

# **Supplementary Guidance**

## **Key Mathematical Vocabulary**

## **Handford Hall Primary School**

The recent changes to the curriculum have meant that the level of mathematical knowledge children need to have by the end of KS2 has risen in expectation. In order to ensure that our children are able to cope with these changes and achieve their expected targets it is important that we are equipping them with not only the number skills but the **vocabulary** to tackle these changes effectively.

In EYFS the focus is on developing children's language so that they are able to communicate effectively the mathematical concepts they are being exposed to. As they move up through the school we formalise this language, moving away from everyday descriptions. IN order to ensure a robust understanding consistency in age related language expectation is important.

Below is a list of key vocabulary and their corresponding definitions to support the transition to formalised language:

<p><b><u>Addition and subtraction</u></b></p> <ul style="list-style-type: none"> <li>• Inverse - use of the opposite operation</li> <li>• Difference - subtraction</li> <li>• Compare - commenting on differences/ similarities</li> <li>• Greater/less than - comparing the size of numbers</li> <li>• Sum - addition</li> </ul>	<p><b><u>Multiplication and division</u></b></p> <ul style="list-style-type: none"> <li>• Lots of- how many (in terms of multiplying)</li> <li>• Repeated subtraction \ addition</li> <li>• Product - multiplication</li> </ul>
<p><b><u>Measurement</u></b></p> <ul style="list-style-type: none"> <li>• Mass - weight</li> <li>• Perimeter - total distance around the outside of a shape</li> <li>• Area - total space of the inside of a shape</li> <li>• Orientation - where something is positioned</li> <li>• Volume - quantity of three-dimensional space</li> <li>• Capacity - the amount something can hold</li> <li>• Horizontal - a line parallel to the horizon</li> <li>• Vertical - downward facing line</li> <li>• </li> </ul>	<p><b><u>Shape</u></b></p> <ul style="list-style-type: none"> <li>• Base - bottom of a 3D shape</li> <li>• Vertices - corners</li> <li>• Compound - shapes put together to form a new shape</li> <li>• Composite - A whole number that can be divided evenly by numbers other than 1 or itself</li> <li>• Edge - where two vertices meet</li> <li>• Quadrilateral - any four sided shape</li> <li>• Regular - A polygon is regular when all angles are equal and all sides are equal</li> <li>• Perpendicular - lines which meet at a 90 degree angle</li> <li>• Parallel - two lines which will never meet and always stay the same distance apart</li> <li>• Net - a plane diagram/ 3D shape flat</li> </ul>
<p><b><u>Statistics</u></b></p> <ul style="list-style-type: none"> <li>• Continuous - data that can take any value</li> <li>• Discrete - data that can only take certain values</li> <li>• Quadrant - Any of the 4 areas when we divide an x and y axis grid</li> <li>• Point of origin - the point where the x and y axis cross at 0</li> </ul>	<p><b><u>Fractions</u></b></p> <ul style="list-style-type: none"> <li>• Improper - when the numerator is bigger than the denominator</li> <li>• Denominator- the number of pieces you have</li> <li>• Numerator - the number you are dividing your whole by</li> </ul>
<p><b><u>General</u></b></p> <ul style="list-style-type: none"> <li>• Estimate - accurate guess</li> <li>• Equivalent - the same as</li> <li>• Identify - recognise</li> <li>• Integers - whole numbers, including negative numbers</li> </ul>	

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| <ul style="list-style-type: none"> <li>• Interpret - explore, understand, explain</li> </ul> |  |
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## Questioning

<p><b>Types of Questions</b>            Within the context of open-ended mathematical tasks, it is useful to group questions into five main categories. These questions can be used by the teacher to guide the children through investigations while stimulating their mathematical thinking and gathering information about their knowledge and strategies.</p>	
<p><b>Starter questions</b></p> <p>These take the form of open-ended questions which focus the children's thinking in a general direction and give them a starting point.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• How could you sort these.....?</li> <li>• How many ways can you find to ..... ?</li> <li>• What happens when we ..... ?</li> <li>• What can be made from....?</li> <li>• How many different ..... can be found?</li> </ul>	<p><b>Questions to stimulate mathematical thinking</b></p> <p>These questions assist children to focus on particular strategies and help them to see patterns and relationships. This aids the formation of a strong conceptual network. The questions can serve as a prompt when children become 'stuck'. (Teachers are often tempted to turn these questions into instructions, which is far less likely to stimulate thinking and removes responsibility for the investigation from the child).</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• What is the same?</li> <li>• What is different?</li> <li>• Can you group these ..... in some way?</li> <li>• Can you see a pattern?</li> <li>• How can this pattern help you find an answer?</li> <li>• What do think comes next? Why?</li> <li>• Is there a way to record what you've found that might help us see more patterns?</li> <li>• What would happen if....?</li> </ul>
<p><b>Assessment questions</b></p> <p>Questions such as these ask children to explain what they are doing or how they arrived at a solution. They allow the teacher to see how the children are thinking, what they understand and what level they are operating at. Obviously they are best asked after the children have had time to make progress with the problem, to record some findings and perhaps achieved at least one solution.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• What have you discovered?</li> <li>• How did you find that out?_Why do you think that?</li> <li>• What made you decide to do it that way?</li> </ul>	<p><b>Final discussion questions</b></p> <p>These questions draw together the efforts of the class and prompt sharing and comparison of strategies and solutions. This is a vital phase in the mathematical thinking processes. It provides further opportunity for reflection and realisation of mathematical ideas and relationships. It encourages children to evaluate their work.</p> <p>Examples:</p> <ul style="list-style-type: none"> <li>• Who has the same answer/ pattern/ grouping as this?</li> <li>• Who has a different solution?</li> <li>• Are everybody's results the same? Why/why not?</li> <li>• Have we found all the possibilities?</li> <li>• How do we know?</li> <li>• Have you thought of another way this could be done?</li> <li>• Do you think we have found the best solution?</li> </ul>
<p><b>Investigative Questioning:</b></p> <ul style="list-style-type: none"> <li>• What is the question asking you?</li> </ul>	<p><b>Sentence Stems for children's responses</b></p> <ul style="list-style-type: none"> <li>• I agree with.... Because...</li> </ul>

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<ul style="list-style-type: none"> <li>• How might you tackle this problem?</li> <li>• What are you being asked to investigate?</li> <li>• What mathematical knowledge are you going to apply?</li> <li>• What methods could you use?</li> <li>• How are you going to break down the steps?</li> <li>• What steps have you identified?</li> <li>• Find different ways to.....?</li> <li>• Tell me.....?</li> <li>• What other method could you use? How else could you solve this problem?</li> </ul>	<ul style="list-style-type: none"> <li>• I disagree with .... Because...</li> <li>• I know that....</li> <li>• First, then, next, after that....</li> <li>• I can explain that....</li> <li>• My reason is...</li> <li>• I can show that by...</li> </ul>
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## **Key Vocabulary by Year Group**

These are key words all teachers should be aware of when teaching maths. Below is a list of the key words and examples of how to use them in questioning.

### **EYFS:**

Counting on/ back	Odd/even
Zero	Groups of/ lots of
More/ less than	Difference between
Greater than/ fewer than	Altogether
Add	Double
Equals	Half
Total	Smallest/ bigger
Score	Answer
Compare	Right/wrong
First/second/third	Pair
Pattern	Money
Coin	Pence
Cost	Buy
sell	measure
size	guess
Close to	Length
Enough/ not enough	Over/ under
Long/short	High/low
balance	Heavy/light
Full/empty	container
Above/below	Top/side/bottom
Before/after	Besides/next to
Left/right	Forwards/backwards
Across	Through/along

### **Key questions**

- How many?
- How many times?
- How many more?
- What number has gone?
- Is this the same as?
- How many fewer?

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### YEAR 1:

Counting on/ back/ to/ from/in....	Odd/even
Zero/ none	Groups of/ lots of
More/ less than	Difference between
Greater than/ fewer than	Altogether
Add/ one more/one less/ plus/sum	Double
Minus/ take away	Roughly/ estimate
Equals	Half
Order	Last
Total	Smallest/ bigger
Score	Answer
Compare	Right/wrong
First/second/third	Pair
Pattern	Money
Coin	Pence
Cost	Buy
sell	measure
size	guess
Close to	Length
Enough/ not enough	Over/ under
Long/short	High/low
balance	Heavy/light
Full/empty	container
Above/below	Top/side/bottom
Before/after	Besides/next to
Left/right	Forwards/backwards
Across	Through/along
Thick/thin	Deep/shallow
Far/near	balance
Quick/slow	Flat/curved
Pointed	Face/side/edge/end
sphere	Cube
Apart	Centre
Movement	turn

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### Key Questions:

Which order?  
It is the same as?  
What is double?  
How many more/less than?  
How many are left over?  
How many? How much?  
What comes next?

### YEAR 2:

Counting on/ back/ to/ from/in....	Odd/even
Zero/ none	Groups of/ lots of
More/ less than	Difference between
Greater than/ fewer than	Altogether
In between	Addition/subtraction
Value	Amount
Add/ one more/one less/ plus/sum	Double
Minus/ take away	Roughly/ estimate
Equals	Half
Order	Last
Total/ Result	Smallest/ bigger
Score	Answer
Compare	Right/wrong
First/second/third	Pair
Pattern	Money
Coin	Pence
Cost	Buy
sell	measure
size	guess
Close to	Length
Enough/ not enough	Over/ under
Long/short	High/low
balance	Heavy/light
Full/empty	container
Above/below	Top/side/bottom
Before/after	Besides/next to
Left/right	Forwards/backwards

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Across	Through/along
Thick/thin	Deep/shallow
Far/near	balance
Quick/slow	Flat/curved
Pointed	Face/side/edge/end
sphere	Cube
Apart	Centre
Movement	turn

### **Key Questions:**

What value/amount?

Which order/sequence?

It is the same as?

What is different?

What is double?

How many more/less than?

How many are left over?

How many? How much?

What comes next?

What steps do you need?

### **YEAR 3:**

Counting on/ back/ to/ from/in....	Odd/even
Zero/ none	Groups of/ lots of
More/ less than	Difference between
Calculation	capacity
Multiples of	sequence
Continue	predict
Greater than/ fewer than	Altogether
Add/ one more/one less/ plus/sum	Double
Minus/ take away	Roughly/ estimate
Equals	Round/ nearest to
Order	Last
Stands for/represents	Exact
Total	Smallest/ bigger
Score	Answer
Compare	Right/wrong
First/second/third	Pair
Pattern	Money
Coin	Pence
Cost	Buy
sell	measure
size	guess
Close to	Length

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Enough/ not enough	Over/ under
Long/short	High/low
balance	Heavy/light
Full/empty	container
Above/below	Top/side/bottom
Before/after	Besides/next to
Left/right	Forwards/backwards
Across	Through/along
Thick/thin	Deep/shallow
Far/near	balance
Quick/slow	Flat/curved
Pointed	Face/side/edge/end
sphere	Cube
Apart	Centre
Movement	turn
Fraction/divide/split/ parts of	Half/ quarter/ whole
Data/ collect/record	Tally/block/pictogram/tables
Properties	Vertices
Clockwise/ anticlockwise	Symmetry /mirror line/reflection

### **Key Questions:**

Can you predict?

What is this the same as?

What is the difference between?

Compare.....?

Contrast...?

### **YEAR 4:**

Counting on/ back/ to/ from/in....	Odd/even
Zero/ none	Groups of/ lots of
Roman numerals	inverse
More/ less than	Difference between
Calculation	capacity
Multiples of	sequence
Continue	predict
Greater than/ fewer than	Altogether
Add/ one more/one less/ plus/sum	Double
Array	twice
Minus/ take away	Roughly/ estimate
Equals	Round/ nearest to
Order	Last
Stands for/represents	Exact
Total	Smallest/ bigger
Score	Answer
Compare	Right/wrong
First/second/third	Pair
Pattern/ puzzle	Money
Coin	Pence
Cost	Buy
sell	measure
size	guess

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Close to	Length
Enough/ not enough	Over/ under
Long/short	High/low
balance	Heavy/light
Full/empty	container
Above/below	Top/side/bottom
Before/after	Besides/next to
Left/right	Forwards/backwards
Across	Through/along
Multiple/factor	Deep/shallow
Far/near	balance
Quick/slow	Flat/curved
Pointed	Face/side/edge/end
sphere	Cube
Angle/ acute/obtuse/reflex	Centre
Movement	turn
Fraction/divide/split/ parts of/partition	Half/ quarter/ whole/ 2 quarters
Data/ collect/record	Tally/block/pictogram/tables
Properties	Vertices
Clockwise/ anticlockwise	Symmetry /mirror line/reflection
column	note
Frequency	Common- more or less
Approximate	Distance between
Century	fortnight
Ascend/ descend	quadrilateral
Diagonal	Vertical/horizontal
Twice/ once	prism

### **Key questions:**

How many are left over?

How many fewer than....is.....?

How much more is.....?

What could we try next?

Explain how you.....?

What are the properties of.....?

How did you work it out?

Which direction is it?

### **YEAR 5 and 6:**

Counting on/ back/ to/ from/in....	Odd/even
Zero/ none	Groups of/ lots of
More/ less than	Difference between
Calculation	capacity
Multiples of	sequence
Continue	predict
Greater than/ fewer than	Altogether
Add/ one more/one less/ plus/sum	Double
Array	twice
Minus/ take away	Roughly/ estimate
Equals	Round/ nearest to
Order	Last
Stands for/represents	Exact
Total	Smallest/ bigger
Score	Answer
Compare	Right/wrong
First/second/third	Pair
Pattern/ puzzle	Money
Coin	Pence
Cost	Buy

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sell	measure
size	guess
Close to	Length
Enough/ not enough	Over/ under
Long/short	High/low
balance	Heavy/light
Full/empty	container
Above/below	Top/side/bottom
Before/after	Besides/next to
Left/right	Forwards/backwards
Across	Through/along
Thick/thin	Deep/shallow
Far/near	balance
Quick/slow	Flat/curved
Pointed	Face/side/edge/end
sphere	Cube
Apart	Centre
Movement	turn
Fraction/divide/split/ parts of/partition	Half/ quarter/ whole/ 2 quarters
Data/ collect/record	Tally/block/pictogram/tables
Properties	Vertices
Clockwise/ anticlockwise	Symmetry /mirror line/reflection
column	note
Frequency	Common- more or less
Approximate	Distance between
Century	fortnight
Ascend/ descend	quadrilateral
Diagonal	Vertical/horizontal
Twice/ once	prism
Acute/obtuse/reflex	Numerator/denominator
Prime	Factor/multiple
Percent	Equivalents
Equilateral/ isosceles	Quadrant
Axis	Regular/ irregular
Bar/pie/line graphs	Distinguish
Interpret	Discrete/ continuous
consecutive	Isosceles/ scalene
Reflect/ translate	Parallel/ perpendicular
Simplify	Ratio/ proportion
Probability	Equation/ algebraic

### Key Questions:

Which quadrant is.....?  
 How would you simplify....?  
 Define.....?

Explain your reasons for.....?  
 What is the equivalent to.....?  
 List the properties of.....?