Dance planner	**Level 2**	**Topic/Theme:** Shape, number, pattern	**Duration**: 10 x 30–40 minute lessons	**Class:** Yr 3–4, L 2

PK – **Developing Practical Knowledge in Dance**
Students will identify and explore through movement the dance elements of body awareness, space, time, energy, and relationships.

DI – **Developing Ideas in Dance**
Students will initiate and express dance ideas based on a variety of stimuli.

CI – **Communicating and Interpreting in Dance**
Students will share dance through informal presentation and describe how dance expresses ideas and feelings.

UC – Understanding Dance in Context
Students will demonstrate an awareness of dance as part of community life.

Specific Learning Outcomes Students will be able to:

- Explore maths through movement (both individually and in groups) by using locomotor and non-locomotor movement, levels, and shapes, on/off/over/under directions and relationships (PK)
- Choose three mathematical activities and combine them into a movement sequence (DI)
- Share the group dance by performing the three linked-up mathematical ideas (CI)
- Observe and discuss the chosen mathematical activities and the use of the elements: space, relationships, etc (CI)
- By viewing photos and performances, discuss the formations and patterns of family and community dances (UC)

Strand	Assessed
PK	*
DI	
CI	
CI	*
UC	*

Teaching and learning focus

Body awareness
Locomotor
Non-locomotor
Body Parts
Body Base
Body Shapes

Relationships
Individual
Pair
Group
To objects
To environments

Space
Level
Pathways
Direction
Size/ Range
Focus
Place

Time
Tempo Beat/Rhythm Accent

Energy
Weight Flow Energy Dynamics

Resources and equipment

- Hall space
- CD player, drum
- CDs: Use a variety of music, such as *NZ Music for Creative Dance 1 & 2*, *Cirque du Soleil*, *Deep Forest*, and music by Debussy, Bach, and other suitable composers
- Dance word cards and direction word cards
- Maths 2D blocks, shapes, mirrors

Cross-curricula links

- Language
- Maths
- Science

Essential skills

- Communication
- Numeracy
- Information
- Problem solving
- Self management and competitive
- Social and co-operative
- Physical

Rationale

Shape, number, pattern unit: Exploring mathematical concepts through dance (Level 2)

Dance can significantly enhance, deepen and increase learning in all of the other essential learning areas, and especially mathematics. This unit extends the students' mathematical investigations through the kinaesthetic activities in dance.

Crossover between maths and dance

Dance is geometry – shape-making, symmetry, asymmetry, reflections, rotations, transformations and directions. Dance uses algebra patterning, group formations, tessellations, repetition, sequences, and variations. Dance uses numeracy and the counting of beats, accents, syncopated time patterns, and other rhythm and time structures. Dance uses mapping, the clock, compass, and other shapes and spatial formations. Dancers and choreographers need to calculate and measure spatial dimensions and the proportions of floor and air space when choreographing and staging a production.

Dance explores and creates patterns, pathways and group formations on the floor and in the air. Dance uses and investigates relationships in time and space with other dancers, with objects (chairs, cushions) and props (elastics, ti rakau, poi), and with the shapes and patterns of the natural environment.

Teaching and learning sequence

For each dance lesson, choose and teach one activity from the following list. Relate each activity to the teaching of the appropriate mathematical strand(s) (that is, mathematical processes, number, measurement, geometry, algebra, and statistics). During the unit, continue to revisit activities (suitable to year level) to foster recall skills. Group work and/or a whole class dance can be initiated, developed, and refined throughout the duration of this unit (a 10-week term).

Activities

Developing Practical Knowledge in Dance (Strand PK): Students will identify and explore through movement the dance elements of body awareness, space, time, energy, and relationships. (Level 2)

Activity 1: Number reaction
Children choose a number from 1 up to 8. The teacher counts out aloud 1, 2, 3, 4, 5, 6, 7, 8 repeatedly while clapping a steady beat or playing it on a drum. Students react in specified ways to their chosen number.

- **Non-locomotive number reaction:** Students make non-locomotive movements (such as bending, swinging, or twisting on the spot), with a strong movement each time their number is called.
- **Locomotive number reaction:** Students make locomotor movements (such as walking, running, skipping or galloping) to the beat, using a variety of pathways through the space, with a strong movement each time their number comes around.
- **Variations:** Repeat, making a **fast** movement on their number. Repeat three more times, making a **soft** movement, then a **big** movement, and finally a **small** movement on the chosen number.
- Repeat the non-locomotor and locomotor number reactions, but reacting to two numbers this time.

Activity 2: Directions

- **Clockwise & anticlockwise directions:** Form circles in small or large groups and create a clock dance.
    - In two circles, one outer circle and one inner, explore moving clockwise and anticlockwise. The outer circle walks, skips, then hops forwards and clockwise for 8 counts, then makes the same movements backwards and anticlockwise for 8 counts. The inner circle moves vice-versa: backwards and anticlockwise for 8 counts, then forwards and clockwise for 8 counts.
    - Repeat with other forms of locomotor movement.
    - Repeat with the outer circle creating still shapes to represent the numerals on a clock, and the inner group moving locomotor in a group to represent the hands of an analogue clock.
- **Compass:** Students travel in the direction of a given compass point using one of a range of positions and levels in time to a beat. For example, “low position North”, and “high position South”.
- **Word and number cards:** Individually, in pairs, or in groups, students follow a sequence of instructions that are given on cards (i.e. not vocally), which display a mathematical concept related to movement and position. There are two types of cards:
    - **Direction word cards:** contain directional words such as “on, over, forwards, sideways, away from, after, beside, next to, above, inside, middle, in front of, around, under, underneath, backwards, towards, before, between, on top, near, outside, behind, along, far”.
    - **Number sentence cards:** contain sums, such as “5 – 3 = 2” or “2 + 3 = 5” for groups of five students to use as stimuli to create a movement phrase.

Activity 3: Reflection (Transformation = turning over, reflecting, mirroring)

- Use the compass formation, positions, and directions of 'North, South, East, West' when mirroring.
- Mirror body movements and still shapes in pairs, at a low level (sitting non-locomotor) facing each other in opposing North/South positions.
- Follow the North leader's movements first. Start with small movements using separate body parts, then move to larger movements, using a combination of body parts moving together.
- Use music to stop and start movement, to give instructions, and to change the leader.
- Repeat mirroring at a high level (standing non-locomotor) facing each other in North/South positions.
- Repeat on the ground (low level) and upright (high level) in North/South positions, but use locomotor (travelling) movement. Travel along the compass directions, both sideways (left and right) towards East and West, and in towards the mirror and out from the mirror (that is, in North and South directions).

Activity 4: Rotation (Transformation = turning around, rotating)

- Explore rotating the human form using non-locomotor and locomotor movements, such as by rolling, spinning, twisting, turning slow and fast, left and right, clockwise and anticlockwise, and through quarter, half, and whole turns.

Activity 5: 2-D shapes

- In students' own personal space, they explore making non-locomotor 2-D (two-dimensional) shapes with the whole body, such as circle, square, triangle, rectangle, hexagon, and octagon. Repeat using isolated parts of the body to make a 2-D shape (for example, fingers only make a circle, legs only make a diamond).
- Make locomotor floor movement pathways and patterns in 2-D shapes, such as walk a square pathway, jump in a circle, skip a rectangle path, and crawl a triangle. Repeat using air movement pathways in 2-D shapes (such as, make a square air movement pathway with hands and arms, wave elbows in circles, make an octagonal air pathway with a foot). Repeat using floor and air pathways together, travelling around the space.
- Explore 2-D shapes inside each other, either horizontal or vertical to the floor, such as a square within a square. Discuss and explore the number of angles and sides belonging to each shape.

Mathematical dance

Developing Ideas in Dance (strand DI): Students will initiate and express dance ideas based on a variety of stimuli. (Level 2)

- Groups of 4–5 students select three of the five mathematical dance activities (see above) to create a mathematical dance using a variety of non-locomotor and locomotor movements, and still shapes. Create a definite group start and finish (that is, a frozen moment or still shape).
- Teacher and students collaborate to choreograph a class dance that celebrates mathematics. For example, five groups of five students each dance one of the above five activities, entering and exiting in order.

Communicating and Interpreting Dance (strand CI): Students will share dance through informal presentation and describe how dance expresses ideas and feelings. (Level 2)

- Each group communicates by performing, and sharing about, their 'Mathematical dance' to the rest of the class.
- The audience interprets the other groups' mathematical dances through sharing and discussion.

Understanding Dance in Context (strand UC): Students will demonstrate an awareness of dance as part of community life. (Level 2)

- Identify and investigate dances in the community that use mathematical shapes and patterns (such as circle and line dances).

Extension activities: For more advanced activities, see the Level 3 'Shape, number, pattern' unit.