Numeracy is the ability to effectively use the mathematics required to meet the general demands of life at home and at work, and for participation in community and civic life. Numeracy is a fundamental component of learning across all areas of the curriculum. The key role that teachers of PDHPE play in the development of numeracy includes teaching students specific skills and providing them with the opportunities to select, use, evaluate and communicate mathematical ideas in a range of situations.

To be successful in PDHPE, students need subject-specific numeracy skills. Consequently, all teachers of PDHPE are responsible for the explicit development of the numeracy skills of students in their classroom. In any given unit of work in PDHPE, teachers need to identify the specific numeracy skills that are needed to achieve syllabus outcomes and plan explicit teaching activities to assist students in their learning.

**Numeracy skills required in PDHPE and assessed in SNAP**

**Working Mathematically**
- Using strategies to solve problems
- Communicating with appropriate numeracy terminology
- Checking solutions to problems
- Providing reasons for solutions
- Using appropriate instruments to solve problems
- Describing the likelihood of experimental results
- Predicting results from sample data

**Number**
- Calculating with whole numbers and decimal fractions in a variety of contexts

**Data**
- Identifying, organising and interpreting data in tables, charts and graphs

**Measurement**
- Estimating, measuring, comparing and drawing lengths and areas
- Comparing volumes, masses and times

**Space**
- Recognising and developing patterns and designs
- Using grids, compass directions and precise terminology to represent position

The syllabus referred to is *Personal Development, Health and Physical Education Years 7–10 Syllabus*, Board of Studies, April 2003.
Question 7d

In this question, students are required to match data in a table to a graph.

In PDHPE, students are often required to read, understand and interpret graphs in relation to health issues such as nutrition, drug use and physical activity.

Teaching strategies

In Stage 4 PDHPE, students explore the dietary habits of young people in relation to the recommended dietary guidelines for children and adolescents. In this activity students will be required to compare their own dietary habits, recorded in a pie graph, with information in *The Australian Guide to Healthy Eating* published by the Australian Government Department for Health and Ageing.

- Instruct students to record their food intake for a 24-hour period during the week.
- Create and complete a table *Comparison of my dietary intake to dietary guidelines*, that outlines the main categories of foods included in *The Australian Guide to Healthy Eating* and the types of foods that fit into each category. For example, one category is meat, fish, poultry, eggs, nuts and legumes. This group is made up of foods such as beef, lamb, veal, chicken, fish, tuna, peanut pastes, cashews, sunflower seeds and sesame seeds. Record under *Types of food* in the table.

Comparison of my dietary intake to dietary guidelines

<table>
<thead>
<tr>
<th>Category</th>
<th>Types of food</th>
<th>Recommended serves for adolescents in one day</th>
<th>My number of serves for 24 hours</th>
<th>Angle size in sector (pie) graph</th>
</tr>
</thead>
<tbody>
<tr>
<td>Meat, fish, poultry, eggs, nuts, legumes</td>
<td>1–2</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fruit</td>
<td>3–4</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Vegetables, legumes</td>
<td>5–9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Bread, cereals, rice, pasta, noodles</td>
<td>4–7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Milk, yogurt, cheese</td>
<td>3–5</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Count the number of serves in each category eaten during a 24-hour period. Record under *My number of serves for 24 hours* in the table.
Teaching strategies (cont'd)

- Construct a sector (pie) graph from the columns in the table headed Category and My number of serves for 24 hours. The following steps should be modelled for students:
  1. Add up the total number of serves consumed.
  2. Complete the column Angle size in sector (pie) graph by first dividing 360° by the total number of serves. This will give you the size of the angle that will be represented by each serve in the pie graph.
  3. Now calculate the size of the angle for each slice of the sector (pie) graph by multiplying the angle found in step 2 by the number of serves for each food category.
  4. Ask students to draw a circle and construct a radius from the centre to the outside of the circle. This is the line from which the first angle will be measured.
  5. Measure out each of the slices for the pie using a protractor by following these steps:
     a. Place a protractor along the radius with the 90° marker positioned on the centre of the circle.
     b. Read the measurements on the protractor from the 0° marker to the number which represents the angle size for one of the slices (sectors) of the graph.
     c. Place a dot at this number.
     d. Draw a line from the centre of the circle towards this dot, stopping on the outside (circumference) of the circle.
     e. Repeat for other sectors.
     f. Label each of the categories.

- Compare the completed sector graph with the graph represented in The Australian Guide to Healthy Eating.

- Ask students to examine how their dietary intake compares to the recommendations of The Australian Guide to Healthy Eating.

- Ask students to suggest ways they could improve their diet or add variety to their diet, based on what they have noticed in The Australian Guide to Healthy Eating.

Syllabus reference

Outcome 4.6 A student describes the nature of health and analyses how health issues may impact on young people

Students learn about:
- healthy food habits
  - nutritional requirements
  - relationship of food habits to health

Students learn to:
- review the dietary habits of young people in relation to recommended dietary guidelines for children and adolescents
Question 46

In this question students are required to locate the likelihood of an event on a number line.

In PDHPE, students are often required to predict the potential for harm as a result of the interaction of factors, such as peers, alcohol and road safety or other adolescent health issues such as drug use and sexual health. When students are exploring scenarios and predicting potential harm they are required to use appropriate language to describe the perceived level of harm. This language is similar to the language used in mathematics to discuss concepts of chance.

Teaching strategies

In this activity, students will predict the potential for harm in a variety of scenarios where the interaction of factors influences the level of harm.

• Introduce the concept of risk and potential for harm. Brainstorm and discuss the types of factors that can interact to increase the potential for harm in common situations, eg peers, drinking alcohol and road use or being at a party, taking drugs and driving a car.

• Discuss the relationship between the factors and how the interaction of factors can increase or decrease the potential for harm. The drug use triangle is an example of how this interaction of factors can be portrayed. For example, having a glass of wine at a family party would have a low potential for harm. However, drinking alcohol at a park with friends with no adult supervision will have a greater potential for harm.

• Introduce the following terms that can be used to describe the likelihood of events occurring.

<table>
<thead>
<tr>
<th>never</th>
<th>equal chance</th>
<th>no chance</th>
<th>impossible</th>
</tr>
</thead>
<tbody>
<tr>
<td>possible</td>
<td>mostly</td>
<td>fat chance</td>
<td>likely</td>
</tr>
<tr>
<td>sometimes</td>
<td>often</td>
<td>maybe/maybe not</td>
<td>unlikely</td>
</tr>
<tr>
<td>might</td>
<td>always</td>
<td>no hope</td>
<td>50–50</td>
</tr>
<tr>
<td>probably</td>
<td>certain</td>
<td>Buckley’s</td>
<td>even chance</td>
</tr>
</tbody>
</table>

Ask students, in pairs or small groups, to place each of these terms on a continuum. At one end of a continuum the event is impossible and at the other end the event is certain. Discuss the positioning of each term and similarities and differences between groups.

impossible .................................................................................................. certain

• Provide students with a series of situation cards such as those shown below. Ensure there are a range of situations that portray low potential for harm, moderate potential for harm and high risk of harm.

**Situation 1:**
Josephine is at a family party. Her father offers her a glass of wine to have with her meal. Josephine only has one small glass of wine with her meal.

**Situation 2:**
Paulo is at a party with friends at the local park. A group of older boys are drinking heavily and have challenged the younger boys to a drinking game.

**Situation 3:**
Jun has organised to get a lift home from a party with friends but they have been drinking heavily. His friend has asked Jun to drive but he is unlicensed.

• Divide the class into small groups and ask students to select a term from the above list to describe the likelihood of harm for each situation. Ask students to justify their position. In their responses, encourage students to argue their position using the descriptors from the word bank. For example, Josephine is unlikely to come to harm compared to Paulo who is likely to come to harm if he gets involved in the drinking games.

• Develop a range of strategies for each situation that could be implemented to reduce the likelihood of harm. Share these with the class and generate a class list of strategies.

Syllabus reference

4.7 A student identifies the consequences of risk behaviours and describes strategies to minimise harm

Students learn about:
• strategies to minimise harm
  – recognising, assessing and responding to risk situations

Students learn to:
• explain how potential for harm can be increased as the result of an interaction of factors, eg peers, alcohol use and road safety
• recognise potentially unsafe situations and respond by demonstrating personal skills:
  – to counteract the influence of others
  – to influence others to modify their behaviour