

Write your name here

Surname

Other names

Edexcel
Functional Skills

Centre Number

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Candidate Number

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Mathematics

Level 2



8–12 October 2012

Time: 1 hour 30 minutes

Paper Reference

FSM02/01

You must have:

Pen, calculator, HB pencil, eraser, ruler graduated in cm and mm, protractor, compasses.

Total Marks

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My signature confirms that I will not discuss the content of the test with anyone until the end of the 5 day test window.

Signature: _____

Instructions

- Use **black** ink or ball-point pen.
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Sign the declaration.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**

Information

- The total mark for this paper is 48.
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*
- **Where you see this sign you must show clearly how you get your answers because marks will be awarded for your working out.**
- **Check your working and your answers at each stage.**



Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.

Turn over ►

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PEARSON

SECTION A: Care home

Answer all questions in this section.

Write your answers in the spaces provided.

1 Eileen is the owner of a care home.

She knows that the ratio of day time staff to residents must be at least 1:7
There are 8 day time staff and 32 residents in the care home.

Eileen thinks she has more than enough day time staff.

(a) Is Eileen right?
Explain why you think this.

(2)

Use the box below to show clearly how you get your answer.



Eileen schedules 3 staff to work every night at the care home.

The night time staff work between 8 pm and 8 am.

Each of the night time staff

- has one break of 15 minutes and one break of 45 minutes
- works for a minimum of 4 hours before they can take their first break
- must not work for more than 5 hours without a break
- must finish their breaks by 6 am

Eileen knows there must be at least 2 staff working at all times.

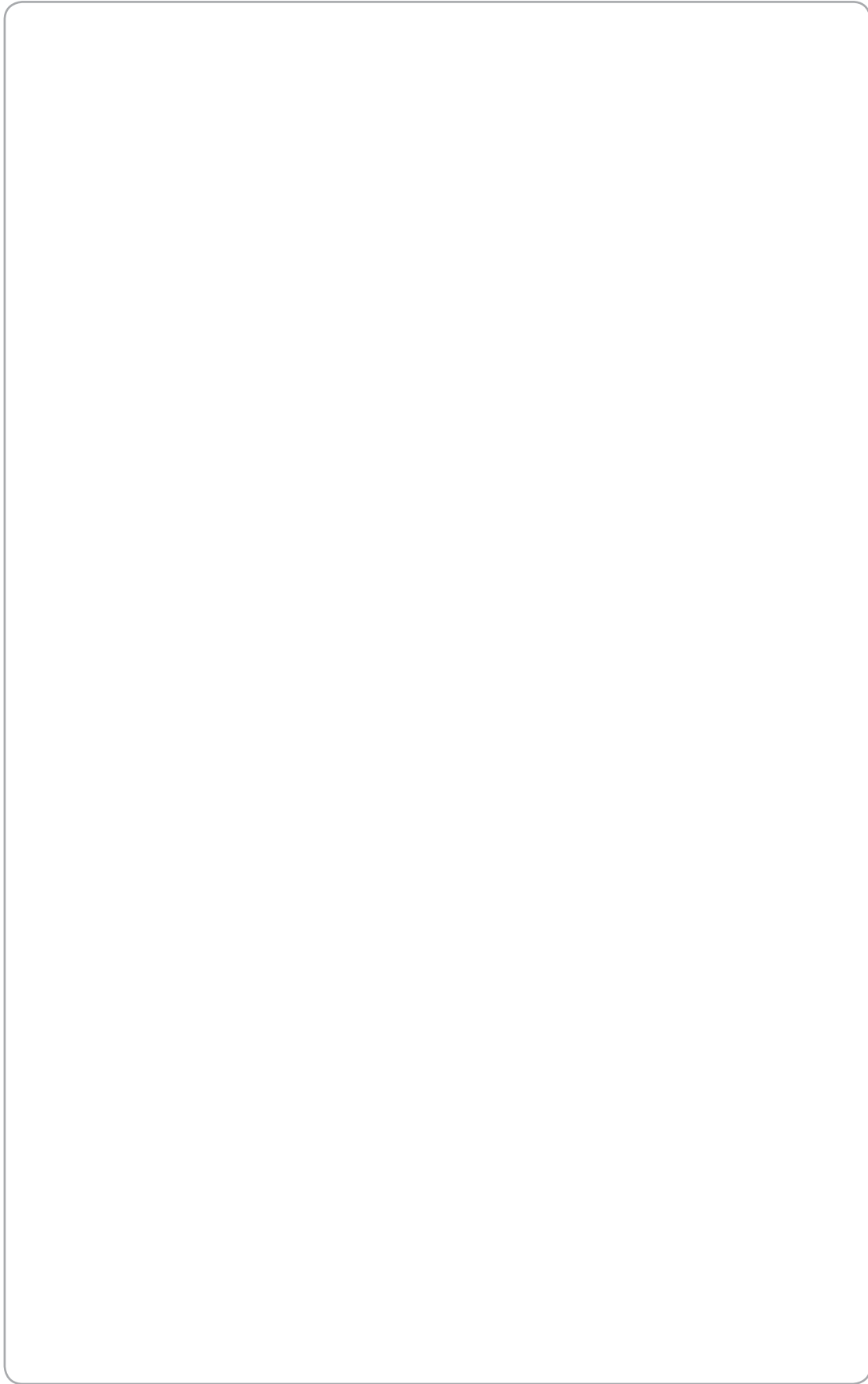
She needs a schedule showing the start and finish times of each break for all 3 staff.

(b) Design a schedule for the night time staff breaks.
Check that your schedule works.

(3)



Use the box below to show your schedule.



(Total for Question 1 is 5 marks)



- 2 Eileen wants to have the care home car park resurfaced.
She asks Mr Dunn to quote for the job.

Mr Dunn measures the car park.

It is a rectangle 22 m by 17 m.

He knows the car park needs 100 mm thickness of concrete.

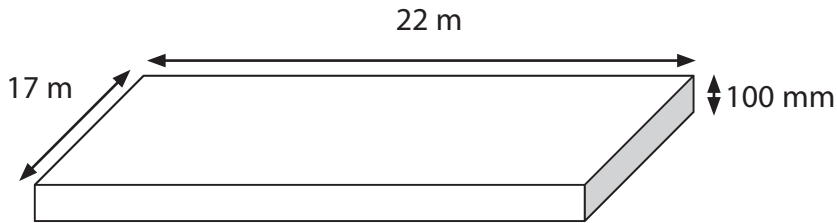


Diagram **NOT**
accurately drawn

Mr Dunn uses this formula to work out the amount of concrete he needs.

$$\text{Volume (m}^3\text{)} = \text{Length (m)} \times \text{Width (m)} \times \text{Thickness (m)}$$

- (a) What volume of concrete does Mr Dunn need to resurface the car park?

(3)

Use the box below to show clearly how you get your answer.



Mr Dunn needs to work out how much to quote Eileen for the work.

He uses this information for the quote.

- He will order 40 m^3 of concrete at £60 per m^3
- It will take 4 days to prepare the car park and resurface it with concrete.
- He charges £225 per day.
- He must add VAT at 20% to the total bill.

(b) How much should Mr Dunn quote Eileen?
Show a check of your answer.

(5)

Use the box below to show clearly how you get your answer.



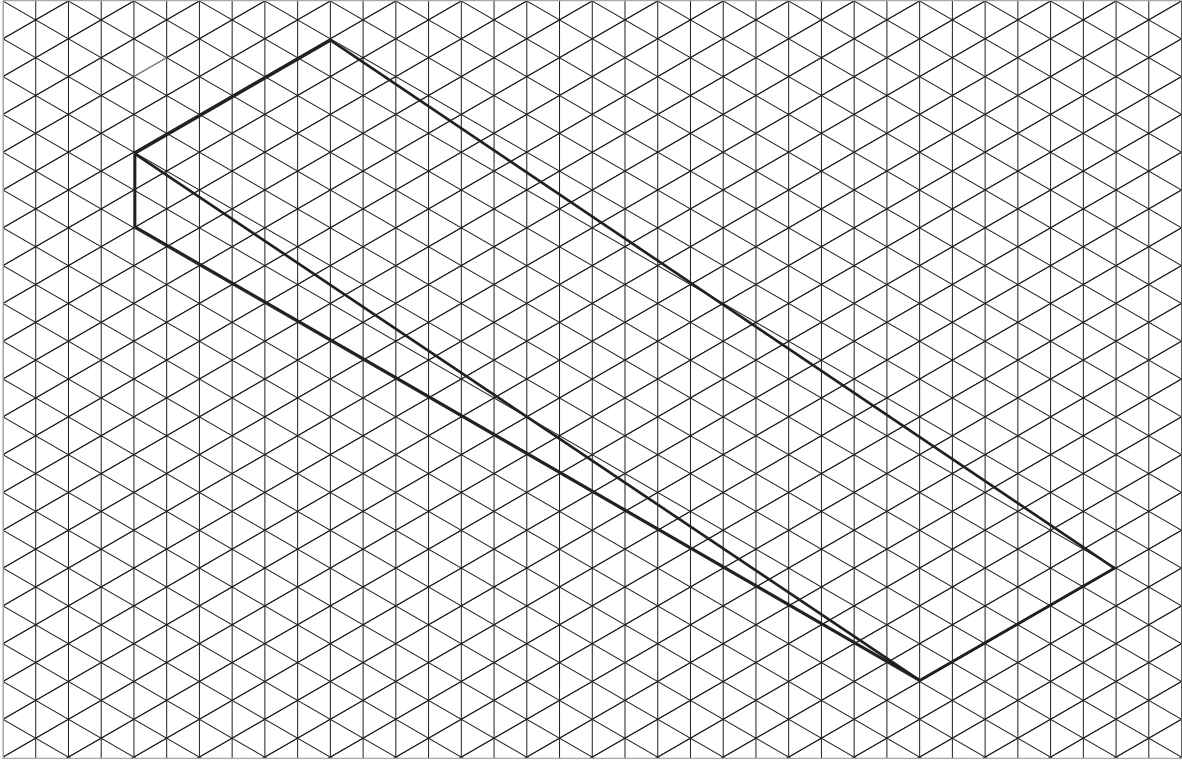
A large empty rectangular box for writing the solution to the problem.



P 4 0 7 5 2 A 0 5 2 0

Eileen asks Mr Dunn to build a ramp at the entrance to the care home.

The diagram shows an isometric drawing of the ramp.



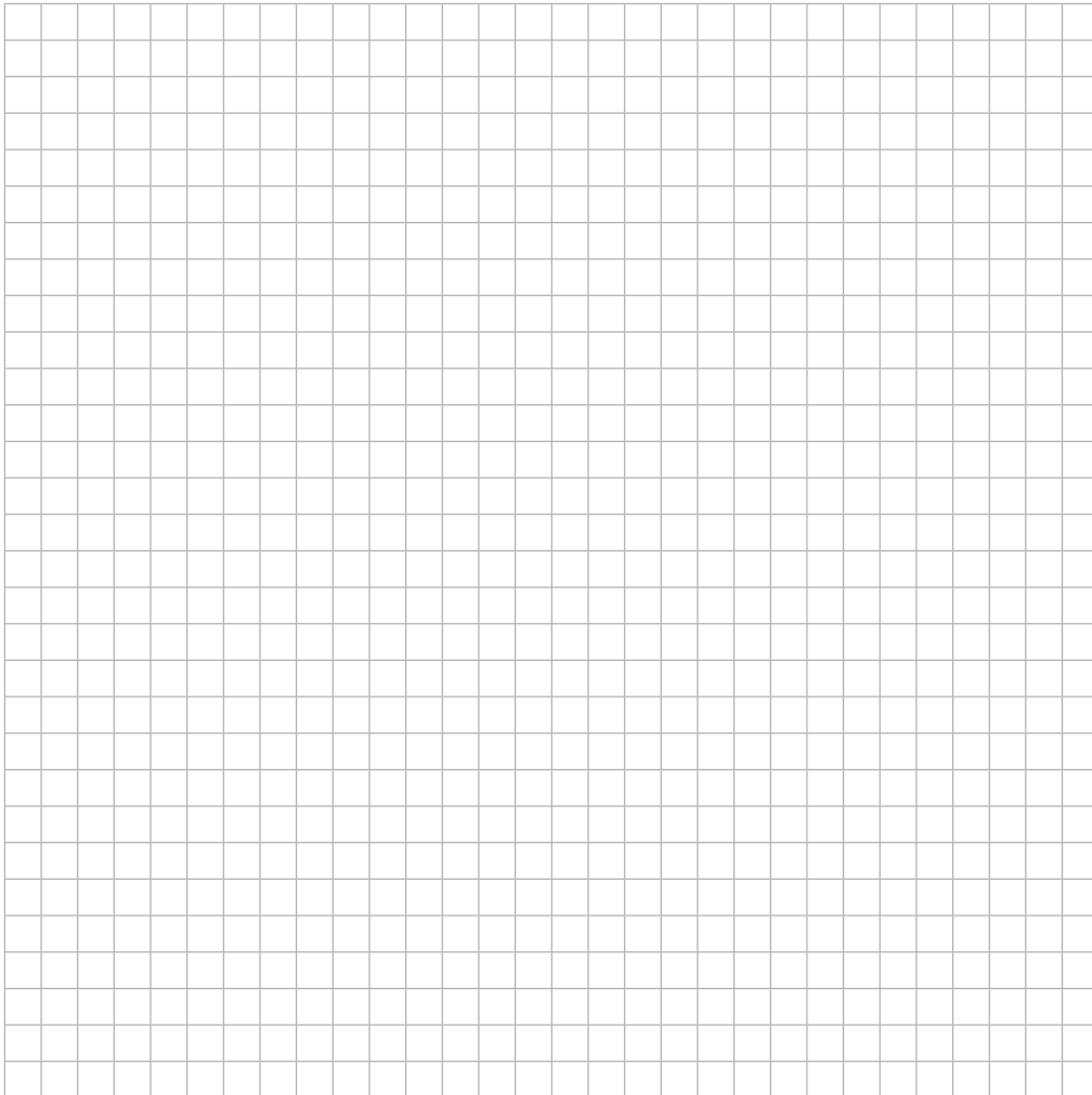
Key: 1 cm on the isometric grid is 0.5 m on the ramp

(c) Draw a plan view of the ramp on the square grid opposite.
Show your scale.

(3)



Use the grid below to show your plan view and complete the key.



Key:on the square grid is on the ramp

(Total for Question 2 is 11 marks)



SECTION B: Fish farming

Answer all questions in this section.

Write your answers in the spaces provided.

3 Khalid is a farmer.

He wants to use some of his land for a fish farm.

Khalid visits his friend Roger's fish farm.

Roger has a fish pond with a water pump.

- The pond holds 12 000 000 litres of water.
- The water pump exchanges water at a rate of 250 litres per minute.

Roger says

It takes more than 30 days for the water pump to exchange the total amount of water in my fish pond.

Is Roger correct?

(4)

Use the box below to show clearly how you get your answer.



(Total for Question 3 is 4 marks)



4 Khalid wants to build a circular pond covering about 1 acre.

1 acre is approximately 4050 m²

Khalid finds a formula for the area of a circle.

$$A = 0.785d^2$$

A = area (m²)

d = diameter (m)

Khalid calculates that a pond with a diameter of 72 m will have an area of about 1 acre.

(a) Is Khalid correct?

(3)

Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the answer.



Roger gives Khalid this information about trout for a fish pond.

Size of trout	Cost per trout	Number of trout per kg
medium	£1.10	8
large	£1.55	4

Khalid thinks he will need a total weight of 900 kg of trout.
Khalid wants at least 1000 of each size of trout.

(b) How many of each size of trout could Khalid buy?
Calculate the total cost.

(5)

Use the box below to show clearly how you get your answer.



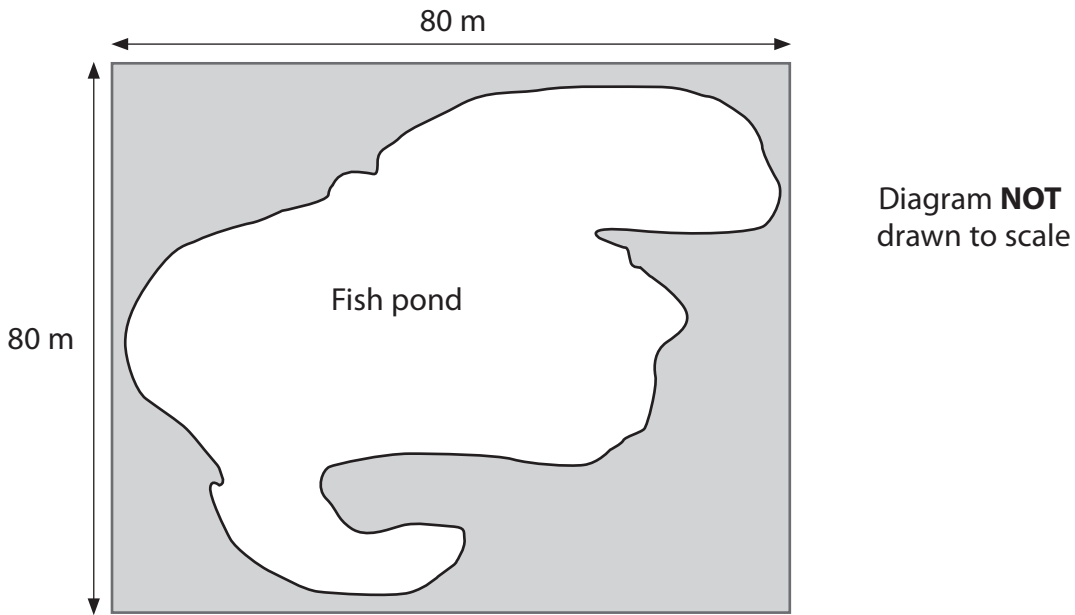
A large empty rectangular box for writing answers.

(Total for Question 4 is 8 marks)



5 Roger wants to sow wetland grass seed around his fish pond.

The diagram shows a plan of the fish pond and the area around it. The shaded region represents the area for the wetland grass seed.



The fish pond covers an area of approximately 6000 m^2

Roger finds information about wetland grass seed.

- The sowing rate is 3 g per m^2
- A bag contains 250 g of seed.

Roger orders 5 bags of wetland grass seed.

Has Roger ordered enough wetland grass seed?

(4)



Use the box below to show clearly how you get your answer.



A large, empty rectangular box with rounded corners, intended for the student to show their work.

(Total for Question 5 is 4 marks)



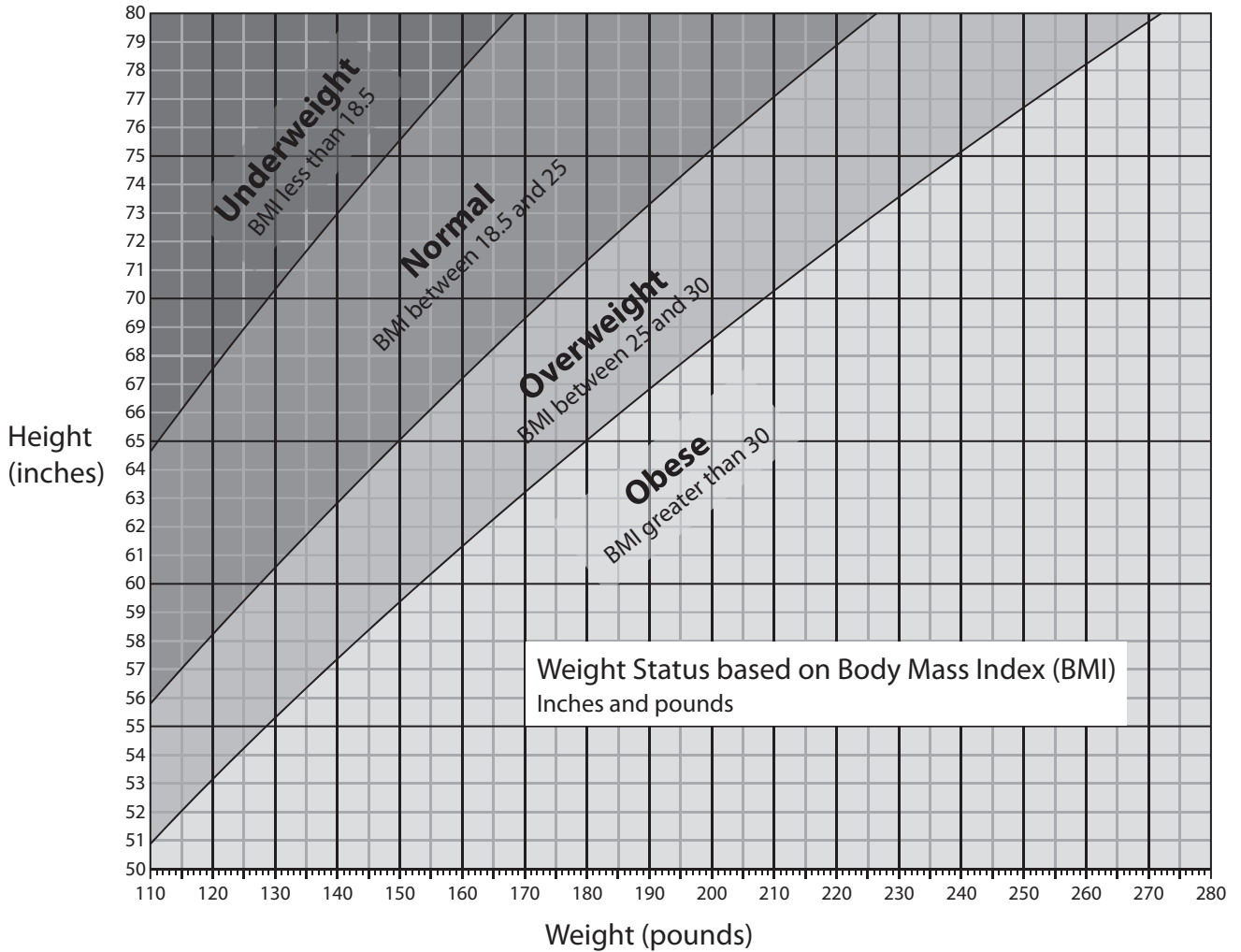
SECTION C: Slimming club

Answer all questions in this section.

Write your answers in the spaces provided.

- 6 Vicky works at a slimming club.
Jess goes to Vicky for advice about her weight.

Vicky uses a Body Mass Index (BMI) graph to set a target weight for Jess.
The BMI graph uses inches and pounds.



Jess is 5 foot 3 inches tall.
Her weight is 10 stone 10 pounds.

Use
1 stone = 14 pounds
1 foot = 12 inches

Vicky sets a target weight for Jess to have a Normal BMI.

What is the minimum number of pounds Jess should lose to reach her target?

(4)

Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the answer and showing the working.

(Total for Question 6 is 4 marks)



- 7 Xin belongs to the slimming club.
She writes down the food and drink she consumes for one week.

Vicky works out Xin's calorie intake.
Calorie intake is the number of calories in the food and drink.

Day	Calorie intake
Mon	2000
Tue	2000
Wed	1800
Thu	1900
Fri	2060
Sat	1850
Sun	1900

(a) Calculate the mean calorie intake per day in Xin's weekly record.

(2)

Use the box below to show clearly how you get your answer.



Xin wants to lose 6 pounds in weight in 9 weeks.
She asks Vicky how long it will take if her calorie intake for each week stays the same as her weekly record.

Vicky knows

- she needs to calculate how many more calories Xin uses than her calorie intake
- for every 3500 calories more Xin will lose 1 pound in weight
- Xin uses 2200 calories per day.

(b) Can Xin lose 6 pounds in 9 weeks if her calorie intake stays the same as her weekly record?

(5)

Use the box below to show clearly how you get your answer.



A large empty rectangular box for writing the answer.

(Total for Question 7 is 7 marks)



8 Vicky uses this rule to work out a target weight for Joe.

- 106 pounds in weight for the first 5 feet in height
- 6 pounds in weight for each inch over 5 feet

Joe is 5 feet 10 inches in height.
His weight is 180 pounds.

(a) How many pounds must Joe lose to reach his target weight?

(2)

Use the box below to show clearly how you get your answer.



Kerry and Gavin go to the slimming club.

Vicky works out the weight lost as a fraction of their original weight.

	original weight in pounds	weight lost in pounds
Kerry	140	7
Gavin	180	12

Vicky thinks Kerry has lost a greater fraction of weight than Gavin.

(b) Is Vicky correct?
Show why you think this.

(3)

Use the box below to show clearly how you get your answer.



(Total for Question 8 is 5 marks)

TOTAL FOR PAPER IS 48 MARKS



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