Problem Solving in Mathematics

Handling Data

Pancreatic Cancer

Rewarding Learning

Teacher Notes

Introduction

Pupils can work on this problem individually or with others.

- They can discuss what information they need from the tables and how to use the information to answer the questions.
- They can share their responses to the questions and compare answers.

This problem deals with a pupil's ability to identify the required information from a selection of provided data in order to solve a problem.

For more information on the data presented in this problem, download this document.

What I know (think)

The pupils should know from the given problem:

- They have been given background reading on fighting pancreatic cancer as well as two tables that contain data.
- One table displays the number of 'males', 'females' and 'both' that have been diagnosed with pancreatic cancer and the other displays the percentages of those that have survived after being diagnosed.
- They should recognise that they are being asked to consider:
  - that pancreatic cancer may be a growing problem; and
  - how many males and females it affects.

What I need to know (identify)

Pupils need to identify:

- which data from the tables will help them respond to the questions;
- whether the trend shown in Table 1 proves that pancreatic cancer is a growing problem;
- if either of the tables support the statement from the Cool FM News report; and
- whether they can use the incidences in Table 1 and the percentages in Table 2 to work out how many males and females survive less than a year after being diagnosed.

Pancreatic Cancer (Continued)

What I need to do (employ)

First, pupils should read and interpret Table 1 to determine whether or not pancreatic cancer is a growing problem in Northern Ireland.

- They should note that from 2004 to 2013, the number of 'males', 'females' and 'both' incidences does not increase year on year. However, they are each still higher in 2013 than 2004. This suggests that it is a growing problem in Northern Ireland.
- Pupils will be able to see which gender is showing a greater increase in diagnoses by subtracting the 2013 incidences from the 2004 incidences.
- They can come to a conclusion by looking at the raw data provided in the table. If they wish to see a visual representation of the trends for each, they can draw a line graph (this is not required).

Pupils should be able to read and interpret Table 2 to determine whether the 4% statistic is accurate.

- Although the statement says the lowest survival rate is just 4%, the pupil should be able to tell from Table 2 that after five years of diagnosis the percentages for 'male', 'female' and 'both' is not lower than 5%.
- Pupils should also be able to use the table's information to discuss why they cannot confirm whether the statement is true or not, for example:
  - The data in Table 2 does not go beyond 2008, but the statement was made in 2016.
  - Table 2 does not show data for survival rates beyond five years after diagnosis.
  - There is no data for other cancer rates to compare with.
  - More recent data might suggest that it is 4%, but pupils do not need to investigate this.

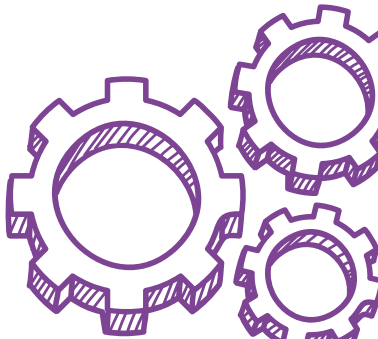
Pupils should be able to use Table 1 and Table 2 to respond to question 3.

- From Table 1 they should add up the number of males diagnosed from 2004 to 2008 inclusive.
- They should then use the percentage of males that survived six months (less than a year) after diagnosis from Table 2 to find out how many males survived.
- They should repeat this for females.

What I did (review)

Pupils will use self-assessment, peer assessment or teacher feedback to decide whether they have approached the problem as intended.

- Did they read the tables and identify the data as required?
- Did they look at how pancreatic cancer affects males and females separately?
- Did they recognise the limitations of the data available when comparing with the recent report?
- Did they effectively use the data from Tables 1 and 2 to answer question 3?



Pancreatic Cancer (Continued)

Curriculum Objectives

This problem should enable pupils to demonstrate their knowledge, understanding and skills through:

Developing pupils as individuals	**Explore issues related to Personal Health** • Pupils will investigate incidences of diseases and recovery rates for pancreatic cancer.
Developing pupils as Contributors to Society	**Explore the issues related to Ethical Awareness** • Pupils will interpret statistics in relation to social issues.

Thinking Skills and Personal Capabilities

This problem can provide an opportunity for pupils to demonstrate a variety of the following Thinking Skills and Personal Capabilities:

Managing Information	• Ask focused questions • Select, classify, compare and evaluate information • Select the most appropriate method for a task • Communicate with a sense of audience and purpose
Thinking, Problem-Solving and Decision Making	• Sequence, order, classify and make comparisons • Examine options and weigh up pros and cons • Generate possible solutions, try out alternative approaches and evaluate outcomes
Being Creative	• Experiment with ideas and questions • Make new connections between ideas/information • Learn from and value other people's ideas • Take risks for learning
Working with Others	• Listen actively and share opinions • Respect the views and opinions of others and reach agreements using negotiation and compromise
Self-Management	• Seek advice when necessary • Review learning and some aspect that might be improved • Organise and plan how to go about a task

Cross-Curricular Skills

This problem should enable pupils to demonstrate a variety of the following Cross-Curriculum Skills:

Using Mathematics