MATHEMATICS AND ME AT HOME

Kindergarten to Year Six

FOR <u>EXCLUSIVE USE</u> OF FAMILIES AND TEACHERS OF ST. JOHN THE APOSTLE NARRAWEENA

CONTENTS

MATHEMATICS IN THE HOME ENVIRONMENT

Connection between family and school plays an important part in a child's education. This book of activities is designed to help you to work with your child to improve their understanding and application of mathematics. It contains activities that you can do with your child to explore mathematics at home.

On each activity page there is a section titled: What are you learning?

This section tells parents what skills the task is designed to improve. If you are unsure of any terminology please refer to the glossary.

If you and your child are more comfortable using a language other than English, please use it. Your child will understand concepts better in the language that he or she knows best. The most important thing is for you to be enthusiastic about mathematics.

How can I help my child?

- **Be positive and let your child know you think maths is important!**

- **Talk about the ways different family members use maths to get jobs done both at work and at home.**

- **Praise your child when they make an effort and engage with 'hard thinking' this will encourage them to persist when problem solving.**

- **Share in your child's excitement when they understand something for the first time.**

- **Encourage your child to give explanations. Ask them to prove it!**

Handfuls (1 or more people)

From EMU Specialist Teacher Course – Dr. Ann Gervosoni

What are you learning?

- **Recognising number structures**
- **Partitioning**
- **Addition**
- **Multiplication**
- **Skip counting**

What you need:

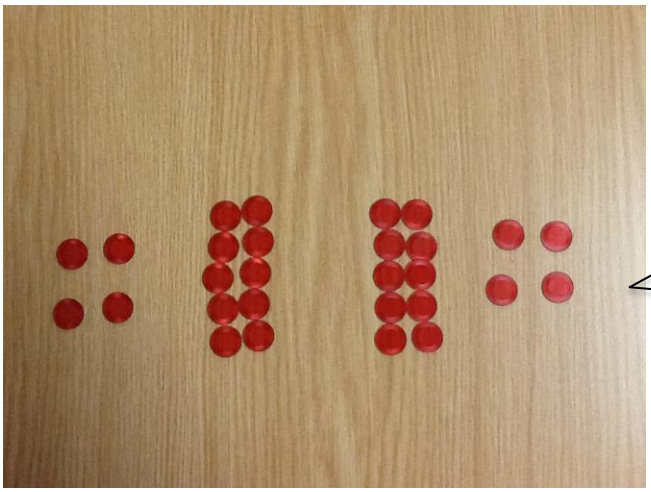
- **Counters**

How do you play?

- **Take a handful of counters and estimate how many you have - you can look at them but don't count them. Tell someone your estimate or write it down.** ***Parent note: The focus on estimation is to ensure a reasonable estimate not to always get the right answer with estimation. 'Three' is probably an unreasonable estimate for a handful of counters, so too is an estimate of 'One hundred' in most cases.***
- **Organise your counters in a way so that you can tell how many there are just by looking. This means that you shouldn't have to count by ones to work out the total. You might structure your counters in equal groups, arrays, triangular numbers etc. Anyway of organising your counters is fine, as long as you can explain how you know the total without counting by ones.** ***Parent note: Children should be able to explain how their structure helps them to determine***

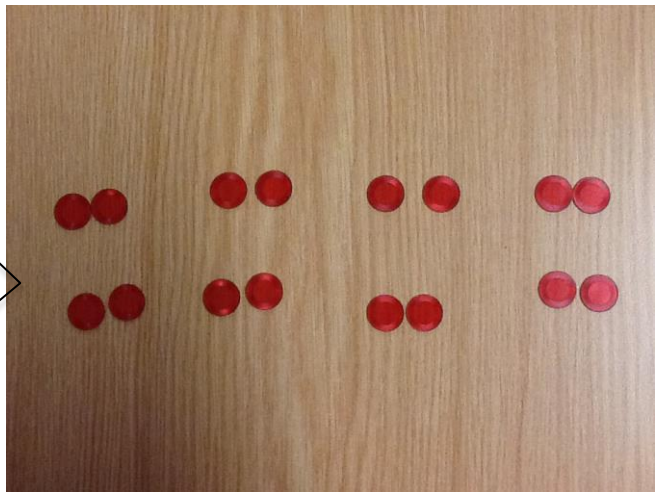
the total number of counters. Notice this in the examples below.

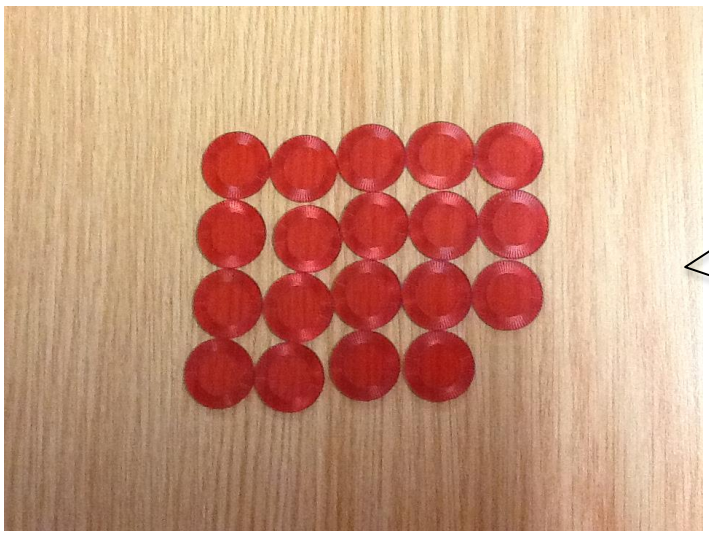
EXAMPLES:



I know I have twenty-eight because I have two lots of ten which is twenty. I also have two fours and I know that double four is eight.

I know that I have sixteen because I organised them in groups of two and counted 2, 4, 6, 8, 10, 12, 14, 16.





I have nineteen because I tried to make four rows of five, which would have been twenty, but I needed one more so I have one less than twenty which is nineteen.

Number Busting (1 or more people)

From EMU Specialist Teacher Course – Dr. Ann Gervosoni

What are you learning?

- **Addition**
- **Subtraction**
- **Multiplication**
- **Division**
- **Order of operations**
- **Roman numerals**
- **Fractions**
- **Writing worded Problems**
- **The list goes on…. The opportunities are endless!**

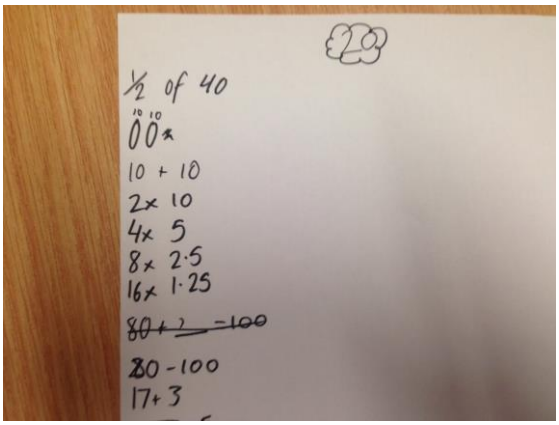
What do you need?

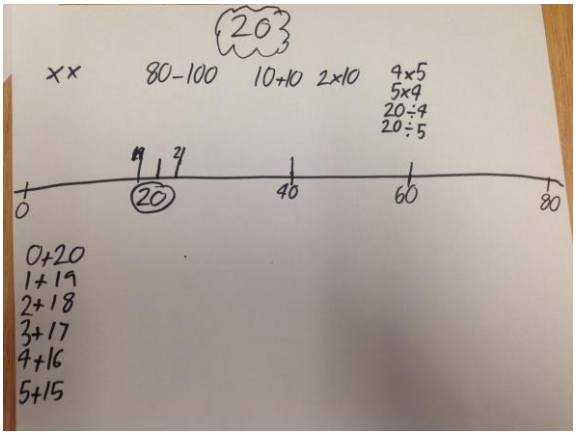
- **Paper**
- **Pencil**

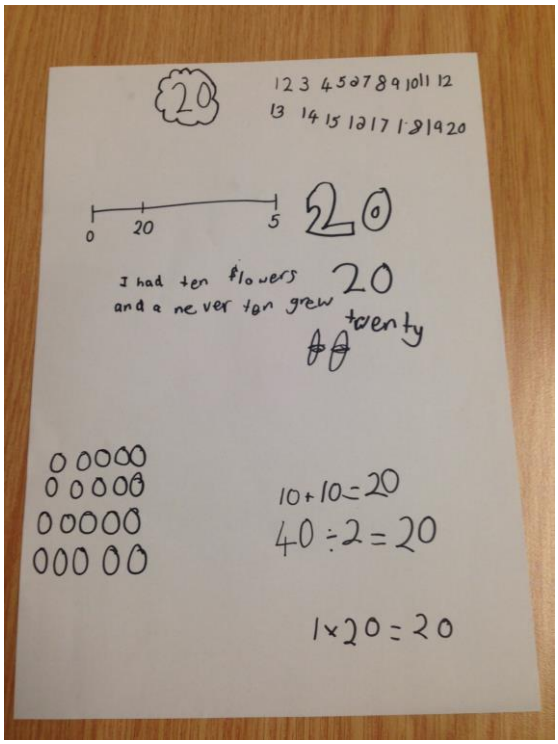
How do you play?

- **Choose a number to work with, flip cards or roll dice if you need help creating a number.**
- **Write that number at the top of your page.**
- **In the time allowed (you can decide this with your parent but it should be between 2 and 5 minutes) record that number as many ways as you can. See some student examples at different year levels below:**

EXAMPLES OF NUMBER BUSTING







Place Value Target (2 or more people)

From EMU Specialist Teacher Course – Dr. Ann Gervosoni

What are you learning?

- **Combining numbers**
- **Addition**
- **Place Value**

What you need:

- **Place Value Target – choose one to suit your needs (these can be found on the St. Johns Maths Weebly)**
- **Counters (between 3 and 10)**

How do you play?

- **Agree on a challenge e.g. make the largest number, make the smallest number, get as close as you can to 200.**
- **Hold the counters in a closed fist above the place value target and drop.** ***Parent note: You could alternatively place the target in the bottom of a tray/box and shake the counters.***
- **Add together the total of your counters e.g. if your counters land on 100, 100, 10, 10, 1 then you made 221.**
- **A point is given to the winner (the person who won the challenge e.g. made the smallest number/largest number).**
- **Play until one person has 10 points.**

Adding Corners (1 or more people)

From EMU Specialist Teacher Course – Dr. Ann Gervosoni

What are you learning?

- **Conservation of numbers**
- **Addition and subtraction**
- **Multiplication**
- **Partitioning numbers**
- **Fractions**

What you need:

- **Paper**
- **Pencils/textas**
- **Counters to share among the corners (if required as support)**

How do you play?

- **Choose a number, or flip playing cards/roll a dice to create a number.**
- **Write that number in the centre of the page.**
- **Decide on a time frame (between 1 and 3 minutes)**
- **In each corner record a number that when combined with the numbers in the other 3 corners will allow you to reach your target number in the middle of the page. Record this as an equation on another sheet of paper.**
- **The challenge is to see how many combinations you can get in your allowed time.**

Three in a Row (2 people)

From EMU Specialist Teacher Course – Dr. Ann Gervosoni

What are you learning?

- **Ordering numbers**
- **Creating numbers**
- **Place Value**
- **Problem Solving**

What do you need?

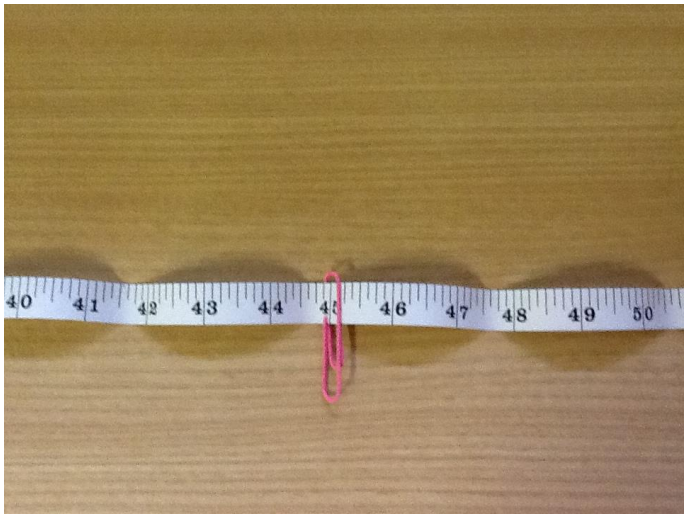
- **Paper clips**
- **1 x six sided dice**
- **1 x ten sided dice**
- **Tape measure (use the inches side)**

What do you do?

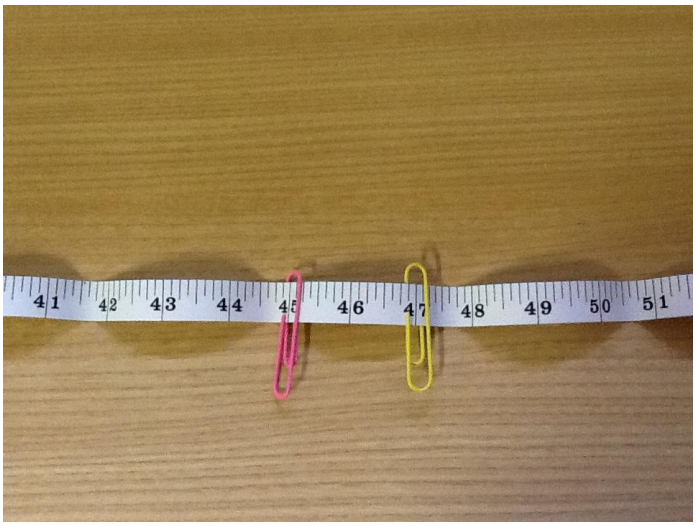
- **Roll the two dice and create a two digit number. Put a paper clip on that number on the number line.**
- **The next person rolls the dice and creates another two digit number, placing a paper clip on that number on the number line.**
- **The aim of the game is to be the first person to cover three consecutive numbers with paper clips. You DO NOT need to have put down all the paper clips to win, you just need to connect three consecutive numbers with your last paper clip.**

Example:

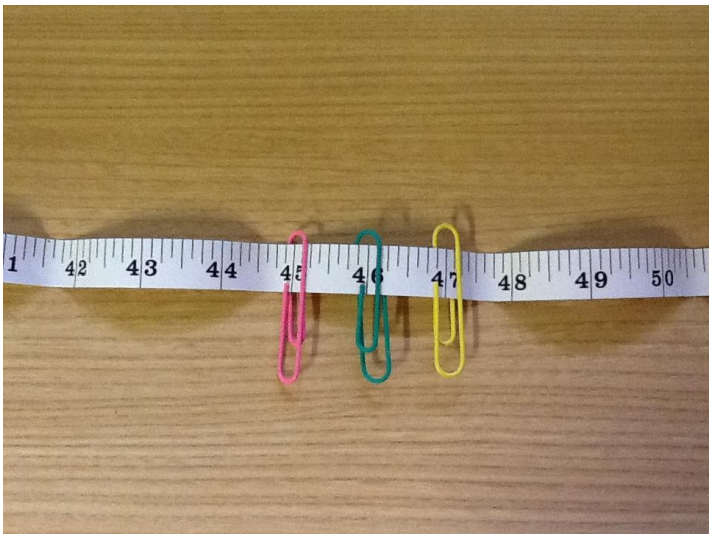
Player one rolls a 4 and a 5 and places a paper clip on 45.



Player two roll a 7 and a 4 and places a paper clip on 47.



Player one rolls a 6 and a 4 and places a paper clip on 46.



Even though Player One did not place all 3 paper clips they connected the 3 numbers and therefore win the game.

Leftovers (2 or more people)

From 'Linking Multiplication and Division in Helpful and Enjoyable Ways for Children' by Ann Downton

What are you learning?

- **Division**
- **Partitioning**

What do you need?

- **Counters**
- **1 x ten-sided dice**
- **Leftovers scaffold (found on the St. Johns Maths Weebly)**

What do you do?

- **Take a collection of counters**
- **Record the quantity**
- **Roll the ten-sided dice and share the quantity between that number of groups and record on the scaffold. For example, 30 shared between 6, is 5 each. If there is a remainder they record this too.**
- **The next person repeats, for examples rolls a 7. They record that 30 shared between 7 is 4 each with 2 left over. The winner is the person with the greatest number of left overs after each round.**

Snake Game (2 or more players)

From EMU Specialist Teacher Course – Dr. Ann Gervosoni

What are you learning?

- **Place Value**
- **Ordering Numbers**

What do you need?

- **Playing cards (Ace – 9, Aces = 1)**
- **A snake template (these can be found on the St. Johns Maths Weebly)**

What do you do?

- **The first player turns over 2 cards and uses those to make a number (4 and 2 makes 42 or 24). The player must then place the number somewhere on the snake.**
- **Players take turns to flip cards and put a number on the snake. Numbers must be placed on in order e.g. 18 cannot be placed after 42. If the players are unable to place their number on the snake they miss a turn.**
- **The player to place the last number on the snake in the correct position is the winner.**

Four cards to 100 (2 players or more)

What are you learning?

- **Place Value**
- **Addition**

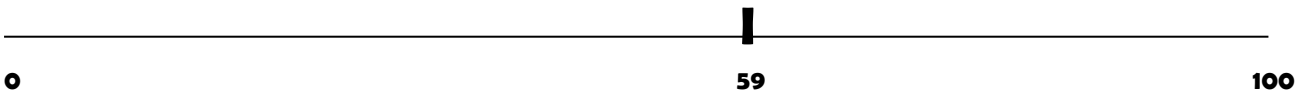
What do you need?

- **Pack of cards (Only use Ace – 9, in this game Ace = 1)**
- **Empty Number line 0 – 100 (these can be found on the St. Johns Maths Weebly)**

What do you do?

- **Each player draws a card from the deck and decides if the number they have drawn will represent ones or tens. For example, if a five is drawn it can represent 5 of 50.**
- **Players draw another card and determine if it will represent ones or tens again. Players add these cards and record their <u>total</u> on empty number line.**

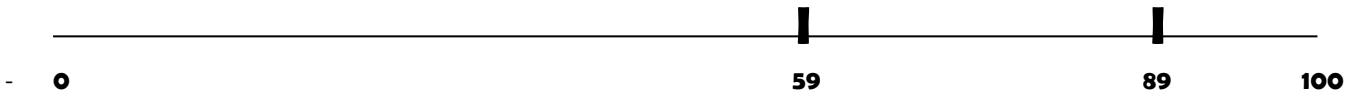
EXAMPLE: I drew a 5 and decided it would represent 5 tens, and then I drew a 9 and decided it would represent 9 ones. My total is 59.



Parent note: If your child is struggling to place the numbers correctly on the number line you might like to add some markers (like 50, 25 or 75) to give them more support.

- **Repeat and add to total until each player has drawn four cards and thus totalled 4 numbers. The player with the highest total not exceeding 100 wins.**

EXAMPLE: Next I drew a 3 and decided it would represent 3 tens. My total is now 89. I place that number on the number line too.



Variation: Change the number of cards e.g. 6 cards to 100.

Variation: Change the end number e.g. 6 cards to 200.

Bingo before (2 or more players)

What are you learning?

- Counting backwards
- Skip counting backwards

What do you need?

- Blank Bingo Templates (these can be found on the St. Johns Maths Weebly)
- Cards – (1- 20, 1 – 50, 1 – 99) choose appropriate cards from 0 – 99 pack (these can be found on the St. Johns Maths Weebly)
- Counters

What do you do?

- Choose 9 numbers in the appropriate range (1- 20, 1 – 50, 1 – 99)
- Write the numbers randomly on a blank bingo template.
- Shuffle the number cards and place them face down.
- Turn over a card. Players must cover up the number that comes before the number on the cards e.g. 'The card we turned was an 8. I cover up 7.'
- The first player is the player who covers 3 in a row, either diagonally, horizontally or vertically. Alternatively you can say that a player needs to cover all 9 numbers to win the game.

- ***Parent note: This game could be Bingo 2 before or Bingo 5 before as well. You can vary the game to suit your child's needs.***

Bingo after (2 or more players)

What are you learning?

- **Counting forwards**
- **Skip counting forwards**

What do you need?

- **Blank Bingo Templates (these can be found on the St. Johns Maths Weebly)**
- **Cards – (0- 20, 0 – 50, 0 – 99) choose appropriate cards from 0 – 99 pack (these can be found on the St. Johns Maths Weebly)**
- **Counters**

What do you do?

- **Choose 9 numbers in the appropriate range (0- 20, 0 – 50, 0 – 99)**
- **Write the numbers randomly on a blank bingo template.**
- **Shuffle the number cards and place them face down.**
- **Turn over a card. Players must cover up the number that comes after the number on the cards e.g. 'The card we turned was an 8. I cover up 9.'**
- **The first player is the player who covers 3 in a row, either diagonally, horizontally or vertically. Alternatively you can say that a player needs to cover all 9 numbers to win the game.**

- ***Parent note: This game could be Bingo 2 after or Bingo 5 after as well. You can vary the game to suit your child's needs.***

Cross the Road (2 players)

From 'Dice Dilemmas' – by Paul Swan

What are you learning?

- **Mental computation**
- **Addition**

What do you need?

- **Two six sided dice**
- **Game board for players to share (these can be found on the St. Johns Maths Weebly)**
- **Counters**

How do you play?

- **Each player places 11 counters on the numbers on their side of the board. Each counter represents a person trying to cross the road.**
- **Players take turns to throw the two dice and add the numbers on each dice e.g. roll 4 and 3 to make 7.**
- **If the number created matches the position where a counter is, then that person may cross the road and the counter may be removed from the game board.**
- **The winner is the first player to have all their counters cross the road and thus have all the counters off their side of the board.**
- ***Variation – Use cross the road game board two – uses 2 ten-sided dice.***

Snap +/- (2 or more players)

From 'Card Capers' by Paul Swan

What are you learning?

- **Forwards and backwards counting**
- **Numeral recognition**

What do you need?

- **Deck of cards with picture cards removed where Ace = 1 or 11.**

How do you play?

- **The game is played in a similar manner to 'snap'.**
- **One player deals all the cards face down to the players.**
- **Each player takes turns to turn over their top card and slap the pile if the number shown is one more or one less. E.g. if I flip a 7 and the card on the pile already is a 6 or an 8 I can snap and collect the pair of cards.**
- **The winner is the player with the most sets of cards when play ends. (You can end after a certain number of turns each or when all the cards have gone depending on your time limitations.)**

Variations: Play the Snap +/- 2 i.e. snap when the values differ by two.

Counting Cards (2 or more players)

From 'Card Capers' by Paul Swan

What are you learning?

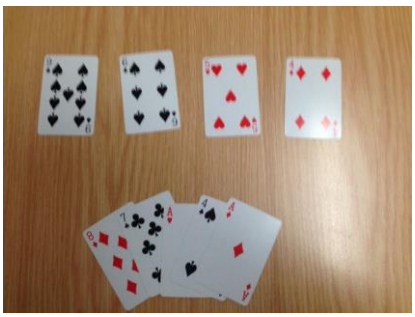
- **Addition**

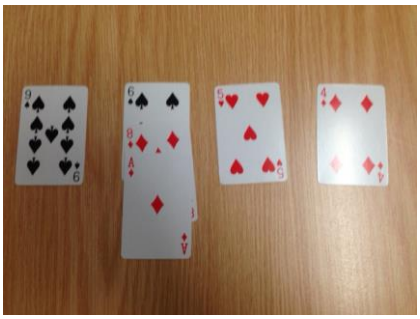
What do you need?

- **Deck of cards with picture cards removed (Ace = 1)**

How do you play?

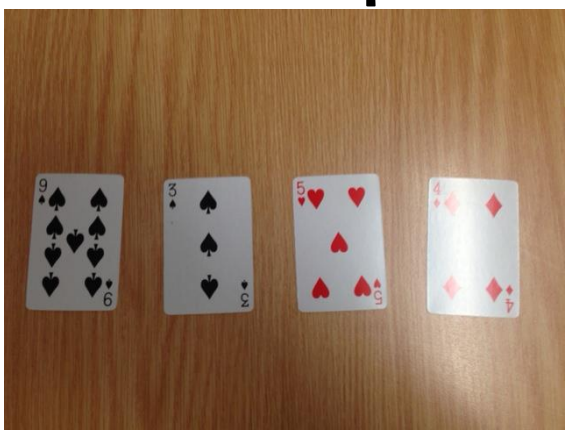
- **Prior to starting the game a target number should be chosen (e.g. 15)**
- **Each player is dealt five cards.**
- **Four cards are dealt face up and the remaining deck placed in the middle.**
- **Players take turns to place their cards on one of the four cards that is face up and add the values to try to reach the target number. Players may place more than one card on a single pile. Cards may only be laid down if the exact total can be produced. A player's turn is over after he/she produces the target number or chooses a card from the deck. Look at the example below where the target number is 15:**





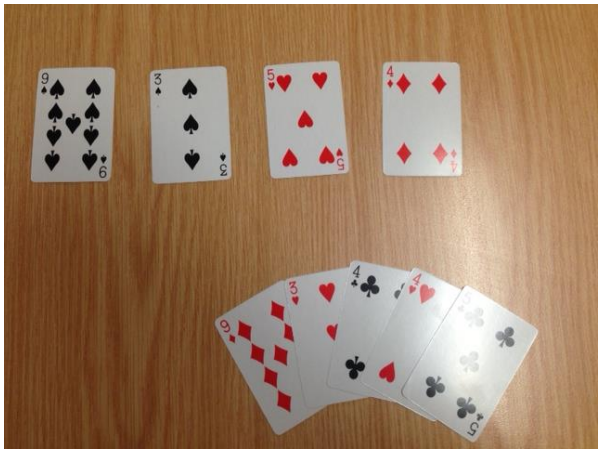
The player can place an 8 and an Ace on the 6 card to make 15. The player then picks up two cards from the deck to replenish their hand to 5 cards.

- **Players reaching the target get to keep the cards in a separate pile. The values of these cards are added at the end of the game to determine a winner.**
- **Once a pile is removed a card is turned over from the deck to replace the card in its spot.**



The pile of cards that reached 15 has been removed and a 3 has replaced it.

- **Players choose a card from the deck if they cannot lay down a card or cards.**



This player cannot combine cards from their hand with a number in the middle to make 15. Therefore they will take a card from the deck to add to their hand.

- **At the end of the game the combination of cards that players have collected to reach the target are totalled and the winner is the player with the highest score.**

Make Ten Again (1 – 2 players)

From 'Card Capers' by Paul Swan

What are you learning?

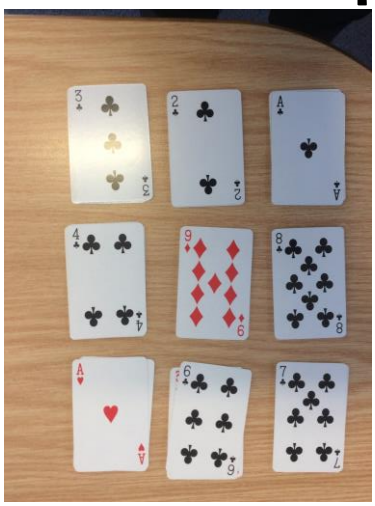
- **Friends of ten**
- **Commutativity**
- **Addition**

What do you need?

- **Deck of playing cards (10s and picture cards are removed and Ace = 1)**

How do you play?

- **One player deals all cards face up in a 3 x 3 array. There should be four cards in each pile.**



- **Players take turns to pick up <u>any number</u> of cards, which when added make 10 (e.g. 3, 3 and 4). As cards are taken from the pile a new card is revealed underneath.**

- **Play continues until all the cards have been used or until no more combinations that add to ten can be made.**
- **The winner is the player with the most cards at the end of the game. If you have a tie, you can reshuffle and set up to play again.**

Variations - Choose a different target number e.g. 12.

Thirty One (2 – 4 players)

From 'Card Capers' by Paul Swan

What are you learning?

- **Addition**

What do you need?

- **Deck of cards where (Ace = 11 and picture cards are worth 10 each).**

What do you do?

- **Each player is dealt three cards. One card is placed face up in the centre of the table (this forms the discard pile) and the remainder of the deck is placed next to it.**
- **The player to the left of the dealer starts by either drawing a card from the deck or drawing a card from the discard pile and then discarding one from his/her hand. No player should have more than 3 cards in their hand after their turn.**
- **Play continues in this fashion until a player can make thirty one exactly by adding the values of the cards in his/her hand OR until one player knocks on the table. By knocking on the table the player indicates that he/she is happy with his/her total. The other players have one more turn and then all hand are exposed, totalled and compared. The winner of the round is the player with the highest total.**
- **The first person to win ten rounds wins the game.**

Getting Closer (2 -4 players)

From 'Card Capers' by Paul Swan

What are you learning?

- **Addition**
- **Subtraction**
- **Place Value**

What do you need?

- **Deck of cards (Picture cards, Jokers and 10 removed, Ace = 1).**

How do you play?

- **Deal four cards to each player.**
- **Turn up two cards from the deck. The first represents the tens, and the second, the units/ones. This becomes the target number.**
- **The players now turn over their cards and try to form two, two digit numbers that when added or subtracted will be as close to the target number as possible.**
- **Players score by finding the difference between their total and the target number.**
- **Play continues for several rounds.**
- **The winner is the player with the smallest total.**

Variation - Players try to produce a total as far away from the target as possible and aim for the largest total to win the game.

Up & Down (2 – 4 players)

From 'Dice Dazzlers' – Paul Swan

What are you learning?

- **Addition**

What do you need?

- **3 six-sided dice.**
- **Paper and pencil**

What do you do?

- **Each player writes the numbers 1 to 12 and 12 to 1 on a piece of paper.**
- **The first player then rolls three dice. This player may then cross out any of the numbers from 1 to 12 using individual numbers or combinations of numbers. The player has the choice of using the number individually, or combining them, but each number rolled may only be used once. Record your algorithm so your partner can check it.**

  For example, if a 2, 4 and 5 turn up, then the player may cross out 2, 4 and 5, or 6 (2 + 4) and 5 or 7 (2 + 5) and 4, or 9 (4 + 5) and 2 or 11 (2 + 4 + 5).

- **A player must cross out all of the ascending numbers 1 – 12, before beginning the descent 12 – 1.**
- **Play continues until one player manages to cross out all of his/her numbers. Play continues until the end of the round. The remaining players then total their**

remaining numbers to determine the score for that round.

- **After five round the player with the smallest total is the winner.**

Variation:

- ***Use two ten sided dice and one six-sided dice and record the numbers 1 – 20 and 20 – 1.***
- ***Change the rules so that you have to cross of the numbers in order e.g. 3 can not be crossed off until 1 and 2 have been crossed off.***
- ***Allow players to cross off as many combinations as they can, even if that means using the number more than once. In the example listed in the rules players could cross out 2, 4, 5, 6, 7, 9, and 11 as they can make all those combinations.***

Thrice Dice (2 players)

From 'Dice Dazzlers' – Paul Swan

What are you learning?

- **Addition**
- **Subtraction**
- **Multiplication**
- **Division**
- **Order of operations.**

What do you need?

- **3 six-sided dice**
- **0 – 99 chart (these can be found on the St. Johns Maths Weebly)**
- **Pencil and paper to record equations**
- **Two different coloured pens**

What do you do?

- **Players roll three dice and combine the numbers and various operations to form as many different results as they can:**

  For example, if 1, 3, and 5 are rolled, numbers such as 15 (3 x 5), 16 (3 x 5 + 1), 14 (3 x 5 – 1), 65 (13 x 5), 7 (5 + 3 - 1) and so on may be formed.

  Two-digit numbers may be formed by combining the digit (e.g. 53) but the player must state the number of tens and ones that are used e.g. 5 tens and 3 ones.

- **Students record their equations and mark the appropriate square/s on the board. Once a square has been claimed, it may not be claimed again.**
- **Once the first player has finished claiming squares the second player rolls the dice and claims squares. Players could both roll at the same time and race each other to claim squares.**
- **The winner is the player who has claimed the most squares after a set number of rolls e.g. 10 (this should be varied depending on the time frame you have to play in).**

Variations:

- ***Play alone – record the numbers rolled each time and the equations created and colour off squares. How many squares can you colour in ten minutes?***
- ***Only allow players to claim a set number of squares each time e.g. you can only claim 3 each turn.***
- ***Change the dice – You could use a combination of ten-sided dice and six-sided dice.***
- ***Change the number of rolls each player gets or set a time limit.***
- ***Try to get a certain number of squares coloured in a row (e.g. first to mark 5 in a row wins)***
- ***You might only play on a section of the chart e.g. 0 – 20 numbers only.***

Double, Halve or Stay (2 – 4 players)

From 'Dice Dazzlers' – Paul Swan

What are you learning?

- **Doubling**
- **Halving**
- **Comparing whole numbers**

What do you need?

- **Two different coloured six-sided dice**

What do you do?

- **Choose one colour to represent the tens and the other to represent the ones.**
- **Choose a target number between 5 and 122.**
- **Players then take turns to roll the dice.**
- **Once the dice are rolled, a number is formed. The player may then make one of three decisions in order to produce a number that is as close as possible to the target number.**
    - **The player may double their number.**
    - **The player may halve their number.**
    - **The player may stay (keep the number as it is).**
- **After each player has had a turn, the player closest to the target is declared the winner for that round and scores 1 point. The winner is the first player to score 10 points.**

Three in a Row (Take Two) (2 players)

From 'Dice Dazzlers' – Paul Swan

What are you learning?

- **Comparing two digit numbers**
- **Showing approximate position of a number on the number line.**
- **Problem Solving/Using a strategy**

What do you need?

- **2 x ten sided dice**
- **Empty 0 - 100 number lines (these can be found on the St. Johns Maths Weebly)**
- **Two different coloured pens**

What do you do?

- **Record a starting and ending number to show the range 0 – 100 or print a copy of the 0 – 100 number lines.**
- **Player one rolls the dice and uses the digits shown on the dice to make a number**
    - **For example, if a player rolls a 7 and a 3, then the player may choose to mark 37 or 73 on the number line.**

- **Player one then writes this number on the number line where they think it should go.**
- **Player two then does the same with their throw.**
- **The first player to win is the player who gets three numbers in a row e.g. If I have written 37 in my colour and have also added 30 and 25 to the number line but my partner has not placed any numbers between 25 and 37 I will win the round.**

Variation:

- ***Change the numbers at either end of the number line e.g. it could run from 0 – 1 (decimals) or 0 – 10 (roll one dice, or roll two and create a decimal) or even 0 – 1000 (roll 3 times for this game).***
- ***You may choose to mark the ends as 0 – 300 (or another end number) which presents another challenge of creating a three-digit number that will fit on the number line or dismissing one of the digits thrown. You could use a combination of 6 and 10 sided dice.***

Counting

What are you learning?

- Counting forwards
- Counting backwards
- Skip counting forwards
- Skip counting backwards
- Visualising

What do you need?

- Dice or playing cards

How do you do it?

- Roll two dice or flip two cards to create a two-digit number (this could be a one-, two- or three-digit number depending on the child).
- Decide on a direction (forwards/backwards)
- Decide what you will count by (your teacher will give you a clue about this) e.g. by ones, by twos, by fives, by tens, by threes, by sevens, by nines etc.
- Count in the agreed direction by the agreed amount for ten – fifteen counts.
- Repeat.

Number Hangman (2 or more people)

What are you learning?

- **Skip counting**
- **Number patterns**
- **Doubles**
- **Halves**
- **Multiplication**
- **Division**
- **Addition**
- **Subtraction**

What do you need?

- **Pencil**
- **Paper**

How do you play?

- **Play as traditional hangman but with a number sequence of 5 to 8 numbers in place of a word.**
- **Give a clue of one number to start. The people guessing need to guess a number in the sequence. If correct the person who is 'in' writes the number in the correct place, if incorrect the person who is 'in' draws part of the hangman.**

Examples:

___, 14, ___, ___, ___.

This pattern gets bigger by ones: 13, 14, 15, 16, 17.

___, ___, 40, ___, ___.

This pattern gets smaller by fives: 50, 45, 40, 35, 30.

___, ___, ___, 63, ___

This pattern gets larger by tens but is off the multiple: 33, 43, 53, 63, 73.

What's my number? (2 players)

What are you learning?

- **Number facts**
- **Addition**
- **Subtraction**

What you need:

- **Deck of cards (picture cards removed, Ace = 1)**
- **Tape measure**
- **Paperclips**

How do you play?

- **Player One takes a cards from the down-turned deck and turns it face up so both players can see.**
- **Player One takes another card and keeps it hidden. Player one determines the total of the two cards – the card which is face up and the card that only they can see.**
- **Player One places a paperclip on the tape measure on the number that corresponds with the total and says the total allowed e.g. The total of the cards is 15.**
- **Player Two determines the n umber on the facedown card by examining the placement of the paperclip on the tape measure and the card they can see.**

Variation: Player one places a paperclip on the number shown on the face up card <u>and</u> the total of the two cards.

Variation: Students create a two-digit number in the centre.

Variation: Students use 0 – 99 Bingo cards (available on the weebly) instead of playing cards.

Eleven is it! (2 or more players)

What are you learning?

- **Number facts**
- **Addition**

What you need:

- **Deck of cards (picture cards removed, Ace = 1)**
- **Tens frames (optional)**
- **Counters (optional)**

How do you play?

- **The first player turns two cards from the deck and adds those numbers together and says the total aloud (ideally this is done mentally but children may need to use tens frames and counters to check or prove their answer).**
- **If the sum of the two cards is less than 11 the child takes another card and adds it to the total saying the new total aloud. The child repeats this until they have a total which is 11 or larger.**
- **Other players repeat the first two steps.**
- **The player with the largest number of cards wins all the cards.**
-

Variation: The player with the smallest number of cards wins.

Variation: The total required is changed e.g. Play Twenty-Two is it!

Variation: The winner could be the player with the largest or smallest sum when adding the total of their card pile together.

Entering a new millennium (2 or more players)

From 'Maths Games for the Australian Curriculum' by Gail Gerdemann with Kathleen Barta

What are you learning?

- **Skip counting**
- **Place value concepts**

What you need:

- **Deck of cards (picture cards removed and tens removed, Ace = 1)**

How do you play?

- **Player 1 turns over three cards and makes the smallest possible 3 digit number they can e.g. turn over 2, 1 and 9 the smallest possible 3 digit number is 129.**
- **Player 2 says the next number, counting by hundreds e.g. 229.**
- **The next player says the next number, counting by hundreds e.g. 329.**
- **Players continue counting by hundreds e.g. 429, 529, 629.**
- **The player who passes the millennium mark (goes over 1000) or 'enters the new millenium' wins a point.**
- **Play until a player has an agreed upon number of points and wins the game. *N.B. Students do not need to say the number beyond 1000 if they cannot, they can instead say 'entering the new millennium'.***

Variation: Take four cards. Make the smallest four digit number you can and count backwards by 100.

Variation: Take four cards. Make the smallest four digit number you can and count forwards by 100.

Entering a new century (2 or more players)

From 'Maths Games for the Australian Curriculum' by Gail Gerdemann with Kathleen Barta

What are you learning?

- **Skip counting**
- **Place value concepts**

What you need:

- **Deck of cards (picture cards removed and tens removed, Ace = 1)**

How do you play?

- **Player 1 turns over three cards and makes the smallest possible 3 digit number they can e.g. turn over 2, 1 and 9 the smallest possible 3 digit number is 129.**
- **Player 2 says the next number, counting by tens e.g. 139.**
- **The next player says the next number, counting by tens e.g. 149.**
- **Players continue counting by tens e.g. 149, 159, 169.**
- **The player who passes the century mark (goes over the next hundred) or 'enters the new century' wins a point.**
- **Play until a player has an agreed upon number of points and wins the game.**

Variation: Make the smallest three digit number you can and count backwards by 10's.

Variation: Make the largest three digit number you can and count backwards by 10's.

Glossary of terms

Recognising number structures

When we talk about recognising number structures we mean being able to recognise what makes up a number. If the number is 23 for example students might recognise that 10, 10 and 3 more make 23. Similarly 5, 5, 5, 5 and 3 more also make 23. Students may recognise that an array of 4 x 5 and another 3 would also make 23.

Partitioning

Partitioning is splitting numbers into smaller units e.g. 23 is 10 and 13 or 20 and 3.

Skip counting

Skip counting is counting by a number that is not 1.

For example: I can skip count by 2: 2, 4, 6, 8, 10 etc.

Order of operations

Order of operations: **the rules of which calculation comes first in an equation.**

- **Do multiplication and division from left to right**
- **Then do the addition and subtraction from left to right**

Roman numerals

Roman numerals are how ancient Romans used to write numbers.

I means 1, V means 5, X means 10, L means 50, C means 100, D means 500 and M means 1000

Example: 2012 = MMXII

Worded Problems

Worded problems are mathematical problems that are expressed in words.

Place Value

The value of where the digit is in the number, such as units, tens, hundreds, etc.

Example: In 352, the place value of the 5 is "tens"

Example: In 17.591, the place value of the 9 is "hundredths"

Mental computation

Mental computation is the most common form of computation used in everyday life. It is used for quick calculations and estimations, but is more than 'mental arithmetic'.

Numeral recognition

Numeral recognition is recognising a numeral 0 – 9.

Friends of ten

Friends of ten are number pairs that go together to make ten e.g. 4 and 6, 7 and 3, 8 and 2 etc.

Commutativity

Commutativity says you can swap numbers around and still get the same answer when you add or when you multiply.

Examples:

You can swap when you add: 6 + 3 = 3 + 6

You can swap when you multiply: 2 × 4 = 4 × 2

Visualising

Visualising is to form a mental image of something. In mathematics students may form a mental image of the number line or of a number structure.