

**Title: Chance For
Gifted and Talented**

Focus KLA:

Mathematics

**Strands: Chance and
Data**

Year Level: 5 and 6

Duration: 5 weeks

Context Statement	Chance activities can provide a positive and enjoyable opportunity for students to understand probability and make links with fractions, decimals and percentage. These activities are often rich in mathematics and involve a considerable amount of maths language, mental computation and problem solving.	
Focus Question	How can chance be seen to be a fraction?	
Contributing Questions	<ul style="list-style-type: none"> ➤ What relationship is there between chance and fractions, decimals and percentage? ➤ What devices do we use in games to decide on chance? ➤ How might rules and game processes affect chance? ➤ How do we express chance differently in real life? 	
Values and Attitudes	<ul style="list-style-type: none"> ➤ Knowledge of probability is important in making choices and decisions. ➤ Games are a meaningful, enjoyable and challenging way to learn maths and can provide depth and substance. 	
Knowledge and Understandings	<ul style="list-style-type: none"> ➤ Chance is a common feature in our everyday lives. ➤ Making predictions may depend on chance. ➤ Independence of events ➤ Dependence of events ➤ Language of chance 	
Skills Analysing Bias Recognition Checking Classifying Co-Operating Considering Options Designing Elaborating Estimating Explaining Generalizing Hypothesising Inferring Interpreting Justifying Listening Locating information Making choices Note-taking Observing	<p style="text-align: center;"><u>CSF OUTCOMES</u></p> <p style="text-align: center;"><u>MATHEMATICS</u></p> <p style="text-align: center;"><u>CHANCE AND DATA</u></p> <p><u>Chance</u></p> <p>4.1 MACDC401 Examine the outcomes from simple chance experiments and data on familiar events to order outcomes and events from least to most likely.</p> <p>4.2 MACDC402 Use and interpret numerical statements which quantify chance.</p> <p>4.3 MACDC403 Use language of chance in everyday situations.</p> <p><u>Summarising and presenting data</u></p> <p>4.1 MACDS401 Prepare tabular displays of discrete and continuous data.</p> <p><u>Interpreting data</u></p> <p>4.2 MACDI402 Interpret, discuss and compare data displays, including how well they communicate information.</p>	ICT

<p>Ordering events Organising Performing Persuading Planning Predicting Presentation variety Provide feedback Questioning Reading Reflect on own learning Respond to other's wk Restating Revisiting Seeing patterns Selecting information Self-assessing Sharing ideas Summarising Synthesising Testing Visually representing Work to a timeline</p>	<p><u>SHAPE AND SPACE</u> 4.3 MASPS403 Make congruent copies of given three-dimensional objects. <u>REASONING AND STRATEGIES</u> <u>Mathematical reasoning</u> 4.1 MARSR401 Make and test simple conjectures in each mathematics strand. 4.2 MARSR402 Make judgments about the accuracy of reasoning and results and modify working accordingly. 4.3 MARSR403 Use and interpret simple mathematical models. <u>Strategies for investigation</u> 4.1 MARSS401 Generate mathematical questions from presented data and from familiar contexts. 4.3 MARSS403 Use a range of strategies for inquiry when responding to tasks and problems. 4.4 MARSS404 Communicate own responses to tasks and problems appropriate for this level to others.</p>	
Activities		
<p>Key Concepts Conceptual and mathematical language a chance, biased, categories, certain, classification, collection, comparisons, data, diagram, exception, experiment, even chance, event, fair, frequency, graph, impossible, investigate, judgment, likely, modify, no chance, numerical scale, order, outcome, outside chance, per cent, possible, probable, probability, random, scale, scaled graph, summarise, survey, table, uncertain, unfair, unlikely, 50%, fifty-fifty, 0.5, one chance-in-four, $\frac{1}{4}$.</p>		
<p>Tuning in and preparing to find out</p> <p>What activities will be used to:</p> <p><input type="checkbox"/> Engage all students in the topic?</p>	<p><u>Activity 1</u> Concept map – Ask students to construct their own concept map on the concept of “chance”. Brainstorm words and phrases we use in everyday life involving chance.</p> <p><u>Activity 2</u> Probability lines – from the words in the brainstorm create statements that you think match the words or phrases. For example:</p>	

<ul style="list-style-type: none"><input type="checkbox"/> Assess prior knowledge?<input type="checkbox"/> Refine further planning?<input type="checkbox"/> Lead into the finding out experiences?	<p>Phrase – extremely unlikely Statement – a meteor will land in the school playground during lunchtime. Place these on a number line between 0 and 1. Zero for impossible and one for a certain chance.</p>	
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<p>Finding Out</p> <p>Experiences to assist students to find gather new information about the topic</p>	<p>Activity 3</p> <p>Play the game “Deal a Diamond” (adapted from <i>Maths on the Go</i>, by Rob Vingerhoets, 2001, MacMillan)</p> <p>Use a pack of playing cards to show the relationship between fractions and probability. Ask the students, how many cards in a pack and ask them to work out the probability of drawing a particular card ($1/52$). Have them suggest words or phrases that describe the chance, for example slim chance, unlikely, etc. Discuss the mathematics in the language. Repeat this for other questions such as the probability of dealing a diamond ($13/52$) or other suit, an odd number, even number, picture card, a number, etc. Have students write the questions and convert the probability expressed as fractions into decimals and percentages. ($13/52 = \frac{1}{4} = 0.25 = 25\%$) Allow students to test their chances by pairing up and picking a card. For example choose an ace and then deal out 13 cards. Did an ace come out? Why/why not? Discuss.</p> <p>Variations: Vary the game by taking out certain cards or suits and challenging students to work out the probability. Have them explain how and why the probability has changed. Set them a target probability and ask what they might take out to reach it.</p>	
<p>Sorting Out</p> <p>Activities to assist students to process and work with the information and ideas they have gathered about the topic, including values.</p>	<p>Activity 4</p> <p>Play the game “Ninny Ninny” (adapted from <i>Maths on the Go</i>, by Rob Vingerhoets, 2001, MacMillan)</p> <p>Place 9 dice – 3 of 3 different colours e.g. red, white, green – in an opaque container. Students rule a page into three columns and place the numbers 1-9 down the page. The first column is for their prediction, the second is for the probability and the third is for the actual colour. Ask the students to predict what colour is going to be pulled out first. Write their prediction (R, W or G), the probability (all have an equal chance $3/9$, $1/3$ or 33%) and then the actual colour that came out. Continue with the remaining 8 dice. How has the probability changed if the first die was white? (Red or green will be $3/8 = 3 \div 8 = 37.5\%$ and white will be $2/8 = \frac{1}{4} = 25\%$). Students write their prediction and continue playing until there are no dice left. Students then total their number of correct predictions.</p> <p>Play the game again and discuss what students have discovered. Did they do better the second time? Why/why not?</p> <p>Variations: Begin to include the numbers in the</p>	

	<p>game. Consider the probability of various combinations of colour and number, odds and evens. Vary the colour combinations and number of dice. For example start with 6 red, 3 white and 3 green. Add one die of another colour another colour such as blue (1/10) and follow how its percentage changes as the game progresses.</p>	
<p>Making Conclusions</p> <p>Activities to pull it all together to demonstrate what the students have learnt and for the purposes of reflecting on their own learning.</p>	<p>Activity 5 Snakes and Ladders – Rule up a 10 by 10 grid on the board and number each square 100 – 1. Make some snakes and ladders which can be stuck onto the board with Blue Tac and be moved around at will. Move some of the Snakes and ladders and ask the students how the likelihood of winning has changed. Can we increase or decrease the chance of winning by moving the ladders or snakes? What would you do to make the smallest/largest change? Can you think of any other ways we could alter the game to change the chance of winning the game. Try designing your own snakes and ladders game.</p> <p><u>Some suggested strategies for changing games</u> (adapted from <i>Dice Dazzlers</i>, by Paul Swan, 2003, A-Z Type Woodvale WA).</p> <ul style="list-style-type: none"> ➤ Change the dice ➤ Add a decimal point ➤ Change the board or target from 0 – 1 instead of 1 – 100 ➤ Allow a choice of dice – which one to use? ➤ Smallest could be declared the winner ➤ Miss a turn ➤ Choose a direction ➤ Change fraction dice to decimals or percentage ➤ Halving odd numbers – wait to make whole numbers or half before moving ➤ Whole numbers can't move ➤ Use different coloured dice – one for addition another for subtraction or first roll and second roll ➤ Consider using poison numbers ➤ Cross numbers off in order or the ones landed on ➤ Combine numbers in as many different ways ➤ Allow different operations to be used ➤ Move back or forward for odd or even ➤ Win an extra dice ➤ Make fractions from two dice ➤ Add or subtract a number from the dice shown ➤ Create and change your own dice from 3D 	

	<p>nets of various shapes – configuration of numbers, shape, use weights on one or more faces of the dice.</p>	
<p>Going Further</p> <p>Activities to challenge and extend</p>	<p><u>Activity 6</u> Making their own game Students design their own board game using chance. They can use any device or combination of devices they choose e.g. cards, dice, spinner etc, but their game must involve the use of fractions knowledge in some way by the players. A teacher created example: Sample Game.doc</p>	
<p>Action</p> <p>Activities to link theory and practice.</p> <p>To empower students to act on what they have learnt and to make links to their daily lives.</p>	<p><u>Activity 7</u> Demonstrate their game Present and demonstrate their creations to the class. Play their games.</p>	
<p>Resources / References</p> <p>What materials do we need to help us teach this unit?</p>	<p><i>Maths on the Go</i>, by Rob Vingerhoets, 2001, MacMillan Education Australia Pty Ltd. <i>Dice Dazzlers</i>, by Paul Swan, 2003, A-Z Type Woodvale WA. Cards, dice, calculators,</p>	
<p>Excursions & Incursions</p>		
<p>Assessment routines & records:</p> <p>What needs to be set up at the beginning of the unit to ensure</p> <ol style="list-style-type: none"> 1) Systematic collection of data 2) Ongoing reflection and self-assessment 	<p>Concept Maps Pre and Post Game</p>	

Appendices

COLOUR JACKPOT

How to play:

1. Everyone choose a counter, and place it on the start square.
2. The youngest in the group goes first, roll the dice and whatever number you land on, pick up the card with the same symbol on it.
3. The person opposite you pick up the answer sheet and see if the person is right or wrong.
4. If the person is right he/she moves forward two, and lets someone else have a turn. If he/she is wrong he/she moves back two.
5. The first person that lands on the jackpot square wins.

RULES

1. If he/she does not no the answer, say pass and move back one space.
2. You are allowed to work out the answers on a piece of paper.
3. You are not allowed to help the other person with answer.
3. **When the person is answering the answer he/she has only twenty seconds to answer.**
4. You must go in the number order.
5. Remember always have **FUN**

FRACTION MAZE

HOW TO PLAY:

- 1) Roll the die to see who goes first. the highest fraction should start.
- 2) The player who goes first will roll the die and whatever fraction it lands on they move to it (the closest one) on the board eg: if I roll a $\frac{1}{4}$ at the start I'll move to the closes $\frac{1}{4}$ on the board!
- 3) If you land on a *move back 5* *move ahead 2* etc do whatever it tells you to do eg: if I was to land on a square that says *move ahead 2* I would do what it told me I would move ahead 2.
- 4) If you land on a *rainbow* you have to climb over it which will bring you closer to the finish.
- 5) When somebody finishes, the players that are left, can wish to play on 'till' there is only 1 person left.

**THERE ARE NO RULES
JUST**

HAVE FUN!!!!!!!

Mouse Matrix

1. Everyone takes turns rolling the dice
2. Whatever space you land on the person on your right makes up the corresponding sum
3. If you come to an intersection you can pick any line you wish
4. First to reach the middle wins
5. If 2 people land on the same space the other person asks a sum and whoever answers first stays and the other person moves
6. If 3 people land on the same space you all have to separate

Fraction Cards

First you will have to pick a card out of the card deck. You will have to use equivalent fractions. Read what the card says and try to match it to the fractions on the game board. You may go 5 steps. If you can not find an equivalent fraction matching to your card just take a step forwards.

Mini Fraction Uno

Instructions:

This game is similar to UNO except it's using fractions.

Rule 1: If the card on top is different to your card, you may put it on top if it is the same colour or a different number that is another colour. This also goes for reverse and skip.

Rule 2 (Wild Card): If you have a wild card you may put it on top when ever you want to this means that you can choose what colour you wish to change it to.

Rule 3 (Skip Card): If you have a skip card this means that when you put it down you skip the person beside you.

Rule 4 (Reverse Card): If you have a reverse card this means that when you use it, it will change the direction of the way that you a playing.

Rule 5: If you have only one card left you have to say uno to let other people know that you have only got one card left.

Rule 6 (Winner): To be the winner you have to be the one with no cards left.

RULES

Monopoly Fraction

CHARACTERS

The characters include Garfield, Asterix, Jackie Chan, Vegeta and Druid Getafix. With these characters you'll never stop having fun. Remember the maximum number of players is five.

RULES

The rules are simple. You start off with two one dollar notes, a five dollar note, a ten dollar note, a twenty, a fifty, and a hundred. Your goal is to be the first person to reach five hundred dollars.

CHANCE

If you land on a chance you pick up a chance card. The chance card will consist of a fraction question. On the bottom left of the card you will see a time limit. You are required to answer the question before the deadline. You will receive money depending on how fast you answer it. e.g. if I answer my question with twenty seconds on the clock, I will be given twenty dollars. If you are not able to answer the question you will be forced to give money to the banker. The money you hand over will depend on the time limit.

PROPERTY & OTHER

If you happen to land on a property you will not be required to buy it though you may if you wish. If you land on someone else's property you will be expected to pay a fine.

Circus- \$50

Boat Ride-\$30

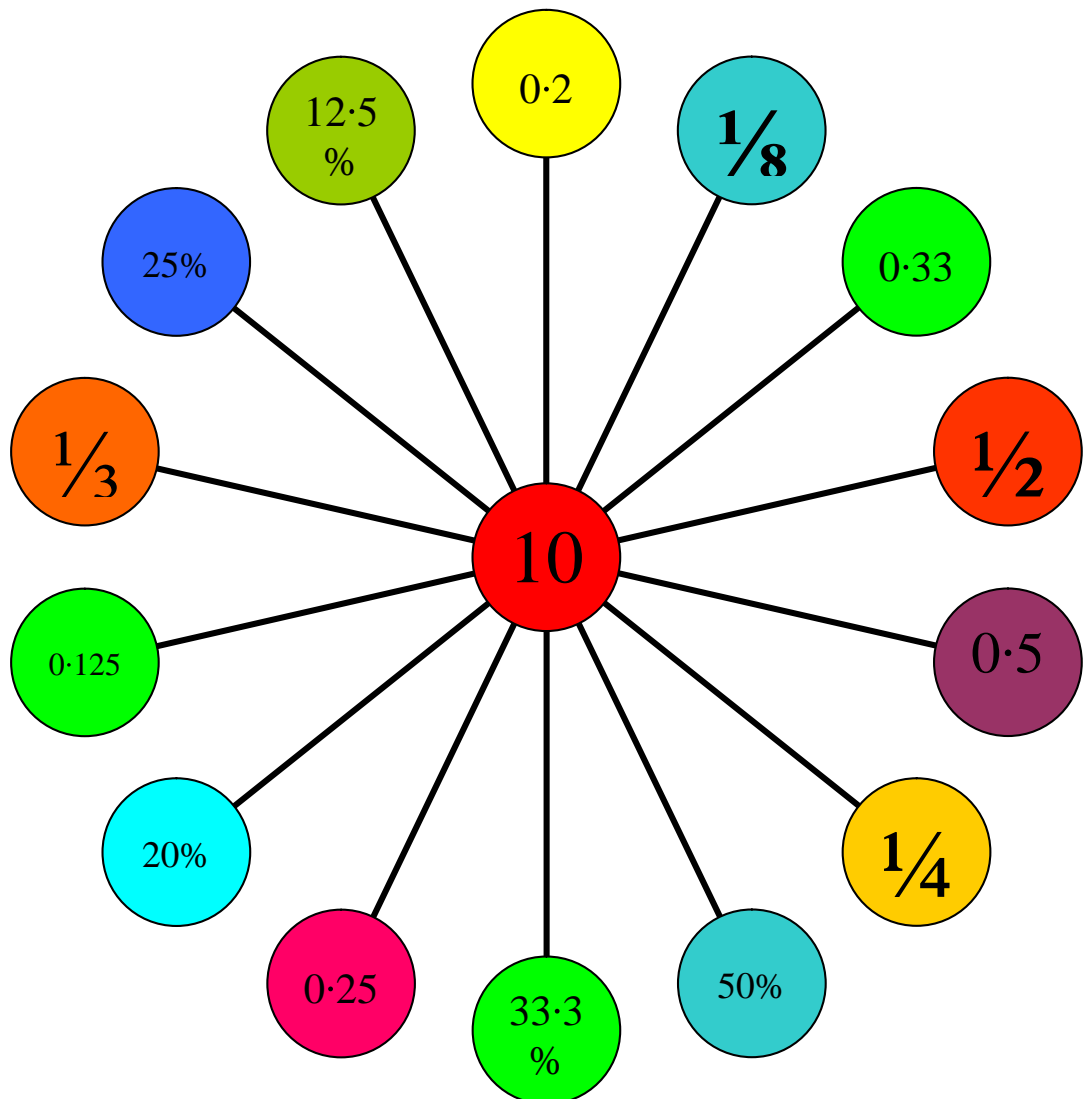
Pokemon Mystery-\$80

Salvation Army Center-\$20(but if you own a property pay extra \$16 for every property you own for donation)

Railroad stations-\$20(but if you own a property pay extra \$20 for every railroad you own)

OTHER RELEVANT INFORMATION

You roll the dice once every turn however you may roll again if you get a six but if you get three sixes in a row, you go to JAIL! You can also roll again if you land on a railroad station. However if you land on someone's station you pay the fine and you don't obtain another turn. If you are low on funds you may mortgage off your property otherwise sell it to another player for any amount. If you tossed a six and you land on a miss a turn you do not miss your next turn but you miss the turn that you earned for throwing a six.



How to Play

Aim:

To travel around the fractions equivalence wheel ten times. First to make it around is the winner.

Equipment:

Playing board, coloured counters (one per player), fraction dice.

Rules:

You make up the rules before you start...

Snakes & Fractions

Notes and rules:

1. First person to one whole straight away wins.
2. If you land on a double fraction you go up the ladder.
3. If you land on an improper fraction you have to go down the snake.
4. To save yourself from going down a snake you have to change an improper fraction to a mixed number in 5 seconds.
5. If you save yourself in 3 seconds you get an extra turn (YAHOO!!!!)
6. Each square you land on you have to workout the sum on it. If you get it wrong you miss a turn, but if you get it right, you get another turn.

Equipment!

Equipment!

1. 2-5 players
2. One dice
3. One timer
4. Board to play on
5. Some counters
6. Calculator to double check the answers
7. ENJOY THE GAME!!!!

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