GCSE

wjec cbac

C300U10-1

S23-C300U10-1

eduqas
Part of WJEC

FRIDAY, 19 MAY 2023 – MORNING

MATHEMATICS – Component 1
Non-Calculator Mathematics
FOUNDATION TIER

2 hours 15 minutes

ADDITIONAL MATERIALS

An additional formulae sheet.

The use of a calculator is not permitted in this examination.

A ruler, protractor and a pair of compasses may be required.

INSTRUCTIONS TO CANDIDATES

Use black ink or black ball-point pen.

Do not use gel pen or correction fluid.

You may use a pencil for graphs and diagrams only.

Write your name, centre number and candidate number in the spaces at the top of this page.

Answer **all** the questions in the spaces provided.

If you run out of space, use the additional page(s) at the back of the booklet, taking care to number the question(s) correctly.

INFORMATION FOR CANDIDATES

You should give details of your method of solution when appropriate.

Unless stated, diagrams are not drawn to scale.

Scale drawing solutions will not be acceptable where you are asked to calculate.

The number of marks is given in brackets at the end of each question or part-question.

You are reminded of the need for good English and orderly, clear presentation in your answers.

For Examiner's use only		
Question	Maximum Mark	Mark Awarded
1.	9	
2.	4	
3.	4	
4.	9	
5.	4	
6.	4	
7.	4	
8.	4	
9.	6	
10.	4	
11.	6	
12.	4	
13.	7	
14.	8	
15.	2	
16.	6	
17.	2	
18.	3	
19.	5	
20.	4	
21.	5	
22.	6	
23.	3	
24.	2	
25.	5	
Total	120	

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Formula list

Area and volume formulae

Where r is the radius of the sphere or cone, l is the slant height of a cone and h is the perpendicular height of a cone:

$$\text{Curved surface area of a cone} = \pi rl$$

$$\text{Surface area of a sphere} = 4\pi r^2$$

$$\text{Volume of a sphere} = \frac{4}{3}\pi r^3$$

$$\text{Volume of a cone} = \frac{1}{3}\pi r^2 h$$

Kinematics formulae

Where a is constant acceleration, u is initial velocity, v is final velocity, s is displacement from the position when $t = 0$ and t is time taken:

$$v = u + at$$

$$s = ut + \frac{1}{2}at^2$$

$$v^2 = u^2 + 2as$$

(C300U10-1)

1. (a) Calculate each of the following.

(i) $7000 \div 10$ [1]

....

....

(ii) 65×1000 [1]

....

....

(iii) $9 - 14$ [1]

....

....

(b) Complete this sum. [1]

.... $+ 121 = 200$

....

....

(c) Complete each statement with a number from the box.

6	8	10	13	15	24	49	55

(i) .... is a prime number. [1]

(ii) .... is a multiple of 12. [1]

(iii) .... is a square number. [1]

(d) Write 0·4 as a fraction in its simplest form. [2]

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....

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2. (a) (i) Circle the best expression for the chance that it will snow in the UK in July. [1]

Impossible   Unlikely   Even chance   Likely   Certain

(ii) A dish contains equal numbers of green grapes and black grapes.
Pedro takes one grape at random from the dish.

Circle the best expression for the chance that Pedro takes a green grape. [1]

Impossible   Unlikely   Even chance   Likely   Certain

(b) One letter is chosen at random from the 9-letter word AUSTRALIA.

(i) On the probability scale below, mark with an arrow (↓) the probability that the letter chosen from the word AUSTRALIA is T. [1]

0   1

(ii) A, E, I, O, U are vowels.

On the probability scale below, mark with an arrow (↓) the probability that the letter chosen from the word AUSTRALIA is a vowel. [1]

0   1

3.
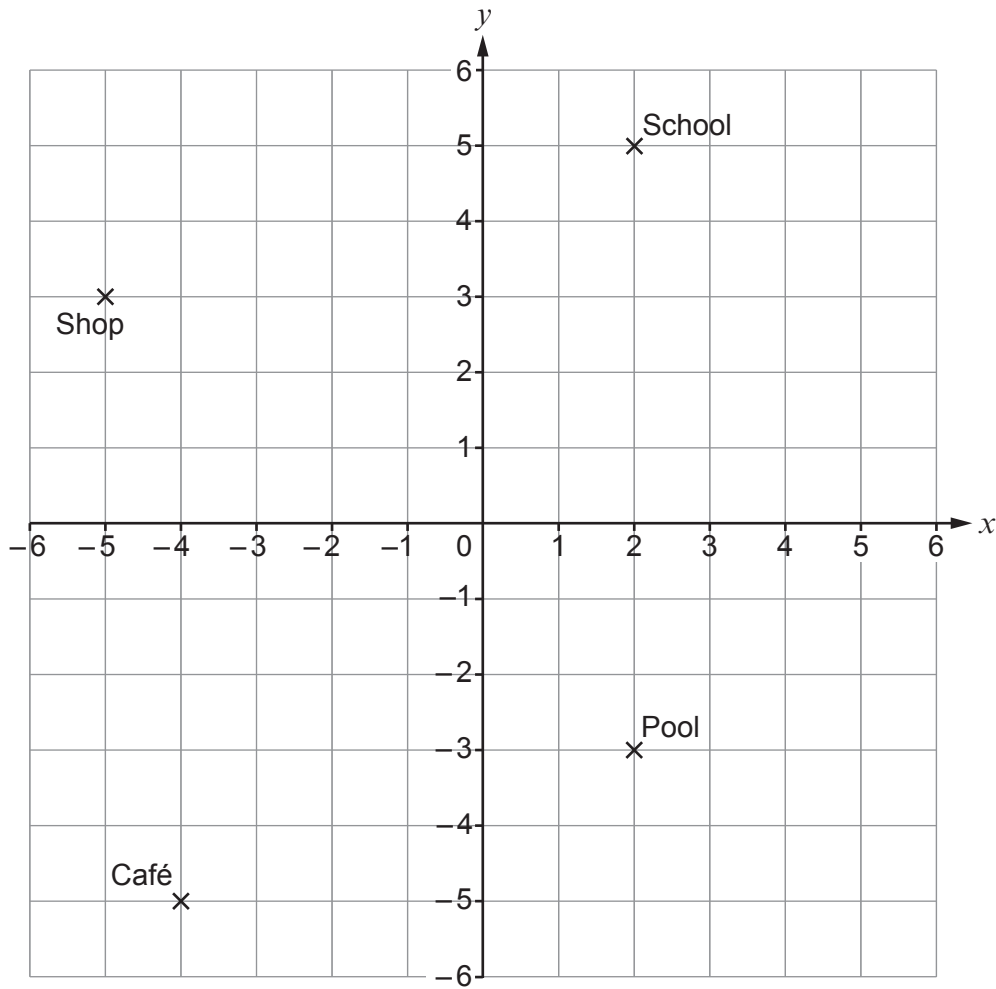
The diagram is drawn on a 1 cm square grid.
It shows the location of some places in a town.

(a)   Write down the coordinates of the shop.

Shop (.................... , ...)   [1]

(b)   There is a bus stop (B) half-way between the café and the pool.

Mark the position of the bus stop on the diagram.   [1]

(c)   The scale of the diagram is 1 cm represents 50 m.
There is a straight path from the school to the pool.

How long is the actual path?
Give your answer in metres.   [2]

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(C300U10-1)   **Turn over.**

4. (a) Joanie is choosing what to wear.
She chooses from the following options.

| **Trousers**
Black (B)
or Grey (G) | and | **Top**
White (W)
or Red (R) | and | **Trainers**
Pink (P)
or Yellow (Y) |
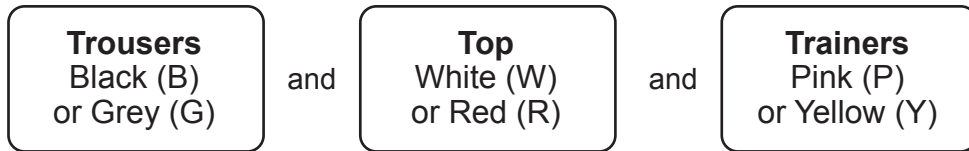
(i) Complete the table to show all the different choices that Joanie has.
The first two have been completed for you. [2]

Trousers	Top	Trainers
B	W	P
B	W	Y

You may not need all the lines in the table.

(ii) Joanie is equally likely to choose any of the possible options.

What is the probability that she chooses grey trousers, a red top and yellow trainers? [1]

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(C300U10-1)

(b) (i) Joanie jogs to the park.
She leaves home at 09:43 and arrives at the park at 10:18.

How many minutes does it take Joanie to jog to the park? [2]

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(ii) Joanie then walks 1·2 km to her friend's house.
This takes 15 minutes.

What is Joanie's average walking speed?
Give your answer in kilometres per hour. [2]

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(iii) Joanie travels home by taxi.

She is charged £2 per kilometre.
She pays a total of £10 which includes a £1 tip.

How many kilometres is Joanie's house from her friend's house? [2]

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(C300U10-1) **Turn over.**

5. (a) Write down a decimal that is between 61% and 62%. [1]

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....

(b) Lea takes two science tests.

In the first test, she scores $\dfrac{18}{25}$.

In the second test, she scores $\dfrac{14}{20}$.

In which of these tests does Lea have the better result?

First test ☐　　　Second test ☐

Show how you decide. [3]

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6. (a)

A small tub contains n nails.
A large tub contains three times as many nails as a small tub.

Find an expression for the **total** number of nails in 2 small tubs and 1 large tub.
Simplify your answer. [2]

....

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....

Total number of nails = ...

(b) Each nail weighs 4·5 grams.

How much do 200 nails weigh?
Give your answer in kilograms. [2]

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.... kg

(C300U10-1)

Turn over.

7. **(a)** On the 1 cm square grid below, draw a rectangle that has an area of 16 cm^2 and a perimeter of 20 cm. [2]

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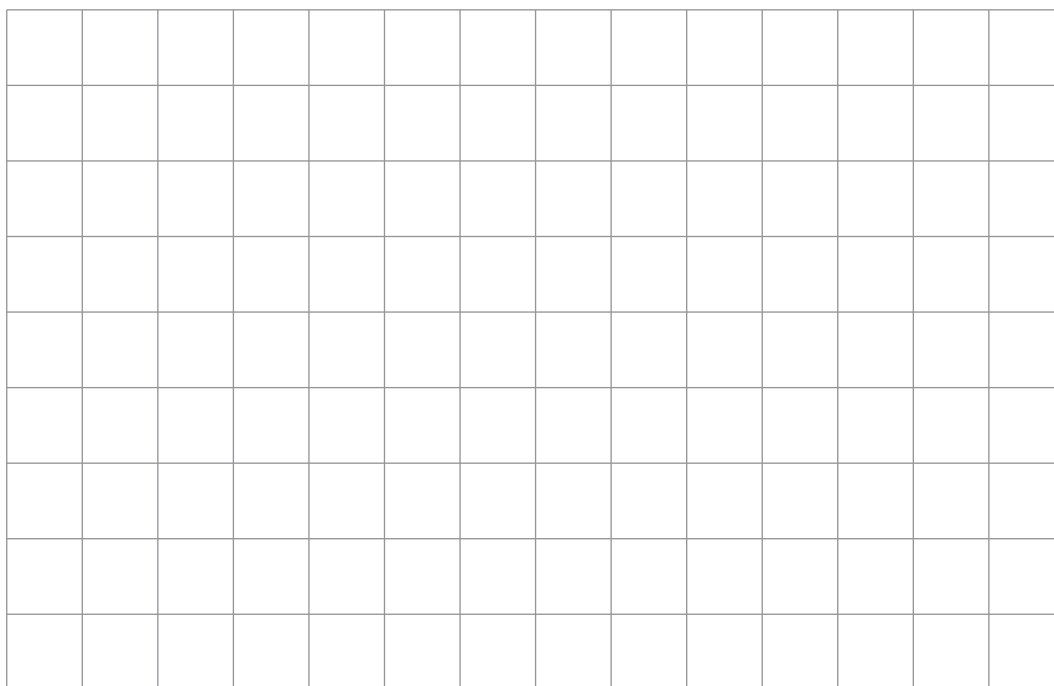
(b) The radius of a circle is 8 cm.

(i) Write down the diameter of this circle. [1]

....

.... cm

(ii) Write the ratio of the length of the radius to the length of the diameter. Give the ratio in its simplest form. [1]

....

....

radius : diameter = ... : ....

(C300U10-1)

8. (a) Calculate 7×5^2. [2]

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(b) Put one pair of brackets in each calculation to make it correct.

(i) $4 \times 3 - 1 + 6 = 14$ [1]

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....

(ii) $\sqrt{36} \div 2 + 1 = 2$ [1]

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(C300U10-1) **Turn over.**

9. Walter, Anna and Maggie all work in the same factory.

(a) Walter works for 3 hours and earns £42.

Calculate how much Walter is paid for each hour. [2]

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(b) One week, Anna works for 8 hours and earns £120.
The next week, Anna works for 12 hours.

How much does Anna earn for this week? [2]

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(c) Maggie earns £18 for each hour that she works.
She is given a 2% pay rise.

By how much does the amount she is paid for each hour increase? [2]

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10. The table shows some of the values of $y = 3x$ for $-2 \leqslant x \leqslant 2$.

x	-2	-1	0	1	2
$y = 3x$				3	6

(a)   Complete the table. [2]

....

....

(b)   On the grid, draw the graph of $y = 3x$ for $-2 \leqslant x \leqslant 2$. [2]

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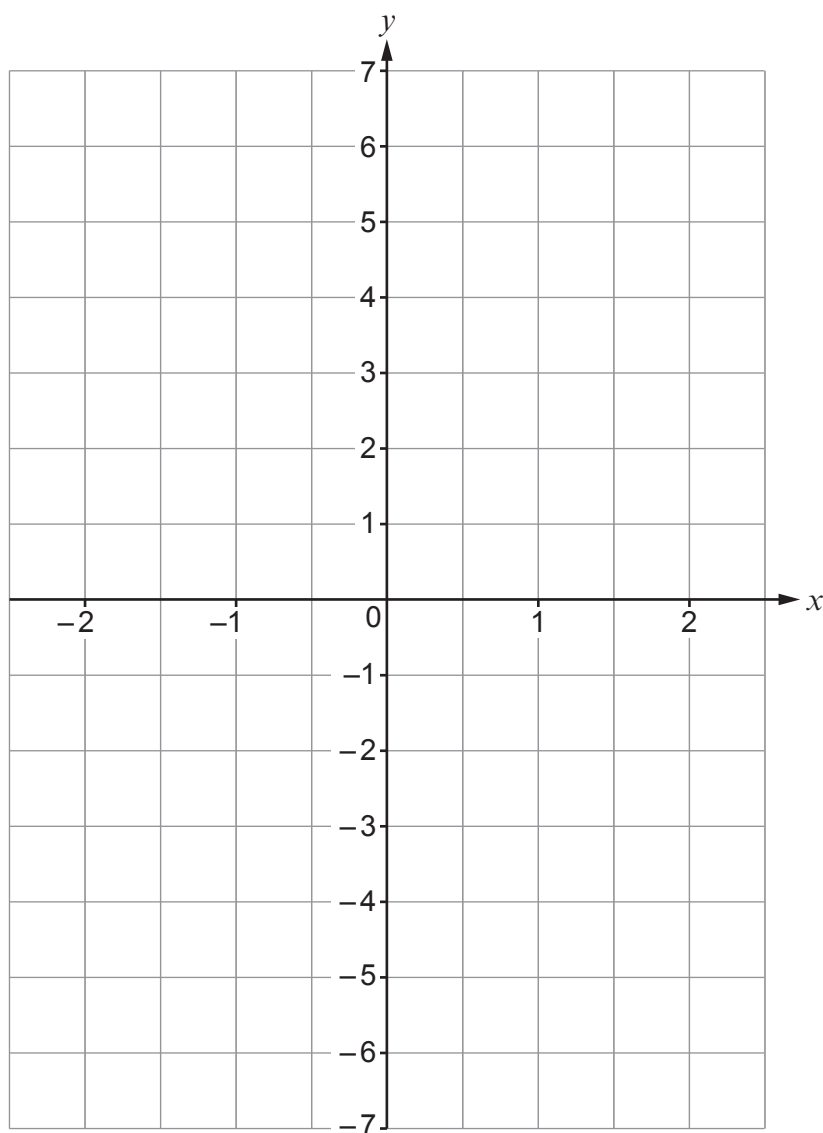
11. (a) The cost of a games console was £342 plus 20% VAT.

What was the cost of this games console including VAT? [3]

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(b)

EduTech: Tablet computer

Deposit is $\frac{1}{4}$ of the price.

Pay the balance in

6 equal monthly payments.

Andy bought a tablet computer from EduTech and paid the deposit and 6 equal monthly payments of £57.

How much was Andy's deposit? [3]

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Deposit £ ....

(C300U10-1)

12. David is shopping in a supermarket.

(a) David sees this information label on the shelf.

> Flapjacks   250 grams
> Our Price   **£1**
>
> £4.00 per 100 grams

He tells the supermarket manager that this information is wrong.

Explain why David is correct. [1]

....

....

(b) David decides to buy some ginger biscuits.
Here are his options.

GINGER BISCUITS   GINGER BISCUITS

> Ginger Biscuits   50 biscuits
> Our Price   **£1.50**

> Ginger Biscuits   30 biscuits
> Our Price   **£0.96**

David wants to buy the packet which is better value for money.

Which packet of biscuits should David buy?

50 biscuits [ ]   30 biscuits [ ]

Show how you decide. [3]

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© WJEC CBAC Ltd.   (C300U10-1)   **Turn over.**

13. (a) Calculate each of the following.

(i) $12 \cdot 1 - 1 \cdot 36$ [2]

(ii) $0 \cdot 6 \times 0 \cdot 4$ [1]

(iii) $\dfrac{7}{12} - \dfrac{1}{6}$ [2]

(b) $56 \times 1 \cdot 565 = 87 \cdot 64$

Use this to complete the following statement.

$$560 \times \text{.....................} = 87\,640$$

[2]

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14. Neil makes jewellery.
Last year he sold all the necklaces he made for a total of £10 800.

(a) He made necklaces for 48 weeks and sold them all for £9 each.

How many necklaces did Neil make each week?
You may assume he made the same number of necklaces each week. [4]

.... necklaces

(b) Neil also makes rings.
Last year, for 246 days, he made one ring each day.
He sold all these rings for £54 each.

How much **more** did Neil receive last year from selling rings than he did from selling necklaces? [4]

Neil received £ .... more

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15.

Marcie is carrying out a survey.

She wants to find out how often the people in her town use the local theatre.

Marcie decides to survey only the 15 people at a meeting of her local drama group.

Is this a reasonable plan?

Yes ☐   No ☐

Give **two** reasons to support your answer.   [2]

1. ....

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2. ....

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....

(C300U10-1)

16. Viola is arranging some paving slabs to make a path **all around** a rectangular pond.
Some of the slabs are grey and some are white.
There are no gaps between the slabs and no gaps between the slabs and the edge of the pond.
The diagram shows how she positions her first three slabs.
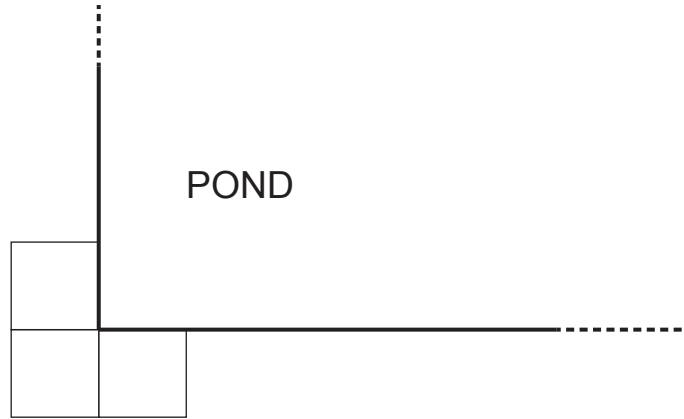
POND

Diagram not drawn to scale

The ratio of grey slabs : white slabs is 3 : 1.

The pond is 2·5 metres by 3·5 metres.
Each slab is a square with side 50 centimetres.

A grey slab costs £5 and a white slab costs £6.

How much does it cost Viola to make her path? [6]

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Turn over.

17. The bearing of *Q* from *P* is 140°.

Find the bearing of *P* from *Q*. [2]

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18. The lengths of the three sides of a triangle are in the ratio 3 : 5 : 7.

(a) What fraction of the perimeter is the longest side of this triangle? [1]

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(b) The perimeter of this triangle is 60 cm.

Find the length of each of the three sides of this triangle. [2]

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.... cm, ... cm, ... cm

Examiner only

19. The nth term of a sequence is given by $2n+9$.

(a) Work out the difference between consecutive terms. [2]

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(b) (i) Solve $2n+9 < 99$. [2]

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(ii) Write down the number of terms of this sequence that are less than 99. [1]

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....

Number of terms = ...

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20. James has been on holiday to the USA and is flying home to the UK.
The price of a gift in a shop at the airport is $65.
The price of the same gift online is €60 including delivery.

On the day of his flight, the exchange rates were as follows.

$$£0.80 = \$1$$
$$£1 = €1.20$$

Is it cheaper to buy the gift at the airport or online?

Airport ☐   Online ☐

Show how you decide. [4]

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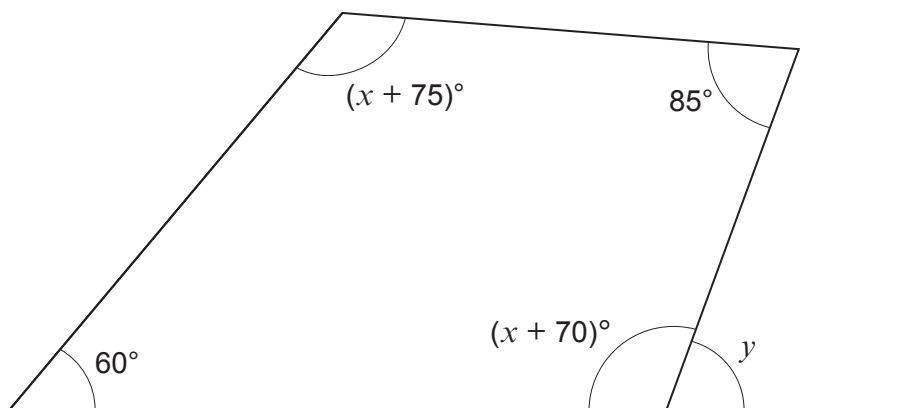
21.

$(x + 75)°$

$85°$

$(x + 70)°$

y

$60°$

Diagram not drawn to scale

The diagram shows a quadrilateral.

Use algebra to find the size of the exterior angle y. [5]

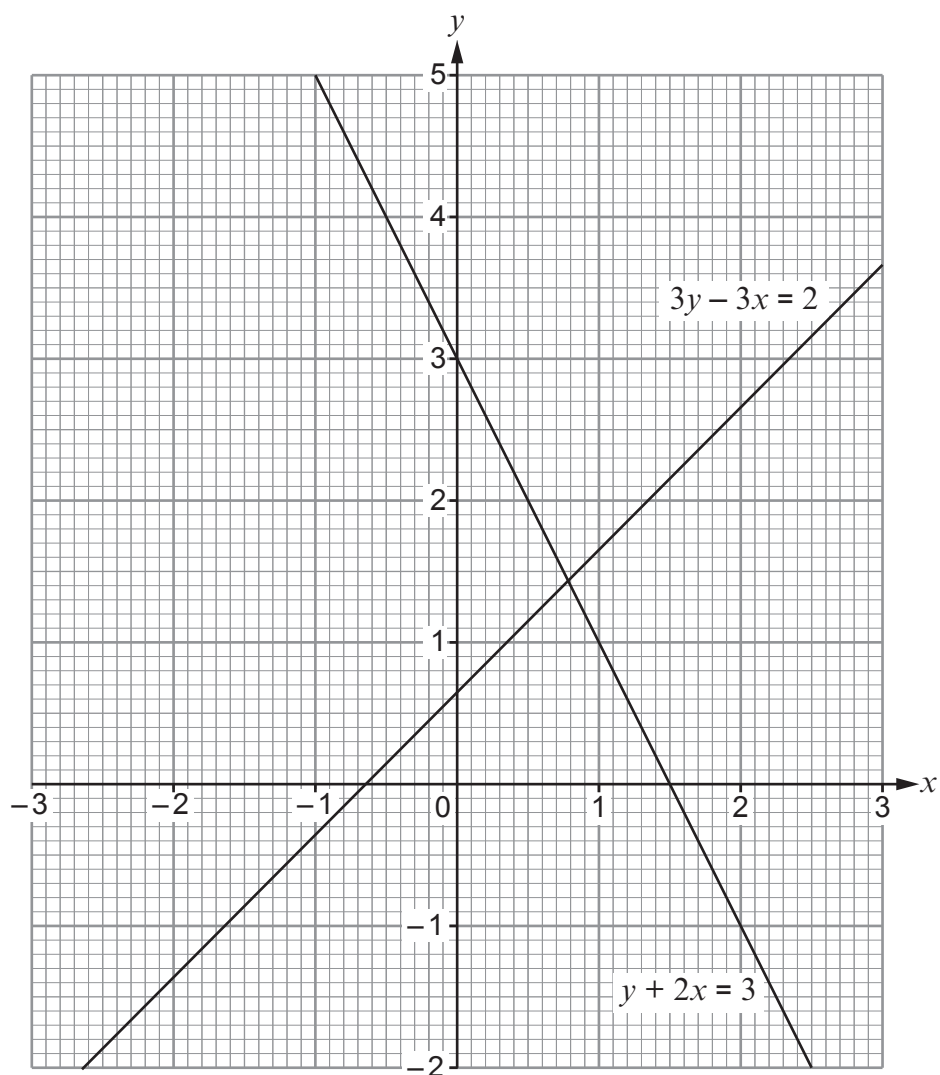...

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$y =$ .... °

(C300U10-1)

Turn over.

22. (a)

Use the diagram to solve the following simultaneous equations.

$$3y - 3x = 2$$
$$y + 2x = 3$$

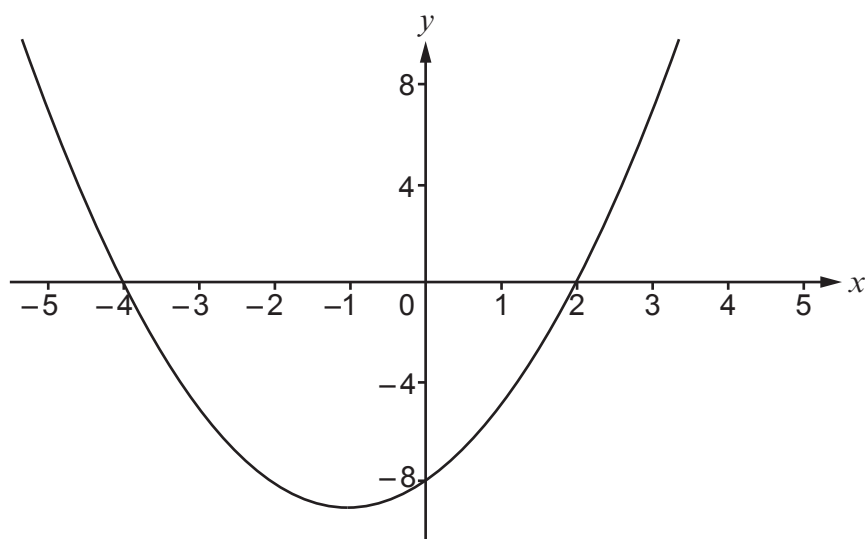Give your answers correct to 1 decimal place. [2]

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....

$x =$ .... $y =$ ....

(b) The diagram shows the curve $y = x^2 + 2x - 8$.

(i) Write down the y-intercept of the curve. [1]

....

(ii) Find the coordinates of the turning point of the curve. [2]

....

....

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(.................... , ...)

(iii) Use the diagram to solve $x^2 + 2x - 8 = 0$. [1]

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....

....

$x =$ .... or $x =$ ....

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23. The surface area of the Earth is $5 \cdot 101 \times 10^8$ km^2.
The Earth's oceans are 70·9% of this surface area.

Estimate the surface area of the Earth's oceans.
Give your answer in standard form. [3]

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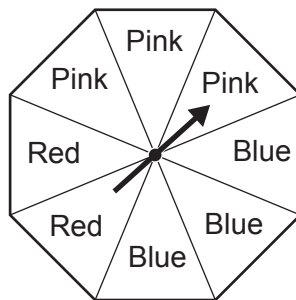
24.

The diagram shows a fair spinner.
Eve spins it twice.

What is the probability that the spinner lands on red both times? [2]

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(C300U10-1)

25. The table shows some information about the cost per person to take a boat across a river.

Adults (£)	a
Children (£)	c

The Jones family of 4 adults and 1 child pay £9.50 to take the boat.
The Patel family of 5 adults and 2 children pay £13 to take the boat.

The Lee family has 3 adults and 2 children.

How much does the Lee family pay to take the boat?
You must use an algebraic method and show all your working. [5]

The Lee family pays ....

Question number	Additional page, if required. Write the question number(s) in the left-hand margin.	Examiner only

(C300U10-1)