

Write your name here

Surname

Other names

Edexcel
Functional Skills

Centre Number

--	--	--	--	--

Candidate Number

--	--	--	--

Mathematics

Level 2



18–22 July 2011

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

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.
- 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.**



Advice

- Read each question carefully before you start to answer it.
- Show all stages in the calculations.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

P39466A

©2011 Edexcel Limited.

6/3/2



edexcel 
advancing learning, changing lives

SECTION A: Fitness centre

Answer all questions in this section.

Write your answers in the spaces provided.

1 Krystal owns a fitness centre.

From Monday to Friday the fitness centre opens at 5.45 am.

It closes at 10.30 pm.

(a) On Monday, how long is the fitness centre open?

(2)

Write your answer in the box below.

Krystal wants to buy equipment for the gym, so she needs a loan of £10 000 from the bank.

She needs to know the cost of paying back the loan to the bank.

The table shows the costs of paying back a £10 000 loan over different numbers of years.

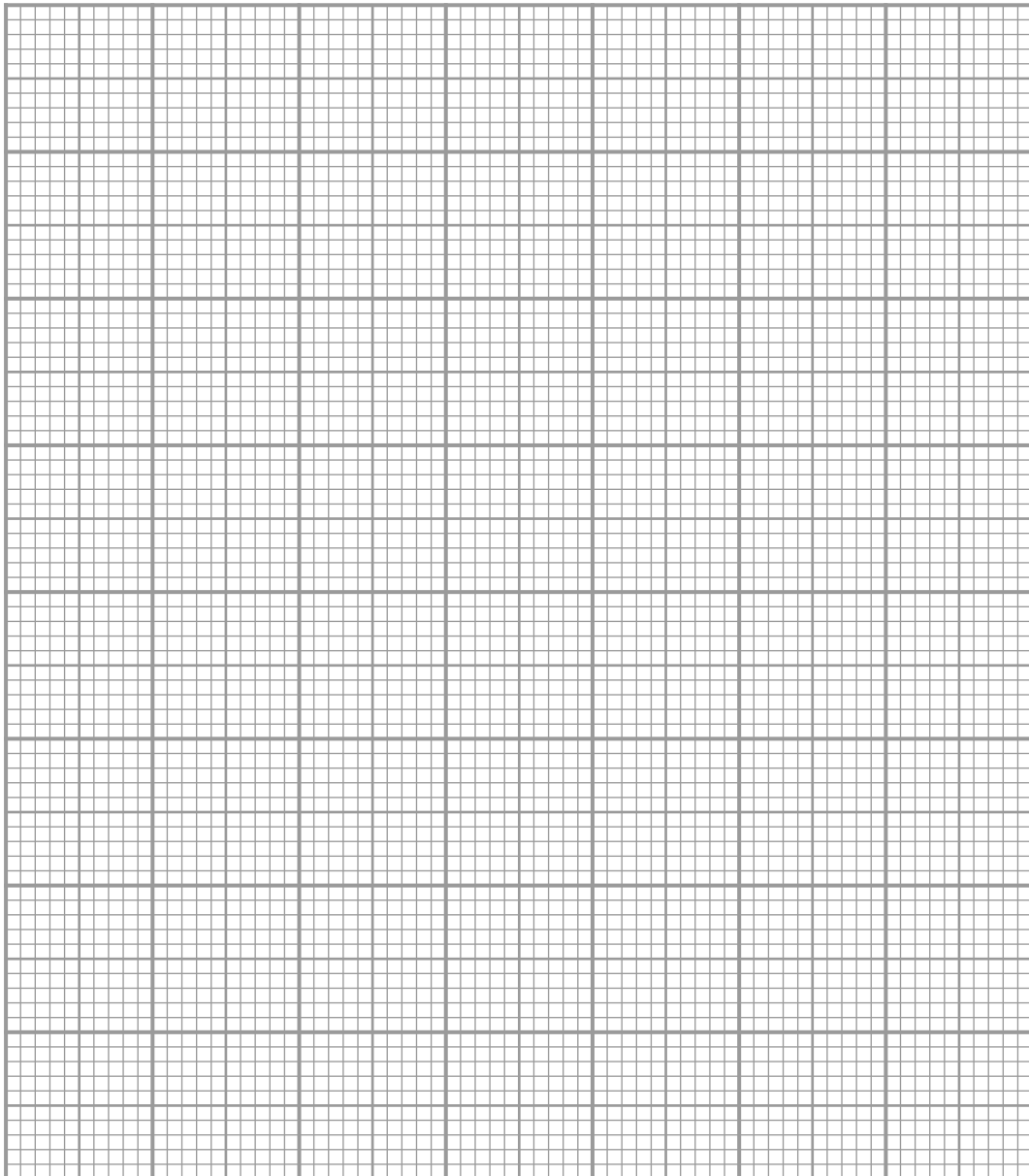
2 years	4 years	6 years	8 years	10 years
£12 500	£13 500	£15 300	£18 500	£23 000

Krystal wants to estimate the cost of paying back the loan over 5 years.

(b) Draw a graph for Krystal and use the graph to estimate the cost of paying back the loan over 5 years.

(4)





In the box below, write your estimate of the cost of paying back the loan over 5 years.

(Total for Question 1 is 6 marks)



2 Krystal wants to make a timetable for Monday afternoons.

These are the activities she wants to put in the timetable.

Activity	Duration
Yoga	1 hour
Step	45 minutes
Bike	45 minutes
Aquafit	45 minutes
Circuit training	45 minutes
Over 60s' fitness	1 hour
Aerobics	1 hour
Interval training	1 hour
Pilates	1 hour
Aero biking	1 hour

On Monday afternoons

- Yusef and Faith are the activity leaders
- the timetable will start at 1.00 pm
- the timetable will finish by 5.45 pm

Yusef and Faith must

- each have a break of 15 minutes
- not work more than 3 hours before taking the break
- work for the same total length of time


For each activity, the timetable must show the start time and the name of the activity leader.

Make a timetable for Monday afternoons.

(4)



Use the box below to show your timetable clearly.



(Total for Question 2 is 4 marks)



- 3 The table shows four of the activities at the fitness centre.
It also shows the number of people at these activities in the last 6 months.

	Yoga	Aerobics	Aquafit	Bike
January	157	162	142	141
February	140	154	145	169
March	146	163	165	157
April	154	120	165	168
May	146	117	176	153
June	156	118	143	160

If the average number of people at an activity is less than 145, Krystal will take that activity off the timetable.

She thinks that the average number of people at Aerobics is less than 145.

- (a) Is Krystal right?
Show why you think this.

(3)

Use the box below to show your answer clearly.



Krystal knows that in August the number of people at activities is usually 30% less than in June.

(b) Calculate the number of people Krystal expects at Yoga in August. (2)

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



(c) Show how you can check your answer to (b). (1)

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

(Total for Question 3 is 6 marks)



SECTION B: Care home

Answer all questions in this section.

Write your answers in the spaces provided.

- 4** Pauline is a retired maths teacher.
She lives in a care home.

This is the menu at the care home.

	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Breakfast	Porridge	Sausage & tomatoes	Porridge	Eggs & bacon	Sausage & tomatoes	Porridge	Eggs on toast
Dinner	Pasta bake	Beef stew	Chicken curry	Pizza	Tuna surprise	Lasagne	Roast beef
Supper	Sandwiches	Soup & bread roll	Sandwiches	Beans on toast	Sandwiches	Soup & bread roll	Fish fingers

Pauline does not know what day it is.
She wants to have porridge for breakfast.

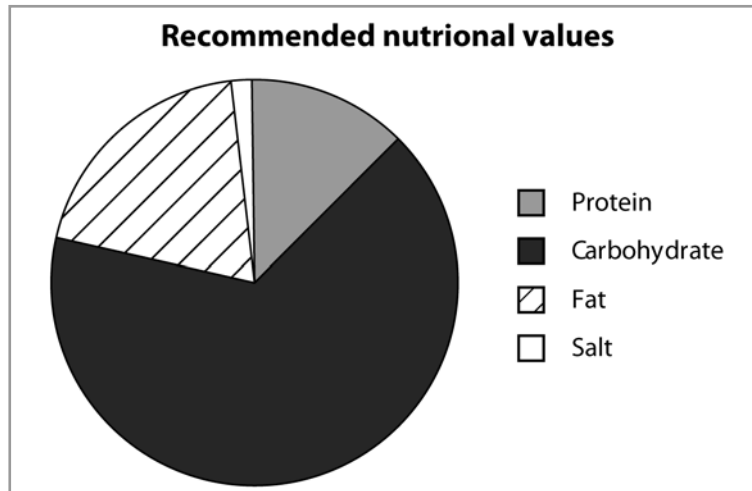
(a) What is the probability of Pauline having porridge for breakfast? (1)

Write your answer in the box below.

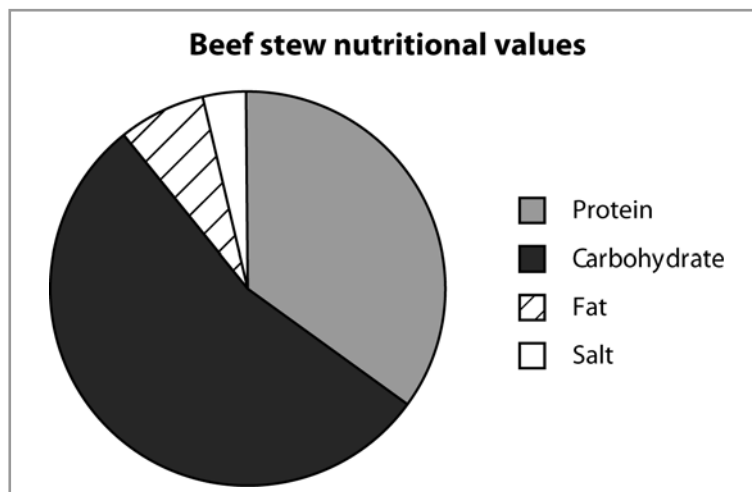


Pauline's favourite dinner is beef stew.

This pie chart shows the nutritional values that the government recommends people to eat each day.



This pie chart shows the nutritional values of beef stew.



(b) Use the pie charts to write **two** statements comparing the nutritional values of beef stew with the nutritional values the government recommends. (2)

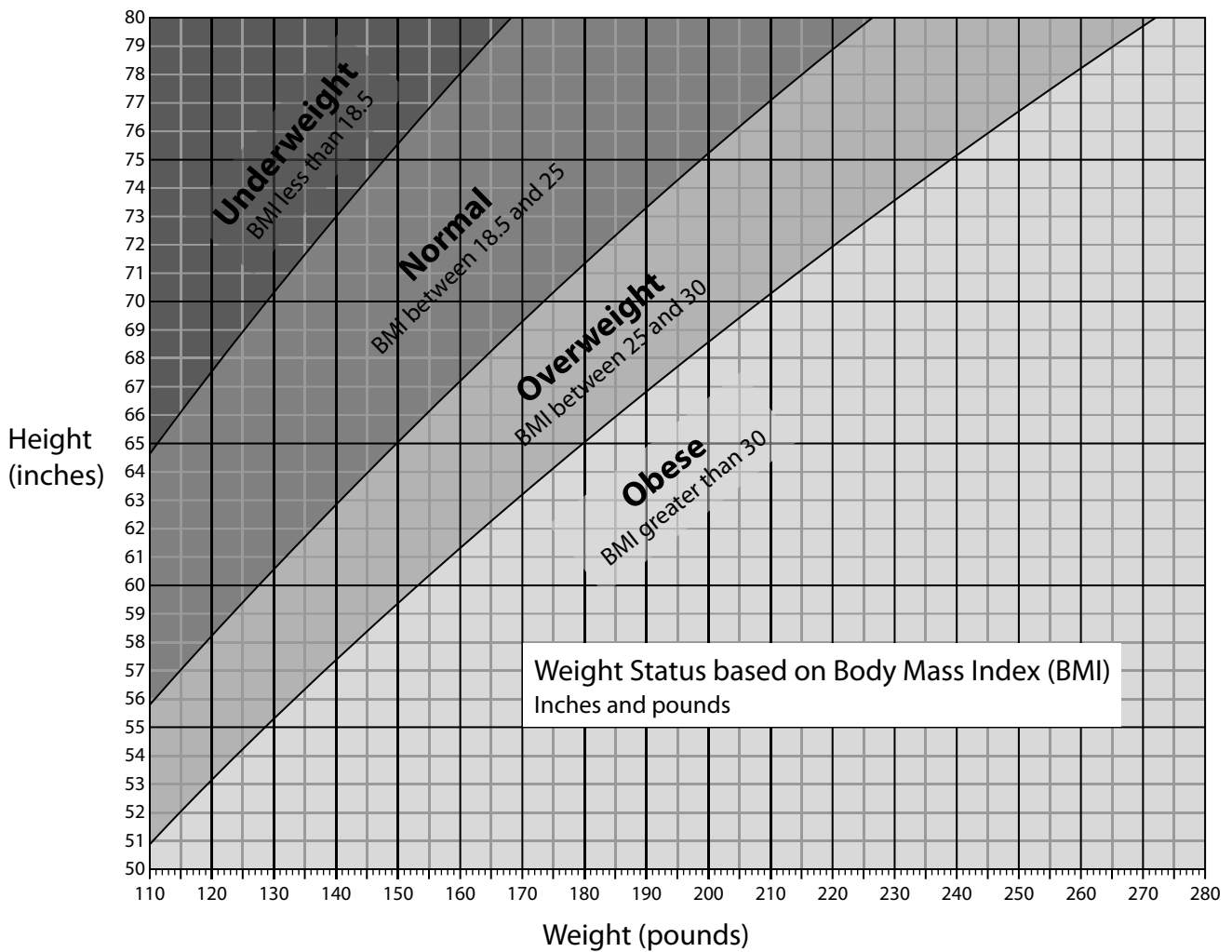
Write your answer in the box below.

(Total for Question 4 is 3 marks)



- 5 Terry lives in a different care home.
His care worker is worried that Terry is losing weight.

Terry's care worker uses this graph to check how much Terry should weigh.



Terry is 5 feet 10 inches tall.

Use 12 inches = 1 foot

- (a) How much should Terry weigh to have a "Normal" Body Mass Index (BMI)?

(3)

Write your answer in the box below.



The table shows the menus at the care home on Thursdays.

Breakfast	Calories	Dinner	Calories	Supper	Calories
Porridge	180	Pasta bake	500	Soup & bread roll	220
Sausages & tomatoes	220	Tuna surprise	520	Sandwiches	200
Eggs & bacon	230	Shepherd's pie	580	Beans on toast	190

There are between 450 and 500 calories in the snacks and drinks Terry has each day.

He needs to have between 1475 and 1525 calories in total each day.

(b) Choose one breakfast, one dinner and one supper for Terry on Thursday and show your check that the total calories are between 1475 and 1525. (4)

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



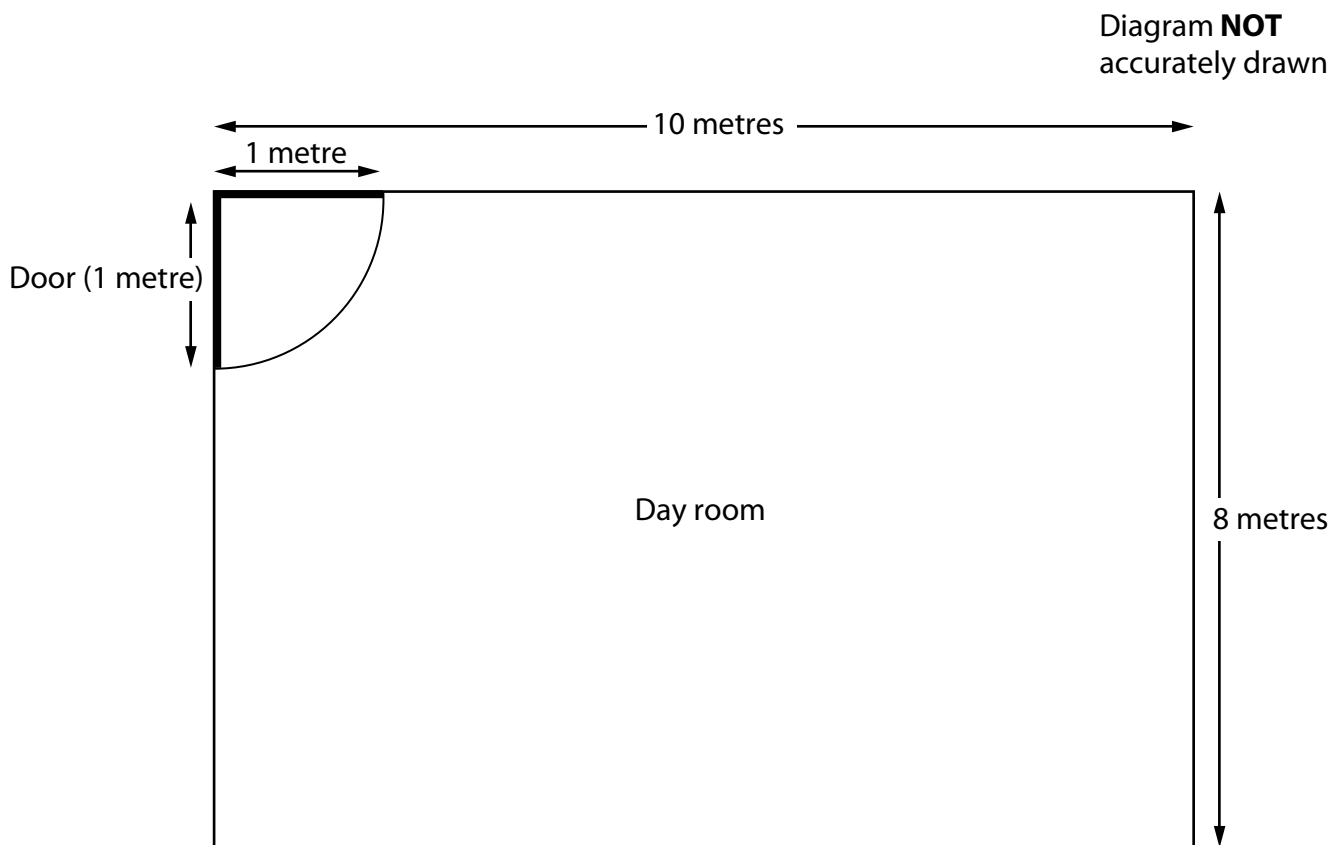
(Total for Question 5 is 7 marks)



- 6 Belle has booked a singer to perform at the care home on Friday.
He will sing in the day room.

Belle wants to put 45 chairs along the walls of the day room.

She uses this sketch to help her work out how many chairs she can put along the walls.



Each chair needs a space 600 mm wide.



Explain how Belle can put 45 chairs for people to sit on along the walls of the day room.

(6)



You may use the sketch and the box below to show clearly how you get your answer.



(Total for Question 6 is 6 marks)



SECTION C: Karting

Answer all questions in this section.

Write your answers in the spaces provided.

- 7 Hanna likes to drive go karts.



Hanna wants to compare her time to drive a lap of the circuit with the fastest recorded time for a lap.

The fastest recorded time to drive 1 lap of the circuit is 23.7 seconds.

Hanna uses this formula to work out her time for 1 lap of the circuit.

$$S = \frac{2.24D}{T}$$

S = the average speed (miles per hour)

D = the distance around the circuit (metres)

T = the time taken to drive 1 lap of the circuit (seconds)

Hanna's average speed is 26.6 mph (miles per hour).

The distance around the circuit is 380 metres.

Compare Hanna's time with the fastest recorded time of 23.7 seconds.

(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 working for the answer.

(Total for Question 7 is 4 marks)



- 8 Hanna invites 11 of her friends to the go kart circuit.
Hanna and her friends will each drive go karts for 30 minutes.

Go Kart Prices

10 minute session £15
20 minute session £25
30 minute session £30
(price per person)

Special Offers

For groups of 6 or more
1 person goes free
For groups of 12 or more
3 people go free

Hanna and her friends want to pay the cheapest cost.
They will share the cost equally.

How much will each person pay?

(3)

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



Blank area for showing the solution.

(Total for Question 8 is 3 marks)



- 9 Richard is the manager at the go kart circuit.
He wants to advertise on the local radio.

The cost of recording a short advert is £250.

The cost of playing the advert on the local radio station is £90 each time it is played.

Richard would like the radio station to play his advert at least 15 times.

He has an advertising budget of £2000 for the cost of recording and playing the advert.

Can Richard afford to advertise on the local radio?

(3)

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



(Total for Question 9 is 3 marks)



10 The go kart circuit is in a building.

Richard needs to put some extractor fans in the building to keep the air fresh.

Richard finds some information about extractor fans.

Fan type A	Fan type B	Fan type C
Extracts 8.822 m ³ of air per second	Extracts 11.594 m ³ of air per second	Extracts 17.617 m ³ of air per second

Richard wants to put as few fans as possible in the building to keep the air fresh.

(a) Choose the type of fan for Richard.

(1)

Write your answer in the box below.

(b) How many fans should Richard put in the building?

(5)

Richard knows the building

- has 135 000 m³ of air
- must have 4 changes of air per hour.



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 10 is 6 marks)

TOTAL FOR PAPER IS 48 MARKS



BLANK PAGE

