The Second
Booklet
on

ORAL and MENTAL STARTERS

Essex Mathematics Team
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Welcome to another publication from the Essex Mathematics Team, based at Harlow Curriculum Development Centre.

We have for you the next 25 Oral and Mental Starters, to be followed by more later this year. We have tried to include examples of open questions and modelling good use of ICT within this pack.

Responding to the many needs of differing learning styles has also been considered wherever possible, including Visual, Auditory and Kinaesthetic input.

Each activity is given in its simplest form, with possible extensions or variations suggested, then it's up to you: see how they work, then adapt them as you see fit.

Each activity is given a number for you to cross-reference the task to units and objectives from the National Numeracy Framework.

These could be used in the main part of the lesson therefore informing use in further Oral and Mental starters.

The term 'leader' is used instead of teacher, because it is always possible, depending upon the age of the children, for pupils to lead these activities.

We have included many appendix materials, which should be sufficient to get you started with all of the activities if you don't already have resources in school.

We have put in a blank proforma for you to write your own. Even better would be to write it on the disk provided and email it to
gill.haysham@essexcc.gov.uk   or   ian.roper@essexcc.gov.uk
then these could be included in future publications for others to share.

We have provided you with a disk copy of this booklet.

Good luck, get stuck in and get mental!

Gill Haysham and Ian Roper
The Essex Mathematics Team

Title: 3 Number Bingo	Ref. no.

You will need…3 ordinary dice, paper and pencils

Activity

The pupils draw a rectangular 3 by 2 grid on their paper. They choose 6 numbers in the range 20 to 40 and write them in the spaces on their grid. The leader rolls the 3 dice. The pupils use the 3 numbers generated to try to make any of the numbers on their grid using any operations. If successful the number should be crossed through and the mathematical statement used should be written under the grid. The first pupil to complete their grid is the winner.

25	32	~~36~~
22	28	40

"Dice scores …3, 4, 6."

"3 + 6 = 9 and 9 x 4 is 36, so I can cross off 36."

Roll the dice again. The first player to cross off all their numbers wins.

Key questions/vocabulary

Add, subtract, multiply, divide, brackets, powers

Which are the best numbers to put in your grid and why?

Extension activities

Use 4 dice .Use other dice, for example multi-faceted, 1-10, and so on.

Increase the range of numbers . Involve decimal numbers(choose degree of accuracy, for example, to 1 decimal place).

Allow numbers to be paired e.g with 3, 4 and 6…"36 divided by 4 is 9."

Introduce the idea of points for the use of different operations, encouraging higher order mathematics to be used. For example, 4 points for division, 3 points for multiplication, 2 points for subtraction and one point for addition.
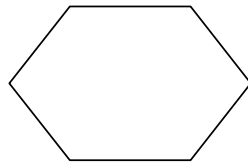
Title: Whiteboard Sorting	Ref. no.

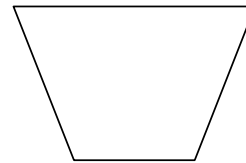You will need…whiteboards (or paper), 'Heading' cards

Activity
Pupils work individually to draw a simple shape on their whiteboard (or paper). These can be sketches or using a ruler.

For example,   or

The leader then produces two 'heading' cards, for example, '4 sides'/'not 4 sides' and places them on opposite sides of the classroom. The children have to move to the side that fits their shape.

Discuss the outcomes.
Ask questions like:
"What shapes are in the 'not 4 sides' group?"
"What shapes are in the '4 sides' group? Why? "

Introduce other heading cards and sort.

Key questions/vocabulary
Language of shape: names and properties.

"Can we give one group another name?"

Extension activities
This activity could be used for any aspect of mathematics, for example, numbers: headings 'prime'/'not prime', measures: headings 'metric units'/ 'non-metric units'.

Include more than one aspect, for example, '4 sides'/'not 4 sides' AND 'no right angles'/'right angles'.
Introduce aspects of reflective or rotational symmetry.
Venn diagrams or tables could be used to sort.

Title: **What units do I use?**	Ref. no.

You will need…cards showing a range of units…for example cm, mm, m, km.

Activity

Children work in pairs for this activity. The cards are placed face up on the table in front of the pupils. One set of cards for each pair.

The leader asks a question such as, "What units would I use to measure the thickness of an exercise book?"

The pupils discuss which units to use and then hold up the appropriate card.

The leader, having seen the pupils' responses can make appropriate comments about the suitability of the units chosen or asks pupils to justify their choice.

"What units would you use to measure the height of the door?"

"I think it should be cm because I could be quite accurate with my measuring."

" No, I think we should use metres because there would only be a small number of them."

mm	km	cm	m
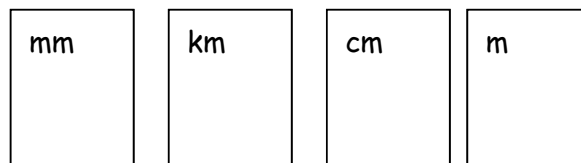
Instead of verbal statements, children could match pictures with units.

Key questions/vocabulary
Language of measures, length, mass, volume, capacity, area, angle.

Extension activities

By combining sets of cards for example, metric length and imperial length pupils can be asked questions involving conversion between units.
Conversions within the same type of unit can be undertaken, for example "2.5 metres could be written as 250 what?"

Any aspect of mathematics could be covered here, capacity, length, time, weight, money… and so on.

Title: **What am I?**	Ref. no.

You will need…whiteboards and marker pens.

Activity

The pupils work in pairs to identify an object, number, sequence or process. The leader gives 3 verbal clues. After each clue the pupils are given 30 seconds to consider what the answer might be and to write their answer on their whiteboard. The whiteboards are held up towards the leader who may make appropriate comments such as " some of you are close to the answer" or " you'll need to listen carefully to the next clue". Each clue should be a little "easier" than the previous one. Points can be awarded … 3 for identifying the answer on the first clue, 2 points on the second clue and 1 point on the third clue.

"Clue number one…I am a square number less than 50."

"Clue number two…I am an even number."

"Clue number three…I am the square of a square number."

1. 49
2. 36
3. 16

"Well done, you identified the number 16 on your third go so you score 1 point."

Key questions/vocabulary

Appropriate vocabulary to use with number, shape, space, data handling, sequences, algebra and so on

Extension activities

Any area of mathematics can be tackled through this starter, for example " I am a type of average"…" you might have to divide to find me"…" the data has to be put in order first"… this series of clues lead to 'median'.

Pupils could create their own series of questions to an object chosen by them or given by the leader.

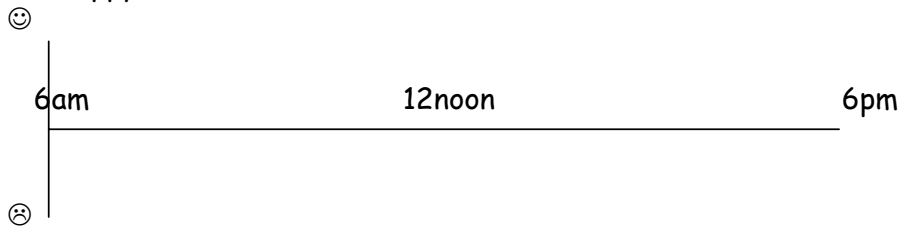Use whiteboards and/or cross off numbers on a grid.

Title: Story Graphs	Ref. no.

You will need…an empty set of axes drawn on the board (as shown below).

Activity

The leader introduces the axes of the graph, horizontally 'time in hours' and vertically: at the bottom of the y axis, a sad face ☹ and at the top of the y axis, a happy face ☺.

☺

6am   12noon   6pm

☹

The leader then draws a continuous line showing how they felt during a fictitious day. The leader then tells the story of the graph. For example: "At 6am I was fast asleep having a wonderful dream. At 8am I woke up and realised I was late for school. I got dressed quickly and drove to school as speedily as I could. I arrived at school at 9:30am only to find that it was Saturday…" and so on.

☺

6am   8am   10am   12noon

☹
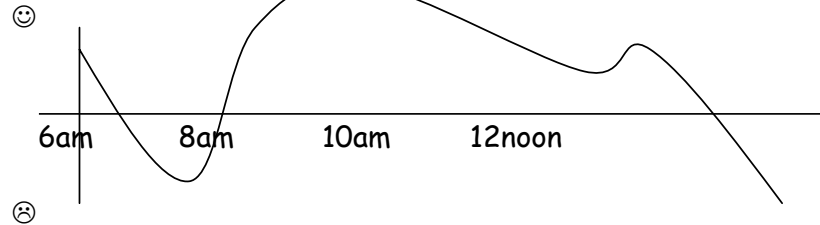
The pupils produce their own 'stories' and the related graphs. These can be shared over a series of future OM starters.

Key questions/vocabulary
Time, continuous, happy, sad, and feelings in between axes

Extension activities
Have different axes values.
Tell the stories of other events, for example the height of water in a bottle as it is filled, the number of people in a hotel, on a bus and so on.
The length of a Mars bar as it is eaten.
Bath time: levels of water.
Money in my purse.

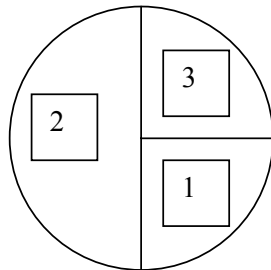Predict, estimate and interpret facts from the graph.

Title: **Spinner 3**	Ref. no.

You will need…a copy of spinner 3, OHP, pencil and paper.

Activity
Place the spinner on the OHP.

Ask pupils to discuss the layout of the spinner. Discuss likelihoods of outcomes.

Tell the pupils that you will be spinning the spinner 10 times and adding the score as you go along. What do you think the score will be?

Allow pupils to discuss their ideas then record their estimates. Collect the range on the board. Carry out the experiment and compare results. Would the pupils change their minds in light of experience? Discuss.

Key questions/vocabulary
Language of probability.
Score, estimate, total, sum, range, mean, mode, median

Extension activities
Change layout of spinner to offer different likelihoods.
Use fractions, decimals or percentages.
Increase the size of the numbers.
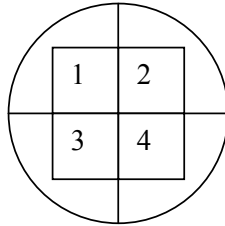Use different sample sizes.

Title: Spinner 2	Ref. no.

You will need…a copy of spinner 2, OHP, pencil and paperclip.

Activity

Leader asks the following question;
"If I spun the spinner 10 times and added the score each time, what do you think the total would be?"

Pupils write down their estimate.

Discuss the children's estimates and tabulate range on the board.
The experiment is carried out and the total is calculated. Children work out the difference between their estimate and the actual score.

Children are asked to estimate again and asked to justify their reasoning.

New estimates are recorded and experiment repeated.

Key questions/vocabulary
Estimate, total, score, difference, range
Language of probability.
Measures of average.

Extension activities
Calculate the average of the predictions, mean, mode and median.
Increase the number of sections.
Increase the size of the numbers.
Use fractions or decimals.
Use a spinner with bias, for example, 1, 1, 2, 3, 3, 3.

| Title: **Spinner 1** | Ref. no. |

You will need…**a copy of spinner 1 on acetate, OHP, pencil and paperclip.**
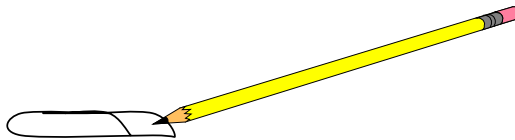
Activity

Pose the following question…

"Using the numbers 1, 2 and 3, create a spinner where;

(A)   there is more chance of a 3 than a 2,

(B)   there is less chance of a 3 than a 1."

Pupils draw the layout on their whiteboards (or it could be provided on paper) and discuss in pairs their ideas. Leader selects examples for class discussion. "Does it matter where the numbers are positioned on the spinner?"

Class chooses the layout of a spinner for testing, this is then written on the acetate on the OHP. Using a pencil and paper clip to form the spinner, the layout is tested for an agreed number of trials.

Record results and discuss.

Key questions/vocabulary

Probability, chance, likelihood

Language of fractions (if appropriate) for example, 2 out of 3.

Extension activities

Use different criteria, for example, using the numbers 1, 2 and 3, create a spinner where there is the same chance of an even outcome as there is of an odd.

Increase the number of segments on the spinner.

Use a range of different numbers according to the challenge.

Title: Sliders	Ref. no.

You will need…Copies of the grid on acetate and paper, counters and a dice

Activity

Pupils work in pairs. Each pair needs a copy of the grid and a counter.
Pupils place their counter at the top of the grid. The dice is rolled (5 say)
and the leader poses the question "Does 22 divide exactly by 5". If the
answer is yes the counter is moved downwards one space to the right. If
there is a remainder the counter is moved downwards one space to the left.
The dice is rolled again and pupils must divide their new number (the one
marked by the counter) by the dice throw. When the pupils have reached
the last row the leader can check which number pupils have reached and
discussion on the calculations can take place. This activity will reinforce the
links between multiplication and division, will give pupils opportunities to
discuss strategies for both operations. Pupils should record their route
through the grid.

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              22

       32         54

    25       42       21
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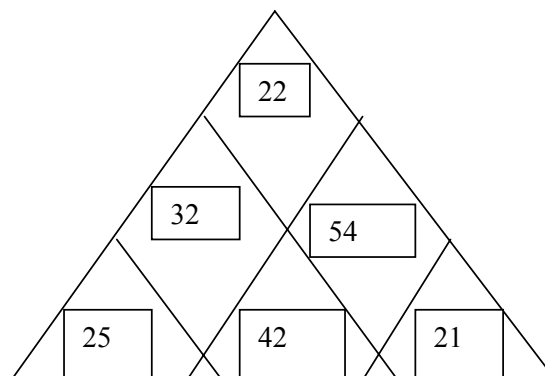
Key questions/vocabulary
Division, remainders   "Which times table could help us to solve this?"

Extension activities

3 digit numbers in the grid: still look at remainders.

3 digit numbers, answers could be calculated to 1 decimal place. If the
tenths digit is odd move left, if even, move right.

Routes through the pyramid could be investigated…"which dice throws would
be required for this route?"

Title: **Shadows**	Ref. no.

You will need…an overhead projector, 3D shapes and a card screen

Activity

The leader places a card screen around the projector so that the pupils cannot see what is on the projector surface. The leader places an object on the screen and a shadow of the object will be projected onto the wall/screen. The leader asks the pupils what they think the shape might be and why.
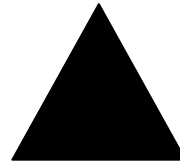
The 3D shape can then be rotated to lay on a different face and the pupils can be asked again to say what the shape may be … and why.

"It could be a square."

"No, I think it is a cube."

"It could be a cuboid standing on one end."

"It must be a pyramid."

"Yes, it is a square based pyramid."

Key questions/vocabulary
Language of shape and space, position, rotation, reflection

Extension activities

Composite shapes could be used.
Classification grids could be produced to group shadows of different shapes. For example, a square shadow could be produced by a cube, a cuboid, a square-based pyramid and so on.
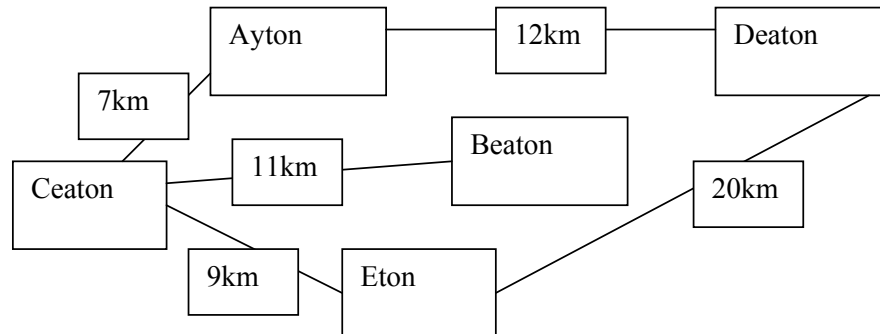
You will need…drawing on whiteboard/ blackboard, OHP.

Activity
Draw the diagram on the class white/black board, or on acetate.

7km	Ayton	12km	Deaton

Ceaton	11km	Beaton	20km

9km	Eton

Ask questions based on routes between the towns:
"How can I get from Eton to Beaton?"
"What's the shortest route from Ceaton to…?"

Create a mileage chart linking the 5 towns and allow the children to fill in appropriate boxes.

	A	B	C	D	E
	18				
		9			

Key questions/vocabulary
Route, distance, kilometre, shortest, furthest, via, linking, network

Extension activities
Increase the number of towns.
Use decimal distances.
Instead of giving a distance give the time taken to travel and create a bus timetable.
Plan a delivery route for the postman: where would you start?
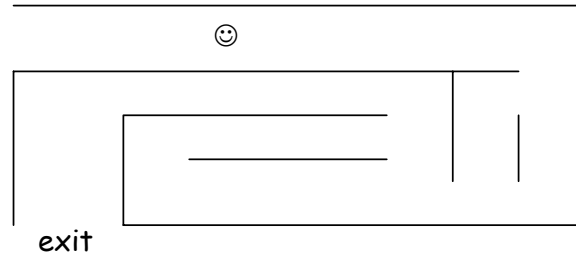Convert km distances to miles.

Title: **Robot in the Maze**	Ref. no.

You will need…whiteboards and a diagram on black/whiteboard

Activity
Show diagram of a simple maze on a whiteboard, an OHP or even better using ICT.

exit

This could, of course, be done using a Roamer on the floor.

Challenge the pupils to direct the robot through the maze. (The example given here uses LOGO, but directional language could be used with younger pupils if required.)
After discussion in pairs, they are asked to write the first instruction on their whiteboard, for example, 'FD 300'. (Scale will be required.)
Discuss outcomes. Once a class consensus is reached, the instruction is given to the robot.
The next instructions are then discussed and decided, one by one, until the robot travels through the maze.

Key questions/vocabulary
Forward, backward, left, right, 90 degrees, up, down, sideways

"Which way is the robot facing?"

Extension activities
Can you direct the robot back to the beginning?
More complicated mazes could be developed.
Turns of greater than, or less than, 90 degrees could be used within the maze.
Units of length could be altered each time to include approximation of distance.
Put maze onto a grid, vectors or bearings could then be given to describe movement.

Title: Reply Cards	Ref. no.

You will need…simple card with 'True'/'False' written on both sides.

Activity

This is a response activity where all pupils are encouraged to interact with the leader using a simple card. They could have a set of cards each or one set between a pair.

Then the leader can make a statement: "A triangle has 4 sides".

True	False

The pupils are encouraged to discuss the statement and decide whether it is True or False. Once discussion time has been allowed the leader can ask all pupils to show their card. Whatever the outcome ask various pupils to justify their thinking.

(Alternatively the answers could be written on whiteboards.)

Choose another statement. This could come from any aspect of mathematics. This could be especially useful for reinforcing previously taught skills or knowledge.

If the pupils could generate their own statements they could become the leader.

Key questions/vocabulary

True, False, Agree, Disagree

"A square number is always even." "Multiplication makes numbers bigger." Show a written number: 3010. "This says three hundred and ten."

"A square is a special rectangle." "10,000m is equal to 1 km."

Extension activities

Use 'Yes'/'No' cards for an alternative reply option.

Alter the level of questioning depending upon the level that the children are working at.

Title: Pockets	Ref. no.

You will need… pupils and a bit of space.

Activity

Group the children according to the number of pockets on their clothing.
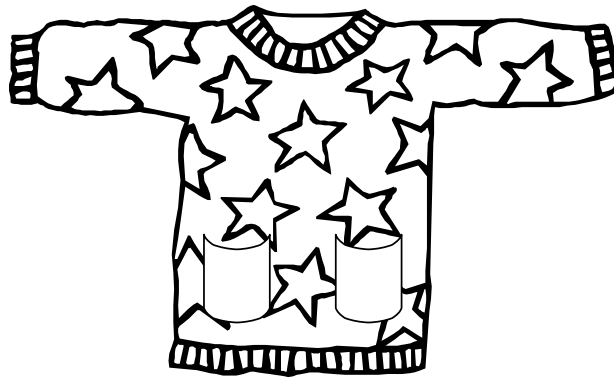Pose the following questions:

"What is the modal number of pockets for the class?"

"How do you know?"

"What is the frequency of three pockets?"

"How can we find the median?"

"How could we find the mean?"

Key questions/vocabulary

Median, mode, mean, frequency, sample, order, ascending, descending

"Which is the best 'average' to describe the group?"

Extension activities

Look at other criteria, for example; hand size, height, shoe size, birthday month, day of the week you were born.

Children can be grouped according to, for example, height between 85cm-90 cm, to introduce grouped frequencies.

Title: Place Value Bingo	Ref. no.

You will need…2 dice, whiteboards or paper for pupils

Activity

The leader asks the pupils to draw a 3x2 window on their paper.

Pupils are then asked to write six two-digit numbers in the spaces, using the numerals 1-6 only.
For example, 34, 42, 61 and so on. (NOT 75, 89.)

Once each pupil has completed this the leader begins the game. The leader throws the 2 dice and calls out the two digits, if the pupils have a two-digit number made by those two digits they can cross that number off their board. The leader rolls the dice again, play continues until all numbers have been crossed off a board.

Players can have the same number more than once, or reversals, that is 34 and 43. If 3 and 4 are rolled then the player decides which one number to cross off – not both.

Key questions/vocabulary
Place value, likelihood, chance,

"What numbers do you have left? What two numbers do we need to show on the dice?"

Extension activities
Increase window to 3x3.

Using two dice record as 3.4 (units and tenths) or 0.34 (tenths and hundredths).

Use three dice: HTU, TU.t , U.th

Title: **Guess My Rule**	Ref. no.

You will need…flipchart, whiteboard or individual whiteboards and pens.

Activity

 The leader decides upon a mathematical rule. The pupils guess numbers that might fit into that rule, they record their number on their whiteboard.

The leader chooses the numbers that fit the rule to stand and show their numbers to the rest of the class. The pupils who were incorrect have another go.

For example, the rule is ' numbers that are prime less than 100'.

Pupils with prime numbers stand. Others have another go using the standing pupils as an indicator; they cannot copy numbers that are already shown.
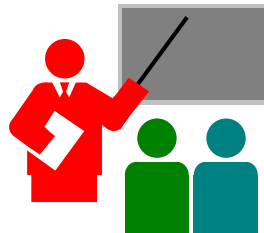
Key questions/vocabulary
Language as appropriate.

Questions can be based around numbers that do fit the rule…"what do these numbers have in common?"

Extension activities
Results could be recorded on a Venn diagram.
Rules could have and/or statements, for example, an even number AND a multiple of 7.
Rules could include properties of shape, for example, 1 right angle. Again these could include and/or statements… 1 right angle OR an obtuse angle.
Rules could include algebra, for example ' 3x + 2 '.

Title: Guess My Number - Teams	Ref. no.

You will need…a large target board or hundred square, whiteboards or paper.

Activity

The pupils work in pairs to choose a number from the target board and write that number and three facts about it on their whiteboard or paper. They then decide the order of difficulty of their clues and label the easiest clue '1' to the hardest '3'. This could be done in a previous lesson, a literacy session or as a home task.

For example, I choose the number 17. My three clues, in order, might be:
1. It is an odd number.
2. It is a prime number.
3. It is one more than a square number.

The children are then grouped into 2 teams. One pair, from Team A, reads their clues to the other team. The children are allowed to guess a number after each clue. Children could be given mini target boards that they can cross off numbers that are no longer possible.

If they manage to guess the original number correctly Team B scores two points. If they guess a number that satisfies all three clues but is not the original number they score 1 point.

If they don't guess the original, or one that satisfies the three clues, Team A scores a point. Play continues with a Team B pair reading their clues.

Play can continue for an agreed number of clues from each team or a time limit.

Key questions/vocabulary
Number names and properties.

Extension activities
Have a target board with 3 digit numbers on it.
Numbers could be decimals, fractions, percentages.

Give four clues and include a 'false' statement.

Allow opposite teams to ask questions and the fewer questions asked give more points – for example, 1 questions = 10 points, 2 questions = 8 points and so on.

| Title: Exchange Rates	Ref. no.

You will need...A3 paper and marker pens

Activity

Pupils work in pairs. Each pair will need a sheet of A3 paper and a marker pen.
The leader writes a statement on the board such as £1 = € 1.6

The pupils then create a "poster" showing as many other facts as they can, based upon the original statement.

The "posters" can then be used to generate discussion on conversion rates.

£ 10 = € 16

£ 100 = € 160

£ 20 = € 32

€ 1 = £ 0.60

£ 1 = € 1.6

£ 2 = € 3.2

£ 4 = € 6.4

£ 5 = € 8

£ 50 = € 80

£ 500 = € 800
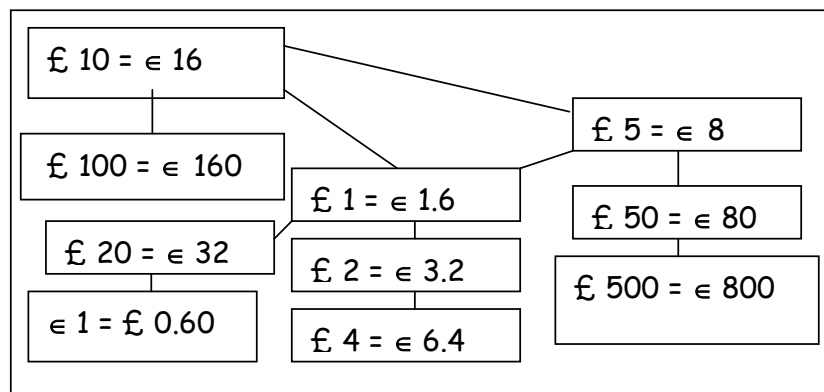
Key questions/vocabulary
Exchange rate, units of currency, names of currencies.
"If £10 gets me € 16 what else do I know?"
"If £10 gets me € 16 how many € for £1?"
"How can you work it out ?" "What operations will be helpful to me?"

Extension activities

Use statements involving unitary ratios, for example 6 oranges cost 80p.
Involve other comparisons for example 30 cm = 1 foot or 1 square metre of carpet costs £9.99, 20% is £3.50.
Start with 100% = 720 litres.

Title: Draw my shape	Ref. no.

You will need… white boards and marker pens
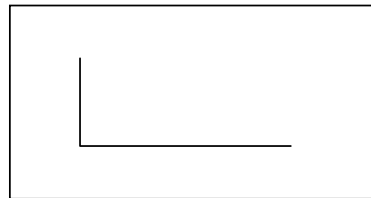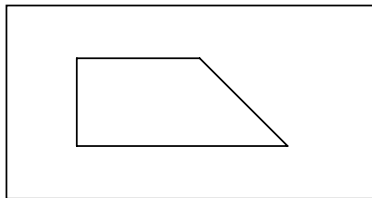
Activity

Pupils work in pairs. Each pupil will need a whiteboard and a marker pen.
Pupils decide who will be A and who will be B.
Pupil A chooses a shape from a selection in front of them. This must be done without pupil B watching. Pupil A then describes how to draw the shape and pupil B draws the shape according to the given instructions.
Pupils then compare diagrams and discuss the results. Pupil B then chooses a shape and describes it to pupil A.
This activity is particularly useful for development of precise mathematical language, reinforcement of mathematical shapes and their properties and visualisation of shapes.

"Draw a line horizontally 3cm long parallel to your first line and towards the right."

Key questions/vocabulary
Language of position, shape and angle.

Extension activities
For younger pupils the activity could involve choosing and describing how to write a number or letter.
Shapes drawn could involve compound shapes (two or more simple shapes joined together).
Shapes could involve circles, semicircles, arcs or other known curves.
Drawings could involve two-dimensional representation of three-dimensional objects.
Use Loci, for example, "You have a square, an ant travels around the square always exactly one centimetre away from its perimeter, draw its path."

Title: Chase me	Ref. no.

You will need…racetrack on acetate, OHP, whiteboards and marker pens.

Activity

Divide the class into two teams. One team is represented on the grid by the circle, the other by the square.

Ask pupils to give the coordinates of their starting position. They show it on their whiteboards. In pairs, pupils write down the coordinates of where they think they should move their marker to, for example (12, 9). Discuss with each team an appropriate coordinate pair for their teams turn and mark them both on the grid. For each team join their two points together, if the line connecting the two points falls off the track then that team goes back to their last position, for example, (9, 12) to (16, 13).
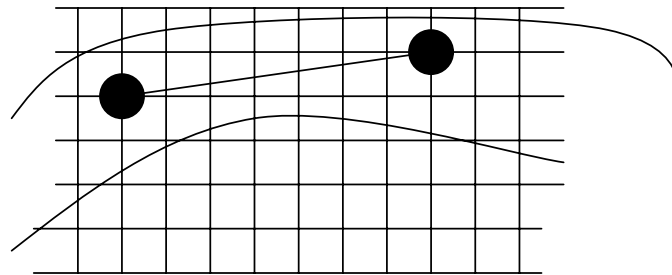
There are two ways of winning the game; either, catch the other marker, or be the first to complete a 'lap' of the racetrack.

Key questions/vocabulary
Coordinates, axes, plot, (x, y), forward, angle, turn

Extension activities
Have more than two teams playing.
Use all four quadrants, thereby involving negative coordinates.
Use a more demanding racetrack (which may require extended time over a series of lessons).
Use of vector notation.
Use bearings for directions.
Use a Roamer on a large racetrack.

Title: Carroll diagram	Ref. no.

You will need…a blackboard, whiteboard or flipchart

Activity

This activity allows pupils to sort and classify information.

Draw a diagram on the board. You can choose whether to label the columns and rows or whether to put information in the table, or a combination.

	Glasses	No glasses
	Linda Fran	Sharon
	Peter	Chris Ian

The pupils could suggest row headings looking at the information, for example boys…? eye colour…? freckles…?

Then they could suggest other information that could be written into the table.

Then they could be asked to analyse the data, answering questions like:
"Do all blue-eyed people wear glasses?"
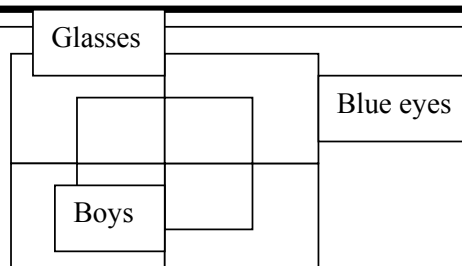"Are all boys short-sighted?"

Key questions/vocabulary
Classify
Row, column, Carroll diagram, information, sort, analyse

Extension activities

Use a 3 aspect Carroll diagram: glasses/boys/blue eyes.

Where would you place 'Peter'?

| Title: **Bingo** | Ref. no. |

You will need…2 dice, whiteboards or paper for pupils

Activity

Pupils draw a 2x3 window on their paper.

On their board they write numbers that can be created by adding the values of two dice together, for example, 2-12. Numbers can be repeated.

The leader throws the two dice, the pupils mentally add the numbers and cross off the answer if it appears on their board. The first player to cross of all numbers is the winner.
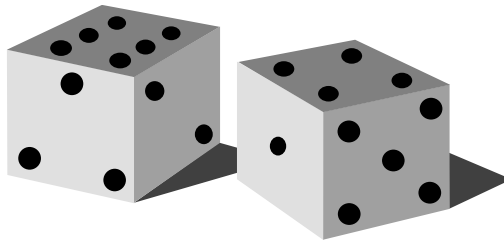
Key questions/vocabulary

"What numbers have you got left on your board? What two numbers do you need to appear on the dice?"

"Which numbers are more/less likely to appear?"

Extension activities

Alternatively, they could play subtraction bingo – subtracting the two scores. For example, throw 4 and 6 – could create answers of 2 and –2. One dice could be units, the other tenths, for example 4 and 6…

$$6 - 0.4 \quad or \quad 4 - 0.6$$

Multiplication bingo: two scores multiplied together (unit x unit). Alternatively the two numbers could be tenths, for example 3 and 6 could generate 0.3 x 0.6 or 0.6 x 0.3
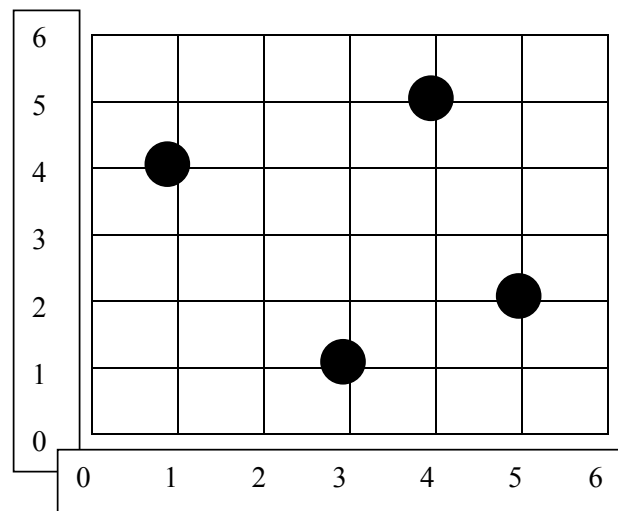
Title: Battle Grids	Ref. no.

You will need…paper, pencil, 2 dice of different colours.

Activity

Grids are drawn, or provided for pupils. They mark on the grid four coordinate points of their choice.

The two coloured dice are rolled to generate a coordinate point. For example, a green dice gives the x coordinate and a blue dice gives the y coordinate. The first player to have ticked all their four points is the winner.

Key questions/vocabulary

Coordinates, axes, (x, y), origin, intersection, plot

"Why isn't it a good idea to choose points on the axes?"

"Are there any points that are better than others to choose?"

Extension activities

Use multi-faceted dice to enable larger grids to be used.

Use 2 dice the same colour allowing pupils the choice of x and y values, for example, throw 3 and 4 – which would give either (3, 4) or (4, 3).

Extend to all four quadrants. (Two dice for coordinates, two dice marked "+" and "-". Alternatively use spinners.)

Use a 0 – 5 dice so that points on the axes can be chosen.

Create grid references by throwing 4 dice, for example (25, 34).

Set the challenge…"set your points so they form a square, a rectangle, an isosceles triangle, an equilateral triangle."

| Title: **And the answer is…** | Ref. no. |

You will need…**A4 paper or mini whiteboards**

Activity

Pupils work in pairs. Each pair will need a sheet of paper and a marker pen or mini whiteboard.

The leader writes a statement on the board such as " The answer is 23cm".

The pupils then generate 3 questions that have the given answer.
Selected questions can then be investigated by the group as a whole.

"If I have a 2.3m length of wood and cut it into 10 equal lengths…"

"If my metre stick was cut into two pieces and one piece was 67cm long…"
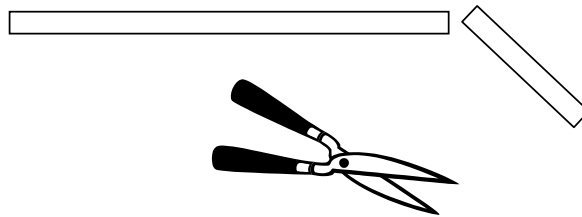
Key questions/vocabulary
Vocabulary of length, area, volume, capacity, area, temperature, money, fractions, decimals, percentages…
Vocabulary related to questions.

Extension activities

The leader could ask for questions of two or more steps from the pupils.
Questions could be required involving change of units.

Title: Word Chains	Ref. no.

You will need…whiteboards or paper

Activity

Children work in pairs. The leader starts the game giving the class a starting word, for example 'odd'.

Then pairs take it in turns to think of other mathematical words that are related. If required, and appropriate, they record their chain.

For example

Odd -> even -> four -> square -> rectangle -> cuboid -> dice -> seven -> fourteen -> five -> square based pyramid -> octahedron -> tetrahedron -> four.

If there is a repeat within the chain the game stops.

If there is a statement made that the other player cannot understand they can challenge it and it has to be justified. In the example given, the link between fourteen and five…the digits in fourteen have been added together.

The first statement from each group could be recorded and discussed. Alternatively this could be played as a class game with pupils split into teams and after discussion they offer their next word in the chain using a whiteboard.

Key questions/vocabulary
As appropriate.

Extension activities

Relations to the real world can be made, for example: parallel -> bars -> cylinders -> bottles -> capacity and so on.

As well as giving the start word, give the pupils a target word to try to aim for and compare how they got there.

Give the children word cards to form a chain, or even a continuous chain. Objects, shapes or symbols could be used to create a visible chain.