Maths Activities for Helping with Numeracy at Home

DISCOVERY COLLEGE
智新書院

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Ten Guidelines for Developing Numeracy at Home*

1. Count everything and anything!
2. Talk aloud as you work
3. Use mathematical language
4. Look for and take advantage of numeracy opportunities
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6. When reading books, discuss aspects of numeracy
7. Play simple games with your child
8. Ask questions and encourage the sharing of strategies
9. Look for, explore and describe patterns
10. Provide "models" at home for your child to play with or for them to see you using

*adapted from Mem Fox, The Sunday Mail, 21 November, 2004

Easy Ideas for Incorporating Maths into Daily Routines

Ask your child to explain how he/she worked it out.

Recognise and read numbers

- Show them the number that matches their age, and when they recognise that, ask what their number is?
- What their young friends number is. For example in our family, we have some children who are 1, some who are 2, some who are 3, and some who are 5.
- Look at the number on your letter box.
- Read numbers on the pages of books.
- Look for numbers in the environment like speed limits, street numbers, numbers on buses, and car number plates.
- Play games with cards to match numbers (eg Snap)

With older children:

- Take opportunities to read larger numbers eg in newspapers, on TV, in the lotteries, in the bank, etc. talk about the ways numbers are named and their value eg how much is 1.3 billion?

Count everything

- Count fingers toes, feet, hands, noses, eyes, and when reading stories with your child, ask questions like how many frogs/pigs/ducks/children/butterflies, bees, etc, then cover one over and ask questions like "How many now?"
- Play board games- using dice.
- Play simple card games.
- Do basic dot-to-dot puzzles.
- Let your child help set the table – ask questions like "How many plates/knives, forks, spoons do we need?"

With older children:

- Play counting games eg Play counting games eg start counting at numbers other than one, count in intervals, count backwards, …
- Give opportunities to count money frequently

Time

- Look at the time often.
- Talk about what time it is when we have breakfast, and what time it will be when we go to school, or go to bed and so on. Talk about what time their favourite television programme comes on, and how long it goes for, and how long it will be before it starts.
- Talk about days of the week, and the things we do on different days of the week, like which days are school days, and which day we go to ballet or have sports practice or go swimming.
- Talk about the seasons, and the kinds of things that happen in various seasons, the clothes we wear and the kinds of activities we engage in.

With older children:

- Pose questions eg we have to leave for soccer at 6.30pm. How much time have we got left?
- Encourage them to be responsible for getting themselves ready by certain times
- Encourage them to use a calendar to remember weekly activities, chores, etc and to plan time for preparing assignments and learning for tests

Fractions

- Cutting sandwiches/bread/toast into halves and quarters in different ways.
- When you are cooking allow the children to measure half a cup/ or fill the jug to 125ml, or teaspoons/ tablespoons.

With older children:

- Talk about situations where fractions are involved eg at what stage do you decide to fill up the petrol tank? How can we make sure everyone gets an equal share of the drink?
- Pose questions to get them thinking about how fractions are used in a wide range of everyday situations eg How many minutes are in half an hour? How do you know? If one kilometre is 1000 metres how far is quarter of a metre?
- Pose story problems eg Ben ate 2/3 of the pizza and Joe ate 1/6 ,how much of the pizza did they eat altogether? How much was left?

The four processes (addition, subtraction, multiplication and division)

- Pose and create "sum stories" (e.g How can we share these biscuits or lollies so that everyone gets an equal amount?)
- Talk about how they worked it out.

Spatial awareness/visualisation

- Name shapes in the house or the neighbourhood
- Go on a triangle walk.
- Use language to describe shapes (eg 2D, 3D, side, corner, etc)
- Do lots of jigsaws, and wooden puzzles, manipulating shapes, turning them over and around to make them fit.
- Playing with construction toys- manipulating blocks, and building roads and bridges, and houses, etc
- Play memory games.
- Look at the street directory at where you live, and how you would get to familiar places.
- Give simple directions (e.g go through the passage door, turn left and look behind the table. What do you see?)

With older children:

- Encourage them to use local maps, GPS to find unfamiliar places.
- Encourage them to use wold & local maps to plan the routes for family holidays

Money

- Allow your child to play with and use money
- Let your child pay for things like milk, bread etc, at the supermarket, and get the change
- Look at toy catalogues and talking about money and how much they could buy, or how much they would need., or what they could buy if they had $20, $50, $100 etc.

With older children:

- Catalogues are great. Ask them to use the junk mail to show you what they would like for birthdays or Christmas presents if they had $50 (or $100) to spend.
- When they want a new toy or game, encourage them to plan how they will save up the money to pay for it

Patterns. Look for patterns everywhere…

- in clothing and on curtains and quilt covers etc
- in the environment like fences, brickwork, lattice etc.
- in the sequences of traffic lights etc.
- in music and movement etc.
- with money – sorting coins.
- Make all kinds of patterns with shells, buttons, bottle tops, blocks, lego etc.
- Make patterns that go round in circles, up and down etc.

With older children:

- Play pattern games. One person starts with a pattern and the other person has to guess how the pattern continues. These can vary in complexity eg 1 3 5 7 (odd numbers) ….. OR 1 2 4 8 16 (doubling) OR …..6 3 9 6 12 9 (up 6 down 3) These games also greatly assist with the development of mental computation.

Measurement

- Sandpit play, fill different kinds of containers, and pour from one to another. See how many cups fill up the bucket etc.
- Bath play with different containers.
- When you are cooking allow the children to fill the jug to 125ml, or to count teaspoons or tablespoons.
- Explore length – is this sock long enough for your foot? Look how much you have grown, your sleeves don't reach your wrist…
- Sort the books and order them biggest to smallest.
- Rearrange bedroom furniture to make more floor space
- Play with rulers or measuring tapes
- Use language associated with size.

With older children

- Talk about how much petrol your golf cart holds, how many kilometres you can get on a full tank, how much time it takes to travel from A to B
- Involve them in planning projects at home eg buying new furniture Will it fit in that space? Buying new carpet – how much do you need to cover the room? Buying paint? How much will you need to paint the room?

Chance

- Use the language of chance e.g. how likely is it that it will rain today? You probably won't get that bike you asked for.
- Play heads and tails.
- Play a range of board games based on chance. Talk about winning and losing.

With older children:

- Discuss competitions (eg as advertised in magazines) and talk about chances of winning.

Data

- Pose simple questions and talk about them (e.g. I wonder how many different types of animals there are in the children's zoo? Which animal in the zoo eats the most in one day? How would we find out?)

With older children:

- Discuss a range of data as it is presented in the media, especially in relation to the messages the authors are trying to convey.
- Involve children in collecting data to make decisions before purchasing items eg how will you decide which one to buy? Where is the best place to buy it from? Etc.

Junior Primary

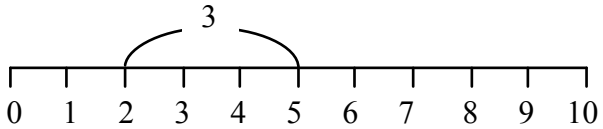
Shape activity
At home, or when you are out, look at the surface of shapes.

- Ask your child – what shape is this plate, this mirror, the bath mat, the tea towel, the window, the door, the red traffic light, and so on.
- Choose a shape for the week, e.g. a square. How many of these shapes can your child spot during the week, at home and when you are out?

Dice game
You need a 1–6 dice, paper and pencil.

- Take turns.
- Choose a number between 1 and 10 and write it down.
- Throw the dice and say the dice number.
- Work out the difference between the chosen number and the dice number, e.g. if you wrote down a 2 and the dice shows 5, the difference is 3.

You could also draw a number line to help your child to see the difference between the two numbers.



How old?
Start with your child's age. Ask your child:

- How old will you be when you are 1 year older?
- How old were you last year?
- How old will you be 10 years from now?
  ... and so on.

Pattern
Pattern is the basis of all mathematics. They exist everywhere in our world. Encourage your children to see pattern as a sequence of repeating units.

- watch the patterns on the computer's screen saver
- look at the tiling in the bathroom or on the verandah
- talk about patterns in daily routines, in music, in dances

Cover up
A game for 2-4 players.

This game helps us learn our addition facts from 1+1 to 6+6

To play you need:

- two dot dice
- counters
- each person needs their own 2-12 number strip

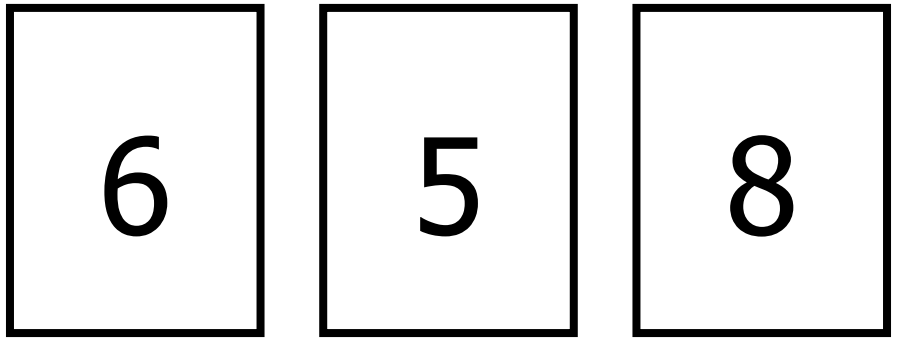
2	3	4	5	6	7	8	9	10	11	12

How to play the game:

- Each player has their own 2-12 number strip in front of them. They take turns to roll the 2 dice, add the total of dice and cover that number on their own number strip For example, if 3 and 4 were rolled the seven would be covered.
- The person who has covered all of their numbers first is the winner.

Who has more?
A game for 2-4 players

To play you need a pack of playing cards with the pictures removed (Keep the Ace, it equals one. You can use the Joker to equal 0)



How to Play

- Deal the pack so that each person has the same number of cards.
- The players hold the cards upside down in their hands
- Simultaneously, they place the top card face up on the table in front of them.
- The person who has the largest number takes all of the cards and places them at the bottom of the pack.

Additional challenges:
In order to take the pack the person has to say how many more.

- Each person places 2 cards out to make a 2-digit number (or 3 to make a three digit number)
- Each person adds (or multiplies) the total of their digits before saying which is bigger.

Pick up ten

A game for 2-4 players.

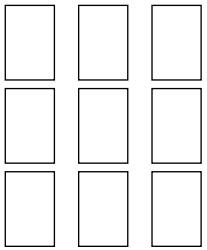
This game helps us learn our tens facts.

To play the game you need:

- Playing cards with the picture cards removed (Keep the Ace. It equals one. You can use the Joker to equal 0). Ideally one pack per person playing. Use packs with different backs, so the packs can be sorted after the game!!

How to play the game:

One person deals out all the cards face up into three rows of three.



Players take turns to "pick up ten" by combining cards which make ten. As they pick the cards up, they must say aloud how they are making ten.

For example,
8 and 2 is ten or
6 and 3 and 1 is ten

As players become more confident and competent with playing they can use other processes, for example,
9 and 4 take away three is ten or
6 lots of two plus one take three makes ten

How heavy?
You will need some kitchen scales that can weigh things in kilograms.

- Ask your child to find something that weighs close to 1 kilogram.
- Can he / she find something that weighs exactly 1 kilogram?
- Find some things that weigh about half a kilogram etc.

Out and about

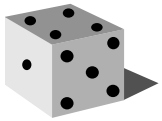
- During a week, look outside for 'thirties' numbers, such as 34 or 38, on house doors, number plates, bus stops, etc. How many can you spot? What is the biggest one you can find?
- Next week, look for 'fifties' numbers, or 'sixties'…

How much?

- Once a week, tip out the small change from a purse. Count it with your child.

Number facts
You need a 1–6 dice.

- Take turns. Roll the dice. See how quickly you can say the number to add to the number on the dice to make 10, e.g.

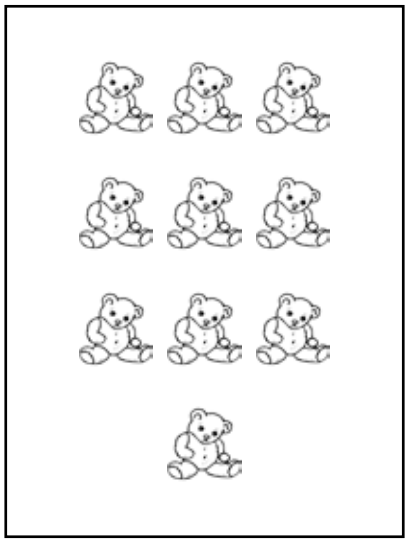


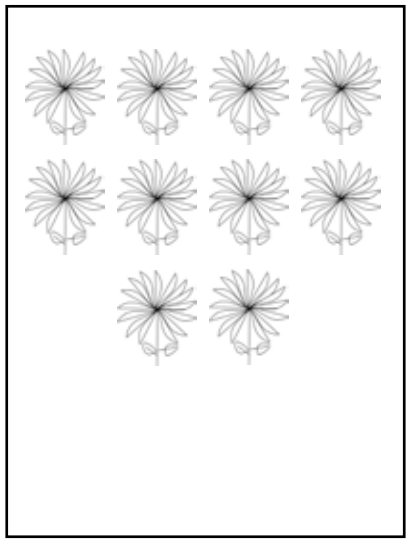
and 6

- If you are right, you score a point.
- The first to get 10 points wins.

You can extend this activity by making the two numbers add up to 20, or 50.

Number lines
Cut out pictures in groups of 10, for example 10 cars, 10 dogs, etc. Stick each group of 10 on a page to make a number line to 100.





- Help your child to learn about numbers by counting in 10's from any number, e.g. 9, 19, 29.

Board games

- With your child, use a 100 square to make a board game about something that interests your child. Make up your own rules to play the game, e.g. a dice throw means move 2 places for each number, use a coin instead of a dice.

- Play any board games you have at home which use counting, e.g. Snakes and Ladders, Bingo.

- Play various card games e.g. Pontoon - making numbers to 20. Modify other games to include addition, e.g. make the rule for Go Fish to make 20 rather than get 2 cards the same.

Encourage your child to work out problems mentally and share their strategy.

- Ask your child for a number, e.g. 27, do something to it, e.g. subtract 10, say the answer, e.g. 17. The child says another number, e.g. 73, do the same thing. Say the answer, e.g. 63. Child has to guess what is happening to the number each time. Continue the game by reversing the roles.

Ask your child to find shapes around the house, which are symmetrical and non-symmetrical, regular or irregular.

Measuring

Provide "models" at home for your child to play with or for them to see you using.

For example:

Length

- tape measures
- rulers
- scales

Capacity

- calibrated measuring cups
- measuring spoons/scoops
- use a wide range of plastic containers in the bath and/or sand pit

Time

- analogue clock
- digital clocks
- a range of timers
- calendars/diaries/timetables

Temperature

- thermometer

When measuring any objects in the home, ask your child to help you estimate the weight, length, area, capacity etc and then use measurement tools to find the exact measurement. Compare the estimates with the actual answers.

Primary

Number facts

Take turns. Roll 2 dice. See how quickly you can say the sum of the two numbers you roll. Modify game to make more challenging. If you roll a 6 and a 5 – you have to say the number that needs to be added to make 20 e.g. 5 and 6 make 11 so to get to 20 you will need to call out 9.

Number game

Use three dice.

If you have only one dice, roll it 3 times.

- Make three-digit numbers, e.g. if you roll 2, 4 and 6, you could make 246, 264, 426, 462, 624 and 642.
- Ask your child to round the three-digit number to the nearest multiple of 10. Check whether it is correct, e.g. 76 to the nearest multiple of 10 is 80. 134 to the nearest multiple of 10 is 130. (A number ending in a 5 always rounds up.)
- Roll again. This time round three-digit numbers to the nearest 100.

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Tables
Practise the 2x, 3x, 4x, 5x, 6x, 7x, 8x, 9x and 10x tables. Say them forwards and backwards.

Ask your child questions like:
What are five threes? What is 15 divided by 5?
Seven times six? How many eights in 64?

Measuring
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For example:

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- A wide range of plastic containers in the bath and/or sand pit

Time
- analogue clock
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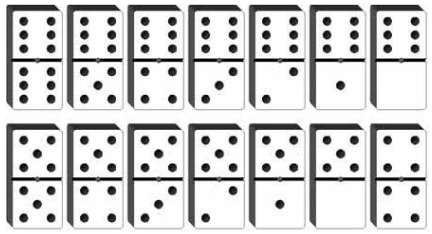
Temperature
- thermometer

Use a tape measure that shows centimetres.
- Take turns measuring lengths of different objects, e.g. the length of a sofa, the width of a table, the length of the bath, the height of a door.
- Record the measurement in milimetres, centimetres, or metres. e.g. if the bath is 165 cm long, you could say it is 1m 65cm or 1.65m.
- Write all the measurements in order.

Number game
You need about 20 counters or coins.
- Take turns. Roll two dice to make a two-digit number, e.g. if you roll a 4 and 1, this could be 41 or 14.
- Add these two numbers in your head. If you are right, you win a counter. Tell your partner how you worked out the sum.
- The first to get 10 counters wins.
- Now try subtracting the smaller number from the larger one.

Dominos
- Put some dominoes face down.
- Shuffle them.
- Each choose a domino.
- Multiply the two numbers on your domino.
- Whoever has the biggest answer keeps the two dominoes.
- The winner is the person with the most dominoes when they have all been used.



Finding area and perimeter

Perimeter = distance around the edge of a shape
Area of a rectangle = length x breadth (width)

- Collect 5 or 6 used envelopes of different sizes.
- Ask your child to estimate the perimeter of each one to the nearest centimetre. Write the estimate on the back.
- Now measure. Write the estimate next to the measurement.
- How close did your child get?
- Now estimate then work out the area of each envelope.
- Were perimeters or areas easier to estimate? Why?

You could do something similar using an old newspaper, e.g.

- Work out which page has the biggest area used for photographs.
- Choose a page and work out the total area of news stories or adverts on that page.

How much?

- While shopping, point out items that together cost $100.
- Ask your child to work out in their head the cost of 3 items.
- Ask them to guess first.
- See how close they come.
- If you see any items labelled, for example, '2 for $26.50', ask them to work out the cost of 1 item for you, and to explain how they got the answer.

TV addicts

Ask your child to keep a record of how long he / she watches TV each day for a week. Then ask him / her to do this.

- Work out the total watching time for the week.
- Work out the average watching time for a day (that is, the total time divided by 7).

Instead of watching TV, you could ask them to keep a record of time spent eating meals, or playing outdoors, or anything else they do each day. Then work out the daily average.

Four in a line

Draw a 6 x 7 grid.
Fill it with numbers under 100.

- Take turns.
- Roll three dice, or roll one dice three times.
- Use all three numbers to make a number on the grid.
- You can add, subtract, multiply or divide the numbers, e.g. if you roll 3, 4 and 5, you could make 3 x 4 – 5 = 7,
- 54 ÷ 3 = 18, (4 + 5) x 3 = 27, and so on.
- Cover the number you make with a coin or counter.
- The first to get four of their counters in a straight line wins.

Rhymes
Make up rhymes together to help your child to remember the harder times-tables facts, e.g.:

6 x 7 = 42 phew! 7 x 7 = 49 fine! 6 x 8 = 48 great!

Favourite food

- Ask your child the cost of a favourite item of food.
- Ask them to work out what 7 of them would cost, or 8, or 9.
- How much change would there be from $1000?
- Repeat with his / her least favourite food.
- What is the difference in cost between the two?

Sale of the century (Year 6)

- When you go shopping, or see a shop with a sale on, ask your child to work out what some items would cost with:

  50% off
  25% off
  10% off

Websites with Interactive Games for Students

www.topmarks.co.uk/Interactive.aspx?cat=8

www.sowashco.k12.mn.us/ro/Pages/studentlinks/math/K-1math.htm

www.woodlands-junior.kent.sch.uk/maths

www.ictgames.com

www.nlvm.usu.edu/en/nav/topic_t_1.html

www.bbc.co.uk/schools/ks2bitesize/maths

www.funbrain.com/brain/MathBrain/MathBrain.html

www.apples4theteacher.com/math.html

www.coolmath4kids.com

www.mathematics.hellam.net

www.cemc.math.uwaterloo.ca/mathfrog/main.shtml

www.resources.kaboose.com/games/math2.html

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