Welcome!!

While you are waiting.....

Find your dice template in your pack and cut out the 2 nets.





DON'T make them completely - just do stages 1 & 2 so that when the children arrive you can work as a team to put the numbers on and make the cube shape

Bracknell Forest Community Learning Team



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"Nothing matters more than stopping, listening and responding positively to young children"

Julie Fisher, Education Adviser, Oxford Brookes University



Interactions are profoundly important for supporting and extending children's learning. Regular meaningful interactions can help develop children's skills in thinking, reasoning, explaining, persuading and language development.

Unique Child

Your child may do it differently, we embrace and welcome individuality.

"No brain is the same; no brain is the best. Each brain finds its own special way"

Psychiatrist Edward Hallowell.



It's good to share h

Your well-being matters too



Session outline

PARENT PREP:

- why using real objects ('manipulatives') to count and calculate is vital

- define key concepts

- how to make & use your 'magic pebbles' counting kit with your child

Activities with the children (30-45 mins, the length of an average lesson)

The children return to class

Summary and evaluation

NEW - EYFS curriculum introduced September 2021

EYFS Early Mathematical Learning



Take a look at this video to find out more about Early Number Sense

Why using real objects (manipulatives) in maths is so important (and not just for EYFS classes!)

- To support sense making, mathematical thinking and reasoning
- To avoid the possibility of blindly following a taught procedure to arrive at an answer
- For children to be able to demonstrate to themselves and others mathematical truths
- To deepen children's understanding of abstract mathematical concepts
- To explain the meaning and justify the use of different mathematical processes such as the standard written methods

E.g. short division



Developing number sense: The Four "C"s

1. Cardinality - The knowledge of how many things are in a set and the number name for that quantity. e.g. the 'howmanyness', or 'threeness' of three.

2. Counting - Counting is one way of establishing how many things are in a set, because the last number you say tells you how many there are.

3. Comparison - Comparing numbers involves knowing which numbers are worth more or less than each other

4. Composition – Understanding that one number can be made up from (composed of) two or more smaller numbers

Rote or Rational counting?

Rote counting is where the child can say number names (often in the right in order) but doesn't necessarily know their meaning/value. Children can often do this from quite a young age and up to quite a high number.

<u>Rational counting</u> is <u>counting</u> that has meaning associated with it

- The child understands that the number name is connected with an actual value or amount of something – they know "how many"
- The child can not only say the numbers in order but recognise that 2 actually means 2 objects, 3 means 3 objects and so on

Subitising - what do you see and how do you see it? The ability to look at a group of objects and realise how many there are without counting.

1. Most people can only subitise small groups (up to 4 or 5 objects) BUT:

2. It's possible to recognise larger numbers by grouping into small sets. For example, if you are shown a line of 6 black dots, it's likely that you will automatically group these into 2 groups of 3, and then know that there are 6 in total without actually counting each one

3. We all subitise in our everyday lives. For example, you might be subitising without realising when you pick out 3 20p coins to pay for something that costs 60p.

4. Subitising makes working out maths problems a lot faster.

HOW YOU CAN HELP: At home, play lots of games (dice are great to practise subitising) and expose your child to as many different visual representations of numbers as possible.

Today, it's all about 'Mastery'- find out more here



"Children who grasp concepts rapidly should be challenged with reasoning and problem solving activities that apply knowledge and make connections, before moving on to new content"

SOLID	DEEP	RICH
FOUNDATION	LEARNING	EXPERIENCES
MAKE LINKS	LOVE OF MATHS	CONFIDENT MATHEMATICIAN

Your kit.....

Dice



0-20 number cards (place value highlighted)





Pebbles & bag





activity sheets



1 - Practising counting

- Ask your child to count out 20 magic pebbles
- Watch how they count:

-Do they use <u>1:1 correspondence?</u> (when counting a set of objects, do they touch one object as they say each number, to arrive at the correct total number in the set?)

-Do they count reliably & accurately, and up to what number?

*If they tend to rush, slow them down by getting them to slide/pass each pebble as they count.



2 - Practising subitising

Play the 'Hidden Jewels' Game

Hidden Jewels

Saying how many there are without counting

Children often enjoy hiding games, especially if they involve gems, jewels or golden coins!

Adults could provide 'hide and reveal' games that prompt children to subitise or see the number of the group without counting.

The Activity

mins

Put three cups over one, two and three 'jewels' (magic pebbles). Quickly lift and replace one cup and challenge your child to say how many there are.

Swap the bowls around rapidly for a minute. When you stop, can they point to the cup with three? Lift the cup and see if they can instantly say whether they are right.

Encouraging mathematical thinking and reasoning:

Describing

Can you see how many there are? How did you see them? (just as a three, as a two and a three, as three ones, or perhaps describing in terms of patterns or shape)

Reasoning How did you know there were three?

Opening Out

Can you make some different patterns with four jewels? How can you arrange five jewels so you can quickly see there are five? What happens if you use more jewels?

Recording Draw, stamp, sticker or take a photo for your favourite patterns for 3 [4,5]. Use the pebbles and 3 pots to have fun with this 'magic' activity. First it's the adult's turn to mix up the pots - but then it's time to reverse the roles and see who is best at subitising!



Don't forget to draw or take a photo of your favourite patterns......

N^{MS} 3 - Practising cardinality

Help your child to cut out the 1-10 number cards (take the others home, to be used when they have 'mastered' 1-10)





- Ask them to choose one of the cards and give you the matching number of magic pebbles
- This links the written number to the quantity it represents and builds your child's understanding of cardinality. (the 'threeness of three')
- Repeat for other numbers if you still have their attention......

4 - Practising comparison

Play the 'Show Me' Game

Show Me

Understanding cardinal numbers Matching numerals and amounts

The Activity

Gather 5 magic pebbles and arrange them however you choose (in a pattern, or a mixture of different colours. Ask your child to make their own set of 5 pebbles

Encouraging mathematical thinking and reasoning:

Describing

What does [this] pattern of five look like? How does my five look different from your five? What can you see?

Reasoning

How do you know these are the same number? What is the same and what is different about these fives?

Opening Out

What different patterns can you make with five pebbles? Can you see any numbers hidden inside [this] pattern of five? Can you show me five fingers? Is there another way? (use both hands) And another? And another?

Recording

Can you draw or record your patterns?

Can you put something on the paper to show how many there are? Can you put some numbers to show what hidden numbers you see?

Play Again?

Choose another number between 3 and 10 - what patterns can you make? How many different patterns? How many hidden numbers can you find? Can you use a 5 or 10 frame to help you to recognise different numbers and organise your patterns? Use the pebbles to explore different numbers, you will automatically be practising 'The 4 Cs' and giving your child a rich learning experience

Use your 5 & 10 frames to help investigate different numbers, find hidden numbers, and make comparisons





Don't forget to have a go at recording the patterns and using numbers to explain what you found.

5 - Making dice

Work with your child to put spots/numbers (or both!) on the dice nets.
 E.g. 0,1,2,3,4,5 and 6,7,8,9,10,³

Top tip: You can draw numbers in pencil first for them to trace over - the number formation rhyme sheet can help with this





• Work as a team to assemble the dice









Make more dice at home: <u>http://www.firstpalette.com/Craft_themes/Alph</u> <u>abet_and_Numbers/paperdice/paperdice.html</u>





6 - Playing with dice

Have fun throwing the dice and making sets of pebbles to **practise early calculation** - try one of these ideas:

- One more, one less
- Compare 2 sets
 (bigger, smaller, more, fewer)
- Combine 2 sets ("how many altogether?")



- Roll the 6-10 die and get the matching number of pebbles, then roll the 0-5 die to decide how many pebbles to remove
- Split a set: play the "quack attack" game (e.g. "how many different ways can we find to make 6?")

*remember to work with numbers up to 10

** encourage them to write or draw their findings......

Concentration issues?

- Keep the pace going try a range of different activities and games (5 mins max per activity)
- Try a different game I have lots they can choose from

What's the Difference? 2-4 players

Materials: A pack of twenty to thirty dot cards () to 10 dots in dice and regular patterne), counters or other objects to use as counters e.g. lego bricks, 1p celts, paste pieces.

Rules: Spread out ten cards face down and place the rest of the cards in a ple face down. The first player turns over the top ple card and places it baside the ple. He/she then chooses are of the spread cards and turns it over. The player works out the difference between the number of dots on each cord (using their pabbles annanged in two rules as a practical way to work this out). The player then takes that number of counters/objects. (For example, if one card showed 3 dots and the ather 8, the difference is 5 and so the player would take 5 counters.) The spread card is turned face down again in its place and the next player turns the top plic card and chooses one of the spread cards to turn over. Continue to take turns until all the plic cards have been used. The winner is the player with the most counters; therefore the attretegy is to remember the value of the spread cards so that the one rulesting in the maximum difference can be chosen.

Variations/Extensions

 Try to turn the spread cords that give the minimum difference, so the winner is the player with the fewest counters.

Rall a die instead of using pile cards. Stort with a set number of counters (say twenty), so that when all the counters have been claimed the game ends.

'Deal and Copy' game

3-4 playara

0-02000

20 × 20 × 5000

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Materials: Fifteen dot servic with a veriety of dat patterne representing the numbers from one to five and a plantiful supply of assuters, or other objects a.g. machare, buttone, piete pieces.

Rules: One child deals not not over if thes up to each other player. Each shill then uses the sourcers to replicate the arrangement of dots on hurber card and app the number shud. The dealsr theses each result then deals out a new cord to each player, placing it on top of the previous card. The children than rearrange their counters to metch the new cord. This continues until all the cords have been used.

Variations/Extensions

 Each child can predict sloud whether the new cord has more, fewer or the same number of data as the previous cord. The prediction is checked by the dealer, by sheerving whether counters need to be taken owny or odded.
 Encrease the number of data on the cords.



How Many?

Cover up a small number of pebbles [or any kind of object] with a cloth.



Ask your child to take some of the pebbles out from under the cloth and then suggest how many they think are still covered. Take the cloth away to check their suggestion

*You can make the task easier by allowing them to remove one or two more pebbles, or to feel the pebbles still hidden.



You can extend this game in various ways:

- "I'm covering up 15 cubes. How many would I have to take out for there to be 8 left under the cloth?"
- Give your child some cubes from under the cover, telling them how many are still hidden and ask "How many did I have to start with?"
- Start with a known number of pebbles and put them under the cloth. Ask your child to close
 their eyes while you add a few more pebbles. Ask child to remove cloth and count up the
 pebbles what was the "scerer number" added?"

Tell us what you think.......

Family Learning Evaluation) Bracknell Forest Council				
Session Attended: 'Magic Pebbles' (counting & early calculation skills) Tutor: Heather Williams					
We hope you have enjoyed today's session - In order for us to monitor the quality of ou we would be grateful if you could spend a couple of minutes completing the sections be	r courses, low:				
Your name:					
Did you enjoy your time in school today? Yes/No					
Did you learn something new? Please rate increase in knowledge/skills:					
+0 +1 +2 +3 +4 +5 +6 +7 +8 +9 +1	0				
Two things I have found useful today:					
We want our sessions to be as useful as possible - what could we do better?					
2. Want to do more/something else? We run a variety of short courses - please circle any of interest (many are FREE)					
Family Learning sessions: Maths /Literacy /anxiety /transition & change /other					
Parenting courses: Challenging behaviour/ self esteem/ sleep/ anxious thoughts & worries					
Back to work courses: working with children / be your own boss / retail / hospitality /					
customer service / food safety / health & safety / first aid					
Soft Skills: Managing change / confidence building/ team building/ effective communication					
English/maths for adults - informal 'café style' sessions (brush up skills / gain a qualification)					
IT skills: Word / Excel / Outlook / Power Point / IT for jobseekers					
Something else?					
Phone number/email address					
Thank you for your time					



Don't struggle on if concentration is wearing thin – ask me to find you another game to try ©

1 more, 1 less

Use a set of objects to explore what happens when things are added or taken away



"How many in your set?" (8) "Can you add (take away) one pebble?" "How many in your set now?" (9) / (7) "Can you write or draw what you did?" /

Comparing numbers

Use 2 sets to match & compare

Compare sets, using 'bigger' 'smaller' Compare objects, using 'more' 'fewer', how many more etc.



Addition with pebbles

Combine 2 (small) sets to practise addition

Throw the dice to randomly select 2 numbers & ask your child to get pebbles to match

"How many in this set?" (5) "How many in this set?" (3)



*encourage your child to push the 2 sets of pebbles together

"How many altogether?" (8)

Subtraction with pebbles

Make a larger set and remove a smaller number of pebbles from it

Throw the 6-10 dice to randomly select a larger number & ask your child to make a matching set of pebbles

Throw the 0-5 dice to randomly select a smaller number & ask your child to remove that number of pebbles from the set

"How many did we start with?" (9) "How many did we remove/take away?" (5) "How many left?" (4)



Splitting sets (Number Bonds)

- 'Number bonds' describe how 2 quantities combine to make a particular total. For example: combining 3 objects with another 4 objects gives us 7 objects altogether. [in short, 3+4=7]
- "Foundation blocks" for calculations, where children begin to see patterns in numbers and to learn mathematical principles and relationships.
- Lots of number bond practice with real objects will make a huge difference to children's mental arithmetic skills and to their speed and confidence in all calculation work.

<u>https://www.theschoolrun.com/what-are-number-bonds</u> <u>https://en.wikipedia.org/wiki/Number_bond</u>

Number bonds with pebbles

- Choose a number (use the 6-10 dice?) and get that number of pebbles
- Find all the different ways to split that number into 2 sets (how do you know you've found them all?)
- Draw or write the different ways



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3



Steve Wyborney



5



Progression in counting skills

		_	
Counting Skill		Age	in months
Show curiosity about numbers by offering comments or asking questions			I
Use some number names and number language, but not accurately			
Use some number names accurately in play e.g. "I have 2 cars"			0-20
Recognise groups with one, two or three objects	(Subitising)		
Recognise some numerals of personal significance e.g. "I am 4 years old" "My house number is a four and a two"			
Understand that when counting, number names must always be said in the same order			
Count up to three or four objects by saying one number name for each item	(1-1 correspondence)		
Count out up to six objects from a larger group			
Count actions or objects that cannot be moved e.g. spots/pictures of objects or the number of times they hear a clock chime			20-40
Begin to count beyond 10, but not always accurately			20-40
Begin to represent numbers using fingers, marks on paper or pictures			
Select the correct numeral to represent 1 to 5, then 1 to 9 objects			
Count an irregular arrangement of up to ten objects and understand that it doesn't matter which object you start the count with			
Estimate how many objects they can see and check by counting them			
Know that the last number said in the count identifies how many objects are in a set	(cardinality)		
Talk about order using 'first', 'second', 'third'			
Match two sets of objects, compare two sets of objects			
Count reliably up to ten everyday objects			
Recognise numerals 1 to 9			
Understands a quantity does not change if it is rearranged, covered up	(conservation of		40.60
Use language such as 'more' or 'less' to compare two numbers	number)		40-00
Find one more or one less than a number from one to ten			
Begin to relate addition to combining two groups of objects and subtracting to 'taking away'		`	
		*	

More info:

- <u>Early maths skills:</u> <u>how your child</u> <u>learns about</u> <u>number |</u> <u>TheSchoolRun</u>
 - How Children Learn
 to Count The
 Mathematical Brain
 (komodomath.com)