Homework 2

You have one week to complete this. What you hand in should be your best work, and you must attempt every question (the only exception being if there are optional topics which don't apply to you).
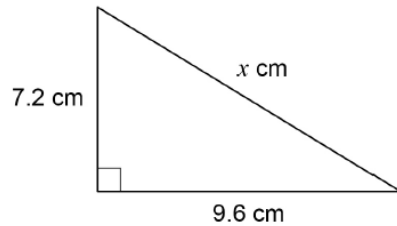
If you are stuck then please either consult notes or textbooks, attend a workshop, or ask your teacher.

You may need to refer to the formula book, found here:

or financial information, found here:

1) Here is a right-angled triangle.

Not drawn accurately

7.2 cm

x cm

9.6 cm

Show that $x = 12$

[2 marks]

2) A number is written on each of the cards below so that the four numbers have

a median of 13
a mode of 10
a range of 13

Work out the four numbers.

[2 marks]

3) The cash price for a boiler is £2000
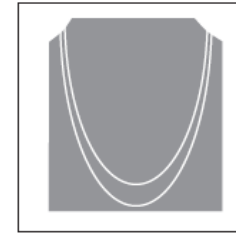Customers can pay the cash price or pay monthly.

Cash Price	Pay Monthly
£2000	60 monthly payments of £40

Work out the percentage increase from the cash price when paying monthly.

[4 marks]

4) A roll of chain is 26 000 mm long.
To make one necklace, two pieces are cut from the roll.

One piece is 460 mm, to the nearest 10 mm
The other is 510 mm, to the nearest 10 mm

Work out the **greatest** number of these necklaces that **could possibly** be made from the roll.
You **must** show your working.

[4 marks]

5) A college employs teachers, office staff and managers.
The table shows the number of people in each type of job.

Teachers	Office Staff	Managers
86	37	12

A sample of 30 staff is chosen, stratified by type of job.

How many **more** teachers than office staff are chosen?

[3 marks]

6) William employs 36 workers.

He wants to ask a random sample of 6 workers their opinions on new security arrangements.

William has two dice, one is red and one is blue.

Explain how William could use his two dice to obtain a random sample of workers.

[3 marks]

7) A car salesman records information about the cars he is selling.

Here is a list of words.

   Qualitative   **Continuous**   **Discrete**

Use a word from the list to complete each sentence.

(a) The number of doors is .... data.

(1)

(b) The age of each car is .... data.

(1)

(c) The colour of the car is .... data.

(1)

8) A film production company wants to find out what people think of its latest (15-rated) film release.

The company is interested in finding out whether there are any differences in views between males and females and between younger and older audience members.

They expect roughly equal numbers of males and females in the audience.

The company hires market researchers to question audience members as they leave cinemas after watching the film.

The market researchers plan to use quota sampling to get the views from a sample of 200 audience members.

(a) Complete the table to identify four subgroups (strata) that the market researchers could use.

You should also suggest possible values for the number of people to be interviewed from each subgroup.

[3 marks]

Subgroup	Number to be interviewed (quota)

Total = 200

(b) Describe how the market researchers could obtain the quota sample.

[2 marks]

(c) Write down one reason why results from quota sampling can be unreliable.

[1 mark]

9) (a) Estimate how many peas you would need to fill a bath
(b) How might changing one of your assumptions affect your answer?