

Write your name here

Surname

Other names

Edexcel
Functional Skills

Centre Number

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Mathematics

Level 2



12–16 November 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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| |
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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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6/4/3



PEARSON

Section A: Training for a triathlon

Answer all questions in this section.

Write your answers in the spaces provided.

1 Cherry wants to enter a triathlon.

She finds out about different triathlon events.

| Triathlon event | cycle(km) | swim(m) | run(km) |
|-----------------|-----------|---------|---------|
| Super Sprint | 10 | 400 | 2.5 |
| Sprint | 20 | 750 | 5 |
| Standard | 40 | 1500 | 10 |
| Middle | 80 | 2500 | 20 |
| Ironman | 180 | 3800 | 42 |

Cherry knows she can

- cycle up to 50 km
- swim up to 2000 m
- run up to 5 km

(a) Which triathlon events could Cherry choose?

(1)

Write your answer in the box below.



Cherry prepares for the triathlon event.

She needs to swim 5 km each week.

Cherry swims a length of 25 metres in 30 seconds.

Cherry wants to know how many hours and minutes she needs to swim each week.

(b) What is the total time Cherry needs to swim 5 km?

(4)

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



A large, empty rectangular box intended for the student to show their working out for the problem.

(Total for Question 1 is 5 marks)



- 2 Cherry and Paige cycle together to prepare for the triathlon. They compete in 3 cycle races.

The table shows Cherry's race times.

| Race times |
|---------------|
| 22 min 32 sec |
| 22 min 25 sec |
| 22 min 13 sec |

Paige has a mean race time of 22 min 21 sec

Paige tells Cherry,

'I have a faster mean race time than you.'

(a) Is Paige correct?

(3)

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

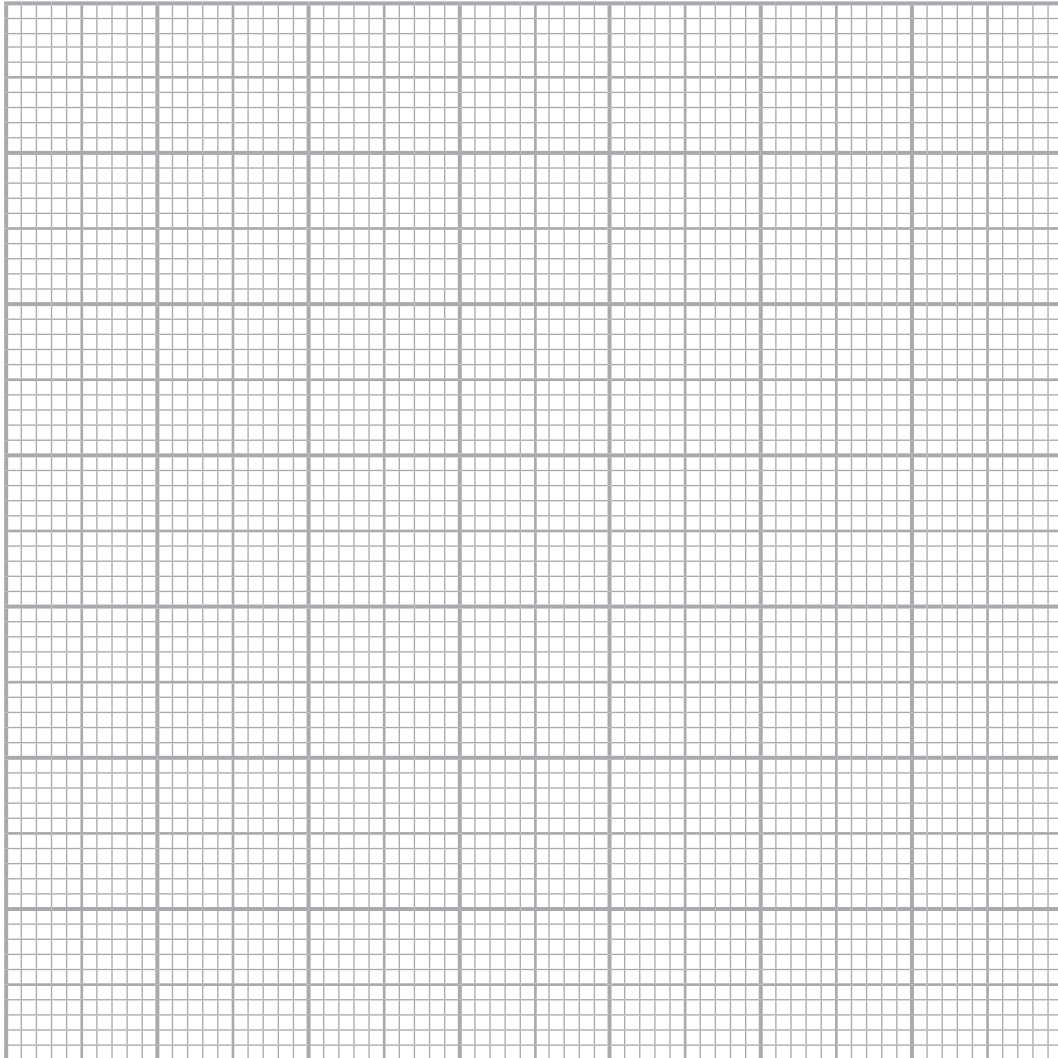


Cherry and Paige want to display the distance they cycle each month.

They collect data for 3 months.

| | Mar | Apr | May |
|---------------|------------|------------|------------|
| Cherry | 350 km | 340 km | 405 km |
| Paige | 385 km | 400 km | 440 km |

(b) Draw a chart or graph for Cherry and Paige. (3)



(Total for Question 2 is 6 marks)



3 Cherry finds out that

- the average body mass index (BMI) of the best female triathletes is 22

Cherry has a BMI of 20

Cherry knows

- a weight gain of 2.5 kg will increase her BMI by 1
- for every 1 kg of weight gain she needs a total of 7700 calories.

She decides to have an extra 450 calories each day.

Can Cherry increase her BMI from 20 to 22 in less than 90 days?

(5)

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



A large empty rectangular box for the student to show their work.





A large, empty rectangular box intended for writing an answer.

(Total for Question 3 is 5 marks)



Section B: Supermarkets

Answer all questions in this section.

Write your answers in the spaces provided.

- 4 Debbie works for a supermarket.
She is going to a meeting in Leeds.

The total distance she has to travel is 260 miles.

Debbie has to work out the cheapest way to travel.

Option A: travel by train.

- The total cost to travel by train is £162

Option B: travel in her own car.

- She can claim 45p per mile.

Option C: hire a car.

- The cost of car hire is £58.46
- This car uses 1 litre of petrol for every 13 miles.
- The cost of petrol is 145.9p per litre.

Debbie must use the cheapest option to travel the 260 miles for the meeting.

Which option should she take?

(6)

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





A large, empty rectangular box with rounded corners, intended for writing an answer.

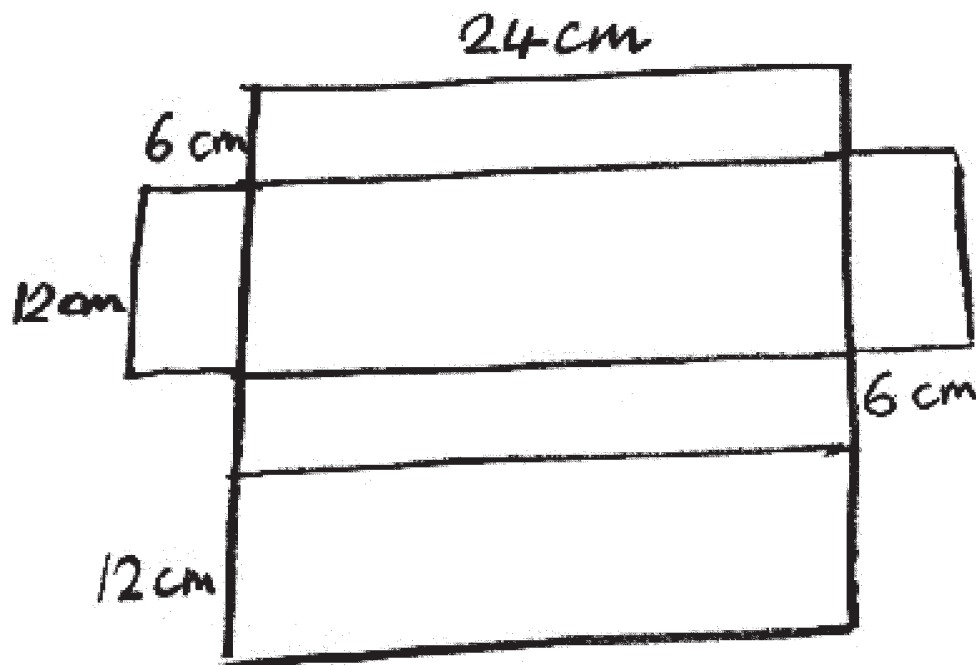
(Total for Question 4 is 6 marks)



- 5 Debbie designs a box for biscuits sold at a supermarket. She needs to draw an accurate net of the box.

The box is a cuboid 6 cm by 12 cm by 24 cm

Here is Debbie's rough sketch of the net of the box.



Debbie has to use a scale of 1:6

(a) Draw an accurate net of the box for Debbie.

(3)



Use the grid below to draw your net.

Use the scale 1:6



P 4 0 7 5 8 A 0 1 1 2 0

Debbie needs to plan how to display the boxes on a supermarket shelf.

The shelf space is 75 cm by 28 cm by 56 cm.

The biscuit boxes are 6 cm by 12 cm by 24 cm.

Debbie thinks she can fit at least 48 biscuit boxes in the shelf space.

(b) Is Debbie correct?

(3)

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 out for the problem.

(Total for Question 5 is 6 marks)



- 6 Dean borrows £500 from his sister.
He wants to pay his sister back.

Dean gets a temporary job at a supermarket.
He estimates that he can earn £2280 from this job.

Dean is going to save $\frac{1}{4}$ of what he earns.

(a) Can Dean pay his sister back the £500 from what he saves?

(2)

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



Dean shops at the supermarket.
His shopping bill comes to £125

Dean gets a discount of 5 % on his shopping.

(b) How much money does Dean pay for his shopping?

(2)

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



(Total for Question 6 is 4 marks)



Section C: Garden improvements

Answer all questions in this section.

Write your answers in the spaces provided.

- 7 Igor has a circular fish pond.
He needs a pump to provide oxygen to the water in his pond.

Igor needs to work out the volume of water in his pond.
He uses this formula.

$$V = 1000 \pi r^2 h$$

V = volume of water (litres)

$\pi = 3.14$

r = radius of pond (m)

h = depth of pond (m)

Igor's pond has

- a radius of 3 m
- a depth of 0.75 m

The Titan pump is suitable for ponds with a volume up to 16 000 litres.

(a) Is the Titan pump suitable for Igor's pond?

(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.



P 4 0 7 5 8 A 0 1 5 2 0

Igor wants to put some fish in his pond.

The fish are fully grown and are 28 cm – 30 cm in length.

There must be 60 cm² of surface area for every 1 cm length of fish.

The surface area of Igor's pond is 282 600 cm²

(b) Is the surface area of his pond large enough for 80 fully grown fish?
Show how you have checked your calculation.

(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 calculations and reasoning for the problem.

(Total for Question 7 is 8 marks)



- 8 Igor wants to remove 16 m^3 of rubble from his garden. He needs to hire skips to remove this rubble.

| Skip | Volume | Price of hire |
|----------------|-------------------|---------------|
| Medium | 3 m^3 | £72 |
| Small builders | 4.6 m^3 | £96 |
| Large builders | 6 m^3 | £120 |

He wants to pay the least amount of money to do this.

What skips should Igor hire?

(3)

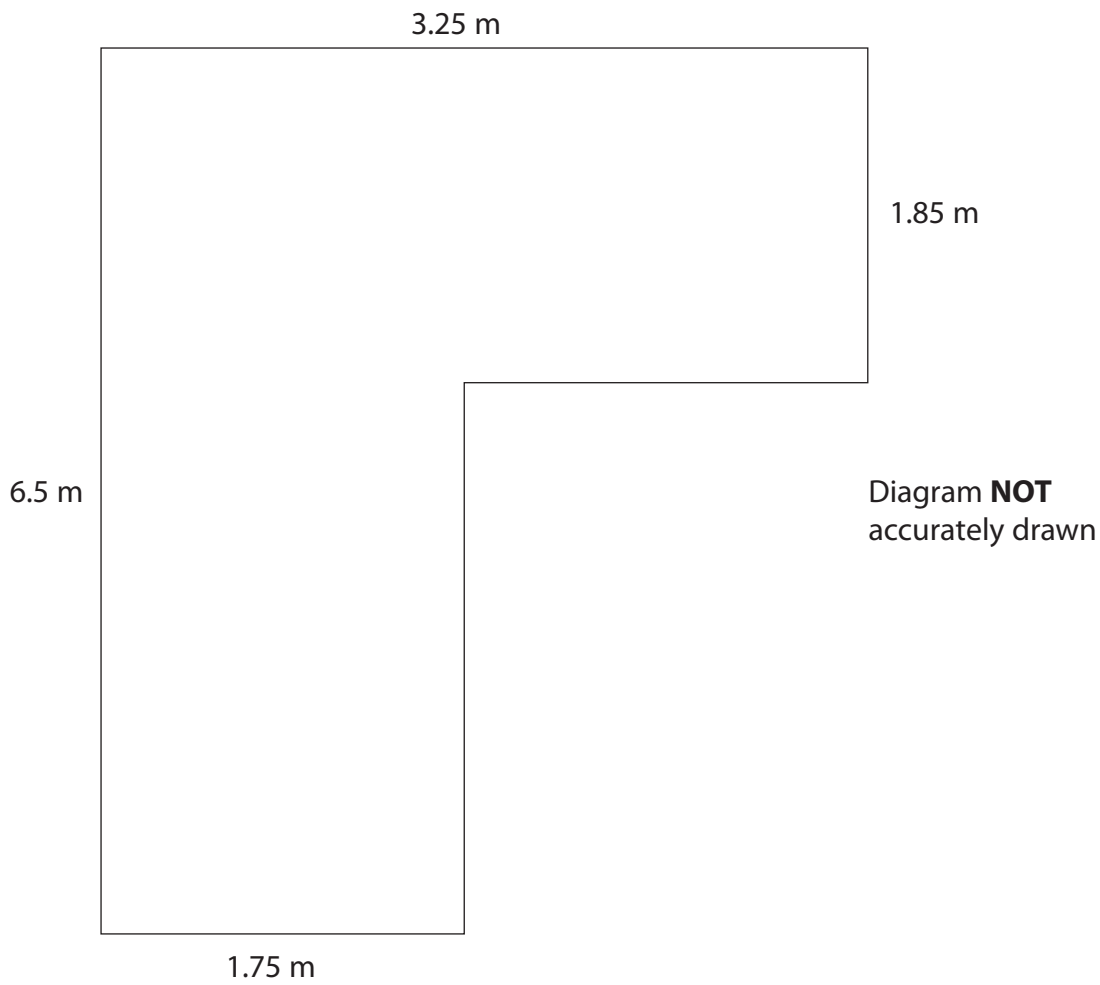
Use the box below to show clearly how you get your answer.



(Total for Question 8 is 3 marks)



- 9 Igor wants a price for a new patio.
The plan of the patio is shown below.



One builder tells Igor he charges £40 per m^2 for building patios.

What is the price for the patio with this builder?

(5)

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



Blank area for showing the calculation.





A large, empty rectangular box with rounded corners, intended for writing an answer.

(Total for Question 9 is 5 marks)

TOTAL FOR PAPER IS 48 MARKS



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