Health

There are many different types of jobs in the health industry. You might work in a fitness gym, as a health assistant, assist a physiotherapist, or work as a doctor's receptionist. There are many different types of traineeships in the health industry. You should test your understanding of the following terms.

Terms

Medicare, gymnasium, heart rate, pulse, calories, kilojoules, nutritionist, physiotherapist, mega, kilo, centi, milli, thermometer, kilogram (kg), gram (g), milligram (mg), kilometer (km), metre (m), centimeter (cm), millimetre (mm), kilolitre (kL), litre (L), millilitre (mL)

Activity 50

Context

You are researching jobs in the health industry. Read the following information on traineeships in the health industry and check your understanding of terms. Share your knowledge of these jobs with others in your group. What maths and numeracy skills might be needed for these jobs?

Allied Health Assistant Traineeship

Cert III in Health Service Assistance (Allied Health Assistance)
Assist allied health professionals perform a range of basic non-professional tasks in the allied health therapy programs, for example, occupational therapy, physiotherapy, speech therapy.

Pathology Assistant Traineeship

Cert III in Health Service Assistance (Pathology Assistance)
Perform duties in a hospital or similar health care facility: cleaning, maintaining and setting up equipment; collecting, classifying and preserving specimens and samples; feeding and watering animals and plants in laboratories; assisting in scientific tests and carrying out routine quality assurance tests.

Dental Assistant Traineeship

Cert III in Dental Assisting
Prepare patients for oral examination; assist dental operators; carry out chair side duties; record filing; maintain stock supplies; clean and sterilize; answer telephone.

Patient Support Assistant Traineeship

Cert II in Health Support Services (Client/Patient Support Services)
Duties may include trolley patients; provide an informal communication service; operate lifts; provide direction/location assistance to staff, patients and visitors.

Patient Services Assistant – Health Services Traineeship

Cert III in Health Service Assistance (Client/Patient Services)
Duties include making beds; lifting, turning and escorting patients; shaves and sponges.

Activity 51

Context

You work as an administrative assistant for a medical practice.

1. You need to block out times in Dr Lim's appointment diary for next Monday. He works 8.00 am to 7.30 pm. He needs a 15-minute break mid-morning; 30 minutes for lunch and 15 minutes during the afternoon. His booking times for patients are 30 minutes. At this stage he has a patient at 8.00 am, one at 1.30 pm and one at 2.15 pm. He has to attend a meeting from 3.00 pm until 5.00 pm. Construct a diary page and highlight spaces where more patients might be able to see the doctor. Allow 5 minutes after every two patients for administration duties.

2. The doctor wants an analysis of this typical diary page. Calculate the amount of time spent with patients and on administration tasks. Provide the answers in hours and then convert your answers to minutes. Describe the proportion of time spent with patients and on administration tasks.

3. The computer prints a receipt for a customer. The receipt has the following information. The customer would like you to explain how the final amount was calculated.

Consultation – base amount $89.00

Consultation – minor surgery $125.00

(The standard consultation fee for the above charges is $111.76)

Medical rebates – 85% of the standard fee = $95.00

Amount owing $119.

4. A patient asks you to explain the Medicare system. Read the following information and answer the questions to check your understanding of the system in Australia.

In 2004, the Australian government decided to spend more than $4 million over five years to improve the Medicare system. The main features of Medicare remained the same: free treatment as a public patient in a public hospital; a Medicare rebate of 85% of the schedule fee for a visit to a doctor outside hospital and affordable medicines through the Pharmaceutical Benefits Scheme (PBS). The changes in 2004 set up a new Safety Net system to protect Australians against high medical costs outside hospital. Once a person reaches a threshold amount in a calendar year, Medicare will also cover 80% of all out-of-pocket costs over and above the rebate, for the rest of that year. For most Australians, the threshold in 2004 was $300 or $700 (higher income earners).

a. On average, how much was spent by the government improving the Medicare system between 2004 and 2008?

b. Three patients have not reached the Safety Net threshold and have accounts from doctors for $145; $126; and $235. How much rebate applies for these schedule fees?

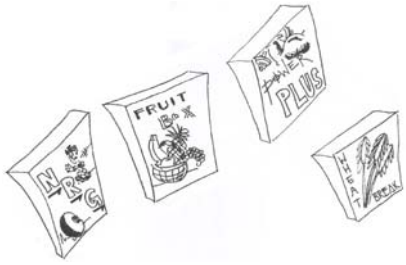
c. Jack has reached the Safety Net threshold (he has paid more than $700 for doctor's fees for the year). He has a bill for $76. The standard consultation fee is $60.40. Under the old system, how much rebate would he receive? How much would Jack receive under the revised Safety Net system?

d. Toni has spent the following amounts on doctors' bills – these are all schedule fees: $148; $92; $315. Her Safety Net threshold is $300. How much will her rebate be under the new system?

e. Eden has the following doctors' bills, the schedule fee is in brackets. Estimate the receipts by the doctors and the rebate to Eden. Eden is a high-income earner with a $700 threshold. $231 ($176); $89 ($75); $167 ($154); $325 ($315); $436 ($429).

Activity 52

Context



You work as an assistant to a nutritionist.

When writing about food, remember to use the correct measurements. Solid food is measured in grams (g) and kilograms (kg). Liquid is measured in litres (L). The energy value of foods is measured in kilojoules (kJ) or calories (cal).

Note that:

- One calorie is equal to 4.2 kilojoules
- The recommended intake of energy is about 6,000 kilojoules (about 1,500 calories)
- Most foods contain mixtures of proteins, fats and carbohydrates.
- 1 gram of protein equals 16 kilojoules or 4 calories
- 1 gram of fat equals 37 kilojoules or 9 calories
- 1 gram of carbohydrate equals 16 kilojoules or 4 calories
- One thick slice of wholemeal bread contains about 3 grams of protein, 0.7 grams of fat and 12 grams of carbohydrate.

1. Complete the following table that describes the content of one slice of wholemeal bread.

	Total kilojoules	**Total calories**
3 grams Protein	3 x 16 = 48	3 x 4 = 12
0.7 grams Fat		
12 grams Carbohydrate		

2. Develop a table to record your intake of food on a typical day. Find information on the amount of fat and kilojoules on **http://www.nutritiondata.com/index.html**. You will need to change the calories into kilojoules. 1 cal = 4 .2 kJ.

3. Plan a better eating program by gaining ideas from **http://www.betterhealth.vic.gov.au/** and **http://www.healthyeatingclub.com/quizzes-games/games/picnic.asp**

Activity 53

Context

You work as an assistant in a health club and need to understand calculations related to bodies and effective use of bodies.

1. You are responsible for explaining to a client, the information on the screens of equipment in the gym. Look at the following illustrations, and work in small groups to determine the meaning of the information.

Walker		
Calories (Kcal)	Distance (km)	Gradient %
52	0.966	2.5
Heart rate (Beats/min)	Time	Speed km/hr
	10 mins	5.8

a. If the client maintains the same level, how far will she walk in 20 minutes?

b. Are the calories likely to increase or decrease if the gradient increases?

c. At what speed is the client walking?

Bike	
Watt Power	rpm
62	85

d. Explain the term rpm and apply to the above bike screen.

2. While using the exercise machine, the client wants to monitor pulse rate. Construct a graph to map time in minutes and pulse beats per minute. The client's resting pulse is 65 beats per minute, after 3 minutes his pulse is 115 beats per minute and by 5 minutes his pulse is 138 beats per minute (maximum pulse). It takes him 10 minutes to return from the maximum to the resting pulse.

3. Gym members receive advice from specialist instructors. You need to build in the cost of this advice when determining gym charges. You have two instructors, Jack who works for $42 per hour and Jan who works for $38 per hour. Jack averages 15.5 hours per week and Jan 13.5 hours per week. How much will you have to pay them in total for the week?

4. You use a database to record member details, amounts paid, their fitness programs, and attendance. Design the database.

5. Set up a spreadsheet or table to record your own physical details over a period of time. Use the following organisers.

- Height
- Weight
- Resting pulse
- Maximum pulse
- Recovery time

If you have access to equipment, also track your blood pressure and level of body fat.

Compare your results with charts on average weight/height recommendations.

6. Craig was born on 15th July 1990. On 1 July 2006 Craig's mass was 87 kg. One month later his mass was 90 kg. What was the percentage increase in Craig's mass? Why might this change have occurred?

Hint: To understand the term 'mass', check the section on Mass in the "Overview - Mathematical Skills" at the back of this book.

Activity 54

Context

You are working with a small team to evaluate the costs of using the gym services. Currently the following fees apply:

- 12 month membership $595
- 6 month membership (24 weeks) $260
- 3 months membership (12 weeks) $115. All fees must be paid in advance.

1. The fees are to go up by 6%. What will the new fees be?

2. People who join for 2 years receive a discount on each year of 15%. What will be the total saving for people who take up this offer?

3. The gym is open 6 days per week. If a person paid for the 6-month membership and attended every Monday, Wednesday and Friday, what is the average cost of a gym visit?

4. What would the average cost be if he attended every day the gym was open?

5. It costs $8.90 for a single visit to the gym. Why might managers keep single visit costs high and longer term membership fees low?

Activity 55

Context

You are training to be a health worker, and observe the following procedures.

1. An injection contained 0.0024 litres of liquid. The doctor asks you to record the amount in milliliters. What would you write?

2. You are preparing a stocktake of a certain tablet. There are 35 bottles of tables, each bottle contains 140 tablets. Each tablet has a mass of 5 mg. What is the total mass of all the tablets in milligrams? What is the total mass in grams?

3. It is suspected that a patient is suffering from carbon monoxide (CO) poisoning through smoke and gas inhalation. The patient has been carried in. She has a severe headache, is vomiting and does not seem to realize where she is. The following chart is on the wall. Which level of CO blood concentration do you think applies?

Symptoms	CO Blood Concentration
Shortness of breath, headache, nausea and vomiting	20%
Severe headache, impaired judgment, nausea, vomiting, irritability	30%
Severe headache, confusion, nausea, vomiting, collapse	40-50%

4. Some medication has adult dosage. One method of determining dosage for a child is to compare the area of skin surface in an adult and that of a child.

$$S = \frac{(W^{0.425} \times H^{0.725} \times 71.84)}{10\ 000}$$

S is the surface area in square metres

W is body weight in kg

H is height in cm.

Develop a table or spreadsheet to record and calculate skin surface area using data from measurement and weight of at least four people.

5. A person weighing 105 kilograms has been told by the doctor to lose weight. He hopes to lose 30 kilograms over the months of June to August. How much should he lose each week? He has to take one tablet a day to increase metabolism over this period. How many tablets will he need?