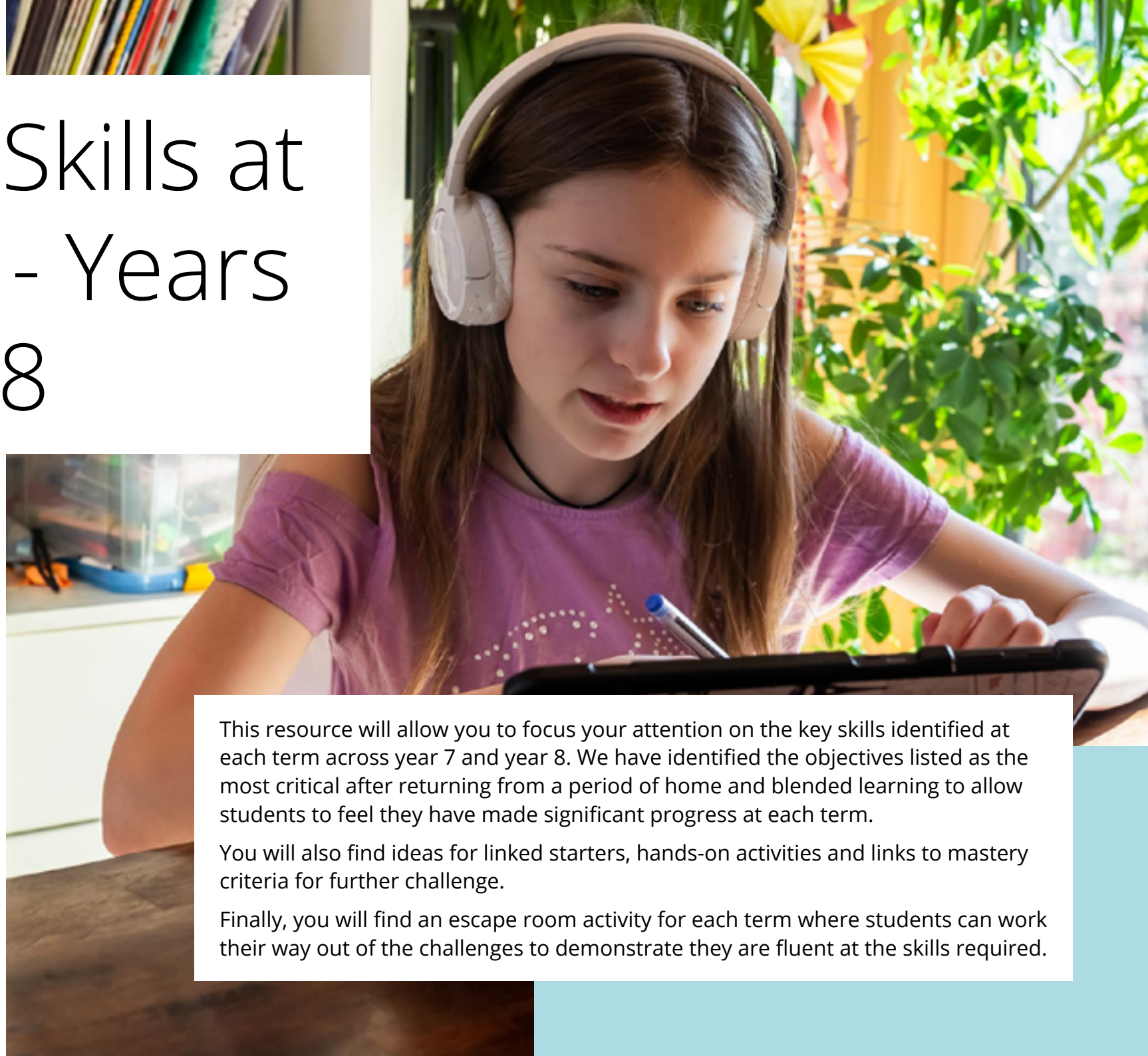


Key Skills at KS3 - Years 7 & 8



This resource will allow you to focus your attention on the key skills identified at each term across year 7 and year 8. We have identified the objectives listed as the most critical after returning from a period of home and blended learning to allow students to feel they have made significant progress at each term.

You will also find ideas for linked starters, hands-on activities and links to mastery criteria for further challenge.

Finally, you will find an escape room activity for each term where students can work their way out of the challenges to demonstrate they are fluent at the skills required.

How to use this resource...

Each term has its own 'virtual classroom'. Each classroom will have four links to all the information you will need to teach year 7 and 8 each term.

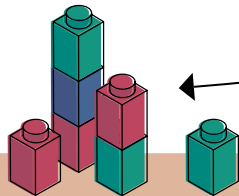


Starters

Year 7 Term 4

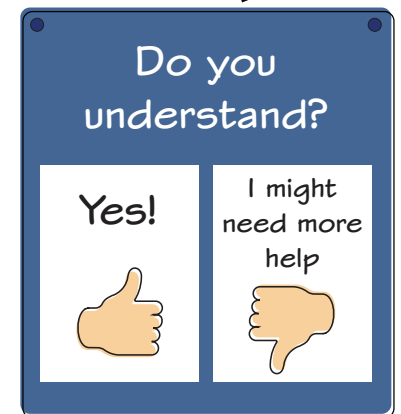
- Simplify expressions including brackets.
- Write expressions to represent a function machine.
- Substitute positive integers into formulae written using words and letters.
- Write simple formulae using words and letter symbols.
- Read and plot coordinates (Find the midpoint of a line segment)
- Recognise, name and plot straight line graphs parallel to the x or y axis.

Manipulatives

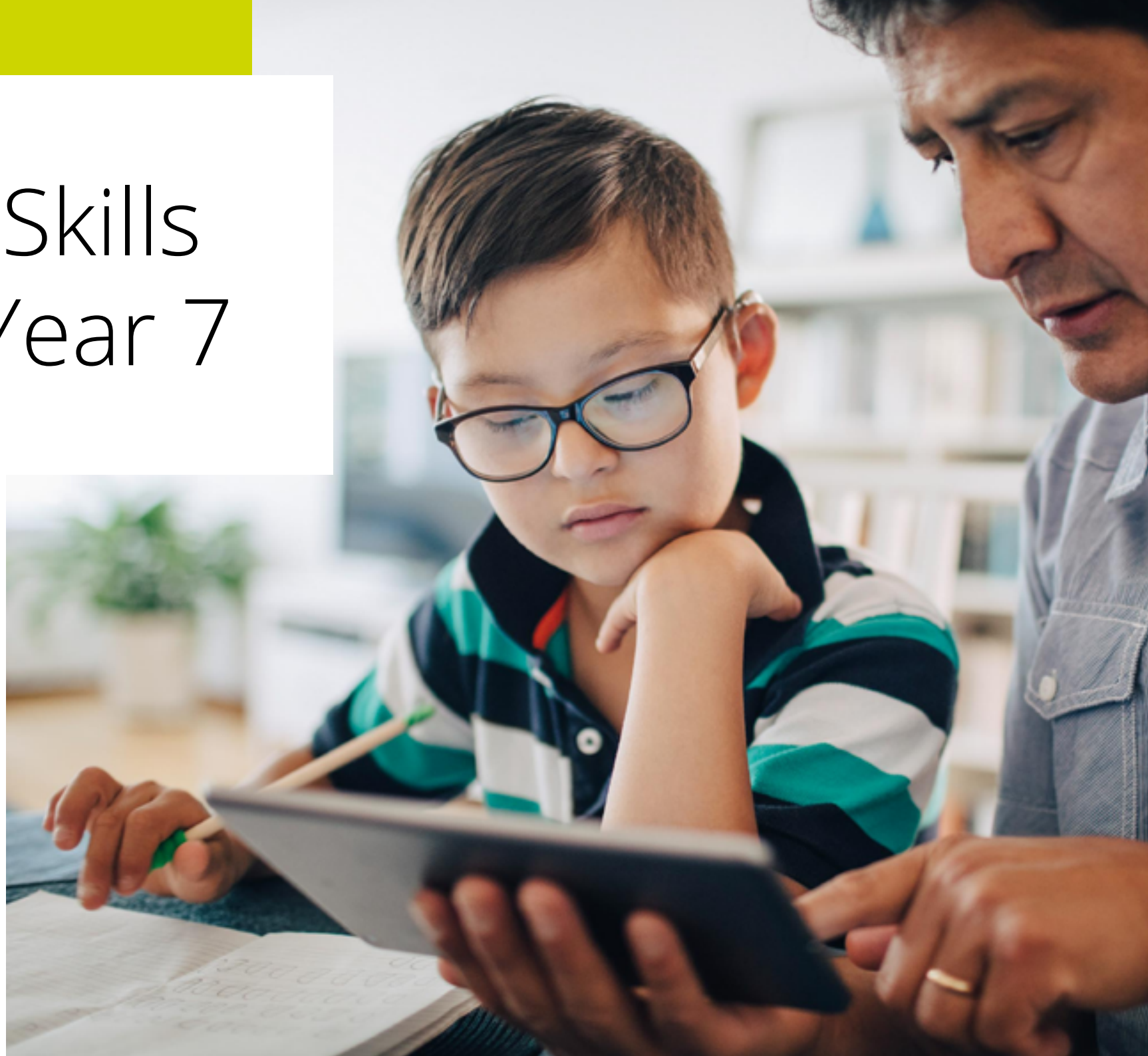


Objectives

Mastery/Support



Key Skills for Year 7

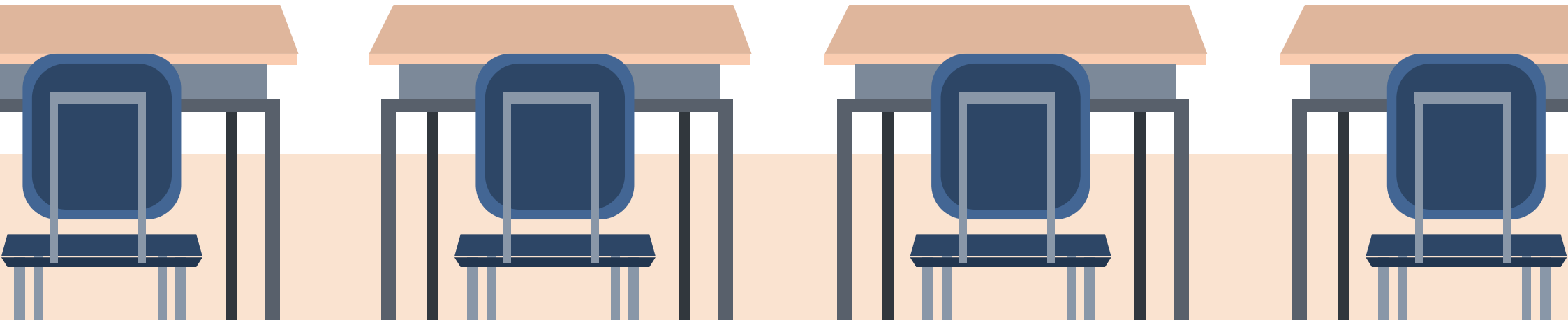


Pearson

Year 7

Year 7 Term 1

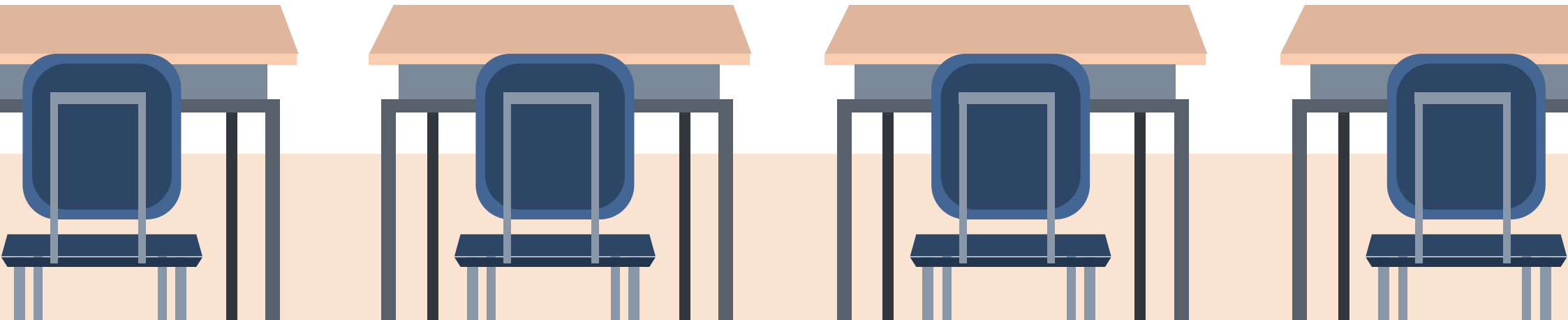
- Read, write, order, compare positive and negative, whole and decimal numbers.
- Addition of whole numbers and decimals in a variety of contexts.
- Subtraction of whole numbers and decimals in a variety of contexts.
- Multiplication of whole numbers (ext only decimals) in a variety of contexts.
- Division of whole numbers (ext only decimals) in a variety of contexts.



Year 7

Year 7 Term 2

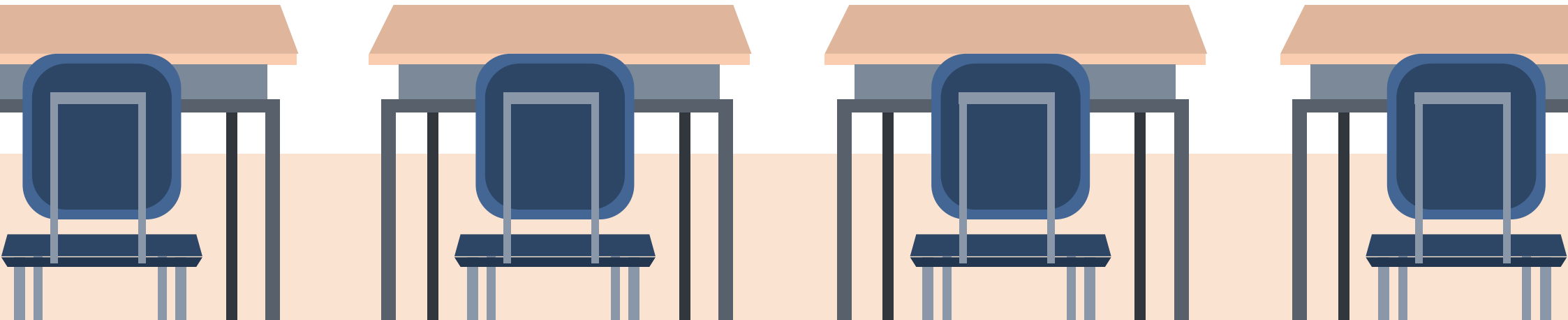
- What is a fraction? Recognise fractions of objects and numbers.
- Identify, order and compare fractions, decimals and percentages.
- Convert freely between fractions, decimals and percentages.
- Complete calculations with fractions, decimals or percentages.
- Use ratio notation, and write ratios in their simplest form.
- Share a quantity into a given ratio.



Year 7

Year 7 Term 3

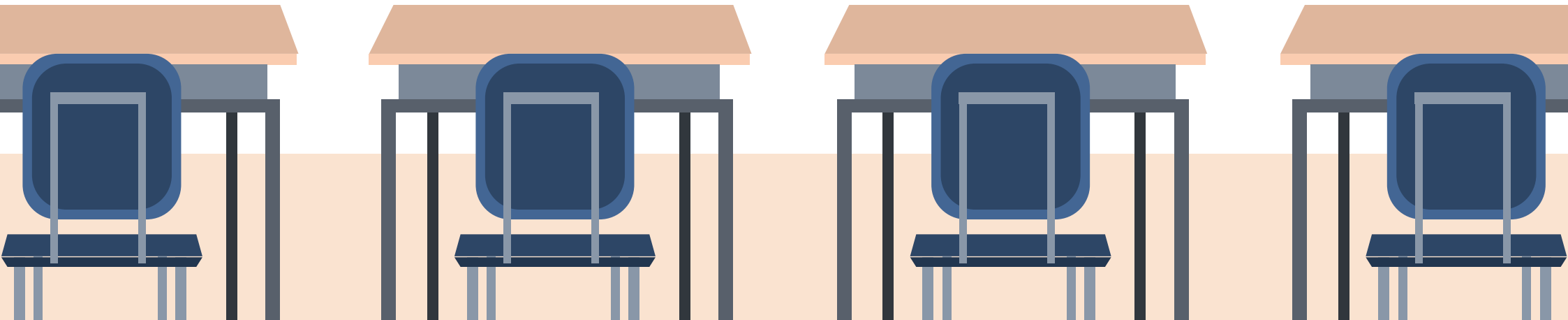
- Use the language of probability and position those words on a scale.
- Identify outcomes
- Calculate probability
- Record data from simple experiments and estimate probabilities based on data.
- Use probability to estimate the expected number of times an outcome will occur.
- Read and draw line graphs and bar charts.



Year 7

Year 7 Term 4

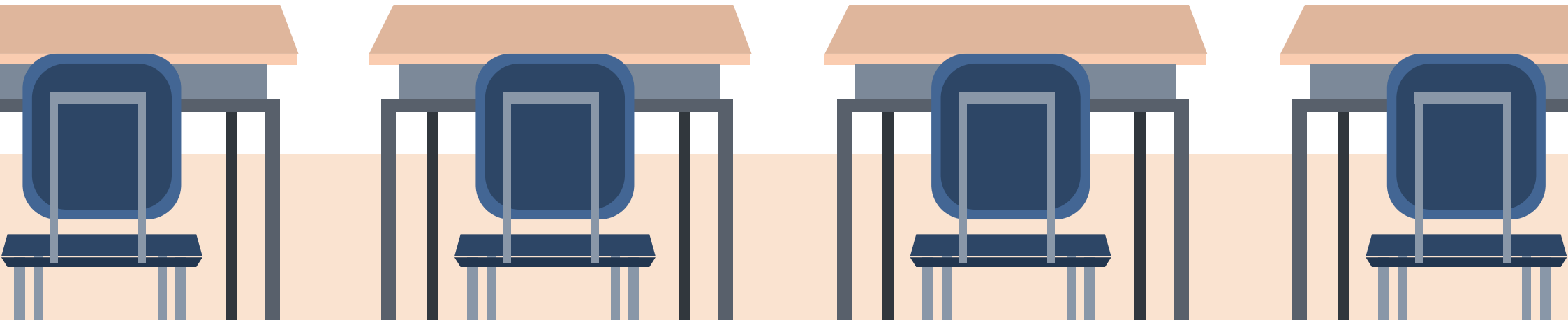
- Simplify expressions including brackets.
- Write expressions to represent a function machine.
- Substitute positive integers into formulae written using words and letters.
- Write simple formulae using words and letter symbols.
- Read and plot coordinates (Find the midpoint of a line segment)
- Recognise, name and plot straight line graphs parallel to the x or y axis.



Year 7

Year 7 Term 5

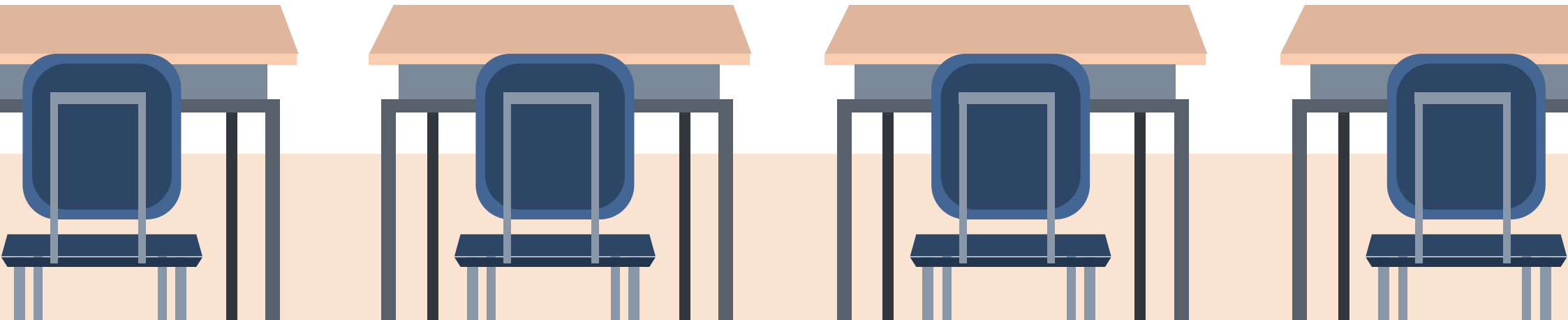
- Find patterns and describe rules in sequences
- Continue and describe special sequences (square, cubes, arithmetic, geometric)
- Generate terms of sequence by using a position to term rule.
- Calculate the mode, median, mean and range of a set of data.
- Read and draw tally charts, frequency tables, pictograms and bar charts.
- Read and construct grouped tally charts, frequency tables and bar charts



Year 7

Year 7 Term 6

- Recognise types of angles, use a protractor to measure and draw angles accurately.
- Be able to calculate missing angles on a straight line, around a point and in triangles and quadrilaterals.
- Identify congruent shapes and be able to enlarge by a given scale factor.
- Identify line and rotational symmetry in 2D shapes.
- Transform 2D shapes by rotation, reflection and translation.



Key Skills for Year 8



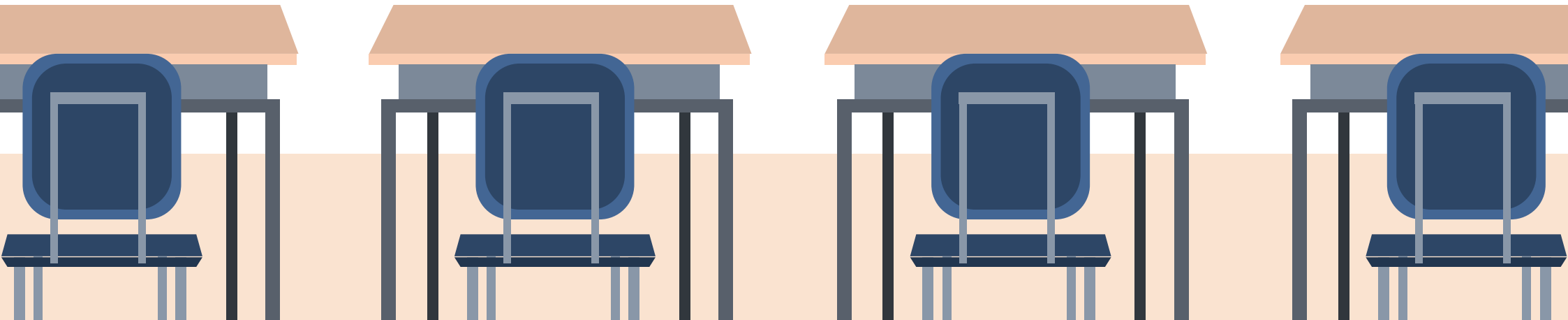
Pearson



Year 8

Year 8 Term 1

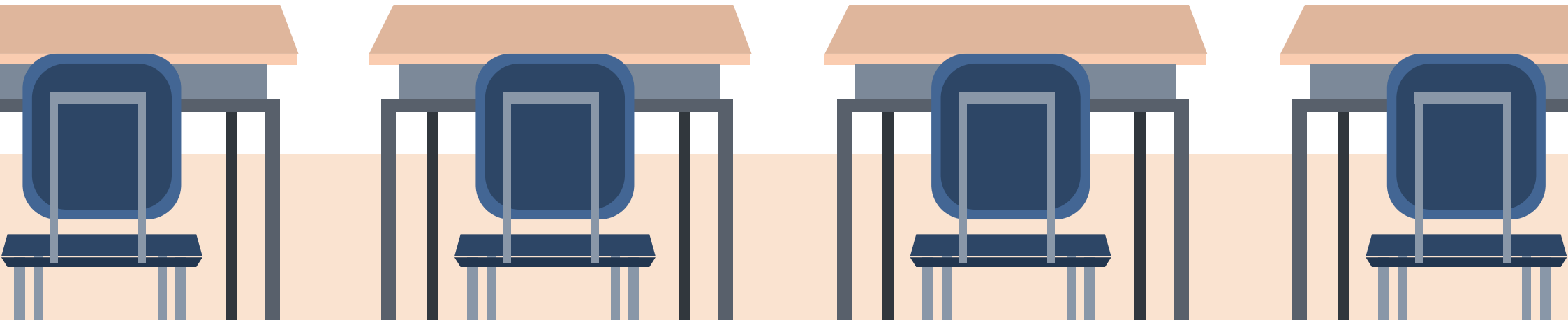
- Add, Subtract, multiply and divide positive and negative numbers, including larger numbers and decimals.
- Know and use squares, square roots, cubes, cube roots and brackets.
- Use index notation
- Write a number as a product of its prime factors.
- Find the HCF and LCM



Year 8

Year 8 Term 2

- Round to an appropriate degree of accuracy.
- Divide a quantity into a given ratio.
- Order fractions.
- Recall equivalent fractions, decimals and percentages.
- Add, subtract, multiply and divide fractions.
- Use the four operations with mixed numbers.

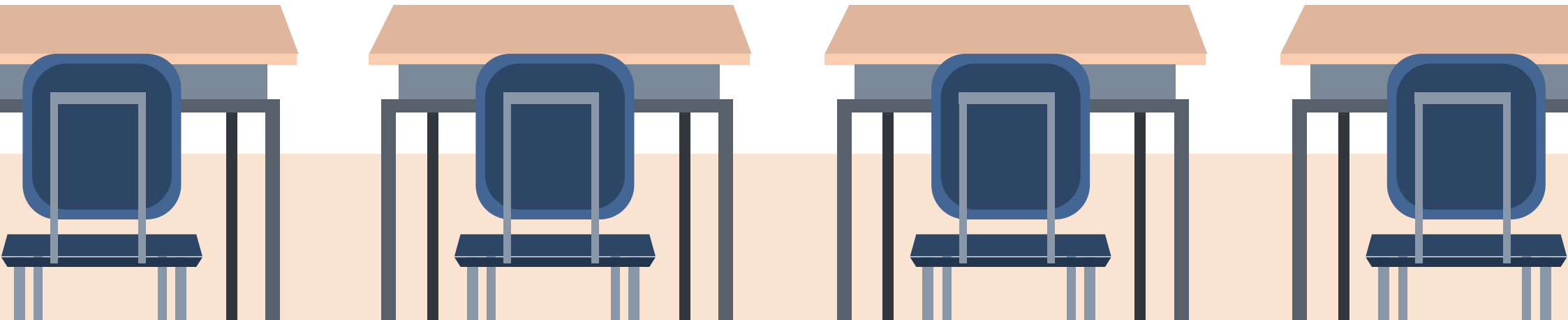




Year 8

Year 8 Term 3

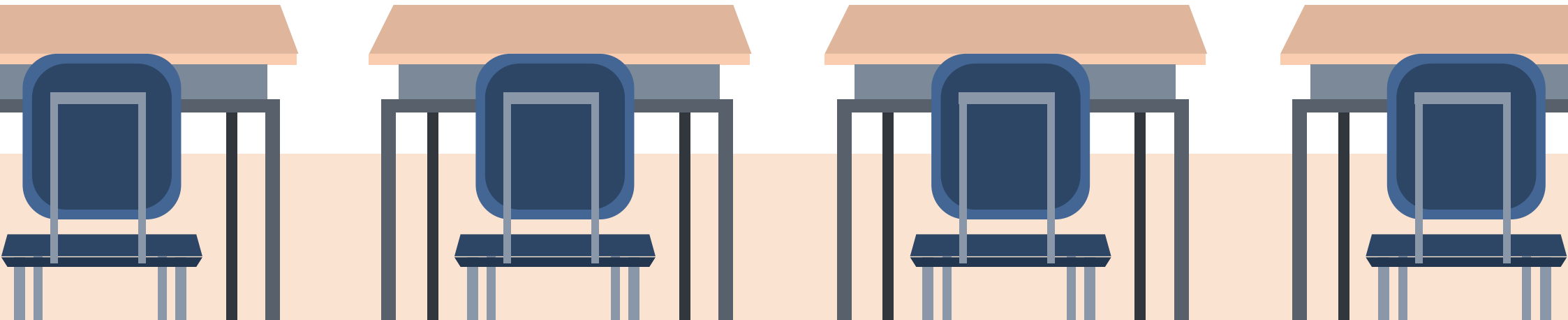
- Interpret and draw pie charts.
- Use two way tables, and frequency tables (inc grouped data)
- Draw and interpret Stem and Leaf diagrams.
- Draw scatter graphs and describe correlation.
- Calculate averages.



Year 8

Year 8 Term 4

- Simplify expressions (inc index laws)
- Expand and Factorise
- Solve one and two step equations.
- Plot a straight line graph and work out its gradient.
- Plot the graphs of linear functions.

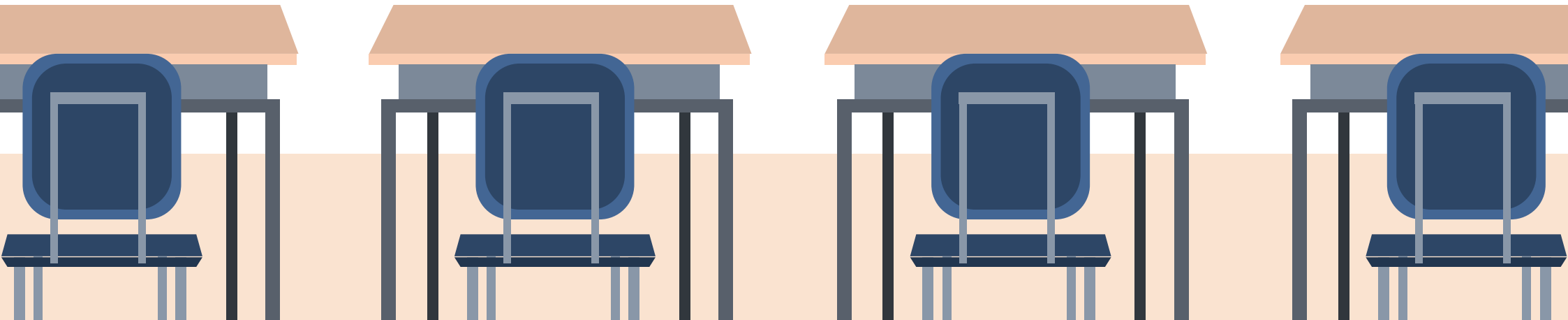




Year 8

Year 8 Term 5

- Classify quadrilaterals by their geometric properties.
- Identify angles in parallel lines.
- Exterior and interior angles of polygons.
- Solve geometrical problems showing reasoning.

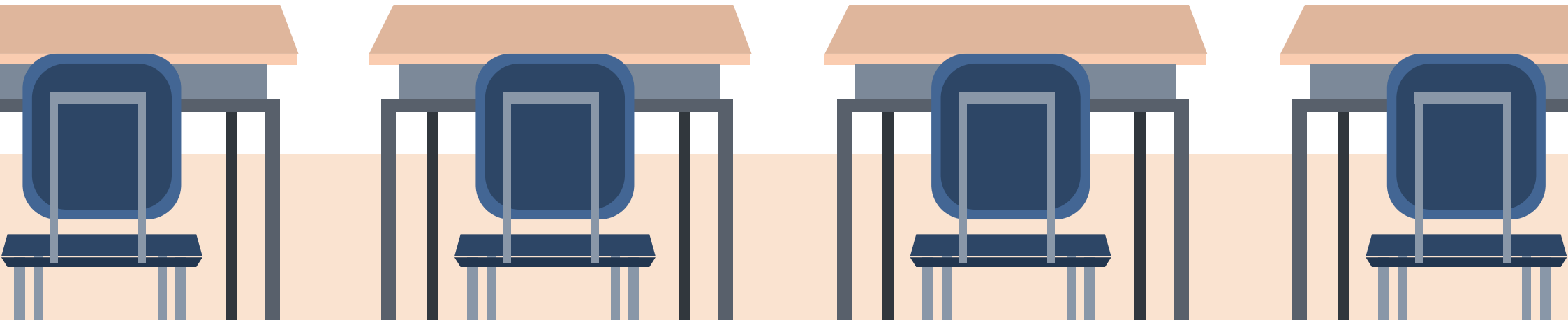




Year 8

Year 8 Term 6

- Calculate the area of triangles, parallelograms and trapeziums.
- Surface area and volume of cubes and cuboids.
- Nets
- Draw and interpret line graphs.
- Conversion graphs and speed, distance, time graphs.





Pearson

Year 7

Term 1

Key Skills for Term 1

- Read, write, order, compare positive and negative, whole and decimal numbers.
- Addition of whole numbers and decimals in a variety of contexts.
- Subtraction of whole numbers and decimals in a variety of contexts.
- Multiplication of whole numbers (ext only decimals) in a variety of contexts.
- Division of whole numbers (ext only decimals) in a variety of contexts.



Mastery

Understand how multiplying by 10, 100, 1000, etc relates to our place value system and why this means we have a decimal system.

Understand inverse operations (addition & subtraction, multiplication & division).

Know what it means to multiply - e.g. by comparing grid method and long multiplication and explaining why they are the same.

Know what it means if a division calculation has a remainder.

Understand what negative numbers are and how they behave: where they fit into the ordering of the number line and how they multiply.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 7 Escape Rooms](#)

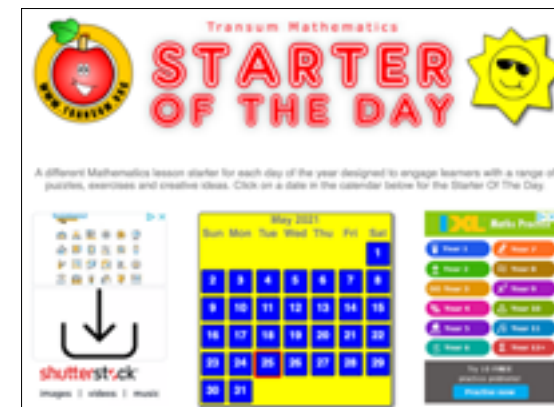
Starters Term 1


Practical Starter Ideas (aim for at least one/week):

- Selection of 2D/3D shapes = Name and list properties
- Selection of 3D shapes = Draw corresponding nets.
- Roll a dice 5 times to generate a number. Round this number to varying degrees of accuracy or partition into place value.
- Have some lengths of string to accurately measure. Order these.

Additional Ideas (at least one/week):

- 'Here's the answer, what could the question have been?'
- 'four operations' practice.
- Transum have great 'starter of the day'





Year 7

Term 2

Key Skills for Term 2

- What is a fraction? Recognise fractions of objects and numbers.
- Identify, order and compare fractions, decimals and percentages.
- Convert freely between fractions, decimals and percentages.
- Complete calculations with fractions, decimals or percentages.
- Use ratio notation, and write ratios in their simplest form.
- Share a quantity into a given ratio.

Mastery

Know that for unit fractions, the larger the denominator, the smaller the value of the fraction.

Understand that simplifying fractions can make them easier to visualise.

Understand inverse operations relating to fractions.

Understand that all 1, 2 and 3 place decimals are also fractions.

When is it easier to compare proportions when using fractions, decimals or percentages? e.g. comparing marks in a test.

Working with fractions and percentages that are >1 and what this means (laying ground work for percentage increase e.g. when is it possible to have 110%?, consider context examples).

What is the same and what is different between ratio and proportion?

Understand that a ratio is simply another way of comparing parts
- How does this relate to comparing parts written in fraction or percentage form?

Understand when it is better/more efficient to use ratios or proportion to make comparisons.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 7 Escape Rooms](#)

Starters Term 2

Practical Starter Ideas (aim for at least one/week):

One activity is to use lolly sticks.

Write numbers on each end (so each stick has four numbers).

You can differentiate by colour, e.g. blue sticks = 2 digit numbers, Green = 3 digit, red = decimals...

Students to complete calculations. E.g. 'add a blue stick number and a red stick number'...



Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- Try to make one starter per week a 'four operations' practice.
- Twinkl do some fab 'Maths Mats'. You could either use one for the whole week/ a couple of lesson or even one question each week for the term.

Year 7

Term 3

Key Skills for Term 3

- Use the language of probability and position those words on a scale.
- Identify outcomes
- Calculate probability
- Record data from simple experiments and estimate probabilities based on data.
- Use probability to estimate the expected number of times an outcome will occur.
- Read and draw line graphs and bar charts.



Mastery

Assigning numerical values to probabilities to help us compare them more accurately.

Know that probability can be represented as a fraction, decimal or a percentage (and how you choose which to use for a given question).

There may only be n outcomes, but the probability of each is only $1/n$ if the outcomes are equally likely.

Understand that when there are outcomes A, B and C, $P(A \text{ or } B) = P(A) + P(B)$, and that $P(A) + P(B) + P(C) = 1$, so $P(C) = 1 - P(A \text{ or } B)$

Understand that experimental probability is always an estimate, and for some contexts you can only use experimental probability as it is not possible to calculate a theoretical probability.

Why do more trials lead to better estimate of probability?

Understand that if an event has probability $1/3$ then we expect it to happen 1 in 3 times, but that doesn't mean that it will happen 1 in 3 times.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 7 Escape Rooms](#)

Starters Term 3


Practical Starter Ideas (aim for at least one/week):

Have a selection of laminated number grids (ideally differentiated - including decimal numbers). Students can quickly use these numbers to identify place value, order and compare.

138	355	1,530	2,084
248	402	1,004	3,744
670	511	4,201	6,329
842	443	8,330	9,113
805	488	7,400	2,587

Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- 'Retrieval' style starter. A good example can be found on the 'mathsbot' website under 'retrieval starter'



Year 7

Term 4

Key Skills for Term 4

- Simplify expressions including brackets.
- Write expressions to represent a function machine.
- Substitute positive integers into formulae written using words and letters.
- Write simple formulae using words and letter symbols.
- Read and plot coordinates (Find the midpoint of a line segment)
- Recognise, name and plot straight line graphs parallel to the x or y axis.

Mastery

Know you can use any letter to represent an unknown number or quantity, and that you can operate with them in the same way as you do numbers.

Understand that algebra uses the same arithmetic rules as number.

Begin to understand that an algebraic expression can represent a rule, and that may be easier than explaining or reading a rule in words.

Understand that the letters are called variables because they can change or vary.

Understand that a formula can be seen as a rule that tells you how to do a calculation and writing it in algebra can save time drawing diagrams or writing out in words.

Understand that the equation of a straight line is a function that generates a y value for every x value, and when you input x = 1, 2, 3, (consecutive terms) into the function, the y values form an arithmetic sequence.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 7 Escape Rooms](#)

Starters Term 4

Practical Starter Ideas (aim for at least one/week):

Students love to question when maths is used in real life. This collection of pictures are a great conversation starter. Challenge the students to find their own too! 'Flickr.com' have good examples of 'bad maths.'



Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- 'Match Up' style starter. A good one can be found on the 'mathsbot' website under 'matching pairs'



Year 7

Term 5

Key Skills for Term 5

- Find patterns and describe rules in sequences
- Continue and describe special sequences (square, cube, arithmetic, geometric)
- Generate terms of sequence by using a position to term rule.
- Calculate the mode, median, mean and range of a set of data.
- Read and draw tally charts, frequency tables, pictograms and bar charts.
- Read and construct grouped tally charts, frequency tables and bar charts.



Mastery

Know that the first term and term-to-term rule together define a sequence. With just one of these, there is (an infinite) number of sequences that could be generated.

Understand that an infinite sequence doesn't necessarily tend to \pm infinity. e.g. $1/2$, $1/4$, $1/8$.

Understand that the first pattern/number is the first term, and the operation each time is the term to term rule.

Understand that when you plot an arithmetic sequence, it will always give a straight line; this is why we sometimes call them linear sequences.

Understand the connection between: n th term, term-to-term rule or common difference and first term (arithmetic sequences only).

Understand averages and what they represent and how to select the most appropriate.

Understand how to use the range to compare data.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 7 Escape Rooms](#)

Starters Term 5

Real-life Starter Ideas (aim for at least one/week):

Some examples can be found on 'The mathematics shed' website

- Money problems
- Jobs that use maths problems (e.g. construction)
- School canteen recipe scaling
- Caretaker measurement problem
- Relatable to a popular computer game



Additional Ideas (at least one/week):

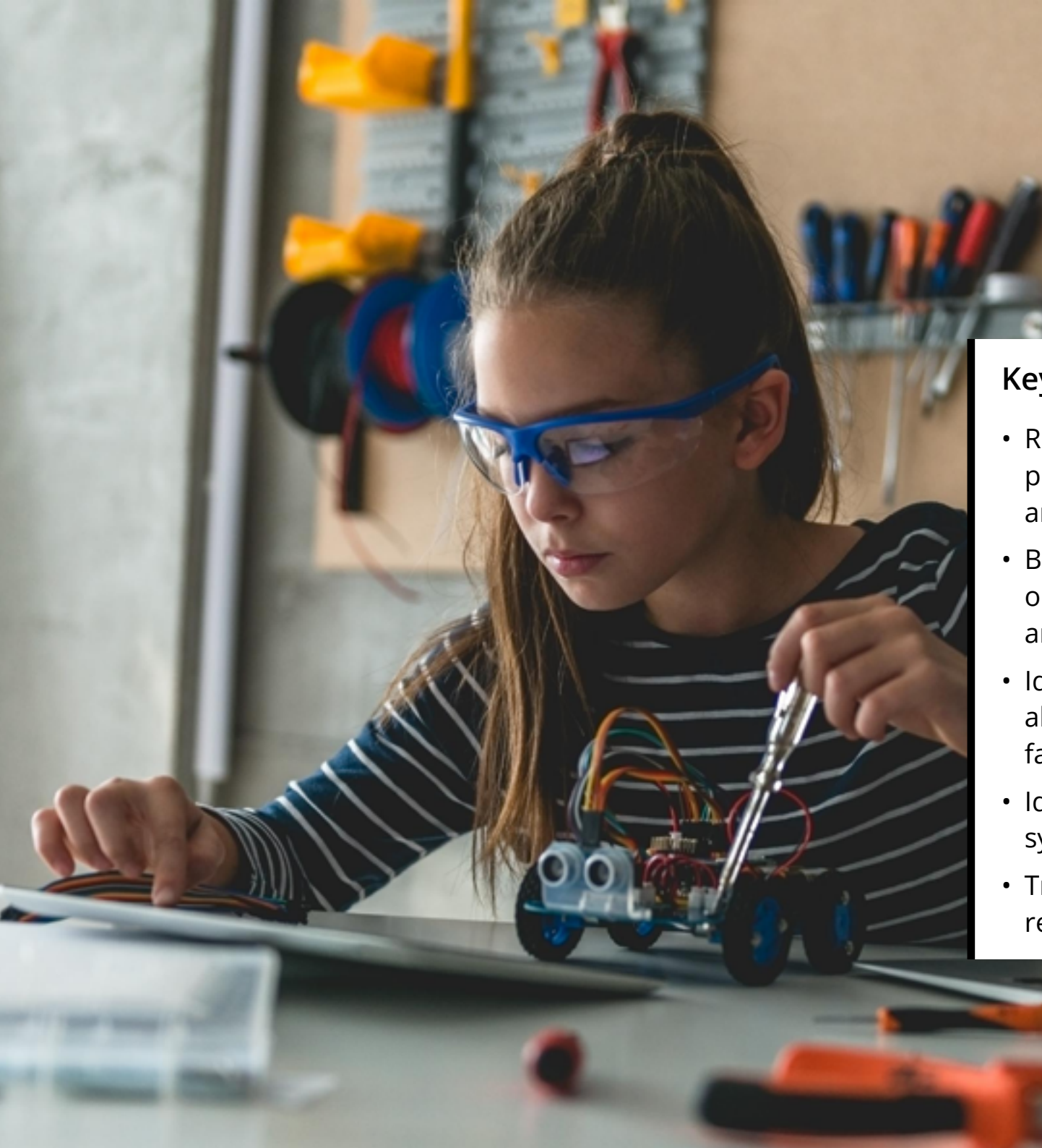
- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- 'Resourceaholic' have great problem solving style questions.

Year 7

Term 6

Key Skills for Term 6

- Recognise types of angles, use a protractor to measure and draw angles accurately.
- Be able to calculate missing angles on a straight line, around a point and in triangles and quadrilaterals.
- Identify congruent shapes and be able to enlarge by a given scale factor.
- Identify line and rotational symmetry in 2D shapes.
- Transform 2D shapes by rotation, reflection and translation.



Mastery

Know and understand why a protractor has two scales, and which to use to measure a given angle.

Understand how to draw a diagram from written instructions.

Classify triangles using more than one name, eg right angled scalene, and right angled isosceles.

Given one side and two angles, understand that you can only draw one triangle (but it may be in different orientations).

Use angles in triangles to solve problems involving other shapes made up of triangles.

Understand the language of 'scale factor' - scale relating to scaling up/down and multiplicity; factor relating to one measure being divisible by another.

Understand how ratio and enlargement relate to each other (including side lengths and perimeter and area).

Know that in enlargements, angles in shapes remain unchanged.

Understand the symmetries of 3D solids and the shapes of their planes of symmetry.

Understand the relationship between rotational and line symmetry in regular polygons.

Identify patterns/rules in coordinates of vertices when a shape is rotated by different angles or reflected in different straight lines on a coordinate grid.

Know that in translation, rotation, reflection the image is congruent to the object and that combined transformations can be equivalent to a single transformation.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 7 Escape Rooms](#)

Starters Term 6

Real-life Starter Ideas (aim for at least one/week):

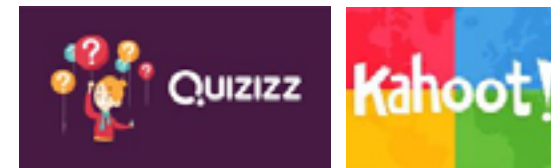
As we reach the end of the year, focus on retrieval of previous learning.

- Search for regular recall templates to make your own.
- 'Mathsbot' retrieval starters



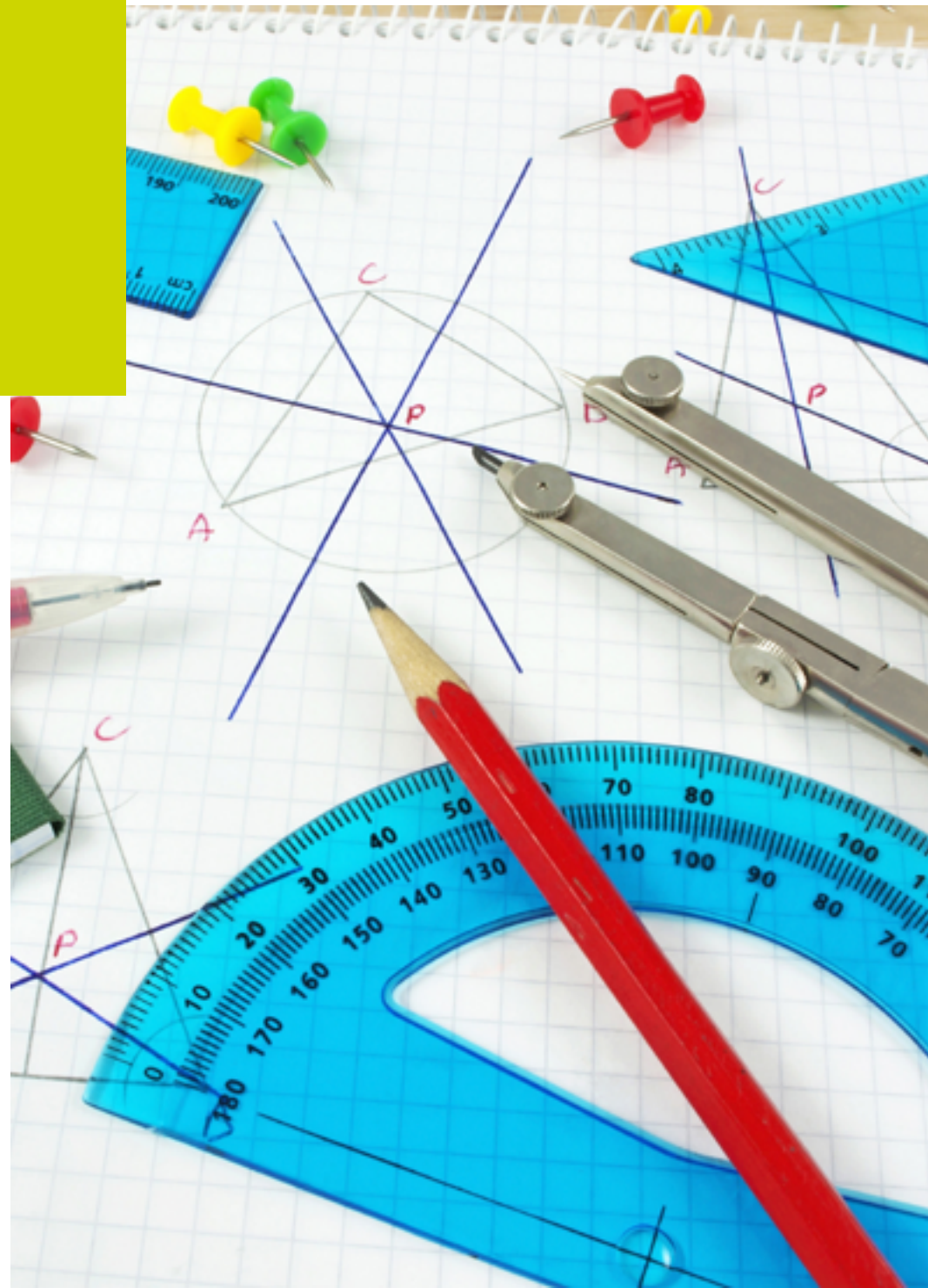
Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- If students have access to devices, websites like 'Quizizz' and 'Kahoot' are great to check prior understanding before starting a lesson. These can be repeated at the end of the lesson too to check for progress.



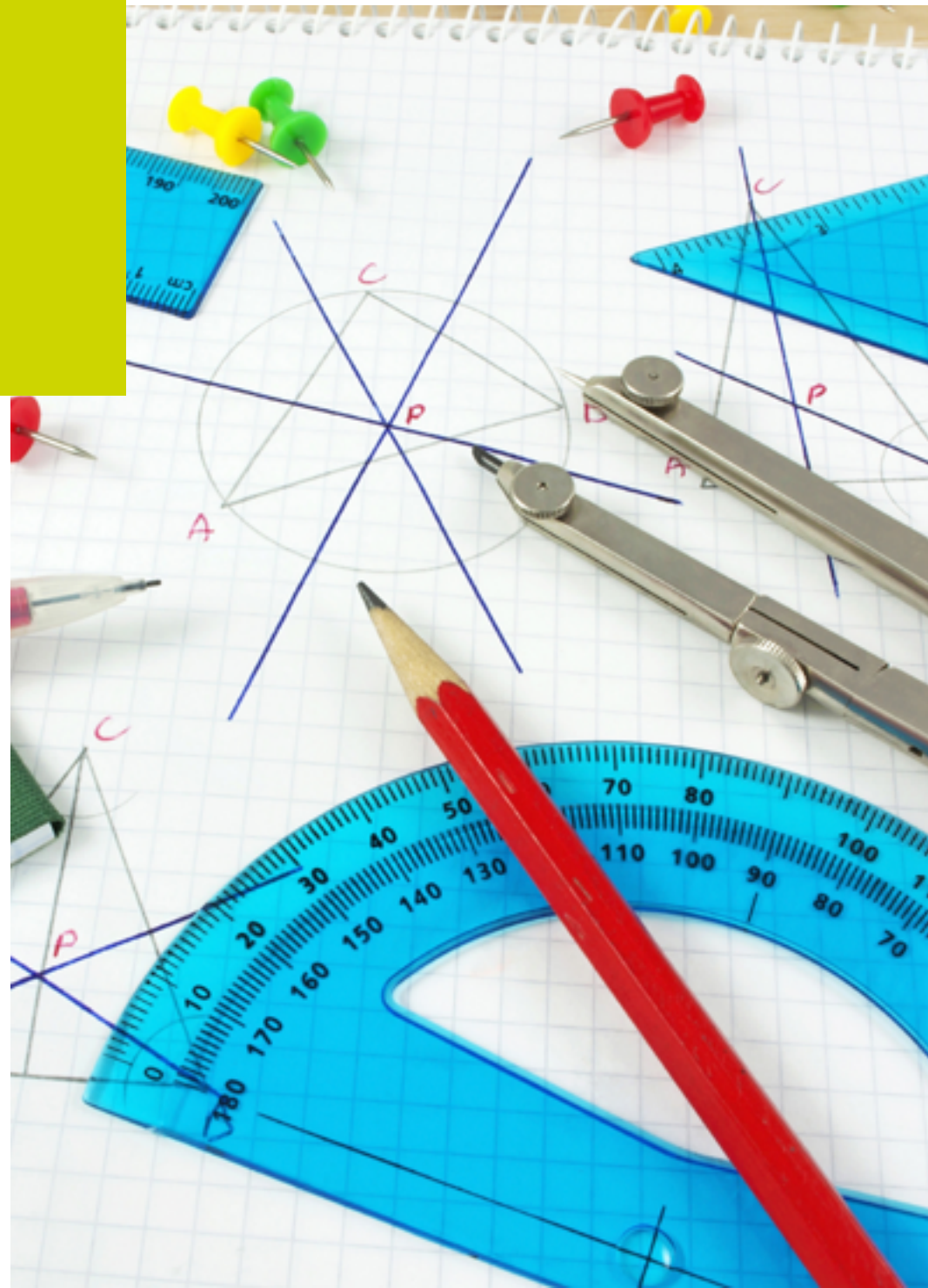
Building engagement & enjoyment through manipulatives

- Use money when practicing addition and subtraction in term one. Could a year 7 cake sale take place? Online catalogues could also be used?
- Include measurement with addition and subtraction (of decimals) practice. Group task: Measure heights and add. Who is the tallest group?
- Long lengths of rope/string that need to be cut into accurate sized smaller pieces for division.
- Scaling recipes for multiplication and division practice.
- Explore fraction wall/wheel manipulatives.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Play Yahtzee to teach concepts of probability.
- '10 Ticks' have Battleship game cards for algebraic fun.



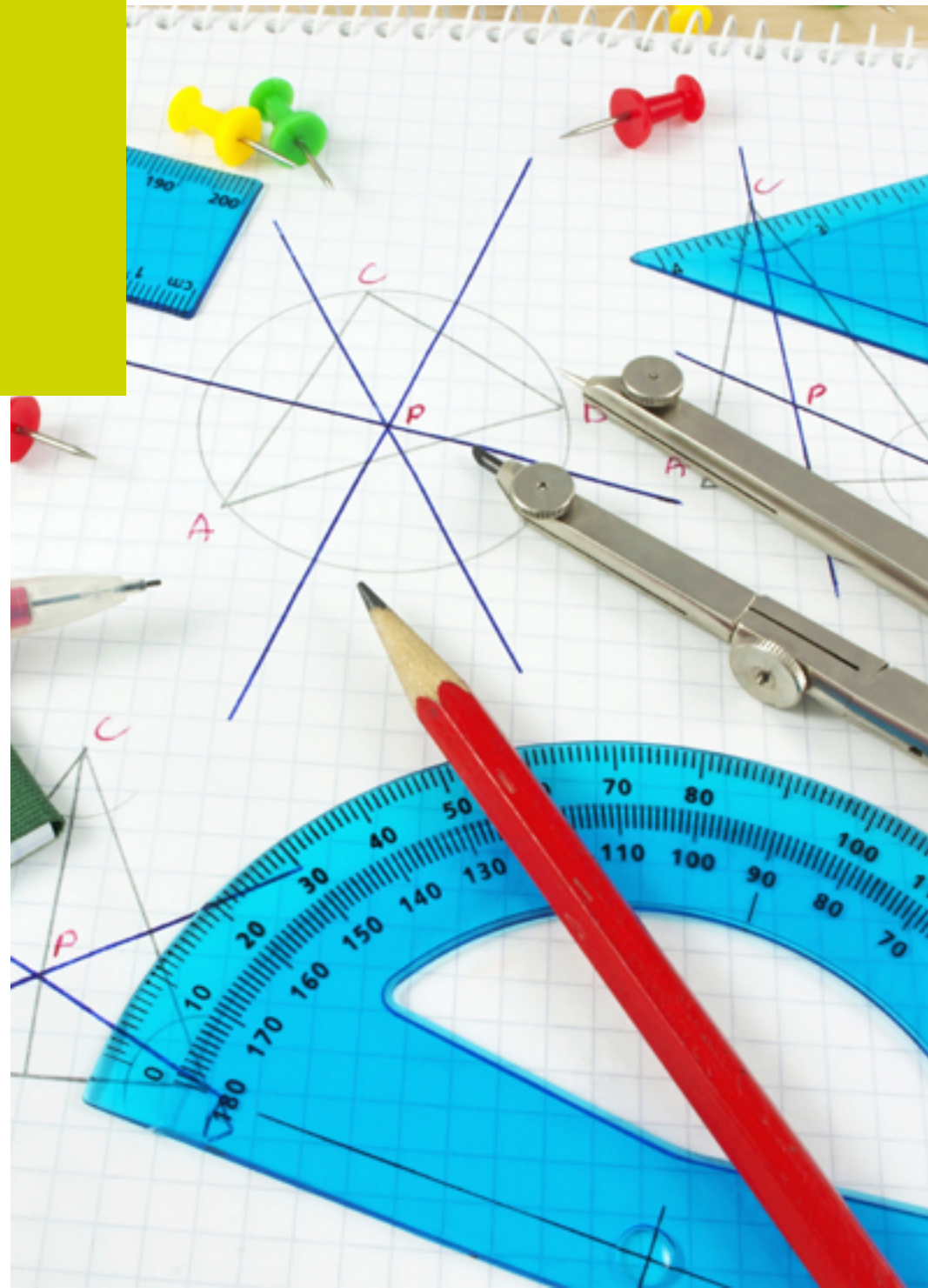
Building engagement & enjoyment through manipulatives

- Use money when practicing addition and subtraction in term one. Could a year 7 cake sale take place? Online catalogues could also be used?
- Include measurement with addition and subtraction (of decimals) practice. Group task: Measure heights and add. Who is the tallest group?
- Long lengths of rope/string that need to be cut into accurate sized smaller pieces for division.
- Scaling recipes for multiplication and division practice.
- Explore fraction wall/wheel manipulatives.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Play Yahtzee to teach concepts of probability.
- '10 Ticks' have Battleship game cards for algebraic fun.



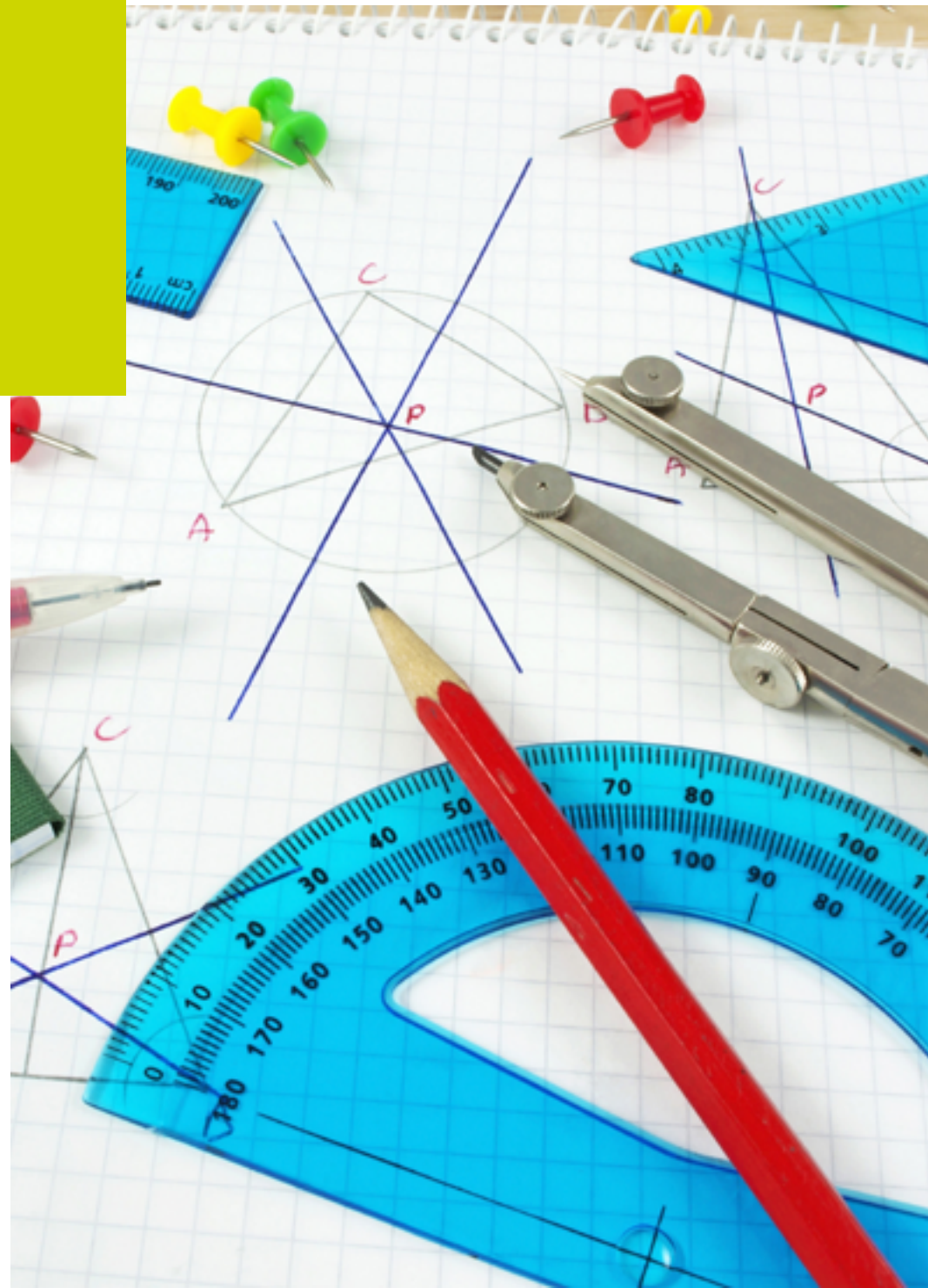
Building engagement & enjoyment through manipulatives

- Use money when practicing addition and subtraction in term one. Could a year 7 cake sale take place? Online catalogues could also be used?
- Include measurement with addition and subtraction (of decimals) practice. Group task: Measure heights and add. Who is the tallest group?
- Long lengths of rope/string that need to be cut into accurate sized smaller pieces for division.
- Scaling recipes for multiplication and division practice.
- Explore fraction wall/wheel manipulatives.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Play Yahtzee to teach concepts of probability.
- '10 Ticks' have Battleship game cards for algebraic fun.



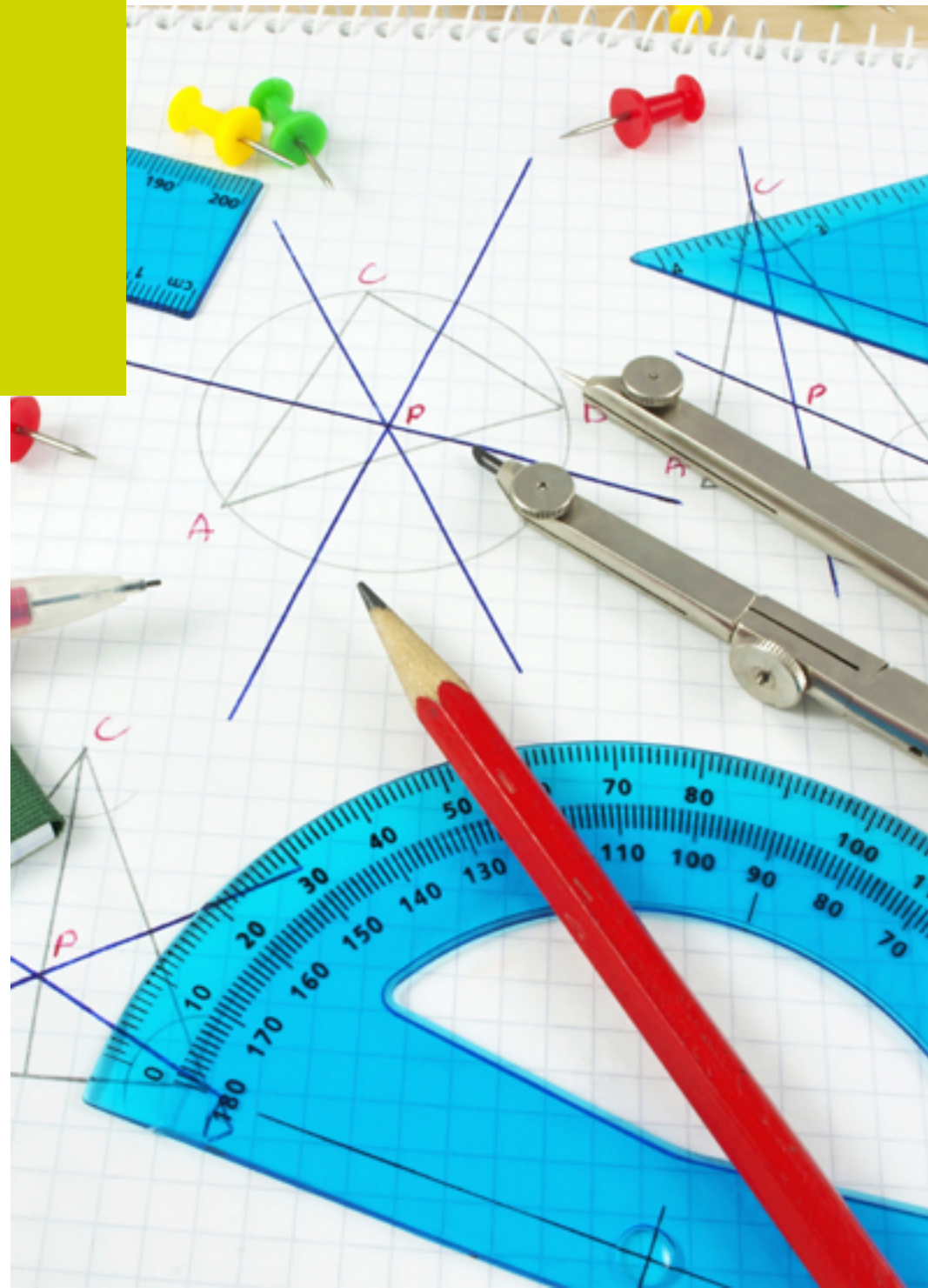
Building engagement & enjoyment through manipulatives

- Use money when practicing addition and subtraction in term one. Could a year 7 cake sale take place? Online catalogues could also be used?
- Include measurement with addition and subtraction (of decimals) practice. Group task: Measure heights and add. Who is the tallest group?
- Long lengths of rope/string that need to be cut into accurate sized smaller pieces for division.
- Scaling recipes for multiplication and division practice.
- Explore fraction wall/wheel manipulatives.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Play Yahtzee to teach concepts of probability.
- '10 Ticks' have Battleship game cards for algebraic fun.



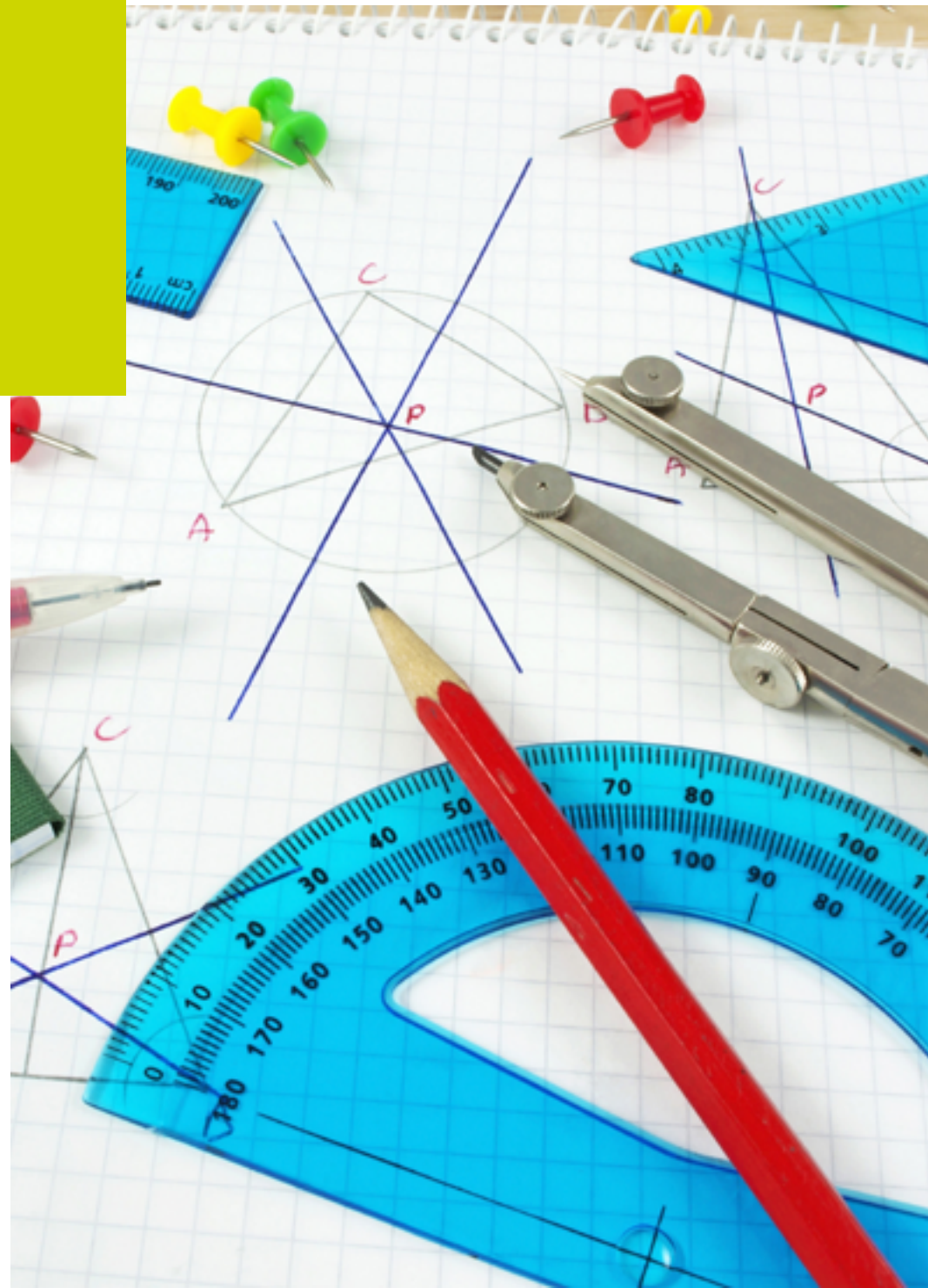
Building engagement & enjoyment through manipulatives

- Use money when practicing addition and subtraction in term one. Could a year 7 cake sale take place? Online catalogues could also be used?
- Include measurement with addition and subtraction (of decimals) practice. Group task: Measure heights and add. Who is the tallest group?
- Long lengths of rope/string that need to be cut into accurate sized smaller pieces for division.
- Scaling recipes for multiplication and division practice.
- Explore fraction wall/wheel manipulatives.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Play Yahtzee to teach concepts of probability.
- '10 Ticks' have Battleship game cards for algebraic fun.



Building engagement & enjoyment through manipulatives

- Use money when practicing addition and subtraction in term one. Could a year 7 cake sale take place? Online catalogues could also be used?
- Include measurement with addition and subtraction (of decimals) practice. Group task: Measure heights and add. Who is the tallest group?
- Long lengths of rope/string that need to be cut into accurate sized smaller pieces for division.
- Scaling recipes for multiplication and division practice.
- Explore fraction wall/wheel manipulatives.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Play Yahtzee to teach concepts of probability.
- '10 Ticks' have Battleship game cards for algebraic fun.



Year 8

Term 1

Key Skills for Term 1

- Add, Subtract, multiply and divide positive and negative numbers, including larger numbers and decimals.
- Know and use squares, square roots, cubes, cube roots and brackets.
- Use index notation
- Write a number as a product of its prime factors.
- Find the HCF and LCM.



Mastery

Understand, choose and use a range of strategies for mental calculations.

Understand why divisibility rules work and how the relationships between divisibility rules relate to factors and multiples.

Extend the 'rules' for calculations with negative numbers to very large numbers and decimal numbers.

Distinguish between the negative sign and subtract operation.

Know when the negative square root is an appropriate solution to a problem.

Understand that prime numbers are the building blocks for the natural numbers – i.e. that all numbers can be written as a product of prime factors.

Understand when to use HCF and LCM to find the answer to a word problem.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 8 Escape Rooms](#)

Starters Term 1

Practical Starter Ideas (aim for at least one/week):

One activity is to use lolly sticks.

Write numbers on each end (so each stick has four numbers).


You can differentiate by colour, e.g. blue sticks = 2 digit numbers, Green = 3 digit, red = decimals...

Students to complete calculations. E.g. 'add a blue stick number and a red stick number'...



Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- Try to make one starter per week a 'four operations' practice.
- Twinkl do some fab 'Maths Mats'. You could either use one for the whole week/ a couple of lesson or even one question each week for the term.



Year 8

Term 2

Key Skills for Term 2

- Round to an appropriate degree of accuracy.
- Divide a quantity into a given ratio.
- Order fractions.
- Recall equivalent fractions, decimals and percentages.
- Add, subtract, multiply and divide fractions.
- Use the four operations with mixed numbers.

Mastery

Understand when it is more appropriate (and more accurate) to round to decimal places than significant figures (or vice versa) and the impact of rounding.

Develop understanding of decimal, ratio and proportion calculations by working out problems in real life contexts that relate to previously learnt multiplicative concepts.

Understand how to simplify ratios involving fractions and decimals'.

Understand the operations of fractions with any size denominator, where one or more fraction is negative, or the answer is a negative fraction.

Apply BIDMAS and inverse relationships of multiplication and division to fraction calculations.

Understand the four operations with mixed numbers, where one or more mixed number is negative, or the answer is a negative mixed number.

Apply BIDMAS and inverse relationships to mixed number calculations.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 8 Escape Rooms](#)

Starters Term 2

Real-life Starter Ideas (aim for at least one/week):

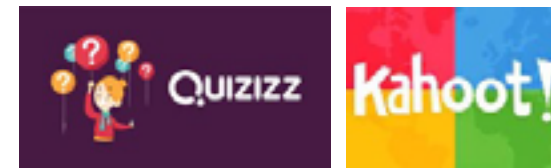
As we reach the end of the year, focus on retrieval of previous learning.

- Search for regular recall templates to make your own.
- 'Mathsbot' retrieval starters



Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- If students have access to devices, websites like 'Quizizz' and 'Kahoot' are great to check prior understanding before starting a lesson. These can be repeated at the end of the lesson too to check for progress.

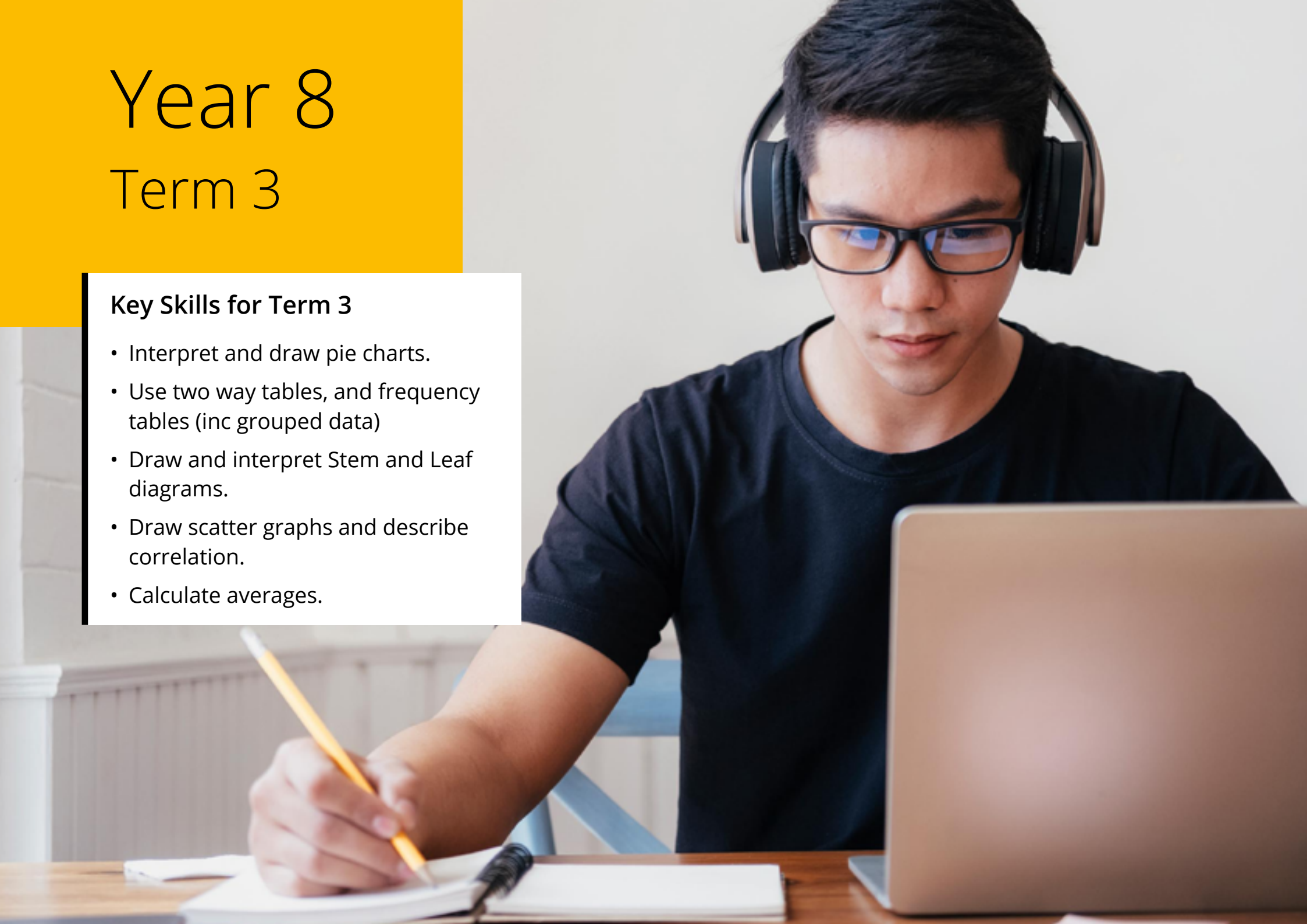


Year 8

Term 3

Key Skills for Term 3

- Interpret and draw pie charts.
- Use two way tables, and frequency tables (inc grouped data)
- Draw and interpret Stem and Leaf diagrams.
- Draw scatter graphs and describe correlation.
- Calculate averages.



Mastery

Understand when a statistical diagram is appropriate/inappropriate to represent a set of data. E.g when to use a bar chart/stem and leaf and when to use a pie chart.

Understand that pie charts show the proportions of data.

Understand that a table presents data from lists.

Understand that the method for calculating mean from a frequency table is the same as the method for calculating the mean from a list, but more efficient.

Know which average is appropriate to represent a set of data.

Understand the similarities and differences between stem and leaf diagrams and bar charts, including back to back bar charts and stem and leaf diagrams.

Understand how to make comparisons between data.

Deepen understanding of correlation by considering examples where there is weak or no correlation, as well as examples where there is correlation that you might not expect (between two seemingly random quantities).

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 8 Escape Rooms](#)

Starters Term 3

Practical Starter Ideas (aim for at least one/week):


Students love to question when maths is used in real life. This collection of pictures are a great conversation starter. Challenge the students to find their own too! 'Flickr.com' have good examples of 'bad maths.'



Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- 'Match Up' style starter. A good one can be found on the 'mathsbot' website under 'matching pairs'



A photograph of two young Black women laughing and looking upwards. The woman on the left has long braids and is wearing a dark jacket with a white fur collar. The woman on the right is wearing a grey hoodie under a dark jacket. They are outdoors with a blurred background of trees.

Year 8

Term 4

Key Skills for Term 4

- Simplify expressions (including index laws)
- Expand brackets and factorise expressions
- Solve one and two step equations.
- Plot a straight line graph and work out its gradient.
- Plot the graphs of linear functions.

Mastery

Understand that powers of variables are written in the same way as powers of numbers, e.g. ab^2 means $a \times b^2$ and not $(ab)^2$

Understand that an algebraic expression is the generalisation of a rule or relationship and algebraic operations follow the same rules as number operations.

Understand the meaning of 'variable' and that the choice of letter is not important when writing an expression.

Understand when to use and when not to use brackets when writing an expression

Understand the significance of multiplying by all terms in a bracket - the expression in the bracket is one factor and that factorisation is the inverse of this.

Know the difference between expressions, formulae and equations.

Know that solutions to equations can be positive and negative integers, (simple) decimals and fractions.

Know and use the order of operations to decide on order of inverse operations when using the balancing method.

Understand when quantities may sometimes be in direct proportion and sometimes not.

Understand the relationship between two quantities in direct proportion (increasing or decreasing at the same rate) and the gradient of the graph when the quantities are plotted against each other.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 8 Escape Rooms](#)

Starters Term 4

Practical Starter Ideas (aim for at least one/week):

- Selection of 2D/3D shapes = Name and list properties
- Selection of 3D shapes = Draw corresponding nets.
- Roll a dice 5 times to generate a number. Round this number to varying degrees of accuracy or partition into place value.
- Have some lengths of string to accurately measure. Order these.

Additional Ideas (at least one/week):

- 'Here's the answer, what could the question have been?'
- 'four operations' practice.
- Transum have great 'starter of the day'



Year 8

Term 5

Key Skills for Term 5

- Classify quadrilaterals by their geometric properties.
- Identify angles in parallel lines.
- Exterior and interior angles of polygons.
- Solve geometrical problems showing reasoning.



Mastery

Know the name and properties of the six key quadrilaterals and use them to find missing lengths and angles in the quadrilaterals.

Understand that missing angles in parallel lines can be found using angle facts in different combinations, that often there is more than one way of solving the angle problem, and you may need to find angles that are not labelled on the diagram in order to work out the size of the angles you want.

Understand that angles in parallel lines prove the angle properties of trapezium, rhombus, parallelogram (eg opposite angles equal) and extend to co-interior angles in these shapes.

Know that the sum of exterior angles 360 and the interior sum has to be a multiple of 180 because n (number of sides) has to be an integer.

Solving geometric problems may involve using angles in parallel lines, properties of triangles, quadrilaterals and polygons, and that there is often more than one way of solving a problem.

Understand when it is useful to write and solve an equation to solve angle problems.

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 8 Escape Rooms](#)

Starters Term 5

Real-life Starter Ideas (aim for at least one/week):

Some examples can be found on 'The mathematics shed' website

- Money problems
- Jobs that use maths problems (e.g. construction)
- School canteen recipe scaling
- Caretaker measurement problem
- Relatable to a popular computer game



Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- 'Resourceaholic' have great problem solving style questions.



Year 8

Term 6

Key Skills for Term 6

- Calculate the area of triangles, parallelograms and trapeziums.
- Surface area and volume of cubes and cuboids.
- Draw nets of 3D shapes.
- Draw and interpret straight line graphs.
- Conversion graphs and speed, distance, time graphs.

Mastery

Know that every triangle's area is half of the area of a rectangle of the same base and height.

Understand that all areas are the product of perpendicular lengths.

Understand that composite areas can be calculated by 'subtracting' a shape, as well as by splitting into two different shapes.

Understand why volume is measured in cube units.

Understand that different representations of a 3D shape convey different information about the faces and edges of the shape, and move between different representations.

Know that two cuboids can have the same volume but different surface area, but all cubes with the same volume have the same surface area.

Understand why a conversion graph between currencies or units of length, mass and volume will always be a straight line through the origin.

Understand that a distance time graph can represent journeys using different units of distance and time, such as metres per second.

On a line graph, intermediate points are only estimates and not actual values. Begin to understand that is more reliable to predict intermediate values within the data (interpolate) than to assume a trend will continue and predict future values (extrapolate).

Intervention

These Escape Room activities allow teachers to assess student understanding across the key skills that have been identified for each term.

[Click here for Year 8 Escape Rooms](#)

Starters Term 6

Practical Starter Ideas (aim for at least one/week):

Have a selection of laminated number grids (ideally differentiated - including decimal numbers). Students can quickly use these numbers to identify place value, order and compare.

138	355	1,530	2,084
248	402	1,004	3,744
670	511	4,201	6,329
842	443	8,330	9,113
805	488	7,900	2,587

Additional Ideas (at least one/week):

- Numeracy Time Starter – examples can be found on 'Jaggers Maths' website.
- 'Retrieval' style starter. A good example can be found on the 'mathsbot' website under 'retrieval starter'

The screenshot shows a web interface titled 'Retrieval Starter' with a purple header. Below the header, there are four white rectangular boxes arranged in a 2x2 grid. Each box has a title: 'Last Lesson', 'Last Week', 'Last Month', and 'Last Year'. Each box contains a 'Random' button, a 'Search Keyword' input field, and a 'Difficulty' dropdown menu.

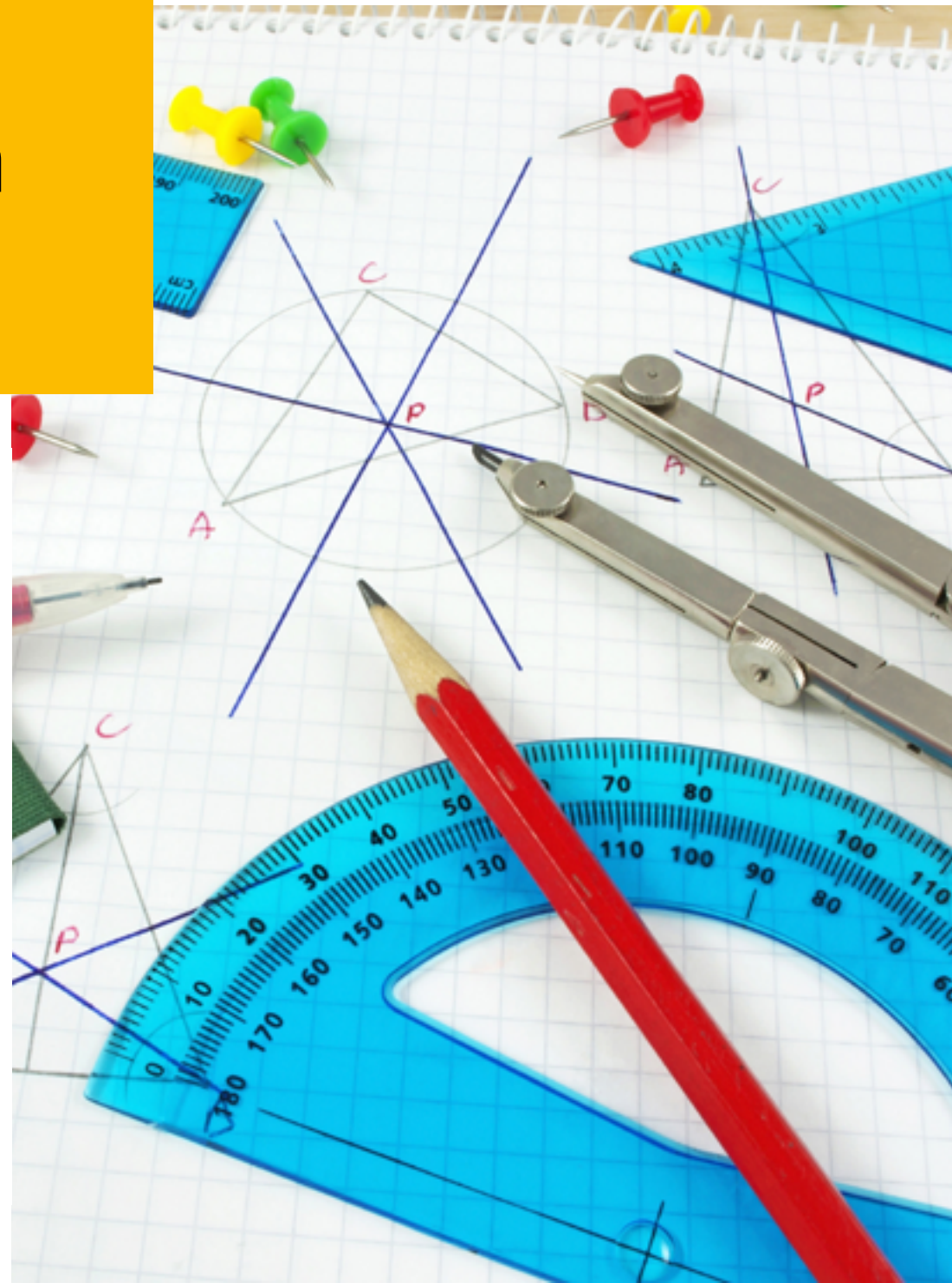
Building engagement & enjoyment through manipulatives

- Practical ways to practice four operation calculations. E.g. Money - price labels, catalogues. Or using numbers taken from measurements of length or weight for example.
- Paper folding to compare fractions.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Use popular household items for nets to explore surface area, e.g. cereal boxes, tins etc.
- Cover desks with tape to create angles to explore and measure.
- Outside lesson on orienteering using compass points and angles, i.e. treasure hunt.
- Use Tarsia puzzles/dominoes for expanding and factorising expressions..



Building engagement & enjoyment through manipulatives

- Practical ways to practice four operation calculations. E.g. Money - price labels, catalogues. Or using numbers taken from measurements of length or weight for example.
- Paper folding to compare fractions.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Use popular household items for nets to explore surface area, e.g. cereal boxes, tins etc.
- Cover desks with tape to create angles to explore and measure.
- Outside lesson on orienteering using compass points and angles, i.e. treasure hunt.
- Use Tarsia puzzles/dominoes for expanding and factorising expressions..



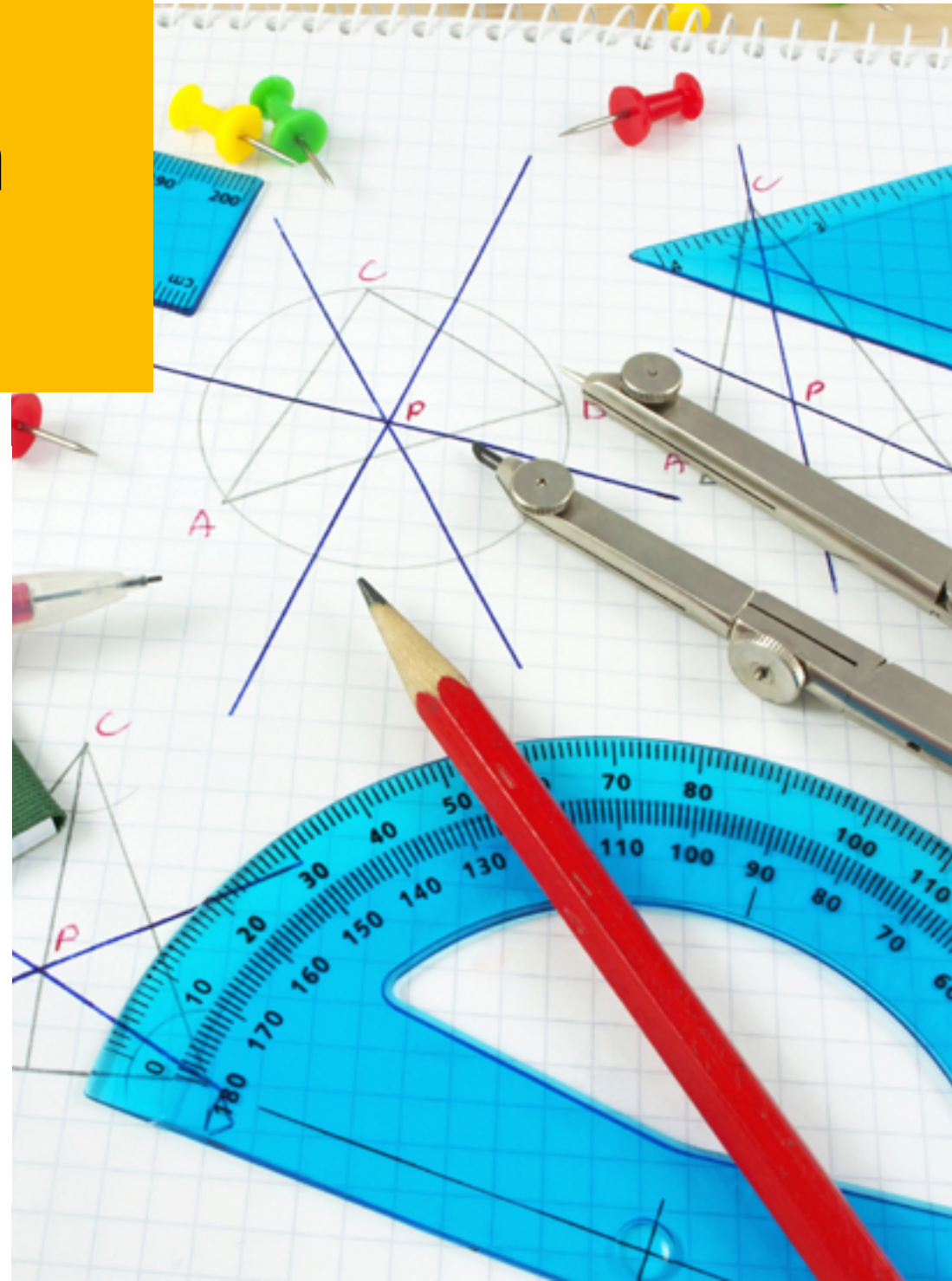
Building engagement & enjoyment through manipulatives

- Practical ways to practice four operation calculations. E.g. Money - price labels, catalogues. Or using numbers taken from measurements of length or weight for example.
- Paper folding to compare fractions.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Use popular household items for nets to explore surface area, e.g. cereal boxes, tins etc.
- Cover desks with tape to create angles to explore and measure.
- Outside lesson on orienteering using compass points and angles, i.e. treasure hunt.
- Use Tarsia puzzles/dominoes for expanding and factorising expressions..



Building engagement & enjoyment through manipulatives

- Practical ways to practice four operation calculations. E.g. Money - price labels, catalogues. Or using numbers taken from measurements of length or weight for example.
- Paper folding to compare fractions.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Use popular household items for nets to explore surface area, e.g. cereal boxes, tins etc.
- Cover desks with tape to create angles to explore and measure.
- Outside lesson on orienteering using compass points and angles, i.e. treasure hunt.
- Use Tarsia puzzles/dominoes for expanding and factorising expressions..



Building engagement & enjoyment through manipulatives

- Practical ways to practice four operation calculations. E.g. Money - price labels, catalogues. Or using numbers taken from measurements of length or weight for example.
- Paper folding to compare fractions.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Use popular household items for nets to explore surface area, e.g. cereal boxes, tins etc.
- Cover desks with tape to create angles to explore and measure.
- Outside lesson on orienteering using compass points and angles, i.e. treasure hunt.
- Use Tarsia puzzles/dominoes for expanding and factorising expressions..



Building engagement & enjoyment through manipulatives

- Practical ways to practice four operation calculations. E.g. Money - price labels, catalogues. Or using numbers taken from measurements of length or weight for example.
- Paper folding to compare fractions.
- Matching activities for FDP converting e.g. Dominoes, puzzle pieces...
- Use popular household items for nets to explore surface area, e.g. cereal boxes, tins etc.
- Cover desks with tape to create angles to explore and measure.
- Outside lesson on orienteering using compass points and angles, i.e. treasure hunt.
- Use Tarsia puzzles/dominoes for expanding and factorising expressions..

