

1. Eight houses in a street are inhabited by different numbers of people, as shown in the table below.

House	A	B	C	D	E	F	G	H
Number of inhabitants	5	4	7	6	4	3	6	4

- (a) The following statements refer to the number of inhabitants per house. Write down true (T) or false (F) for each.
- (i) The mean is 5.
  - (ii) The range is 4.
  - (iii) The mode is 6.
  - (iv) The standard deviation is 1.4 correct to 2 significant figures. (4)
- (b) Calculate the interquartile range for the number of inhabitants per house. (2)
- (Total 6 marks)**

2. Give all your numerical answers correct to two decimal places.

On 1 January 2005, Daniel invested 30 000 AUD at an annual **simple** interest rate in a *Regular Saver* account. On 1 January 2007, Daniel had 31 650 AUD in the account.

- (a) Calculate the rate of interest. (3)

On 1 January 2005, Rebecca invested 30 000 AUD in a *Supersaver* account at a nominal annual rate of 2.5 % **compounded annually**.

- (b) Calculate the amount in the *Supersaver* account after two years. (3)
- (c) Find the number of complete years since 1 January 2005 it will take for the amount in Rebecca's account to exceed the amount in Daniel's account. (3)

On 1 January 2007, Daniel reinvested 80 % of the money from the *Regular Saver* account in an *Extra Saver* account at a nominal annual rate of 3 % **compounded quarterly**.

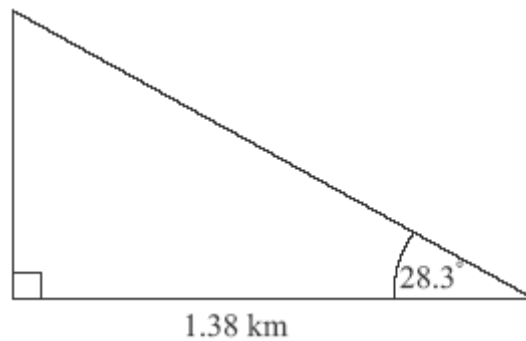
- (d) (i) Calculate the amount of money reinvested by Daniel on the 1 January 2007.
- (ii) Find the number of complete years it will take for the amount in Daniel's *Extra Saver* account to exceed 30 000 AUD. (5)
- (Total 14 marks)**

3. José stands 1.38 kilometres from a vertical cliff.

(a) Express this distance in metres.

(1)

José estimates the angle between the horizontal and the top of the cliff as  $28.3^\circ$  and uses it to find the height of the cliff.



*diagram not to scale*

(b) Find the height of the cliff according to José's calculation. **Express your answer in metres, to the nearest whole metre.**

(3)

(c) The actual height of the cliff is 718 metres. Calculate the percentage error made by José when calculating the height of the cliff.

(2)

**(Total 6 marks)**

4. Astrid invests 1200 euros for five years at a nominal annual interest rate of 7.2 %, **compounded monthly**.

(a) Find the interest Astrid has earned during the five years of her investment. **Give your answer correct to two decimal places.**

(3)

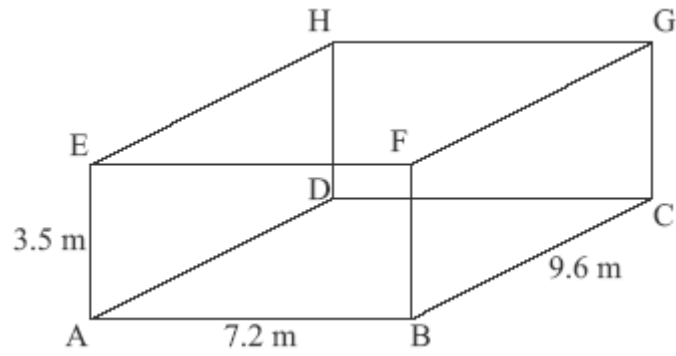
Helen invests 1200 euros in an annual **simple interest** scheme for five years. She earns **the same** interest as Astrid.

(b) Find the simple interest rate of this scheme.

(3)

**(Total 6 marks)**

5. A room is in the shape of a cuboid. Its floor measures 7.2 m by 9.6 m and its height is 3.5 m.

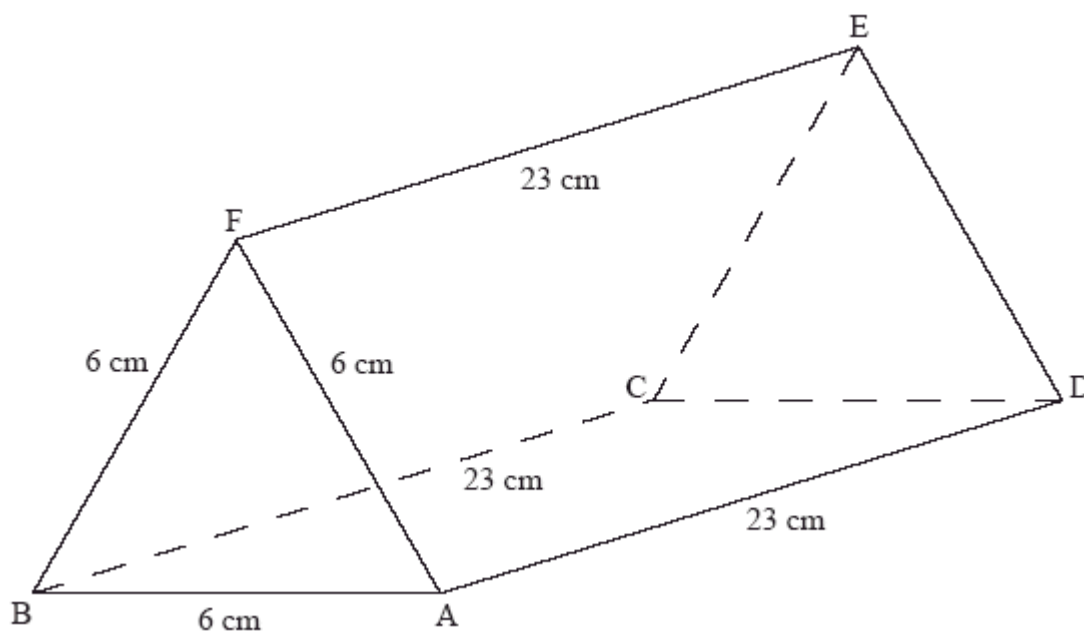


*diagram not to scale*

- (a) Calculate the length of AC. (2)
- (b) Calculate the length of AG. (2)
- (c) Calculate the angle that AG makes with the floor. (2)

(Total 6 marks)

6. A chocolate bar has the shape of a triangular right prism ABCDEF as shown in the diagram. The ends are equilateral triangles of side 6 cm and the length of the chocolate bar is 23 cm.



*diagram not to scale*

- (a) (i) Write down the size of angle  $\hat{B}AF$ .
- (ii) Hence or otherwise find the area of the triangular end of the chocolate bar. (4)
- (b) Find the total surface area of the chocolate bar. (3)
- (c) It is known that  $1 \text{ cm}^3$  of this chocolate weighs 1.5 g. Calculate the weight of the chocolate bar. (3)

A different chocolate bar made with the same mixture also has the shape of a triangular prism. The ends are triangles with sides of length 4 cm, 6 cm and 7 cm.

- (d) Show that the size of the angle between the sides of 6 cm and 4 cm is  $86.4^\circ$  correct to 3 significant figures. (3)

(e) The weight of this chocolate bar is 500 g. Find its length.

(4)

(Total 17 marks)