

YuMi Deadly Maths

Year 1 Teacher Resource: **SP – What's the chance?**

Prepared by the YuMi Deadly Centre
Faculty of Education, QUT



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ACKNOWLEDGEMENT

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Year 1 Statistics and probability

What's the chance?

Learning goal	Students will explore and describe the likelihood of an event occurring using the chance terms “possible” and “impossible”.
Content description	Statistics and Probability – Chance <ul style="list-style-type: none">Identify outcomes of familiar events involving chance and describe them using everyday language such as “will happen”, “won’t happen” or “might happen” (ACMSP024)
Big idea	Probability – possible and impossible outcomes
Resources	Bouncing balls, buckets, footballs, nets; bag with plastic shapes of a triangle, rectangle and circle; worksheet with triangle, star, rectangle, circle, square, and line for tally marks next to each of the five shapes

Reality

Local knowledge	<p><i>Today for our deadly start we will look at the chance that:</i></p> <ul style="list-style-type: none"><i>tomorrow’s weather will be rainy, hailing, sunny, cloudy, snowing, windy, hot, cold</i><i>tomorrow’s lunch will have an apple, orange, grapes, banana, peach, pear, nectarine.</i> <p>Justify answers for either outcome: <i>It might rain if there are lots of black clouds in the sky; It won’t rain if there are no clouds in the sky.</i></p> <p><i>I might have an apple for lunch if there are some in the fridge and one is put into my lunch box; I won’t get an apple for lunch if there are none in the fridge and I don’t have any money to buy one from Tuckshop.</i></p>
Prior experience	Check that students understand that possible means an event might happen and impossible means an event has no chance of happening, it won’t happen.
Kinaesthetic	<p>Groups of four to six students with buckets and balls.</p> <p><i>Is it possible or impossible to throw the ball into the bucket?</i> Reason: possible if we stand close to the bucket and our aim is good; impossible if we miss the bucket or if someone catches the ball before it gets into the bucket.</p> <p>Place the buckets a couple of metres apart on a straight line. Predict distance from the buckets where students think it might be possible to throw the ball into the bucket and draw a line. Predict distance from the buckets where students think it would be impossible to throw the ball into the bucket, draw another straight line.</p> <p>As student from each team throws, predict the chance of throwing the ball into the buckets. Test their estimates by throwing the balls and counting the number of students who found it possible to throw the ball from the first line into the bucket and also the number who found it impossible. Stop and discuss the results before repeating from the impossible line. Use the language of chance in its various forms.</p>

Abstraction

Body	Repeat the above experiment using soccer balls and nets with two teams. Discuss with students the conditions for the chance of a possible goal: kick has to go into the net, distance needs to be close to the net, position best directly in front of the net. Use chance terminology. Explore conditions for the impossible chance of kicking a goal: miss the net, miss the ball, someone intercepts the ball, kicks it away/catches it, it goes into the lake.
Hand	Students discuss the possibility/impossibility of taking a given shape from the bag containing a triangle, rectangle and circle: <i>It is possible to draw out a circle because there is a circle in the</i>

bag; it is impossible to draw out a star or square because they aren't there, so that is impossible, it won't happen. Teacher calls out shapes randomly for students to take out a shape quickly. Students keep a tally on their shape sheet. Tick their successful draws in columns of triangle, rectangle, circle. Add the totals for each shape. Compare students' results.

Mind Students imagine they are in a boat. Visualise all these possibilities: *Is it possible to catch a fish? (See your fish.) Is it possible to fall overboard? Is it possible to get caught in a storm? Is it possible to catch a giraffe? (Why or why not?) Is it possible to sail to the moon? Think of something that is possible, that might happen and something that is impossible, that won't happen, there's no chance.* Share the stories.

Creativity Students draw and tell stories about the possible/impossible outcomes for situations they think may or may not happen, e.g. *What is possible/impossible to eat for tea?* Discuss.

Mathematics

Language/symbols chance, event, outcome, may, might, certain, sure, unsure, impossible, possible, not possible, couldn't happen, never, no it won't happen, no chance, maybe, perhaps, will happen, always

Practice

1. Make a class chart of the shapes drawn out in the Hand activity. Examine the results: *Which shape was drawn out the most, the least? Were all shapes possible? What shapes were impossible?*
2. Toy box: *What are the possible toys that can be taken from the box? What are the toys that are impossible to take from the box?*
3. Class activity: Discuss, list and draw pictures of events that are impossible, possible and certain.

Connections *What is the possible money (coins and notes) we might use to buy gifts in Australia? When is this possible/impossible? [We need to have enough money.] What money is impossible to use because the shopkeepers won't take it in exchange for gifts, food, and so on? [foreign coins/notes].*

Compare the possibility of doing Maths, English, Music, Sport, French, Drama, or excursions on a certain day including weekends.

Reflection

Validation Students check impossible, possible and certain events that happen for them and talk about these with a partner.

Application/problems Provide applications to:

- home events and school periods
- pets
- athletics/Olympic games (gold medals/countries) for possible and impossible outcomes (impossible for an alien to win a race or a fictitious country to win a medal).

Pose questions: *If I drop a ball, will it hit the ground?* Certain – law of gravity where no-one intercepts it; possible – someone catches it/then drops it; impossible – someone has caught it.

Extension **Flexibility.** Students are given opportunities to move from concrete explorations to the examination of more abstract events: birthdays and family/friends' parties; trips to theme parks; watching TV during the day/night.

Reversing. Exercises are given where students are asked to state the chance of a proposed situation occurring and then reversing so that students find examples of impossible/possible/certain situations (event → chance and chance → event).

Generalising. *Most events are possible, that is, have some chance of happening, perhaps they'll happen, maybe they might. Some events are impossible, they have no chance of happening, they'll never happen, there's no chance. Few events are absolutely certain to happen, for example, night will follow day.*

Changing parameters. Students list events that are impossible, possible or certain to happen for an animal. Identify ways in which the chance of an event occurring is increased or decreased. This is an important step as it provides a foundation to lead into the next level.

Teacher's notes

- Identify and use the various terms that apply to possible/impossible/certain events.
- Students need to be taught the skill of visualising: closing their eyes and seeing pictures in their minds, making mental images; e.g. show a picture of a kookaburra, students look at it, remove the picture, students then close their eyes and see the picture in their mind; then make a mental picture of a different bird.
- Suggestions in Local Knowledge are only a guide. It is very important that examples in Reality are taken from the local environment that have significance to the local culture and come from the students' experience of their local environment.
- Useful websites for resources: www.rrr.edu.au; <https://www.qcaa.qld.edu.au/3035.html>
- Explicit teaching that **aligns with students' understanding** is part of every section of the RAMR cycle and has particular emphasis in the Mathematics section. The RAMR cycle is not always linear but may necessitate revisiting the previous stage/s at any given point.
- Reflection on the concept may happen at any stage of the RAMR cycle to reinforce the concept being taught. Validation, Application, and the last two parts of Extension should not be undertaken until students have mastered the mathematical concept as students need the foundation in order to be able to validate, apply, generalise and change parameters.