Primary Magazine

Issue 9

National Centre for Excellence in the Teaching of Mathematics

Welcome to the ninth issue of the Primary Magazine.
In this issue, we have the second article in our series **The Art of Mathematics**, where we focus on the mathematical possibilities of the work of Kandinsky.
Our Up2d8 Maths looks at opportunities for purposeful ways to focus on aspects of mathematics such as direction and angles through the news story of the emergency aeroplane landing by Captain Chelsey Sullenberger on the Hudson River in January.

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From the editor

Is the government's latest idea that a top city worker can become a teacher with just six months' training a gimmick or a real possibility? The question has been raised: 'Is teaching becoming viewed as the easy option?' Click here to read the article on the BBC website, and find related pieces on this theme. Why not have your say by adding your comments to the Primary Forum?

Now that spring is with us and the weather is warmer why not consider learning more about mathematics outside the classroom? The NCETM features projects from many parts of the country that demonstrate good practice in using the outside environment for mathematics. It is worth checking out the professional development module for primary schools, designed to help explore the possibilities of facilitating mathematics outside.

On 20 February 2009, the Cambridge Primary Review published a two-part report on the primary curriculum entitled Towards a New Primary Curriculum. The first part of the report identifies the questions which need to be addressed, describes current arrangements for the primary curriculum and sets them in historical and international context, discussing existing curriculum strengths and weaknesses and what needs to change. The second part summarises the main points from this evidence, highlights other matters in need of resolution, and sets out proposals for reform. One of its conclusions was that primary school children are missing out on a broad and balanced education because of an excessive focus on numeracy and literacy and national curriculum testing. It is well worth a read.

A date for your diary

Have you heard of STEM? Up until now it has been on the secondary education agenda, but it is now branching into primary. The STEM Advisory Forum provides the opportunity for all of those interested in the science, technology, engineering and mathematics (STEM) education to contribute their views on the STEM agenda.

As well as having the opportunity to comment in their discussion area, the forum also hosts two face-to-face events each year. Their next conference is scheduled for 5 June at the Museum of Science and Industry in Manchester.

The focus of the conference is primary mathematics, science and technology education with a specialist speaker in each subject to introduce the issues for that subject.

For more information click here.

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Up2d8 maths

The mathematics within **Crash!** provides opportunities for work involving data handling and shape and space, particularly direction and angles. There is also a focus on the thinking skills of enquiry and reasoning, with opportunities for discussion and links to science. The suggestions presented on the spreads are ideas which need to be adapted before use.
As well as the teacher's guide within the resource, here are some other ideas:

- You could ask the children to use the internet to find out the distance to some of the countries they have visited and ask them to work out return distances by doubling.

- They could then convert the distances from kilometres to miles and vice versa.

- You could develop a series of lessons which involve the children planning a holiday. They will need to look at climate, particularly temperature and rainfall, costs of flights and accommodation, currency conversions for spending money etc. They could take into consideration the type of holiday they would wish to go on, eg sea and sand, walking, skiing, diving, exploration, cultural, and find suitable destinations.

- You could ask them to work within a budget.

- The children could explore other ways of getting to the different destinations.

- This would be a good opportunity to look at flight, bus and train timetables and ask questions from them that involve finding time differences and journey times.

- You could explore time zones and compare times around the world with the time in the UK.

- You could explore temperatures around the world including those that are below zero.

- You could use a data logger in class to record the temperature during the day, identifying differences in temperature during playtime/lunch etc. on the graph.

- If you develop ideas around your role play area, for example by turning it into an aeroplane or travel agent, it would be a good idea to provide holiday brochures for the children to look at and also a map of the world. They could identify places that they have visited and mark the routes they might take if they were to fly there either directly or via other countries. This could be developed into looking at other countries and discovering what they are like in terms of climate, landscapes, animals, plants and the people's way of life.

- You could make a collection of luggage labels and airline tickets and use these to explore the different numbers they can see. You can find information on what these numbers mean on the web, for example in this Wikipedia entry.

- The children could work with the idea of packing a bag for a hot/cold country. You could give them a small selection of clothes and ask them to work out how many different outfits they could put together.

- You could explore the altitudes that planes fly at: usually between 30 and 40 thousand feet depending on whether they are short or long flights – higher for longer flights. The children could work on scale for this, maybe drawing planes at different heights.

Click here to download the Up2d8 maths resource - in PowerPoint format.

Click here to download the Up2d8 maths resource - in PDF format.

The Art of Mathematics

Wassily Kandinsky (1866-1944)

Background information about the artist

Wassily Kandinsky was born in Moscow in 1866. He studied economics and law at the University of Moscow before becoming a professor. It wasn't until he was 30 that he went to Germany and began to study art.

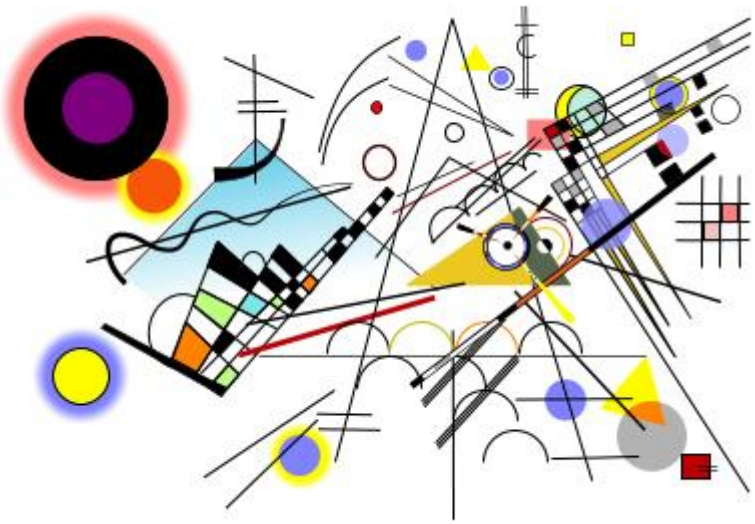
His first sketches and paintings were quite realistic impressions of human bodies. He then moved to a more Impressionistic style (similar to that of Monet), before becoming completely abstract. Olga's Kandinsky Gallery displays most of his work in date order, and the change in his style can be clearly seen.

As he developed, Kandinsky became particularly interested in the use of colour in paintings. Soon, what were recognisable objects and features in his work, became just patches of colour. He wanted to use colour to display his emotion, and encouraged those viewing his paintings to do the same.

Some say that Kandinsky was trying to create the same effect on a viewer of his paintings as a beautiful piece of music can have on a listener.

Kandinsky wrote three books about his ideas in art, and there is a considerable number of books and websites dedicated to the appreciation of his remarkable work.

Click here for a useful child-friendly summary of Kandinsky and his work, with some suggestions of activities for the classroom. Click here for another excellent collection of Kandinsky's work, displayed well for sharing in the classroom. It also provides additional notes on the artist.



Here is an idea that you could develop using Kandinsky's painting **Composition VIII** (oil on canvas, 1923). Click here to find it.

Composition VIII from the 10-part Composition Collection is considered by many to be Kandinsky's most popular piece. It was the first to truly focus on geometric form; those preceding it showed a more 'apocalyptic' emotion of colour.

Before showing the image to the children, ask them to close their eyes. Explain that when they re-open them, they will be shown a picture for just two to three seconds, and they must decide upon the most striking part for them. Try to display the image as large as possible. The original oil painting measured 140 x 201cm, so it is good for the children to get an idea of the scale of Kandinsky's work.

Ask the children to explain which part of the painting they chose. Can they describe it to the others? Can they verbalise why that particular part stood out for them? Responses might include the large and complex circular form in the top left hand corner, which is almost being pointed at by the acute lines of the checkerboard on the right. It might be the circle enclosed in what appears to be a right angled triangle, just slightly right of the centre, towards which lots of lines and angles are pointing. Answers are likely to refer to the position of the section of the painting such as the centre, top etc. or the colours, shapes or lines seen.

Display the image again. Ask the children to see how many 2D shapes they can find. Where could they draw extra lines to complete even more 2D shapes? Suggestions might include the base of what would become a large isosceles triangle in the centre of the picture, or the four semi-circles towards the bottom.

A great deal of discussion can come from close inspection of such an incredible painting, focusing on many different areas of mathematics. Try answering some of the questions below – they might get your creative juices flowing!




- Estimate how many separate straight lines there are? How could we count them?
- Which is the longest line? Which is the shortest? How can we measure them to check?
- Are any of the lines parallel? Perpendicular?
- Can we find an acute angle? An obtuse angle? A right angle?
- How many circles are there? How many triangles?
- What is the ratio of circles to triangles?
- Can we calculate the diameter of the large black circle (top left of the painting) of the original painting?
- Just to the left of the centre is what looks like four skyscraper buildings, tilted slightly to the right, against a blue sky. If the first skyscraper building has five floors, how many does the last have?
- How many of the skyscraper building windows are black?
- What proportion of the skyscraper building windows are white?

Storeys (oil on cardboard, 1929) is another example of Kandinsky's work which can provide a wonderful stimulus for a range of mathematical discussion.

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Focus on poetry

According to Wikipedia:

- Poetry as an art form may have predated people's ability to read and write. Some of the earliest poetry is believed to have been orally recited or sung. Following the development of writing, poetry has since developed into increasingly structured forms, though much poetry since the late 19th century has moved away from traditional forms towards the more vaguely defined free verse and prose poem formats including rhymes, limericks and riddles.
- Poetry was employed as a way of remembering oral history and story.
- The oral tradition of poetry – as recited by troubadours (travelling poets) in the middle ages and others before them – was also the precursor of modern newspapers, being the only way in which news could be conveyed from group to group with any amount of detail.
- The word limerick derives from the Irish city of Limerick. Apparently a pub song or tavern chorus based on the refrain 'Will you come up to Limerick?' where, of course, such bawdy songs or 'limericks' were sung.
- The oldest surviving poem is the Epic of Gilgamesh, from the third millennium BC.
- The longest poem in the world is 'Only as Life' by Nikhil Parekh with 7 394 words.
- The world's shortest poem is called 'Fleas' by an unknown author. Here it is:

FLEAS:
Adam
Had 'em!

So how can we use poetry in mathematics lessons?
Poetry can be used to help to:

- practise counting skills
- recall information
- develop a richer vocabulary
- look for patterns and extend sequences
- solve problems.

This article will now examine each of these tools and how they can be used in mathematics lessons, with some practical examples.

A Department for Children, Schools and Families initiative to enhance professional development across mathematics teaching

Practise counting skills
The most obvious use of poetry in the mathematics lesson is to use poetry to practise counting skills. There is a range of good websites that provide the words, visual imagery and music to support this, including the BBC.

One Two Three Four Five
One, two, three, four, five
Once I caught a fish alive
Six, seven, eight, nine, ten
Then I let it go again
Why did you let it go?
Because it bit my finger so
Which finger did it bite?
This little finger on my right

The day I went to sea
When I was one I'd just begun
The day I went to sea,
I jumped aboard a pirate ship
And the captain said to me –
"We're going this way, that way,
Forwards and backwards,
Over the Irish Sea.
A bottle of rum to fill my tum
And that's the life for me."

When I was two I lost my shoe
The day I went to sea…

When I was three I hurt my knee…
When I was four I knocked at the door…
When I was five I learnt to drive…
When I was six I played some tricks…
When I was seven I went to Devon…
When I was eight I found a mate…
When I was nine I had some wine…
When I was ten I bought a hen…
(A.A.Milne)

More examples can be found in the Starter of the Month section of this magazine.

Recall information
Poems can be used to help children recall information.
When was the last time that you found yourself muttering the words of the 'Thirty days hath September' poem?

The words to 'Thirty days hath September' are still used by many adults to prompt them into recalling how many days there are in each month. The origin of the words is obscure but the use of 'olde' English can date this poem back to at least the 16th century.

Thirty days hath September,
April, June and November,
All the rest have thirty-one,
Excepting February alone.
Which only has but twenty-eight days clear
And twenty-nine in each leap year.

Rhymes can also be used to help children remember procedures. If, for example, when teaching young children to write numbers the formation is accompanied by a rhyme, the children will be able to recall the rhyme when forming numbers independently.

Number Formation Rhymes

Number 1 is like a stick.
A straight line that is very quick.

For number 2, go right around.
Then make a line across the ground.

Go right around. What will it be?
Go round again to make a 3.

Down and over and down some more.
That's the way to make a 4.

Go down and around. Then you stop.
Finish the 5 with a line on top.

Make a curve. Then make a loop.
There are no tricks to make a 6.

Across the sky and down from heaven.
That's the way to make a 7.

Make an "S" and then don't wait.
Go up again to make an 8.

Make a loop and then a line.
That's the way to make a 9.

Make a 1 and then a 0.
10 are all your fingers you know!

Develop a richer vocabulary
You could ask children to write a concrete or shape poem to help them to remember shape names and properties. This will help support mnemonic strategies for remembering shape names and properties.

A concrete poem, or shape poem, is a poem which is written in a specific shape. Usually the poem is also about this item. Concrete poems are useful if you want to write a poem that focuses on one main idea, because the shape helps the person reading your poem to remember what it is about very clearly.

You will need to model this activity first.
Ask children to think about a shape and identify its properties, for example cube.

List all the properties of a cube: 6 square faces, 8 vertices (corners), and 12 edges all the same length. Write these on strips of paper and paste them over a template of a net of a cube and then make it up. Alternatively, ask the children to lightly draw or trace a 3D representation of a cube (dependent on ability) and then write the words over the picture.

Children could create their own poems for other 2D and 3D shapes and their properties – an activity that could be used from KS1 all the way through to Y6 as the properties of the shapes become more developed. See Issue 8 of this magazine for more ideas.

Look for patterns
Use poems to look for patterns.
Consider looking for rhyming patterns using

- couplets – a pair of lines of verse. It usually consists of two lines that rhyme and have the same meter
- triplet – three lines that rhyme. Each line usually has the same number of syllables
- AABB patterns – lines 1 and 2 rhyme, lines 3 and 4 rhyme
- ABAB – lines 1 and 3 rhyme and lines 2 and 4 rhyme.

Or syllable patterns, using:

- Cinquain – this poem does not rhyme. It follows a pattern of five lines containing 22 syllables. Line 1 – two syllables, Line 2 – four syllables, Line 3 – six syllables, Line 4 – eight syllables, Line 5 – two syllables.
- Haiku – this poem does not rhyme. It follows a pattern of three lines containing 17 syllables. Line 1 – five syllables, Line 2 – seven syllables, Line 3 – five syllables.
- Limerick – amusing verse of 5 lines. There are three long lines which rhyme and two short lines that rhyme, giving an AABBA pattern.

An example using a limerick:

There was an Old Man with a beard,
Who said, 'It is just as I feared!
Two Owls and a Hen,
Four Larks and a Wren,
Have all built their nests in my beard!'
(Edward Lear)

Ask the children to read the limerick and investigate the structure of a limerick encouraging them to clap out rhythms and count syllables.

- How many lines does a limerick have?
- How many syllables are there in each line?
- What is the rhythm of the limerick like?
- What is the rhyming pattern in the limerick?

The children could then use the same format to write their own poems, using the same pattern of lines, syllables, rhythm and rhyme.

This process could be used with any style poem. Instead of writing their own poems, you could consider asking the children to continue the existing poem, writing extra verses using the same pattern of lines, syllables, rhythm and rhyme.

You could also provide a 'same/different' activity: present children with some poems and ask them to identify what is the same and what is different between the poems. See KS2 Starter of the Month in this issue.

Solve Problems

You could provide children with riddles as an opportunity for logic problem-solving. Here is a couple of examples:

As I was going to St Ives
As I was going to St Ives,
I met a man with seven wives.
Each wife had seven sacks,
Each sack had seven cats,
Each cat had seven kits.
Kits, cats, sacks and wives,
How many were going to St Ives?
(Answer: 1)

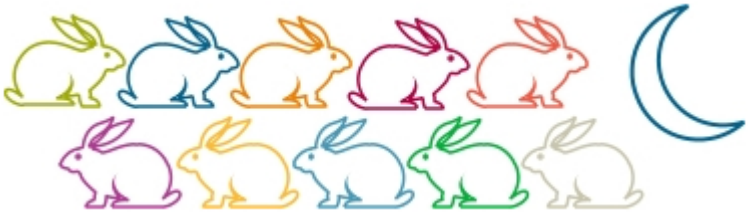
Thomas a Tattamus
Thomas a Tattamus took two T's,
To tie two tups to two tall trees,
To frighten the terrible Thomas a Tattamus!
Tell me how many T's there are in all THAT!
(Answer: 2)

As an extension activity children could make up their own riddle. Here is one from one of the author's pupils based on their teacher's name:

Q: My name suggests that I am hard and cold, but my heart has softened since getting married. Who am I?
A: Miss Stone.

Starter of the Month

We often use number rhymes in EYFS and KS1 to help children with their counting. Number rhymes are a form of poetry. Here are some ideas that you may wish to use.



EYFS

Primary Framework learning objectives: say and use number names in order and familiar contexts, know that numbers identify how many objects in a set.

Chant the following rhyme, matching each verse by the appropriate number of fingers and a suitable action:

One big bunny rabbit bouncing just like you,
Along came another one and then there were two.
Two big bunny rabbits digging by a tree,
Along came another one and then there were three.
Three big bunny rabbits eating even more…
Four big bunny rabbits glad to be alive…
Five big bunny rabbits jumping over bricks…
Six big bunny rabbits living down in Devon…
Seven big bunny rabbits squeezing through the gate…
Eight big bunny rabbits hopping in a line…
Nine big bunny rabbits sitting in a pen…
Ten big bunny rabbits running in the furrow
Out came the moon so they went down in their burrow.

Use the toy rabbit to match fingers to spoken numerals. Bunny says he has five friends!
Show me five bunnies on your fingers. The children show five fingers. Say the appropriate verse: Five big bunny rabbits jumping over bricks, along came another one and then there were six.
Use the rabbit again. Bunny says he has… pause to add suspense… three friends. As fast as possible, children show you three fingers. Praise those who were quick! Repeat.

This activity comes from **Mathematical Activities for the Foundation Stage: Reception** (DfES, now DCSF). Click here to download the document.

KS1

Primary Framework learning objective: count on or back in ones, twos, fives and tens.

Ten Fat Sausages

Ten fat sausages sizzling in a pan
Ten fat sausages sizzling in a pan
One went pop!
and the other went bang!

There were eight fat sausages sizzling in a pan
Eight fat sausages sizzling in a pan
Eight fat sausages sizzling in a pan
One went pop!
and the other went bang!

There were six fat sausages sizzling in a pan
Six fat sausages sizzling in a pan
Six fat sausages sizzling in a pan
One went pop!
and the other went bang!

There were four fat sausages sizzling in a pan
Four fat sausages sizzling in a pan
Four fat sausages sizzling in a pan
One went pop!
and the other went bang!

There were two fat sausages sizzling in a pan
Two fat sausages sizzling in a pan
Two fat sausages sizzling in a pan
One went pop!
and the other went bang!

There were no fat sausages sizzling in a pan
No fat sausages sizzling in a pan
No fat sausages sizzling in a pan
None went pop!
and none went bang!
There were no fat sausages sizzling in a pan.

Use visual images, eg sausages in pan, or ICT resources to support the children's learning.

Click here for more counting rhymes.

KS2
Have you ever thought of using poetry as a way into your oral and mental starters with children in KS2? If not, try some of these ideas...

Primary Framework learning objective: explore patterns, properties and relationships and propose a general statement.

Same/different
What is the same or different about these three poems. The first is a haiku, the second a cinquain and the third a limerick (see Focus on poetry for definitions of these).
If pupils need a prompt, ask them to look at the rhyming pattern/rhythm/number of lines and syllables.

She uses a pen
Serious about her maths
When she's done there's peace.

Dragon
Mythical beast
Following the brave knight
Silent death dropping from the sky
Battle

There was an Old Man in a tree,
Who was horribly bored by a Bee;
When they said, 'Does it buzz?'
He replied, 'Yes, it does!'
'It's a regular brute of a Bee!'
(Edward Lear)

Extension activity
You could ask children to represent their results in a bar graph!

A little bit of history

Our monetary system, in brief
The introduction of buying and selling dates back at least 100 000 years, when trading in red ochre and shell jewellery began in Swaziland, the land-locked country in Southern Africa. After this, metal was used either in bars or coins, and this practice has continued and been developed right up to the present day.

It all started with a civilisation called the Sumerians who were reputed to be the first civilisation in world history. They lived in Sumeria which was located in the Middle East where southern Iraq is today. It later spread and became known as Babylonia.

These people used silver bars as money. They marked their bars according to their quality and so developed a system of value. From this early start, silver became the universal way to buy and sell.

Shortly after the Sumerians and Babylonians used silver bars for their currency, the ancient Egyptians used gold bars of different weights as their early monetary system.

Apparently, the first people to introduce the use of gold and silver coins as money, in around 650 - 600BC, were the Lydians, who lived in what is now Turkey. These coins were stamped according to their value and looked like this:

During the sixth century BC, silver coins were widely used in Greece. It was the discovery of the touchstone (a small tablet of dark stone such as slate) as a means for testing the purity of a metal which led the way for metal-based money. As a result of this, the use of gold and silver coins spread around the world. Each government minted their own, giving each an emblem to show where they came from and a value according to weight. Gradually other metals began to be used, such as iron and copper.

Persian coin

A shekel

The British pound sterling originated in Anglo-Saxon times, and is the world's oldest currency still in use. In the latter half of the seventh century, King Offa of Mercia, an Anglo-Saxon kingdom in what is now the English Midlands, introduced the silver penny. Its use quickly spread throughout the other Anglo-Saxon kingdoms and became the standard coin of what was to become England.

In 1158, King Henry II introduced a new type of silver coinage which became the standard until the 20th century, and is today known as sterling silver. It was more durable than the fine silver used previously. Over the years, the amount of silver used in coins was reduced, until, in the reigns of Henry VIII and Edward VI, the coins were made mostly from copper. During the Tudor period the size and value of coins changed considerably. The Bank of England was formed in 1694 and it was then that paper money was developed. The first banknotes were used in China in the seventh century.

In 1817, the sovereign was introduced, and from that point various other coins came along until we had a system of pounds, shillings and pence. This was quite a complicated system compared with what we have been using since 1971.

There were 12 pennies in a shilling and 20 shillings in a pound. Ten shillings would have been written as 10/- and 2 shillings and 5 pennies would be written as 2s 5d or 2/5. In addition, there were other coins, for example:

- the guinea – which was one pound and one shilling
- the crown – which was five shillings, and went out of use after the the Second World War
- the half crown – worth two shillings and sixpence. This was the highest value coin between the war and decimalisation
- the sovereign and half sovereign – worth one pound and ten shillings respectively; they disappeared from circulation in 1914
- the florin – worth two shillings and often called the two bob bit. This was a tenth of a pound, and was introduced when the possibility of a decimal coinage was first thought of, many years before its eventual implementation
- the sixpence – worth half a shilling and sometimes known as a tanner - post-decimalisation, it was worth 2½p, until its withdrawal in 1980
- the threepenny coin – worth half a sixpence
- the halfpenny – worth half a penny
- the farthing – worth a quarter of a penny

In the 1960s, you may have had these coins in your purse or pocket:

halfpenny (½d)

penny (1d)

threepence (3d)

sixpence (6d)

one shilling (1s or 1/-)

two shilling (2s or 2/-)

half crown (2s 6d or 2/6)

The higher value coins were called silver, because they were made partly of silver and the lower value were called coppers, even though they were made of bronze!
Adding up all these coins in calculations was rather a nightmare for school children in the 1940s, 50s and 60s! Today's system is a lot easier.

On 15 February 1971, Britain went decimal, and the pound was subdivided into 100 pence instead of 240, and shillings disappeared entirely. At the time, people were really worried about this change - although today it seems so simple (imagine converting from the current system to the old one!). At first, people were able to use both systems, but by August 1971 the old penny, halfpenny and threepenny coins went out of circulation and we were left with these:

halfpenny (½p)

penny (1p)

two pence (2p)

five pence (5p)

ten pence (10p)

Since then, we have lost the ½p and sixpence (2½p) coins, and gained the 20p, 50p, and one- and two-pound coins.

Credit and charge cards came into use in the 1960s, mainly by businessmen for travel expenses. In 1966, this changed when the Barclaycard was launched and any Barclay's bank customer could use it. Of course, more and more companies started to use this idea, and now cards are more commonly used to purchase items than cash.

And finally, the cheque book! Cheques, as money, originated centuries ago: in the case of the cheque, we go back to Roman times and the ancient banking system. Bankers would issue orders at the request of their customers, to pay money to identified payees. This eliminated the need for traders to carry large quantities of their currency (eg gold) to buy goods and services.

Cheques have been in decline for many years due to the extensive use of credit and debit cards, telephone and on-line banking, and the development of the ATM (Automated Teller Machine – or 'hole

In the wall'!). In most European countries, cheques are rarely used any more: how long it will be until the cheque vanishes from the UK?

Visit these websites for more details of any of the above:

- Wikipedia
- Money Museum
- DiCamillo Companion

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National Centre for Excellence in the Teaching of Mathematics

Maths to share – CPD for your school

Errors and misconceptions

We all make errors and have a few misconceptions. So how do we avoid passing these on to the children we teach? For a start, the classroom climate should be one where mistakes are valued as a learning tool. Have you ever given a sticker to a child for making a mistake? It sounds trite but it really does help to develop the willingness to own up to errors and learn from them. When you make a mistake, admit it and thank the children for spotting it. Your classroom should be a mutually supportive learning community, where everyone is learning.

The problem with misconceptions is that, while we never forget the ones we have learnt to correct and strive to make sure the children do not fall into the same trap, it's the ones we don't know about which will be difficult to avoid passing on. Fortunately, there are some common misconceptions which we can look out for and be ready to deal with.

The Mathemapedia entry Misconceptions, Partial Conceptions & Errors could be a thought-provoking starter for a staff meeting on the subject. Split colleagues into groups to discuss children's misconceptions they have encountered, how they dealt with them and alternatives to saying, 'You can't do that', when it is perfectly possible but not yet within the child's knowledge and experience. We should aim never to say something to a child which will need to be 'unlearnt' in future.

Another approach would be to discuss the Numeracy Bloopers document. All of the examples are real, collected by a subject leader's trawl through some Year 2 and Year 3 children's workbooks. The teachers' marks and comments have been highlighted in pink. There are some interesting children's errors, some teacher ones and evidence of rushed marking. I expect we have all ticked correct answers but not necessarily noticed the incorrect or inconsistent method. Colleagues could consider whose misconception is shown and how to use it.

For the main part of your session, go to the Count On website and pick out a few of the common misconceptions to look at. There are 22 to choose from and you are best placed to know which ones will be most beneficial to your colleagues. Ask the question posed at the beginning of the chosen **Misconceptions in Mathematics** and expect some heated debate in some cases! Copy and display or distribute the *Misconception* box. Ask colleagues which of the examples they feel are correct. Work through the *Correct* box together and have copies of the whole piece, complete with the *Further Explanation* section for people to take away. Give colleagues the address of the website so that they can look up other areas with which they have difficulties.

Finish by discussing the questions posed in the **Probes and Prompts** section of the Mathemapedia entry. The discussion will be a rich one and should help you to decide how to move forward.

Further reading

- Maths misconceptions (Teachernet)
- Hispanic and Anglo Students' Misconceptions in Mathematics (ERIC Digest)
- Mathematical Misconceptions (SAGE Publications)