

SCO NPMD

All topics covered between September 2018 – May 2019 will be examined in the summer exam. It is building on from knowledge in first year.

Topics Covered:

- Algebra 1 (Chapter 2)
- Statistics 1 – Data (Chapter 7)
- Statistics 2 – Averages (Chapter 9)
- Patterns and Sequences – (Chapter 19)
- Sets – (Chapter 3)
- Factors – (Chapter 4)
- Perimeter, Area and Volume – (Chapter 6)
- Cylinder, Sphere and Cone – (Chapter 17)
- Statistics 3 – Presenting Data (Chapter 15)
- Distance, Speed and Time – (Chapter 11)
- Distance time graphs and graphs – (Chapter 24)
- Coordinate Plane and Coordinate Geometry – (Chapter 14)
- Simultaneous Equations – (Chapter 12)
- Geometry 1 – (Chapter 10, if its covered in class)

Revision should consist of the following:

- Go over the test yourself section at the end of each chapter.
- Go over your maths tests.
- Use your hardback, book and internet to help you with revision.
- Use One Note notebook to help with revision.
- Practice, practice, practice

Good websites:

www.mathsisfun.ie

www.projectmaths.ie

www.khanacademy.org

www.ixl.com

www.corbettmaths.com

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Sample Questions:

Algebra:

Q1.

Simplify each of the following by adding like terms.

a.)

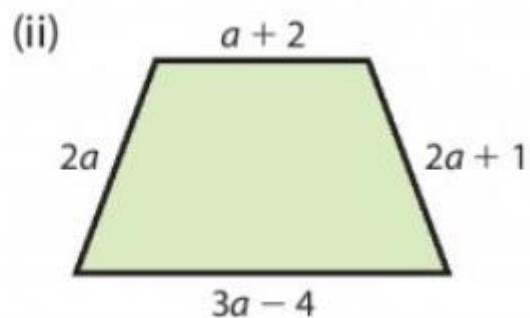
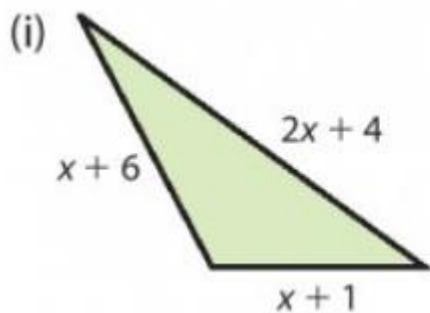
i.) $4x + 3x + 2x =$

ii.) $5x - 4 + 3x + 2 =$

iii.) $10t + 3w + 2t - 8w =$

iv.) $2p + 3q - 4r + 3p - 5q + 2r =$

b.) Write down a simplified expression for the perimeter of each shape.



i.) Perimeter =

ii.) Perimeter =

Q2.

a.) If $x = 2$ and $y = 3$ Find the value of:

i.) $x + y =$

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ii.) $2x + y =$

iii.) $3x - 4y =$

iv.) $x^2 + y^2 =$

v.) $3x + 4xy =$

Q3

a.) Each symbol stands for a number. Find its value.

i.) $5 + \text{starburst} = 11.$ $\text{starburst} =$

ii.) $\text{star} \div 3 = 4.$ $\text{star} =$

b.) Solve these equations.

i.) $3x - 1 = 8$

ii.) $2x + 7 = 21$

iii.) $3(5x - 2) = 4(3x + 6)$

iv.) $3(x+3) - 7 = 5(x - 4)$

Factors:

Q1

i.) Find the numbers which multiply together to get 18 and add together to get 11.

Answer =

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ii.) Find the numbers which multiply together to get 42 and add together to get 13.

Answer =

iii.) Find the numbers which multiply together to get 25 and add together to get 10.

Answer =

iv.) Find the numbers which multiply together to get 19 and add together to get 20.

Answer =

Q2.

Complete the following. (Fill in the brackets)

i.) $5x + 10 = 5(\quad)$

ii.) $4x + 16 = 4(\quad)$

iii.) $ab + bc = b(\quad)$

iv.) $5x^2 + 20x = 5x(\quad)$

Q3.

Factorise the following

i.) $8x + 24 =$

ii.) $pq + pr =$

iii.) $10x^2 + 40x =$

iv.) $12xy + 24xy^2 =$

Q4.

a.) Write down the factors of the following.

i.) $3(x + 4) + a(x+4)$

Answer = $(\quad) (\quad)$ (Fill in the brackets)

ii.) $3x(2x - 3) + 4(2x - 3)$

Answer = $(\quad) (\quad)$ (Fill in the brackets)

b.) Find the factors of the following.

i.) $ab + bc + ad + cd$

ii.) $x^2 + ax + bx + ab$

Q5.

Factorise the following

i.) $x^2 - 9 = (\quad)^2 - (\quad)^2 = (\quad) (\quad)$ Fill in the brackets.

ii.) $9x^2 - 100 = (\quad)^2 - (\quad)^2 = (\quad) (\quad)$ Fill in the brackets

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Q6.

Factorise the following

i.) $x^2 + 8x + 12 = (\quad)(\quad)$

ii.) $x^2 - 10x + 24 = (\quad)(\quad)$

iii.) $x^2 + 4x - 21 = (\quad)(\quad)$

Graphs and Distance, Speed and Time Graphs.

Q1.

How many minutes are there in each of these?

- (i) $\frac{1}{2}$ hour (ii) $\frac{1}{4}$ hour (iii) $\frac{2}{5}$ hour (iv) $1\frac{3}{4}$ hours (v) $\frac{7}{10}$ hour.

Q2.

Add each of the following:

$$\begin{array}{r} \text{(i) hr min} \\ 4 \quad 12 \\ 3 \quad 46 \\ \hline \end{array}$$

$$\begin{array}{r} \text{(ii) hr min} \\ 4 \quad 38 \\ 3 \quad 46 \\ \hline \end{array}$$

Q3.

How many hours and minutes from

- (i) 10.35 to 14.45 (ii) 12.48 to 16.20

Q4.

A car journey began at 10.40 and finished at 13.25.

- (i) How long did the journey take?
(ii) If the car uses 6 litres of petrol per hour and each litre costs €1.65, calculate the cost of the petrol for the journey, correct to the nearest euro.

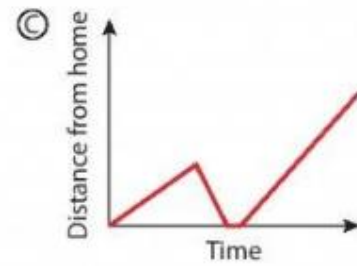
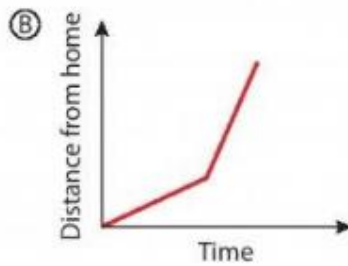
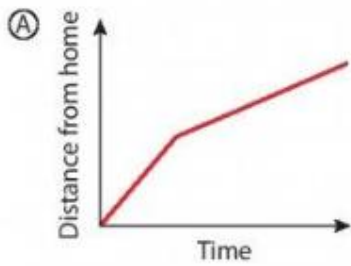
Q5.

The distance from Tralee to Dublin is 312 km. If a motorist completes the journey in 4 hr 20 min, find her average speed in km/hr.

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Q6.

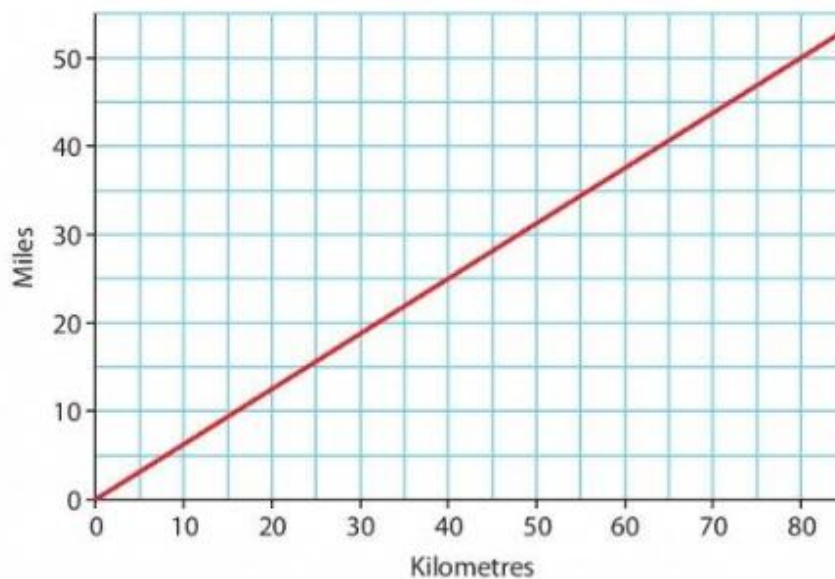
Match the graph to the story.



- (i) I am walking steadily to school. After a while, I meet a friend and we walk together. We walk slower than when I was by myself.
- (ii) I am part-way to school when I remember that I have left my homework at home. I run back home to get it and then run to school.
- (iii) I start to walk to school, then I accept a ride with a friend.

Q7.

The graph below shows the relationship between kilometres and miles.



Use the graph to convert approximately

- (i) 60 km to miles
- (ii) 80 km to miles

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Q8.

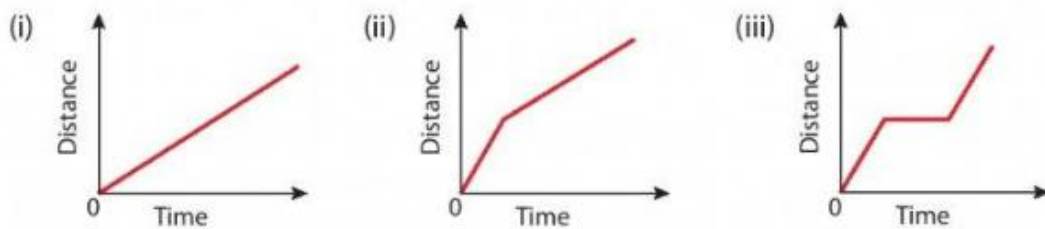
There are three routes from Appleville to Peartown.

Match the route descriptions to the appropriate *distance–time graphs*:

Route A: A two-lane highway direct with a maximum speed limit of 110 km/hour. A thirty minute wait at bridge-works.

Route B: A winding mountain road with steep gradients and curves requiring you to travel at a constant slower speed.

Route C: A two-lane highway with a maximum speed limit of 110 km/hour and then a winding detour to avoid bridge-works.



Statistics:

Q1.

State whether each of the following is numerical data or categorical data

- i.) The number of horses that ran at a race meeting
- ii.) The cost of posting each of seven parcels.
- iii.) The hair colours of the students in your class.
- iv.) The types of crops grown on a tillage farm.
- v.) The number of jigsaw pieces in a selection of jigsaw boxes.

Q2.

For each of these types of data, write down whether it is discrete or continuous.

- i.) The marks gained by the pupils in your class in a maths test.
- ii.) The shoe sizes of the pupils in your class.

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- iii.) The times taken to finish a 100-meter race.
- iv.) The area of your sports hall.
- v.) The number of buttons on a jacket.

Q3.

Denise carried out a survey to find how students travelled to school. Her frequency table looked like this:

Method of travel	Tally	Frequency
Walk		A
Car		B
Bus		C
Bicycle		D
Taxi		E

- i.) Write down the values for A, B, C, D, E
A = , B = , C = , D = , E =
- ii.) What is the most common way of travelling to school?
- iii.) What fraction of the students cycled to school?
- iv.) Which two methods were used exactly by one half of the students?

Q4.

Find the mean, median, mode and range of the following set of numbers

11, 7, 3, 2, 6, 2, 8, 7, 2.

Mean =

Median =

Mode =

Range =

Q5.

- 1) The mean of the six numbers 3, 6, 7, 8, 9 and x is 10. Find x
- 2) What number should be added to the above list to increase the mean to 11?
- 3) What number should be added to the above list to reduce the mean to 9?

Perimeter, Area and Volume

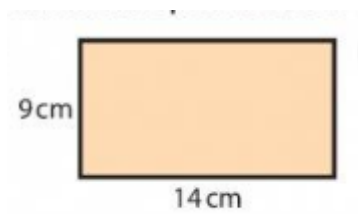
Q1. Define the following terms (explain in your own words):

Area:

Perimeter:

Q2. Find the area and perimeter of the following shapes:

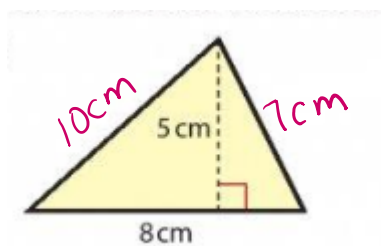
(a)



Area:

Perimeter:

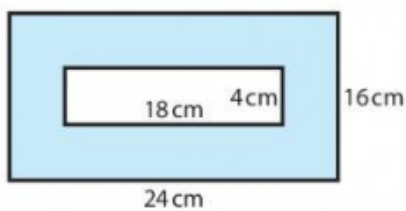
(b)



Area:

Perimeter:

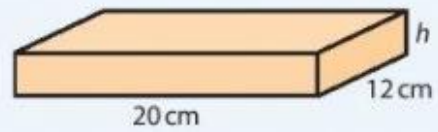
Q3. Find the shaded region:



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Q4.

The volume of the given solid is 1080 cm^3 .
Find the height h of the solid.



Q5.

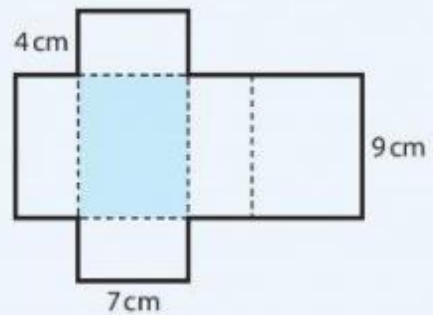
A map has a scale of $1 : 25\,000$.

- (i) What is the actual distance if the scaled distance is 4 cm?
- (ii) What is the scaled distance if the actual distance is 3.5 km?

Q6.

Here is the net of a rectangular box.
The shaded rectangle is the base of the box.

- (i) What is the height of the box?
- (ii) Find the volume of the box.
- (iii) Find the surface area of the box.

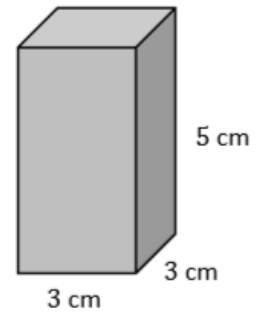
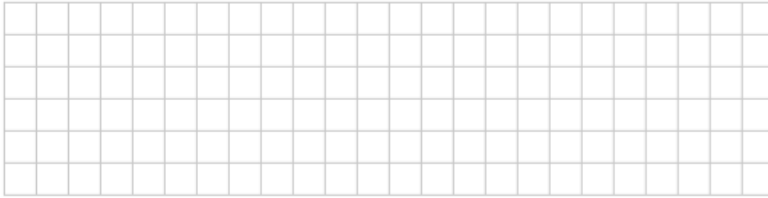


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Q7.

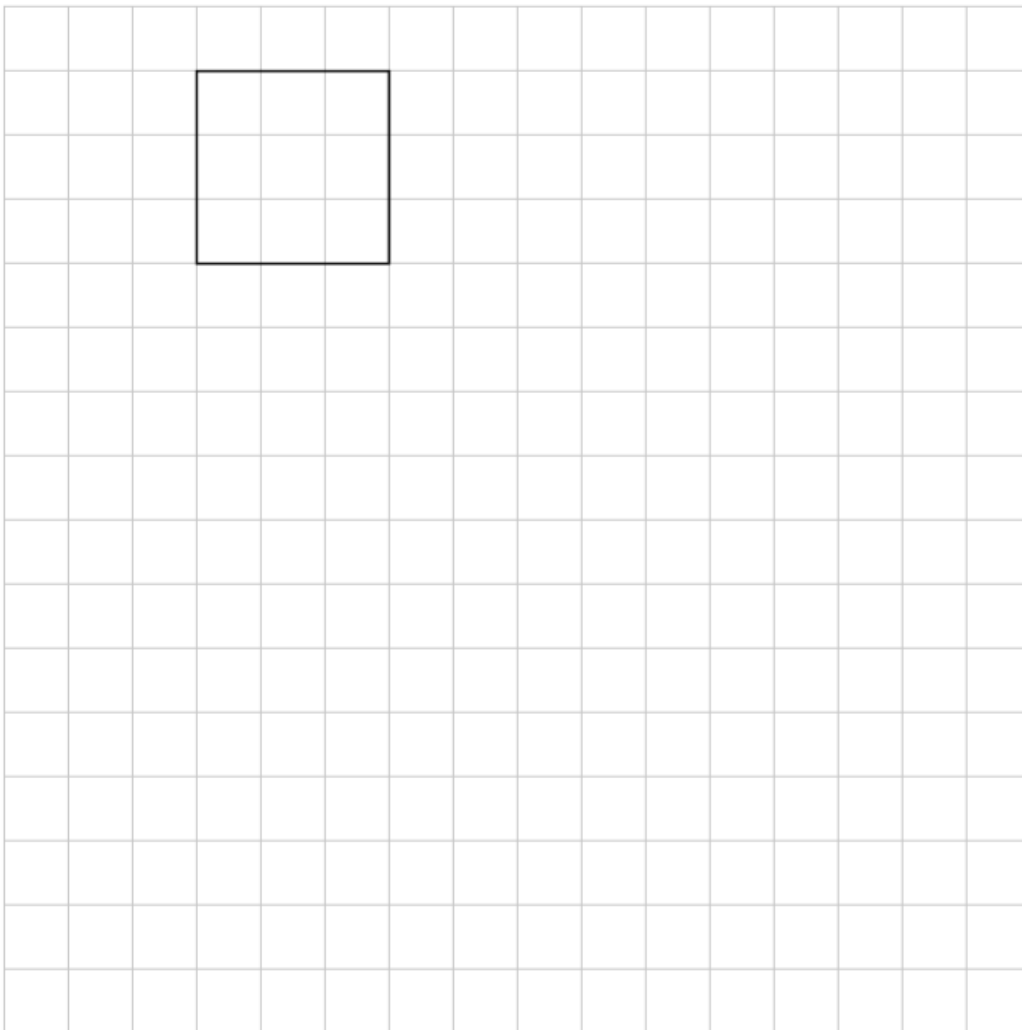
A closed rectangular box has a square base with sides of length 3 cm, and a height of 5 cm.

(a) Find the **volume** of the box.



(b) The diagram below shows part of a **net** of the box.

Complete the net, as accurately as you can.

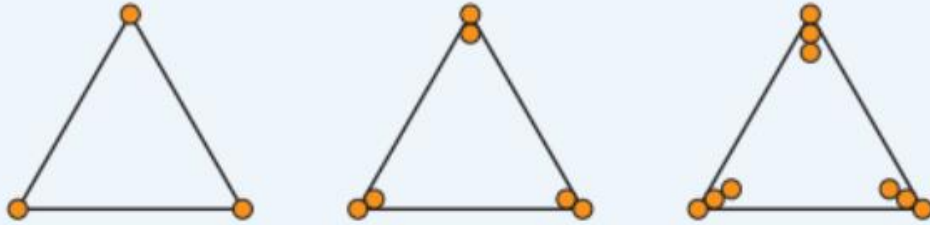


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Patterns:

Q1.

Look at the sequence of these triangle patterns:



- (i) Draw the next triangle in the sequence.
- (ii) How many dots will there be in the 5th pattern?
- (iii) Find an expression for the n th term for this sequence.
- (iv) Use the expression for the n th term to find which pattern has 63 dots.

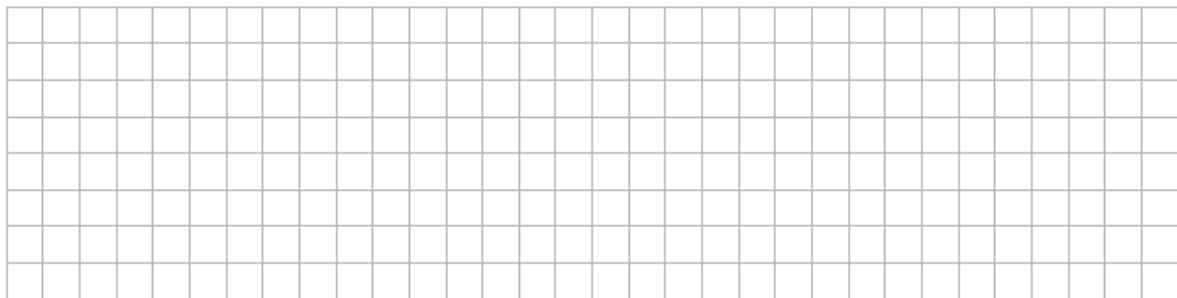
Q2.

Which **one** of the following sequences is linear?

(i) 6, 4, 0, ...

(ii) -3, -1, 3, 6, ...

(iii) -5, -3, -1, 1, ...



Q3.

A sequence of numbers begins 36, 20, 12, 8, ...

The rule for the sequence is 'add 4 to the previous term and then halve the result'.

- (i) Work out the next three terms.
- (ii) Is the sequence linear? Explain your answer.
- (iii) Is the sequence quadratic? Explain your answer.

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3.

State whether the data in each of the following situations is:

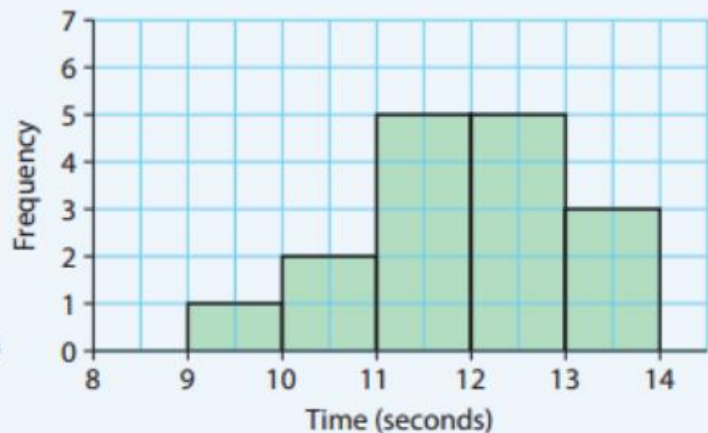
- (i) Numerical discrete,
 - (ii) Numerical continuous
 - (iii) Categorical data where the categories are not ordered
 - (iv) Ordered categorical data
-
- The temperature of the air in the classroom. _____
 - The number of people who voted for each political party in the last general election.

 - The time it takes you to travel to school. _____
 - Breed of dogs. _____
 - The speed of the runners in an Olympic race. _____
 - The number of goals scored in a football match. _____
 - The months of the year in which students in the class were born. _____

4.

The histogram below shows information about the training times taken by some 100 m runners before the Olympic Games.

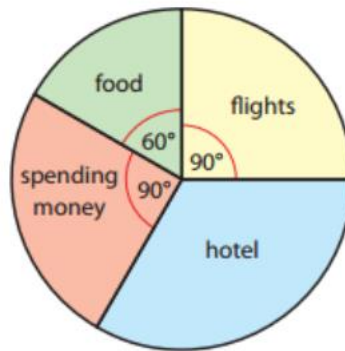
- (i) Write down the reason why there are no gaps between bars.
- (ii) Write down the number of runners that took between 10 and 12 seconds.
- (iii) Work out the number of runners that took 12 seconds or more.
- (iv) Work out how many runners there were altogether.



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5.

The pie chart shows how the cost of a holiday was shared between various items.



The flights cost €450.

- (i) Calculate the total cost of the holiday.
- (ii) (a) Calculate the size of the angle which represents the cost of the hotel.
(b) Calculate the cost of the hotel.