

Write your name here

Surname

Other names

**Pearson Edexcel
Functional Skills**

Centre Number

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Candidate Number

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Mathematics

Level 2



13 – 17 March 2017

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

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 a **black** 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 to how much time to spend on each question.*
- **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.**
- **This sign shows where marks will be awarded for showing your check.**



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: Getting to college

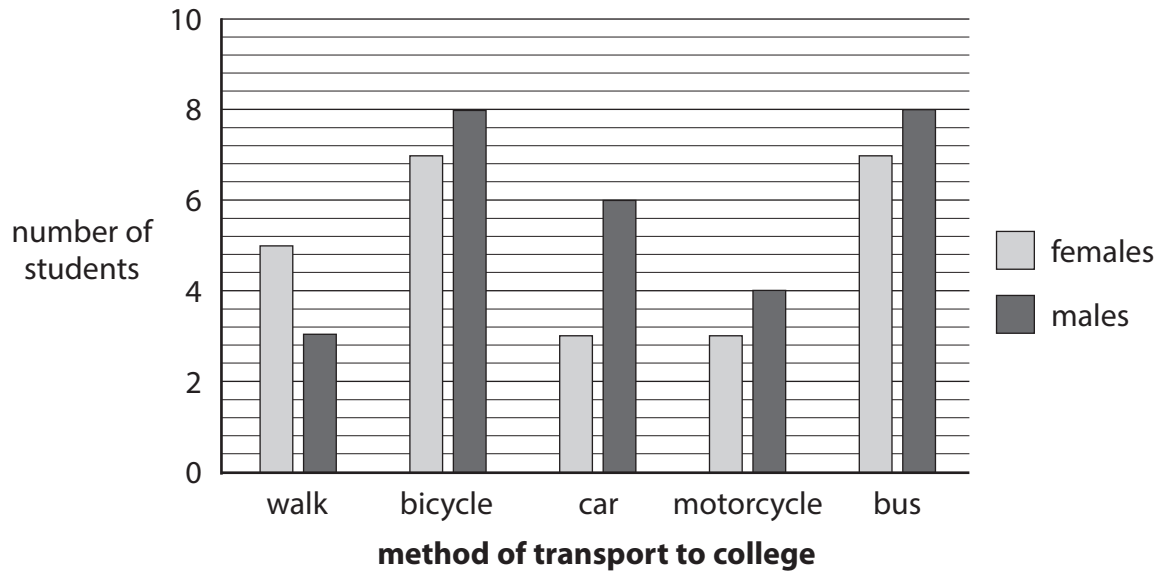
Answer all questions in this section.

Write your answers in the spaces provided.

1 Tariq works for a college newspaper.

He carries out a survey.

The results are shown in the chart.



Tariq is going to write a report.

He needs to include the ratio of the total number of students in the survey who walk to college to the total number of students in the survey who get to college by bus.

(a) Write the ratio for Tariq.

(2)

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

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Tariq thinks 18% of all these students travel to college by car.

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

(3)

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



(Total for Question 1 is 5 marks)



- 2 A group of female students has a median journey time of 27 minutes.
Tariq completes a survey of journey times for a group of male students.
He records the following individual journey times for the male students.

Journey time in minutes

22	21	14	25	48	24	22	35
26	33	19	25	28	39	33	34

Tariq thinks the group of male students has a lower median journey time than the group of female students.

Is Tariq correct?
Show why you think this.

(2)

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

(Total for Question 2 is 2 marks)

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3 The college plans to use part of its land for a bicycle park.

The space for the bicycle park is rectangular 18 m by 4.8 m.

A rectangular space is needed for each bicycle.

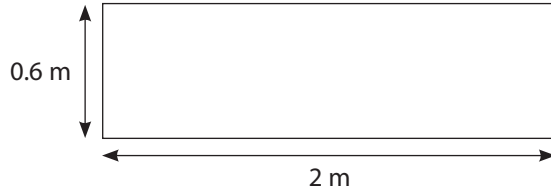


Diagram **not** accurately drawn

The builders think that 90 bicycles can fit in the bicycle park.

Are the builders correct?
Show a check of your working.

(4)

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

Use the box below to show your check.



(Total for Question 3 is 4 marks)



4 Tina buys a car to travel to college.

The car manual gives the petrol consumption as 7.0 litres per 100 km.
Petrol costs £1.10 per litre.

Tina drives a total of 20 miles each day on 5 days each week.

Tina pays £1.20 each day to use the college car park.

1 mile = 1.6 kilometres

How much in total will it cost Tina to drive to college and park each week?

(5)

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

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(Total for Question 4 is 5 marks)

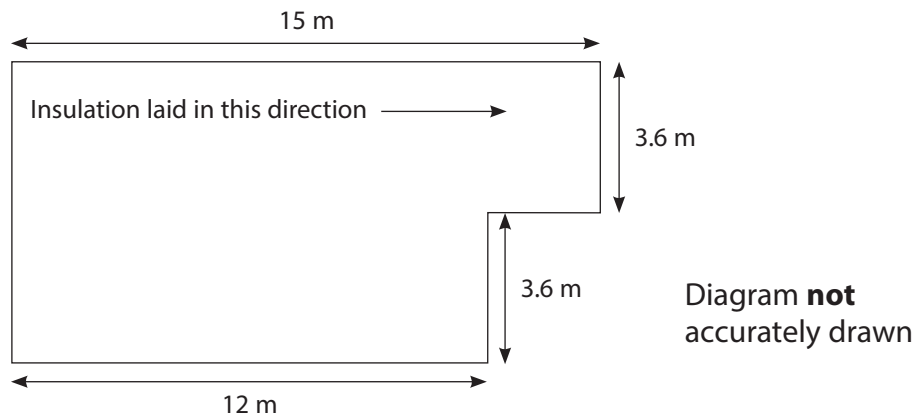


SECTION B: Saving energy

Answer all questions in this section.

Write your answers in the spaces provided.

- 5 Katrin wants to put insulation on her loft floor to reduce heat loss.
She draws a sketch of the loft floor.



Insulation is sold in rolls.
The insulation in each roll has
length 4800 mm
width 1200 mm

Insulation can be cut and joined.

(a) How many rolls of insulation does Katrin need to buy?

(5)

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

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Large empty rectangular area for writing or drawing.



Katrin wants to buy a new boiler.
The price of the new boiler is £1850

Katrin knows the cost of using the old boiler is £775 per year.

She is told the cost of using the new boiler will be $\frac{1}{5}$ less than the cost of using the old boiler.

(b) How many years will it take for the savings from the cost of using the new boiler to total £1850? (3)

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

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(c) Give a reason why your answer may not be correct.

(1)

Write your answer in the box below.

(Total for Question 5 is 9 marks)

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6 Katrin is going to buy a new fridge.
She finds this information.

Fridge Cash price £289.99	OR	Fridge 12 monthly payments £26 per month
Delivery charge £5.99 Electricity use per year 291 kWh		

The cost of electricity is 15.39 pence per kWh.

Katrin wants to pay monthly over 12 months and wants the fridge delivered.
She thinks that £400 will be enough to pay for both

- the fridge (including delivery)
- the electricity for 3 years.

Is Katrin correct?

Show why you think this.

(4)

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

(Total for Question 6 is 4 marks)

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7 Katrin's monthly payment for electricity went down from £38.60 to £34.20

She thinks this means that her monthly payment has gone down by $\frac{1}{6}$

Is Katrin correct?

Show why you think this.

(3)

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

(Total for Question 7 is 3 marks)



SECTION C: The leisure centre

Answer all questions in this section.

Write your answers in the spaces provided.

8 Jenny is an assistant manager in a leisure centre.

She asks some of the leisure centre users to complete a questionnaire.

The questionnaire was completed by

- 25 people who were swimming
- 8 people who were playing squash
- 11 people who were in a fitness class.

Jenny picks one of the questionnaires at random.

(a) What is the probability the questionnaire was completed by a person who was playing squash?

(2)

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

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Jenny must prepare a presentation to show the number of leisure centre members for the last 3 months.

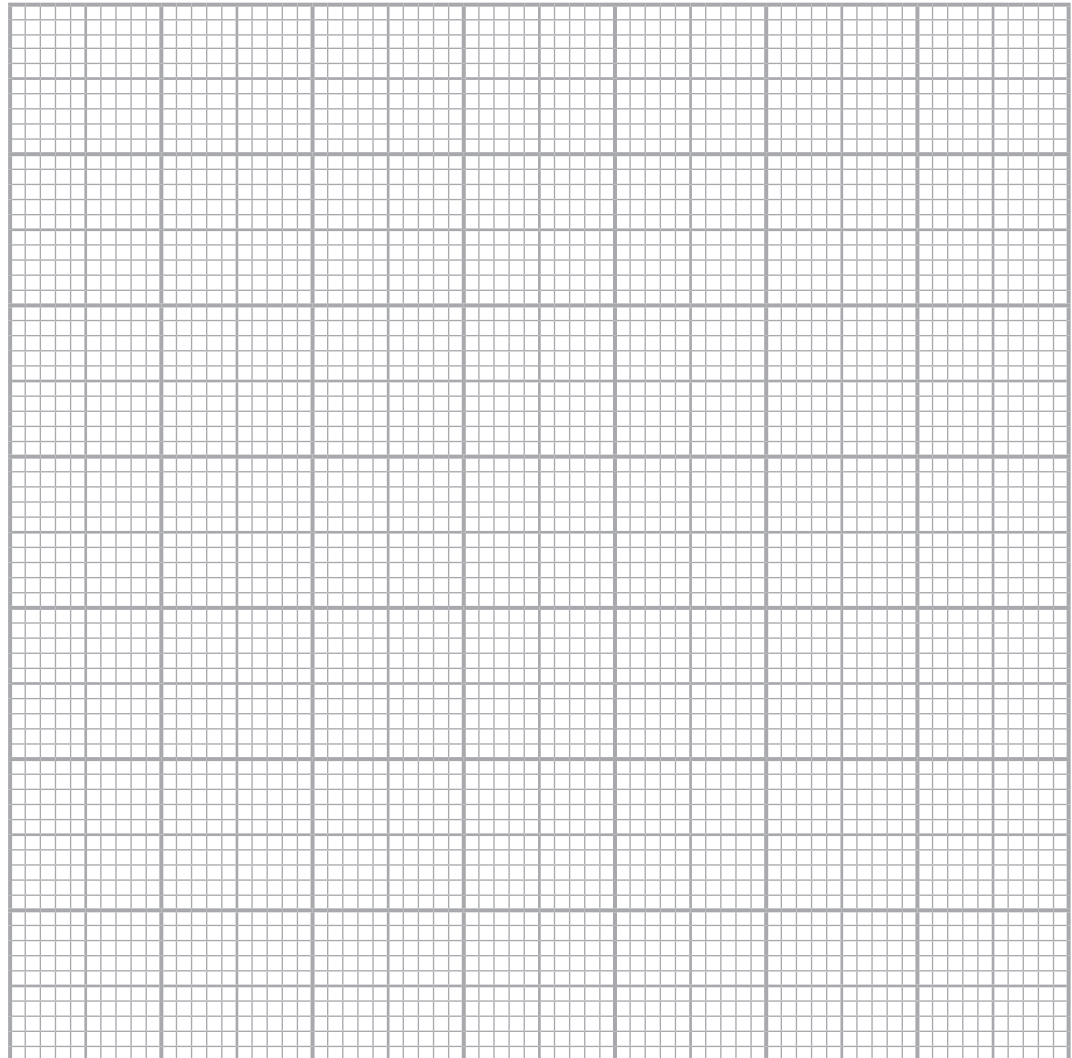
She finds this information.

Number of leisure centre members			
	Jan	Feb	Mar
Male	178	152	120
Female	215	175	155

(b) Draw a graph or chart for the presentation.

(3)

Use the grid below to draw your graph or chart.



(Total for Question 8 is 5 marks)



- 9 Amir visits the gym.
He wants to find out his Body Mass Index (BMI).

Amir uses this formula to work out his BMI.

$$\text{BMI} = \frac{M}{H^2}$$

where M is mass (kg), H is height (m)

Amir has mass 83.3 kg and height 1.75 m.

A healthy BMI is between 18.5 and 25.0

Does Amir have a healthy BMI?
Show why you think this.

(3)

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

(Total for Question 9 is 3 marks)

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10 Jenny wants to show the gym on a scale drawing.

She uses a scale of 1:75

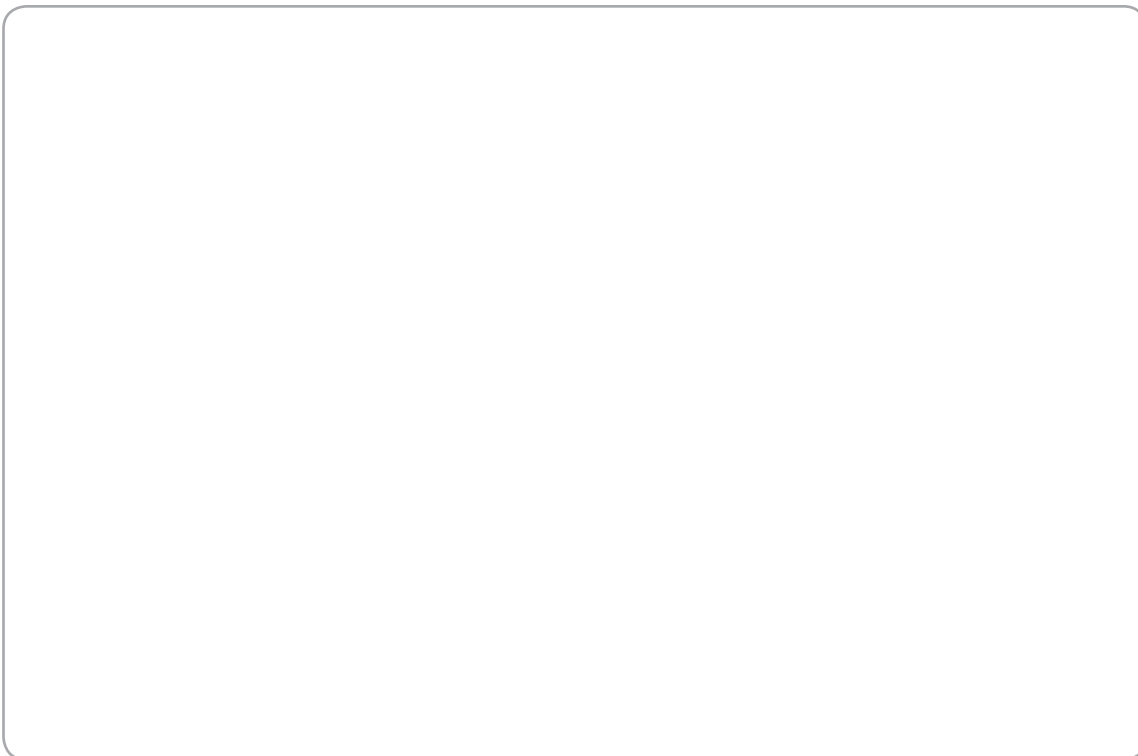
The gym has a length of 12.3 metres.

Jenny works out the length of the gym on the scale drawing is 18 cm.

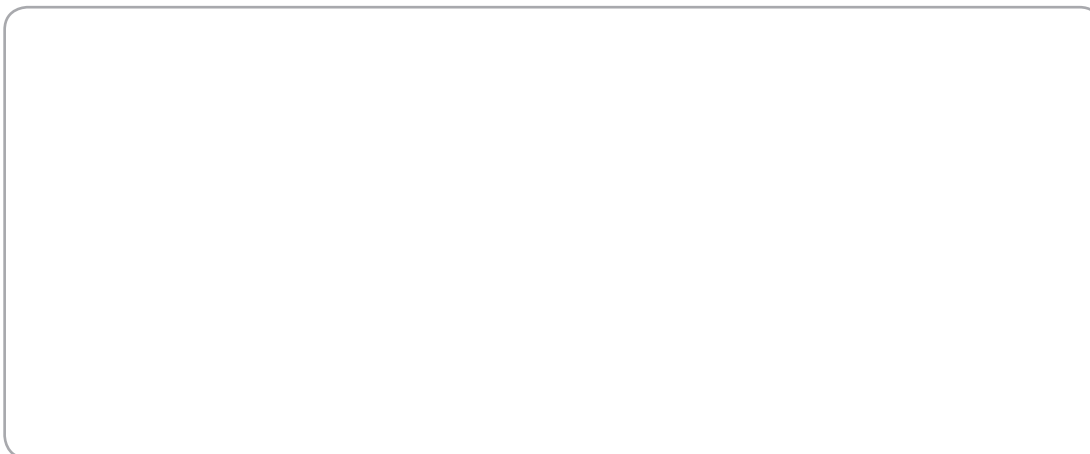
- (a) Is Jenny correct?
Show why you think this.
Show a check of your working.

(3)

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



Use the box below to show your check.



A room in the leisure centre is used as a gym.
The room is in the shape of a cuboid.

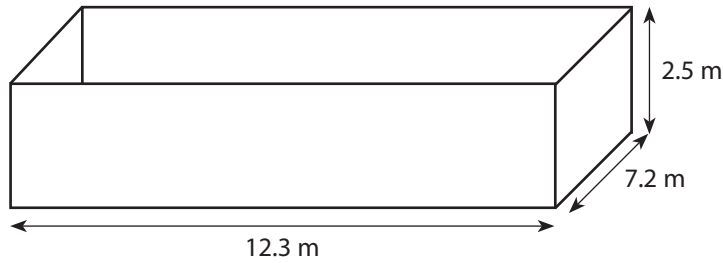


Diagram **not**
accurately drawn

A fan is used to remove the air from the gym and replace it with fresh air.
The fan needs replacing.

The new fan must replace the air in the gym at the **greater** rate of

- 2.5 times the volume of air in the room per hour
- or
- 28 800 litres per hour for each person in the gym.

There can be a maximum of 18 people in the gym.

1m^3 is equal to 1000 litres.

(b) At what rate in m^3 per hour must the new fan replace the air?

(5)

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

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[Empty answer box for Question 10]

(Total for Question 10 is 8 marks)

TOTAL FOR PAPER IS 48 MARKS



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