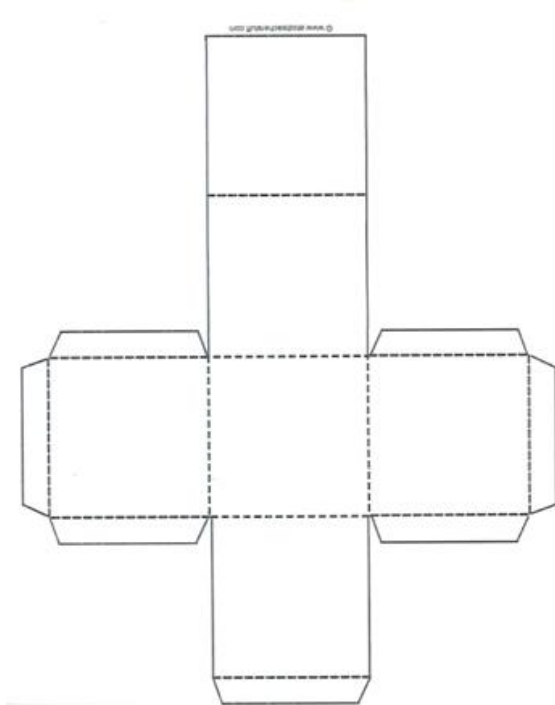


# Welcome!!

While you are waiting.....

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



## Instructions for making dice

1. Cut out the dice nets (adult)



2. Carefully fold along each of the bold lines (adult)



3. Help your child to 'customise' their dice



4. Cut 7 pieces of sticky tape ready to use



5. Work together to make the dice e.g. child holds the dice steady, adult applies tape



6. Get ready to have fun!



**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



Bringing learning to life

# Heather Williams

[Heather-L.Williams@bracknell-forest.gov.uk](mailto:Heather-L.Williams@bracknell-forest.gov.uk)

Bracknell Forest Council

**Bracknell Forest  
Family Learning  
Team**

Working with families in the  
community in partnership with  
schools and children's centres

**Bracknell Forest  
Community Learning**


Bracknell Forest Council

**Our Commitment**

We are committed to promoting learning for all and we welcome adult learners regardless of age, gender, race, disability, belief, sexual orientation, background or learning difficulty.

You have the right to feel safe where you learn, and your safety is extremely important to us. This leaflet gives you key information and various contact numbers to use if you, or someone you know, are at risk.

**1. Fire Regulations**

 Please familiarise yourself with the health and safety procedures and fire exits for the venue before your session begins.

**On hearing the fire alarm:**

- Leave the building by the nearest fire exit
- Do not stop to collect personal belongings
- Assemble at the appointed place where your tutor will take the register
- Remain at the assembly point until advised otherwise

**2. Accident**

If you have an accident, injury or 'near miss' while on the premises, please notify a member of staff. We will arrange any necessary assistance and ask you to complete an incident report form.

**3. 'Safeguarding'**

Our staff undertake Safeguarding training and understand the importance of safeguarding children and adults at risk from abuse.

Abuse is when someone does something to another person that damages their quality of life or puts them at risk of harm. Abuse may be physical, emotional, sexual, neglect, financial or discriminatory.

If you suspect that a **child or adult** is at risk of being abused or neglected, you should either:

- 1) Inform your tutor or another available member of staff
- 2) Telephone the **Bracknell Forest Safeguarding Children Team** on 01344 354014/  
**Bracknell Forest Safeguarding Adults Team** on 01344 351500
- 3) The council Out of Hours Team are available on 01344 786543 or Thames Valley Police on 101 (or 999 in an emergency)

You can also call these numbers if you are the person being abused.

# 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

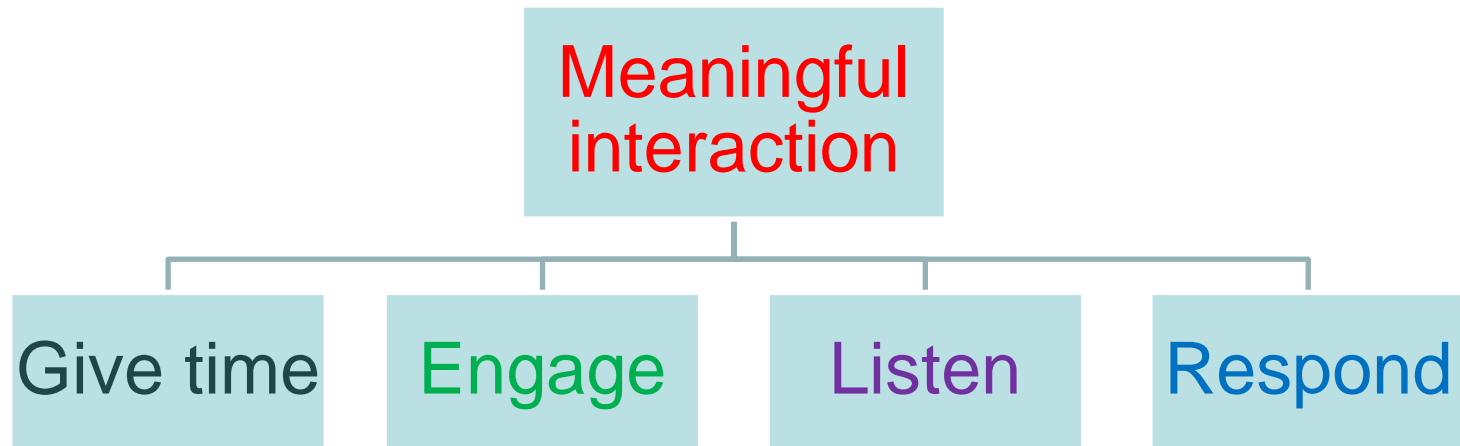
Activities with the children (30-45 mins, the length of an average lesson)

The children return to class

Summary and evaluation


# "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

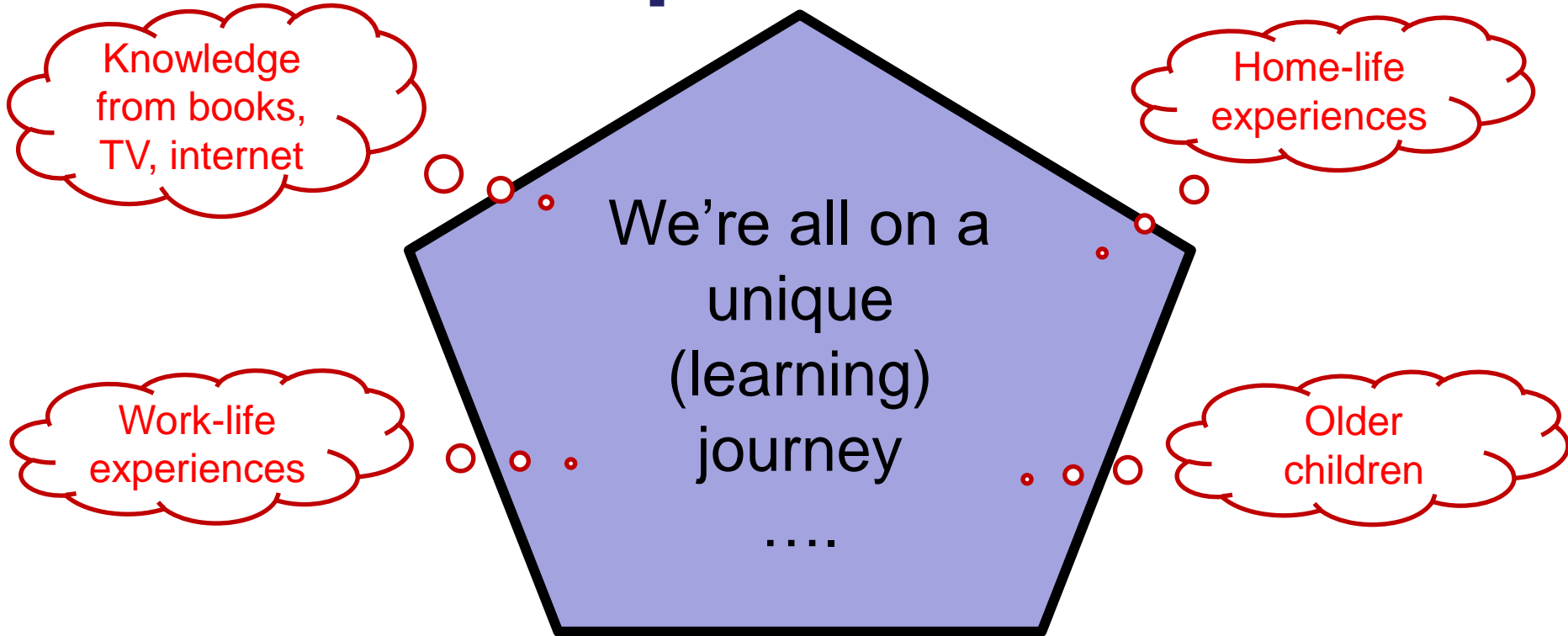


Your child may  
do it differently,  
we embrace  
and welcome  
individuality.

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

*Psychiatrist Edward Hallowell.*

# Unique Adult



*It's good to share* 👍

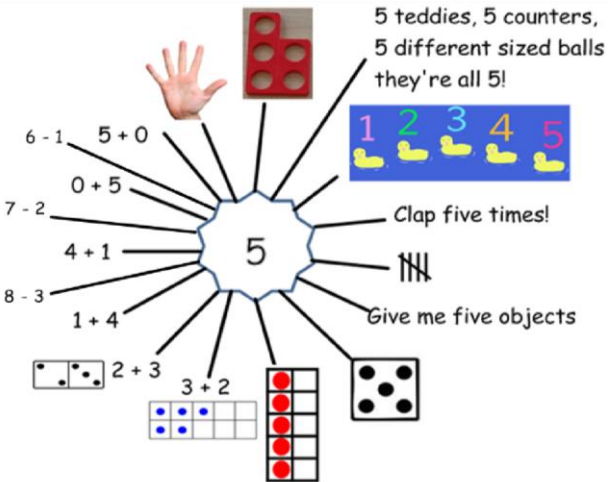
*Your well-being matters too* ❤️

# EYFS Early Mathematical Learning

**\*NOTE - "Have a deep understanding of the numbers up to 10 including the composition of each number"**

## The Story of Numbers

Know the story of each number up to 10 e.g.:



## The Four C's

### 1. Cardinality

The cardinal value of a number refers to the quantity of things it represents, e.g. the numerosity, 'howmanyness', or 'threeness' of three.

### 2. Counting

Counting is one way of establishing how many things are in a group, 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 from) two or more smaller numbers

## Shape and Space

Exploring spatial relations and the properties of shapes, in order to develop mathematical thinking (rather than on shape classification, which requires prior knowledge of properties)



## Maths Early Learning Goals

### Number

- Have a deep understanding of the numbers up to 10 including the composition of each number
- Subitise up to 5
- Automatic recall of number bonds to 5 and some number bonds to 10 including doubles facts

### Numerical Patterns

- Verbally count beyond 20, recognising the pattern of the counting system
- Compare quantities up to 10 in different contexts, recognising when one quantity is greater than, less than or the same as the other quantity;
- Explore and represent patterns within numbers up to 10, including evens and odds, double facts and how quantities can be distributed equally.

## Subitising

"What do you see and how do you see it?"



I see a 2+2, 2+1+1, 1+1+1+1, 3+1, 4+0

## Pattern

Looking for and finding patterns helps children notice and understand mathematical relationships

- Continuing a pattern
- Copying a pattern
- Creating a pattern
- Spotting errors in patterns



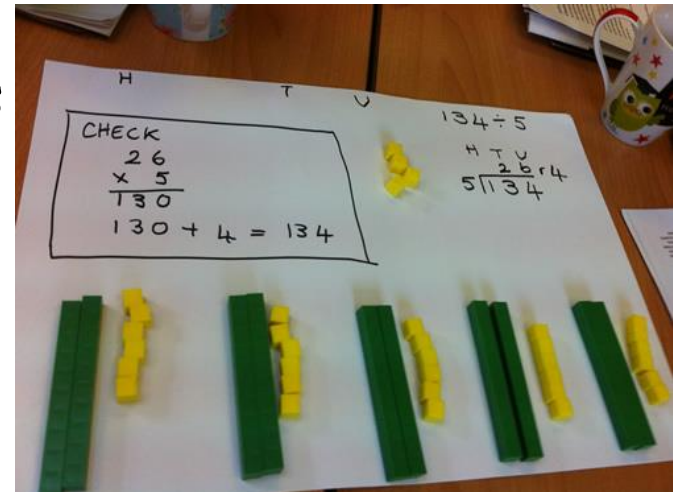
0	1	2	3	4	5	6	7	8	9	10
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Take a look at this video to find out more about [Early Number Sense](#)

# 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



Today, it's all about 'Mastery' - find out more [here](#)

Confidence

Competence

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

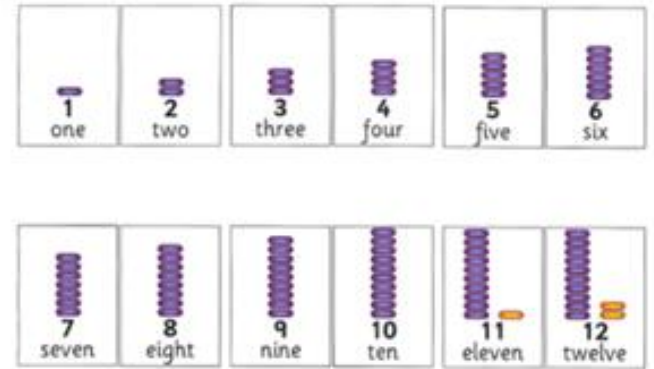
<b>SOLID FOUNDATION</b>	<b>DEEP LEARNING</b>	<b>RICH EXPERIENCES</b>
<b>MAKE LINKS</b>	<b>LOVE OF MATHS</b>	<b>CONFIDENT MATHEMATICIAN</b>

# Your kit.....

Dice



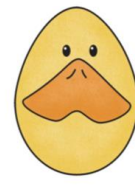
0-20 number cards  
(place value highlighted)



Pebbles & bag



activity sheets

<p><b>Hidden Jewels</b> Saying how many there are without counting</p> <p>Children enjoy colour hiding games, especially if they involve gems, jewels or golden coins!</p> <p>Adults could provide 'hide and reveal' games that prompt children to count or see the number of the group without counting.</p> <p><b>The Activity</b> Put three dice in one cup, two and three 'jewels' (small objects). Quickly lift and replace one cup and challenge your child to say how many there are. Swap the jewels around rapidly for a minute. When you stop, can they point to the cup with 'three' left the cup and say if they get 'outside' the number they are right.</p> <p><b>Encouraging mathematical thinking and reasoning:</b></p> <p><b>Describing</b> Can you see how many there are? How did you see them? (Just as a three, six a two and a three, as three lots of one-one, diceless in terms of patterns or shapes)</p> <p><b>Reasoning</b> How do you know these were three?</p> <p><b>Working Out</b> Can you make three different patterns with this number? How can you arrange the jewels so you can quickly see there are five? How many more do you need to make ten?</p> <p><b>Reasoning</b> Using, drawing, colour or take a photo for your favourite patterns for 3, 6, 9.</p>	<p><b>Quack Attack Shake and Spill</b></p>  <p><small>www.twinkl.co.uk</small></p>	<p><b>Show Me</b> Understanding ordinal numbers Reading number and amounts</p> <p><b>The Activity</b> Children create patterns and arrange them however you choose in a pattern, or a mixture of different colours. Ask your child to make their best of 3 orders.</p> <p><b>Encouraging mathematical thinking and reasoning:</b></p> <p><b>Describing</b> What does this pattern of the look like? How does my box look different from your box? What can you see?</p> <p><b>Reasoning</b> How do you know these are the same number? What is the same and what is different about these boxes?</p> <p><b>Working Out</b> What different patterns can you make with five pebbles? Can you see any number patterns (two, three, pattern or two)? Can you draw the 'five pebbles' in three different ways (use both hands)?</p> <p><b>Reasoning</b> Can you draw or record your patterns? Can you see anything in the shape to show how many there are? Can you use one number to show what three numbers you see?</p> <p><b>Five Squares</b> Choose another number between 3 and 10 - what patterns can you make? How many different patterns? How many more numbers can you find? Can you draw a 10 pebbles to help you to recognize different numbers and make a 10 pebbles pattern?</p>
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# 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 .

Rational counting is **counting 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

5 mins

# 1 - Practising counting

- Ask your child to count out 20 magic pebbles
  - Watch how they count:
    - Do they use 1:1 correspondence? *(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.*



# 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.

5 mins

# 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

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.....

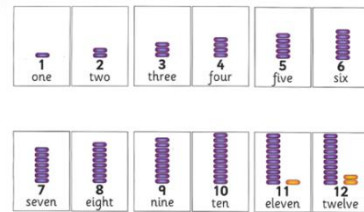
# Developing number sense: The Four "C"s

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

5 mins

# 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)



You might like to ask them to put the cards in order, and see how far they get - prompt them with questions such as 'what number comes after.....!'

- 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.....

5 mins

# 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 *"How is my 5 the same as (different to) your 5?"*

Five and ten frames can be used as a way to organise counting, helping children to develop number relationships

5 Frame

--	--	--	--	--

10 Frame


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

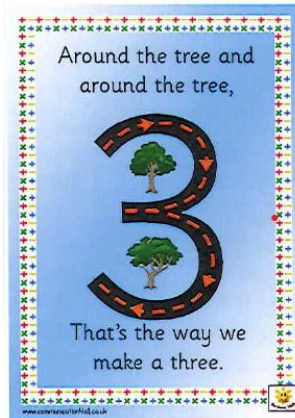
Activity idea: 'Which number is greater'

5 mins

# 5 - Making dice

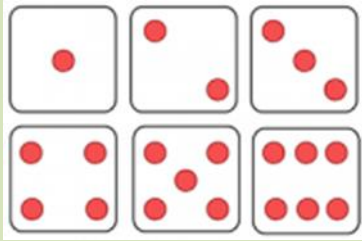
- Work with your child to put spots/numbers (or both!) on the dice nets. E.g. 0,1,2,3,4,5 and 6,7,8,9,10,☺

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



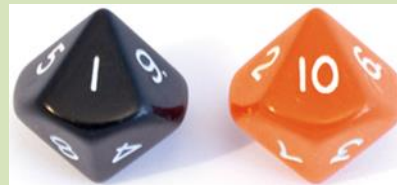
- Work as a team to assemble the dice





Make more dice at home:

[http://www.firstpalette.com/Craft\\_themes/Alphabet\\_and\\_Numbers/paperdice/paperdice.html](http://www.firstpalette.com/Craft_themes/Alphabet_and_Numbers/paperdice/paperdice.html)



5 mins

# 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 (1 to 10 dots in dice and regular patterns), counters or other objects to use as counters e.g. lego bricks, 1p coins, pasta pieces.



Rules: Spread out ten cards face down and place the rest of the cards in a pile face down. The first player turns over the top pile card and places it beside the pile. He/she then chooses one of the spread cards and turns it over. The player works out the difference between the number of dots on each card (using their pebbles arranged in two rows 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 other 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 pile card and chooses one of the spread cards to turn over. Continue to take turns until all the pile cards have been used. The winner is the player with the most counters; therefore the strategy is to remember the value of the spread cards so that the one resulting in the maximum difference can be chosen.

### Variations/Extensions

1. Try to turn the spread cards that give the **minimum** difference, so the winner is the player with the **fewest** counters.
2. Roll a die instead of using pile cards. Start with a set number of counters (say twenty), so that when all the counters have been claimed the game ends.

## 'Deal and Copy' game

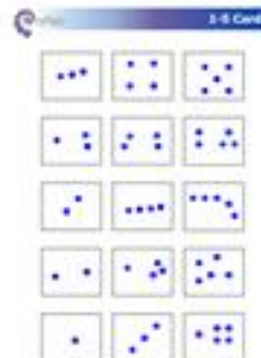
2-4 players

Materials: Fifteen dot cards with a variety of dot patterns representing the numbers from one to five and a plentiful supply of counters, or other objects e.g. washers, buttons, pasta pieces.

Rules: One child deals out one card face up to each other player. Each child then uses the counters to replicate the arrangement of dots on his/her card and says the number aloud. The dealer checks each result, then deals out a new card to each player, placing it on top of the previous card. The children then rearrange their counters to match the new card. This continues until all the cards have been used.

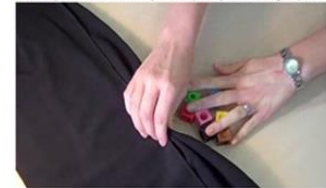
### Variations/Extensions

1. Each child can predict aloud whether the new card has more, fewer or the same number of dots as the previous card. The prediction is checked by the dealer, by observing whether counters need to be taken away or added.
2. Increase the number of dots on the cards.



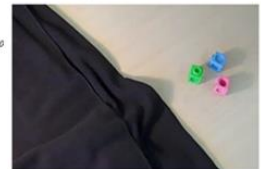
## How Many?

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 cloth, 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 'secret number' I added?"

# Tell us what you think.....😊

 **Family Learning Evaluation** 

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 our courses, we would be grateful if you could spend a couple of minutes completing the sections below:

Your name: ..... Date: .....

**1. Glad you came?**

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	+10
----	----	----	----	----	----	----	----	----	----	-----

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

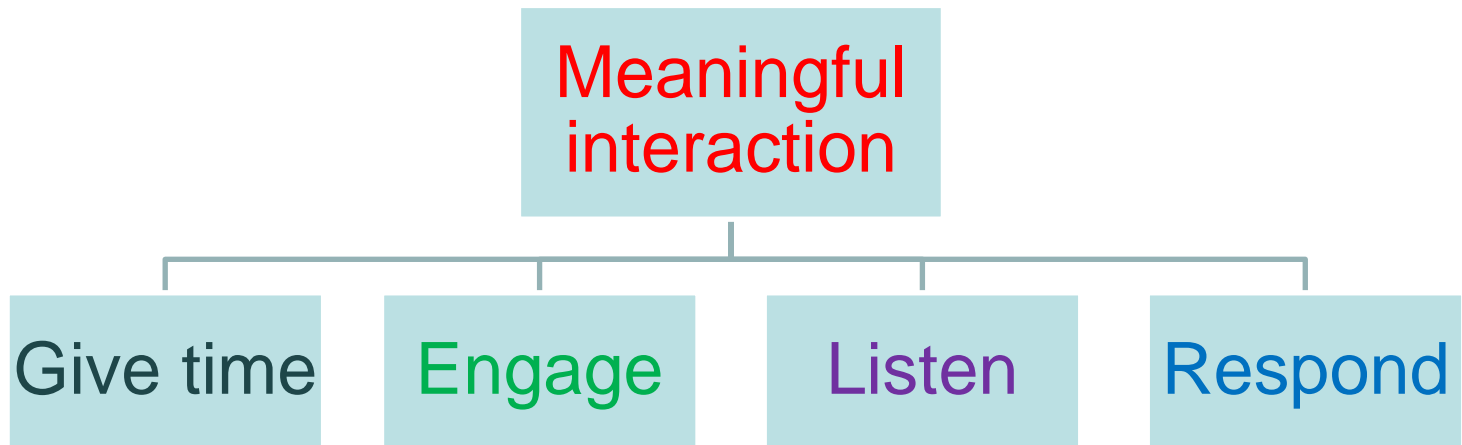
Something else? .....

Phone number/email address.....

*Thank you for your time*

# Time for the tiddly peeps.....

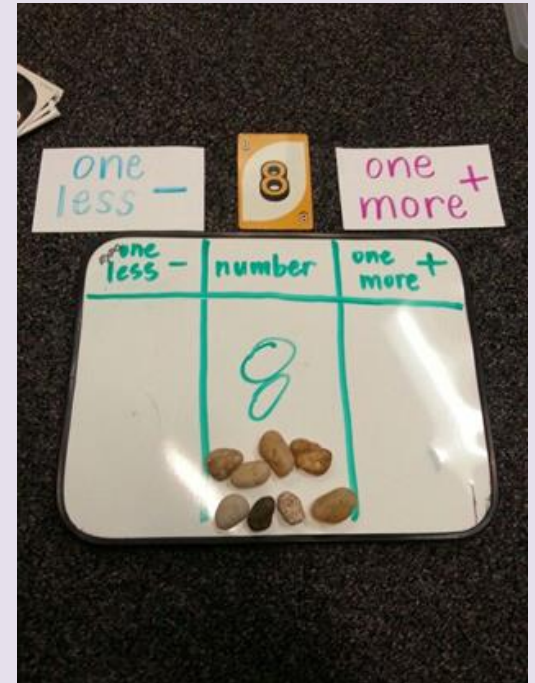
Remember:



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)

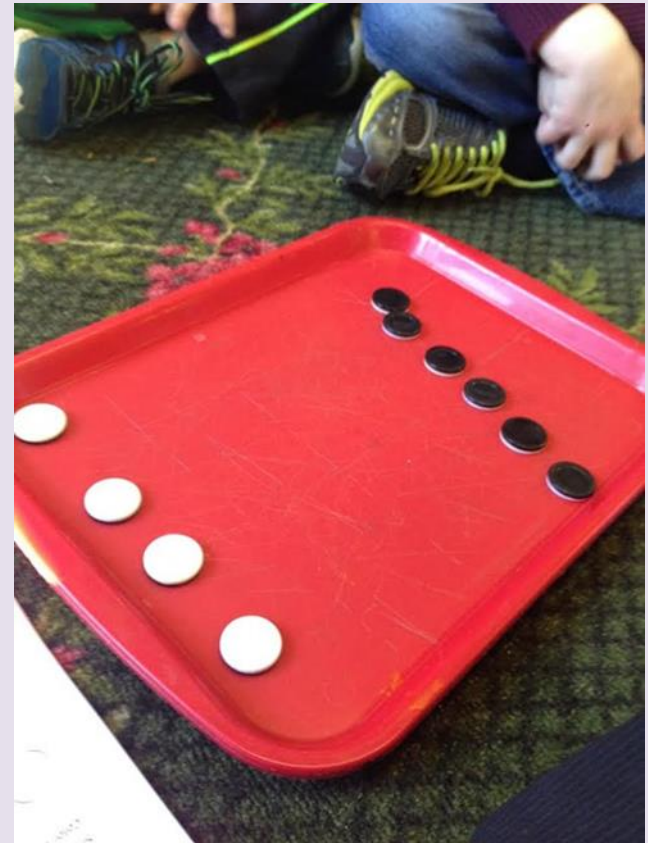
"Can you write or draw what you did?"

# 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)

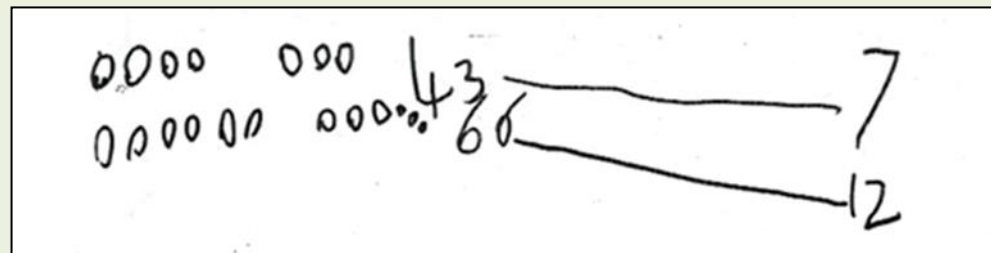
- 'Number bonds' describe how 2 quantities combine to make a particular total. For example: combining 3 objects with another 4 objects gives us 7 objects altogether. [in short,  $3+4=7$ ]
- "Foundation blocks" for calculations, where children begin to see patterns in numbers and to learn mathematical 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.

<https://www.theschoolrun.com/what-are-number-bonds>

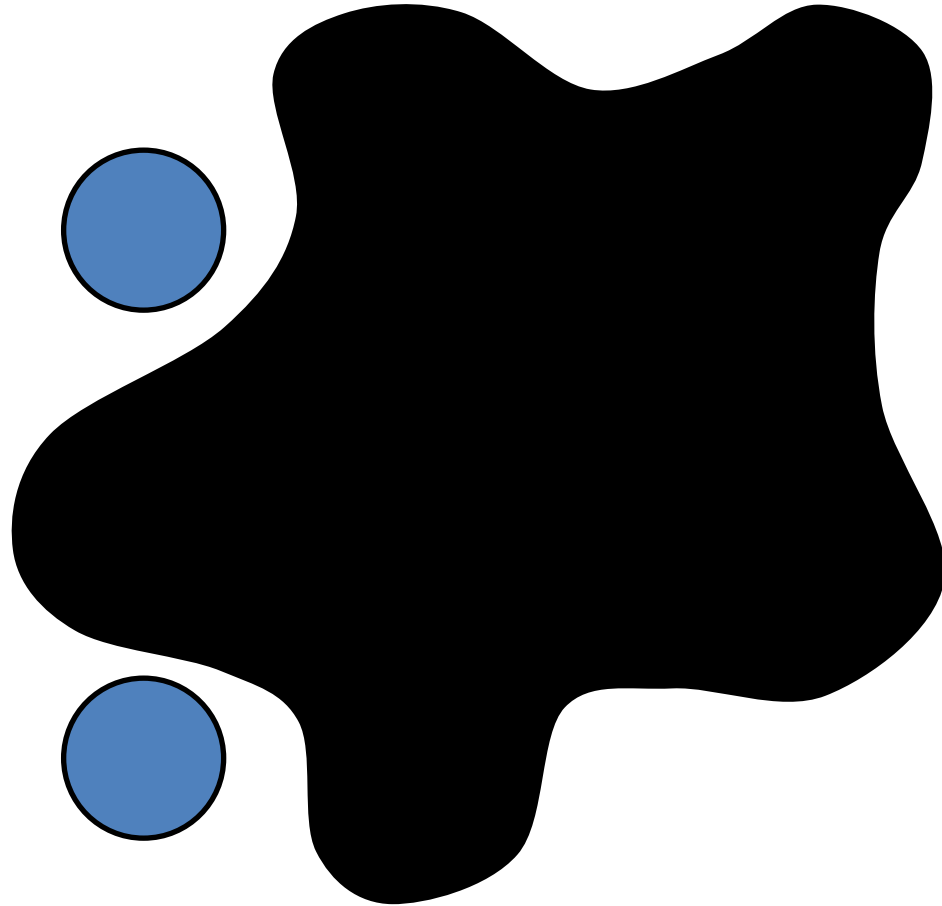
[https://en.wikipedia.org/wiki/Number\\_bond](https://en.wikipedia.org/wiki/Number_bond)

# Number bonds with pebbles

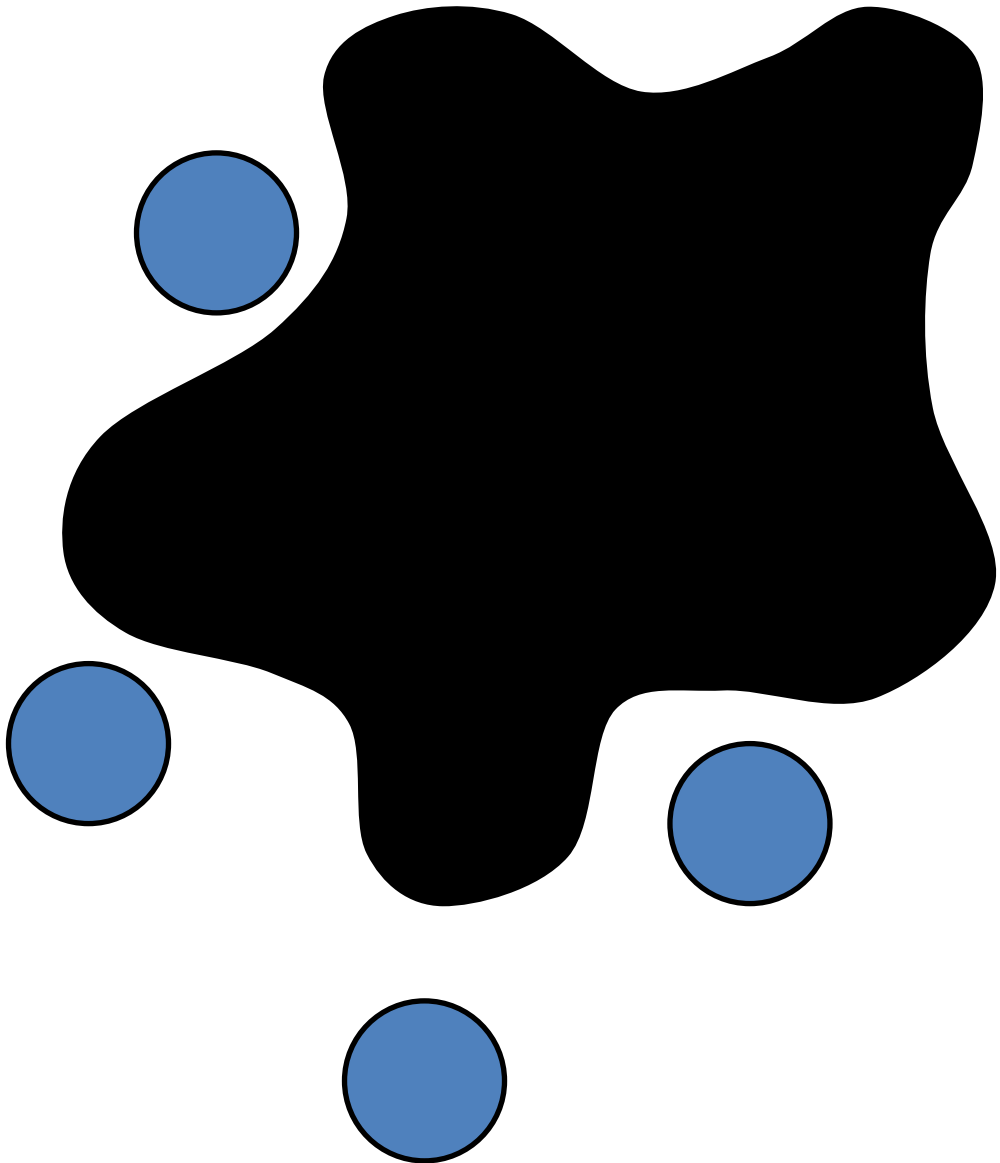
- Choose a number (use the 6-10 dice?) and get that number of pebbles
- Find all the different ways to split that number into 2 sets (how do you know you've found them all?)
- Draw or write the different ways



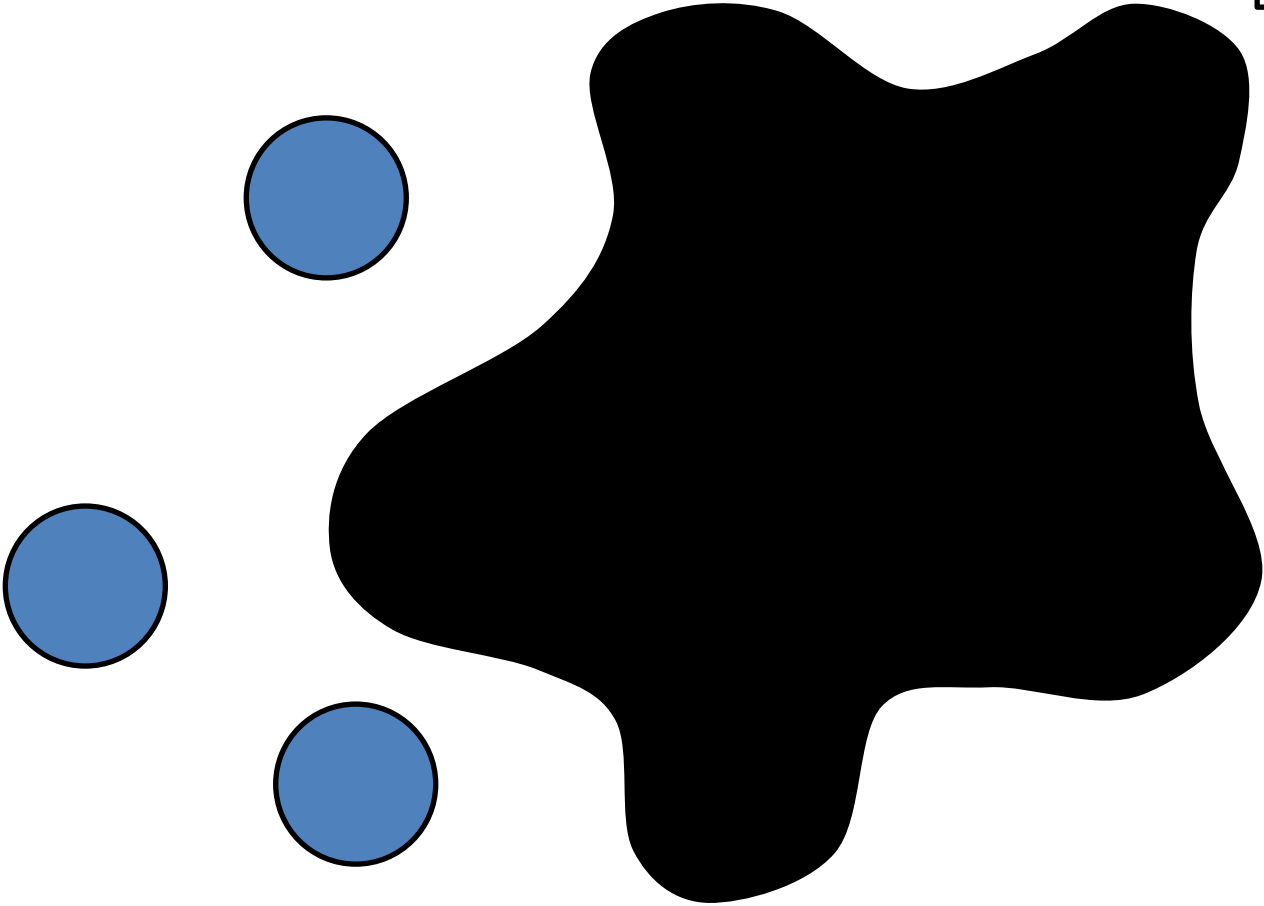
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5



7



# Progression in counting skills

Counting Skill		Age in months
Show curiosity about numbers by offering comments or asking questions		0-20
Use some number names and number language, but not accurately		
Use some number names accurately in play e.g. "I have 2 cars"		
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)	
<b>Count out</b> up to six objects from a larger group		
Count actions or objects that <b>cannot be moved</b> e.g. spots/pictures of objects or the number of times they hear a clock chime		
Begin to count beyond 10, but not always accurately		
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 <b>reliably</b> up to ten everyday objects		
Recognise numerals 1 to 9		40-60
Understands a quantity does not change if it is rearranged, covered up or hidden behind a box	( conservation of number)	
Use language such as 'more' or 'less' to compare two numbers		
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:

- [Early maths skills: how your child learns about number | TheSchoolRun](#)
- [How Children Learn to Count - The Mathematical Brain \(komodomath.com\)](#)