair, reliable, and support students in their educational journey.

Our qualifications expertise dates back to 1903, when our predecessor boards were founded by five leading universities. Today, we're the largest provider of academic qualifications taught in schools and colleges.

We set and mark the papers for over half of all GCSEs and A-levels taken every year. But exams are only part of the story – we also make sure the content of our qualifications support great teaching.

Our qualifications are designed to suit a range of abilities and include GCSEs, AS and A-levels, the Extended Project Qualification and Technical Awards. Our qualifications are internationally recognised and taught in more than 40 countries around the world and they're highly valued by employers and universities.

We're led by our Executive Team and governed by a Board of Trustees drawn from schools, colleges, higher education, children's services and the business community.

Oak National Academy

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