

You have one week to complete this. What you hand in should be your best work, and you must attempt every question.

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) Paula has decided to have her bedroom redecorated. The work involved has been divided into a number of tasks, as shown in the table. The minimum time required to complete each task is also shown.

| Activity | Immediate predecessor | Duration (hours) |
|---------------------------------------------------|-----------------------|------------------|
| A: Move all furniture into the centre of the room | – | 1 |
| B: Take down curtains and curtain rail | A | 0.5 |
| C: Clean and sand the woodwork | A | 3 |
| D: Strip the old wallpaper | B | 6 |
| E: Paint the ceiling with a first coat | D | 2 |
| F: Undercoat the woodwork | C | 3 |
| G: Paint the ceiling with a second coat | E | 2 |
| H: Gloss the woodwork | F | 4 |
| I: Hang the new wallpaper | G, H | 5 |
| J: Put up curtain rail and hang curtains | I | 0.5 |
| K: Move furniture back into its correct place | I | 1 |
| L: Tidy the room | J, K | 1 |

- (a) Construct an activity network for the project. [2 marks]
- (b) Find the earliest start time and latest finish time for each activity. [3 marks]

- 2) Jasmin wants to borrow £150 from a lender offering loans at an APR of 25% if she pays back the loan in two equal repayments, the first at the end of one year and the second at the end of two years.
- (a) Find the amount of each repayment. (3 marks)
- (b) A different lender offers the loan for a single payment of £200 at the end of two years. What is the APR in this case? (4 marks)

- 3) Ryan works in quality control at a biscuit factory. He checks the weights of 50 packets of biscuits.

| Weight, g (grams) | Frequency |
|--------------------|-----------|
| $230 \leq g < 234$ | 1 |
| $234 \leq g < 238$ | 6 |
| $238 \leq g < 242$ | 23 |
| $242 \leq g < 246$ | 17 |
| $246 \leq g < 250$ | 3 |

- (a) Work out an estimate of the mean weight of biscuits in these packets. [4 marks]
- (b) The biscuit manufacturer claims that the average weight of a packet of these biscuits is 240 grams.
- Does this seem a reasonable claim?
Give a reason for your answer. [1 mark]

- 4) A house has been bought in which the garden is overgrown and needs to be completely restored.

The work involved has been divided into a number of tasks, as shown in the table. The minimum time required to complete each task is also shown.

| Activity | Immediate predecessor | Duration (hours) |
|-------------------------------------|-----------------------|------------------|
| A: Demolish garage | – | 4 |
| B: Cut down trees | – | 3 |
| C: Remove all plants | – | 5 |
| D: Remove garage | A | 2 |
| E: Remove all weeds | B, C | 5 |
| F: Level sub-soil in front garden | E | 3 |
| G: Level sub-soil in rear garden | D, E | 6 |
| H: Cover front garden with top soil | F | 3 |
| I: Build rockery in rear garden | G | 5 |
| J: Fit pond in rockery | I | 4 |
| K: Cover rear garden with top soil | J | 5 |
| L: Lay turf | H, K | 8 |
| M: Fill pond | J | 1 |
| N: Plant flowers and shrubs | L | 5 |
| O: Water lawn and plants | N | 2 |

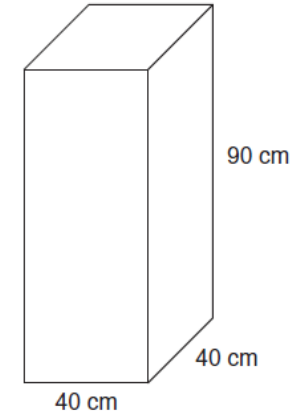
- (a) Construct an activity network for the project. (3 marks)
- (b) Find the earliest start time for each activity. (2 marks)
- (c) Find the latest finish time for each activity. (3 marks)

- 5) I increase a number by 24%
The answer is 6014.

What number did I start with?

[3 marks]

- 6) The diagram shows a water tank in the shape of a cuboid.



The tank is full of water.

1 litre = 1000 cm³

How many gallons of water are in the tank?

[4 marks]

- 7) The weights, in grams, of 15 turnips were as follows.

115 455 550 590 585 230 450 480
370 110 445 370 575 425 550

For these 15 weights:

- (a) find the range, and state why the mode is **not** a suitable numerical measure; [2 marks]
- (b) find the median and calculate the interquartile range; [3 marks]
- (c) calculate the mean and the standard deviation. [2 marks]

- 8) a) Estimate how many people could fit into a lift. (you do not need to take into account weight)
- b) Is this realistic?
- c) How would changing one of your assumptions affect your answer