Are **YOU** the king OR **YOU** the JOKER ?

Play Math for Young Children

Are
you
the king
OR
Are
you
the JOKER?

Play Math for Young Children

YEO Adrian

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ARE YOU THE KING, OR ARE YOU THE JOKER?

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Dedicated to
REBECCA and KATHRYN

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Go, play, boy, play,
thy mother plays,
and I play too . . .
go, play, boy, play

William Shakespeare
The Winter's Tale

Everything should be
made as simple as
possible,
But not simpler.

Albert Einstein

CONTENTS

xi PREFACE

xviii INTRODUCTION

3 NURSERY AND PRE-SCHOOL

Recognition of Patterns, Colours, Shapes and Numbers

- 5 Game 1 Recognition of Patterns
- 11 Game 2 Recognition of Colours
- 17 Game 3 Recognition of Shapes
- 21 Game 4 Recognition of Numbers
- 25 Game 5 Recognition of Sequences
- 31 Game 6 Recognition of Multiple Characteristics

40 PRE-SCHOOL AND PRIMARY

Simple Arithmetical Concepts

- 43 Game 7 "Greater than"
- 47 Game 8 "Less than"
- 51 Game 9 Simple Addition
- 61 Game 10 Simple Subtraction
- 65 Game 11 Simple Multiplication
- 73 Game 12 Simple Division

80 PRIMARY AND HIGHER PRIMARY

Simple Mathematical Concepts

- 83 Game 13 Simple Symbols
- 87 Game 14 Simple Sets
- 93 Game 15 Simple Probability
- 99 Game 16 Simple Logic and Deduction
- 109 Game 17 Simple Algebra
- 115 Game 18 Simple Simultaneous Equations

124 APPENDIX

- 125 "SNAP"
- 127 "Simple Gin-Rummy"
- 131 "Are you the King or Are you the Joker?"

133 POST-APPENDIX

- 134 Probability Examples

Come hither, boy; come,
Come, and learn of us . . .
Thy grandsire loved thee well:
Many a time he danced thee
on his knee,
Sung thee asleep, his loving
breast thy pillow:

William Shakespeare
Titus Andronicus

I was their tutor to instruct
them . . .

As sure a card as ever
won the set . . .

They learn'd of me

William Shakespeare
Titus Andronicus

Have I not here
The best cards for the game

William Shakespeare
King John

PREFACE

Children love playing. They can play and play for hours on end. They don't seem to tire, and would even ignore calls for "bath-time" and "dinner", and go on playing.

Many children don't like work, especially school work or homework. In particular, many children don't like math. They find math difficult and incomprehensible. Reluctantly, they struggle at it, and endure the boredom, difficulties and unpleasantness. Sometimes when they do not fully understand what they are doing, they end up frustrated, and "hating math" in the process.

But math is vital in education, and students have to study it until the 10th grade (O-level). Math is also a "hierarchical" subject — it means that if you do not understand or know how to do math at lower levels (the foundations), you will have even greater difficulties at higher levels.

My five-year old granddaughter Rebecca loves math. She can do mental and written sums for hours on end. She would even ignore "bath-time" and "dinner" calls, and continue doing her math. Except that she doesn't regard what she is doing as "math". She thinks she's "playing cards" with Grampa!

The games in this book are suitable for both boys and girls. For convenience, we will use the pronoun "he" in this book, instead of the more accurate "he or she".

I am a grandfather, with a special interest in teaching math to the young. I love my grandchildren; and I love math. So, I have read many books and articles on math; on the teaching of math; on “the math brain”; “the math gene”; “math puzzles”; “math circus”; “math delights” etc. I have spent many hours thinking about how to make math easy and fun for my grandchildren.

Last year, I was at a conference overseas. One day, over lunch, I happened to sit next to a mother with young children. The conversation drifted to the difficulties of bringing up young children. She confided that her children in primary school “couldn’t do math”; “couldn’t add”. I shared my experience with her, about how my then five-year old granddaughter could add and subtract triple digit numbers. She was surprised. I explained to her how we did it.

On another occasion, I was having a business lunch with some company directors, including two university professors. The subject of conversation drifted to the book that I was writing. One professor had a six-year old daughter. “She’s very bright. But from time to time, she has difficulties with her math.” The professor wanted to help her overcome her frustrations when she has her difficulties in math. I explained briefly how I “played cards” with my grandchildren. “You must hurry up and finish your book quickly. I’ll buy a copy from you right away.”

The thought that there may be other young children with similar difficulties with simple math prompted me to finish writing this little book, to help in a small way, children with similar difficulties. My hope is that parents and grandparents would read this book, spend some time “playing cards” with their young loved ones, and help them, in a fun and pleasurable way, to overcome their fear of and difficulty with math.

I am of the opinion that how you teach is more important than what you teach. Hence, whenever possible, parents and grandparents should play with their children. Teaching through play is a time-honour approach. Do not delegate this critical function to teachers, especially the teaching of this “difficult subject, math”. With limited time and resources at their disposal, teachers have to deal with classes with dozens of children, with different abilities.

Children, even very young children, enjoy competition, which gives an added sense of achievement when they “beat” some one else. (My grandchildren love “beating” Grampa in our card games. In their innocence, they know they are not “as clever as Grampa” but when the results showed that they had “beaten” Grampa, they are absolutely delighted, and tell everyone in the family about their achievements. Such achievements help them develop a healthy sense of self confidence and a positive self image in a world of gigantic grown-ups.

Children also learn through challenges — starting with the super-simple, and progressively, step-by-step, moving upwards, to higher and higher levels. A game (or task) that is too simple for a child soon becomes boring. Conversely, a game (or task) that is too difficult soon becomes frustrating. Therefore parents and grandparents must always bear this in mind. When a game becomes too easy or boring for a child, create your own variations on the same theme, or move upwards to a new game with a higher level of intellectual challenge. The art of keeping the child enjoying his games (and his learning) is to balance the ability of the child with the intellectual demands of the game at hand. Diagrammatically, this can be represented in the figure below.

* The concept represented in the above Figure is compatible with the detailed results of decades of research by Mihaly Csikszentmihalyi, Professor of Psychology and Education at the University of Chicago. See, for example, his books "Living Well – the psychology of everyday life", "Flow: the psychology of optimal experience", and "Creativity: Flow and the psychology of discovery and invention".

As the child's abilities progress, move slowly up the ladder of intellectual challenge, always listening carefully to the child's preferences, for clues on how he's enjoying the game, and learning the math. Never rush a child when he is not ready, or does not fully understand the game, or is unable to do the task required. Do not push him to play the game that he doesn't like.

Even as you encourage the child to play the games at progressively higher levels, be sensitive to the child, and let him decide what he wants to play. This way, "math" will always be "play" to him.

Three balloons of different colors (orange, pink, and blue) are arranged in a cluster. Each balloon has a white curved line and a small white diamond shape near the top, resembling a balloon's neck. The orange balloon is on the left, the pink one is at the top right, and the blue one is at the bottom right. Each balloon contains a quote and the name of the person who said it. The orange balloon has a black string, the pink one has a white string, and the blue one has a black string.

The most important job
in the world,
second only to being a
good parent,
is being a good teacher.

S. G. Ellis

The best teacher is not the
one who knows most,
but the one who is most
capable of reducing
knowledge
to that simple compound of
the obvious and wonderful.

H. L. Mencken

In a completely rational world,
the best of us would be teachers . . .
because passing civilization along
from one generation to the next
ought to be the highest honour
and the highest responsibility
anyone could have

Lee Iacocca

INTRODUCTION

My grandchildren learn math by “playing cards” with me, beginning when they were 3 and 5 years old, respectively. In this book, I have listed some of the games we played.

The games are broadly grouped into three overlapping levels of intellectual challenge, based on my survey of children’s math books, from nursery to Primary 6 (Sixth Grade).

- I Nursery and Pre-School
- II Pre-School and Primary
- III Primary and Higher Primary

Parents and grandparents must always remember that children develop at different pace. Some make steady continuous progress; others develop in spurts, with pauses in between. (Albert Einstein was well-known for being slow, in beginning to talk as a child, and later, slow again in school work!). So parents and grandparents should not be unduly worried. Nor should they make unnecessary comparisons with other children of similar age groups.

Parents/grandparents should feel free to pick and choose games from all three categories, and play with their children, regardless of age. If a child does not like a game or is uncomfortable playing with it, change the game to one that he likes. By being sensitive to the child, parents/grandparents can gauge their child's level of development. My four year old granddaughter Kathryn plays games in both Sections I and II. She loves "open-ended" sequencing (see Game 6), "fishing" (see Game 9), "mini-gin" and "SNAP". Rebecca, aged 6, plays games from all three Sections. "Fishing" (Game 9) with all its different variations, and "Logic" ("Tee Taa Too", Game 16) are among her favourites, with occasional games of "SNAP" and "Gin Rummy".

The guiding principle always is that the child must enjoy the game he plays. If he is bored, or conversely, if he finds it too difficult, change the game. Always be guided by the child's preference. The last thing adults should do is to force the child to "play", "for his own good". If you do, then the card-playing would be counter-productive, and the child will not enjoy his "math" anymore.

Also, remember not to rush the child. Even within a single game, there are different levels of intellectual challenge, some easier than others. Different children grasp the concepts behind the different variations at different pace. A child may initially not fully understand the basics behind a game; then one day — out of the blues — everything becomes crystal-clear. This is the classic example of the "eureka" discovery.

Play with your child and watch him learn, day by day. You'll be glad to be party to his adventure in discovery. As William Shakespeare said:
"Go, play, boy, play"

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Three balloons of different colors (red, green, and orange) are arranged in a triangular pattern. Each balloon has a black string attached to its bottom. The red balloon is at the top left, the green balloon is at the top right, and the orange balloon is at the bottom center. Each balloon contains a quote and the name of the person who said it.

Nothing you do
for children is
ever wasted

Garrison Keillor

Children are our
most valuable
natural resource

Herbert Hoover

From the very beginning of
his education,
the child should experience
the joy of discovery

Alfred North Whitehead

The Universe,
Nature's great book, is
written in mathematics

Galileo Galilei

Our greatest
natural resource
is the minds of
our children

Walt Disney

We cannot hope that many
children will learn math
unless we find a way to
share our enjoyment
and show them its beauty
as well as its utility.

Mary Beth Ruskai

NURSERY AND PRE-SCHOOL

Recognition of
Patterns, Colours
Shapes and
Numbers

Game 1
Recognition of
PATTERNS
pg **5** >>

Game 2
Recognition of
COLOURS
pg **11** >>

Game 3
Recognition of
SHAPES
pg **17** >>

Game 4
Recognition of
NUMBERS
<< pg **21**

Game 5
Recognition of
SEQUENCES
<< pg **25**

Game 6
Recognition of
**MULTIPLE
CHARACTERISTICS**
<< pg **31**