

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



8 – 12 May 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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P 5 3 8 7 4 A 0 1 2 0



Pearson

SECTION A: Swimming pool

Answer all questions in this section.

Write your answers in the spaces provided.

- 1 Charles is the owner of a gym.
There is a swimming pool at the gym.

On Saturday, the swimming pool is open from 9 am to 5 pm.

Charles needs to make a schedule for 7 swimming sessions on Saturday.
He has these notes.

Sessions on Saturday

Aqua aerobics (A) 3 sessions of 45 minutes each
Child lesson (C) 2 sessions of 60 minutes each
Group swim (G) 2 sessions of 90 minutes each

Trainers available on Saturday

Krissy (K)	9 am – 1 pm	can do C and A
Russ (R)	10 am – 4 pm	can do G and A
Tina (T)	1 pm – 5 pm	can do C and A

Charles will have one trainer at each session.
Each trainer will have at least 2 different types of sessions on Saturday.

Only one session can take place at any given time.
There will be a 5 minute break between each session.

Plan the schedule for Saturday for Charles.
Remember to show the start time and the end time for each session. (3)

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Use the box below to show your schedule.



(Total for Question 1 is 3 marks)

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- 2 Moira is going to join the gym.
She sees these two offers.

One-year gym membership
£69.99 per month
No joining fee
Pay now for 11 months and get 1 month for free

Special offer
Locker hire for a year – usual price £150
get 30% off the usual price

Moira wants to use both of these offers.
She thinks she will pay less than £900 in total.

- (a) Is Moira correct?
Show why you think this.

(5)

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

Empty box for showing the answer.

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Large empty rectangular area for writing or drawing.



Moira goes swimming as often as she can each week.

She keeps a record of the shortest time it takes her to swim 100 metres each time she goes swimming.

Here is her record for week 1 and week 2.

Week 1	1:58	2:02	1:56	2:10	
Week 2	2:08	1:56	1:58	1:58	2:04

Key 1:58 is 1 minute 58 seconds

Moira thinks that her mean shortest time to swim 100 metres improved in week 2.

- (b) Is Moira correct?
Show why you think this.
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 2 is 9 marks)



- 3 The swimming pool is in the shape of a cuboid 20 metres long and 8 metres wide. It is filled with water to a depth of 1.8 metres.

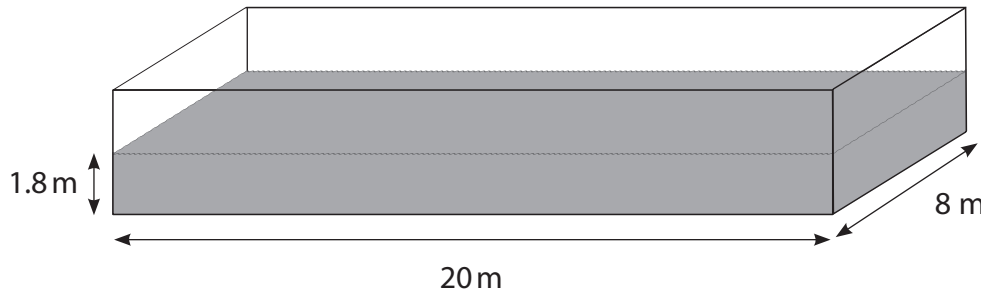


Diagram **not** accurately drawn

Charles needs to add chlorine powder to the water in the pool to keep the water clean.

Each week Charles needs to use 300 grams of chlorine powder per 50 m^3 of water. Chlorine powder is sold in boxes. Each box contains 5000 grams of chlorine powder.

Charles thinks that one box will be enough for 4 weeks.

Is one box enough for 4 weeks?
Show why you think this.

(4)

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

(Total for Question 3 is 4 marks)



SECTION B: Loft

Answer all questions in this section.

Write your answers in the spaces provided.

- 4 Rory is a builder.
He is converting and decorating a loft.

Rory is going to install an air conditioning unit in the loft.
He uses this information to work out the number of British Thermal Units (BTU) a suitable air conditioning unit needs to have.

Floor area in square feet	Minimum BTU
Up to 200	8000
201 – 300	10 000
301 – 400	12 000
401 – 600	14 000
601 – 800	15 000
801 – 1000	18 000

- multiply the minimum BTU by 1.1 if the room is in full sun
- then add 600 BTU per person for the number of people regularly in the room at the same time

Rory knows that

- the loft has a floor area of 53.52 m^2
- 1 m^2 is 10.76 square feet
- the loft is in full sun
- there will be 3 people regularly in the loft at the same time.

Rory thinks that an air conditioning unit with 18 000 BTU will be suitable for the loft.

Is he correct?
Show why you think this.

(4)

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



(Total for Question 4 is 4 marks)

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- 5 Rory needs to paint the walls in the loft.
He draws a sketch of one of the walls.

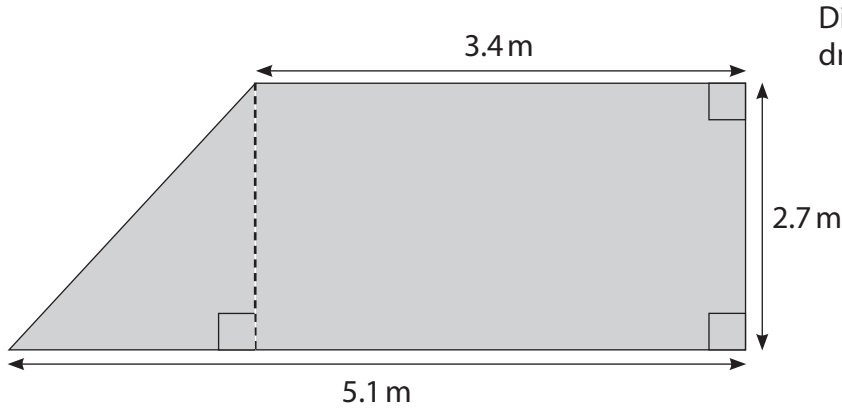


Diagram **not** accurately drawn

Rory is going to paint this wall blue.
He needs to paint the wall three times.

Rory has 2 litres of blue paint.
He knows that 1 litre of paint covers 16 m^2 .

- (a) Does Rory have enough blue paint?
Show a check of your working.

(6)

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

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Use the box below to show your check.



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Rory needs to paint two other walls in the loft on Thursday.

He needs

- 25 minutes to paint each wall once
- to paint each wall twice
- to leave each wall to dry for 4 hours before he can paint it again.

On Thursday Rory needs to finish work by 6 pm.

He thinks he needs to start painting by 12.30 pm at the latest.

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

(3)

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

(Total for Question 5 is 9 marks)

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6 Rory needs to put the air conditioning unit on one of the walls in the loft.

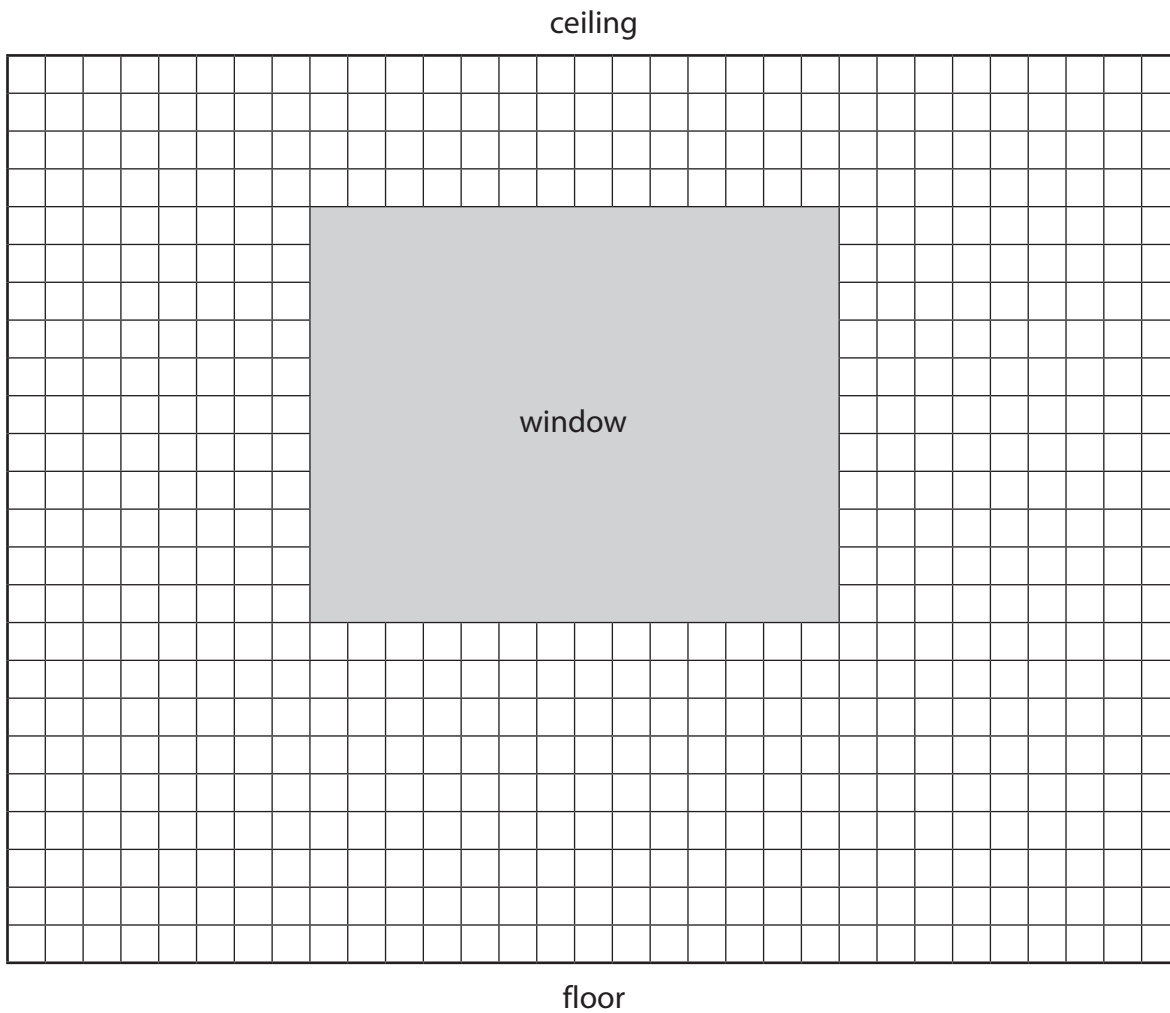
He knows that

- the space for the unit is rectangular 75 cm wide and 45 cm high
- the bottom edge of the unit must be at least 30 cm above the floor
- the top edge of the unit must be at least 10 cm below the window.

Rory makes an accurate drawing of the wall to a scale of 1:20

Draw the space for the unit on the accurate drawing.
Remember to use the scale.

(3)



Scale 1 : 20

(Total for Question 6 is 3 marks)



SECTION C: Boat

Answer all questions in this section.

Write your answers in the spaces provided.

- 7 Shilpa owns a boat.
She rents out her boat in Greece during the summer.

Shilpa has this information about her income from renting out the boat.
She wants to show this information in a graph to her business partner.

Income in euros (€)			
	June	July	August
2015	83 400	81 750	79 200
2016	81 800	84 000	84 500

Shilpa starts to draw a graph to show this information.

(a) Complete the graph for Shilpa.

(3)

Use the graph paper and the scale on the opposite page.

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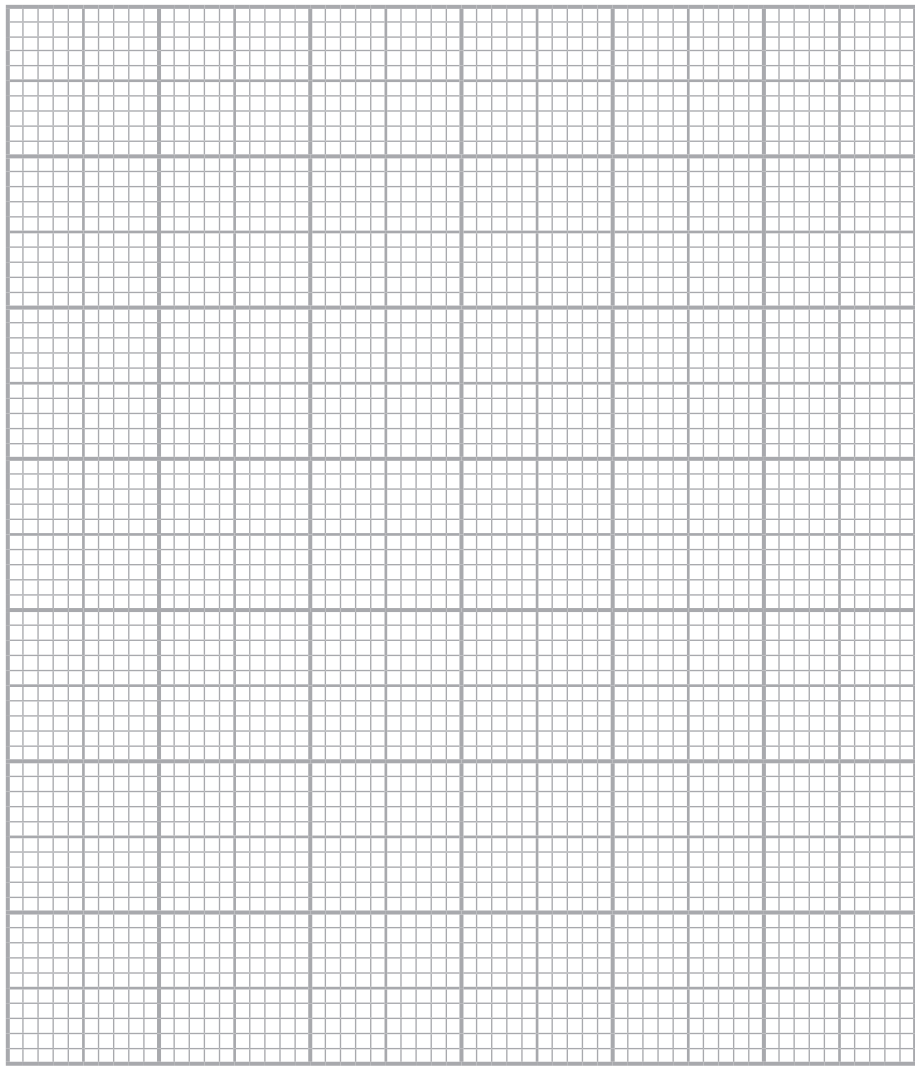
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80 000

78 000



The boat is big enough for up to twenty passengers.

Shilpa uses this formula to set the total price, in euros, to rent out the boat for a day.

$$P = 990 + 70(n - 6)$$

P = total price to rent the boat in euros
 n = number of passengers

A group of 14 passengers would like to rent the boat for a day.

They will share the cost equally between them.

They want to know how much each of them would pay in pounds (£).

Shilpa offers them $\frac{1}{5}$ off the total price.

£1 = 1.231 euros

(b) How much does each passenger need to pay, in pounds, to rent the boat?

(6)

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

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[Empty answer box for Question 7]

(Total for Question 7 is 9 marks)



8 Shilpa has this information from renting out her boat in 2016.

Income (euros)	Costs (euros)
382 000	291 500

$$\text{Profit} = \text{Income} - \text{Costs}$$

Shilpa wants to know the profit as a percentage of her income.

Work out the profit as a percentage of Shilpa's income.
Give your answer correct to 1 decimal place.

(3)

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

(Total for Question 8 is 3 marks)

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9 The captain of the boat wants to get enough fuel for 7 hours of sailing.

He knows that the boat needs 67 gallons of fuel per hour of sailing.

1 gallon = 4.54 litres

The captain needs to know how many litres of fuel will be enough for 7 hours of sailing.

(a) Work out how many litres of fuel will be enough for 7 hours of sailing.

(3)

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

Empty box for showing the calculation for part (a).

(b) Is this a sensible amount of fuel for the captain to get for 7 hours of sailing?
Give a reason for your answer.

(1)

Use the box below to write your answer and reason.

Empty box for writing the answer and reason for part (b).

(Total for Question 9 is 4 marks)

TOTAL FOR PAPER IS 48 MARKS



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