Eduqvas - F - 19th May '23 - P1.

Examiner only

1. (a) Calculate each of the following.

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

700

(ii) 65×1000 [1]

65000

(iii) $9 - 14$ [1]

-5

(b) Complete this sum. [1]

79 + 121 = 200

200 - 121

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

6	8	10	13	15	24	49	55

(i) 13 is a prime number. [1]

(ii) 24 is a multiple of 12. [1]

(iii) 49 is a square number. [1]

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

$\frac{4}{10} = \frac{2}{5}$

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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.

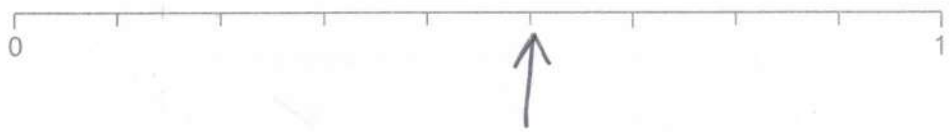
(i) On the probability scale below, mark with an arrow (↓) the probability that the letter chosen from the word AUSTRALIA is T. [1]

1/9

(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]

5/9



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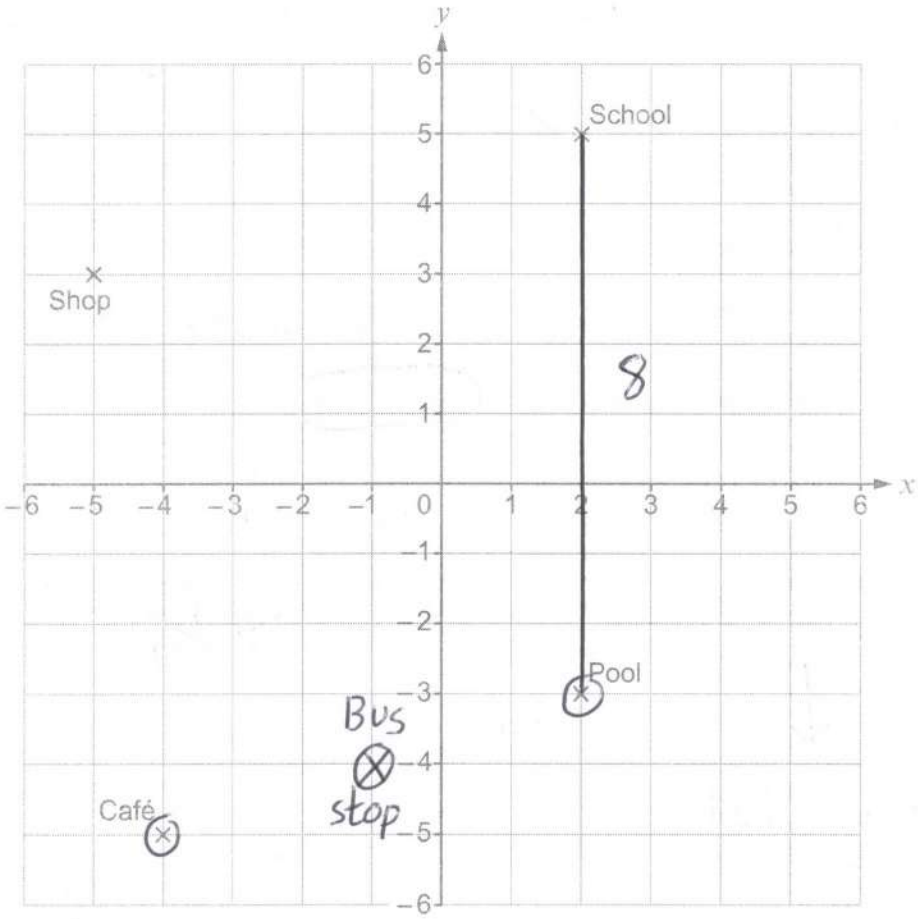
3.



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 (-5 , 3) [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. x 8
There is a straight path from the school to the pool.

How long is the actual path?
Give your answer in metres. = 400m [2]

.....

.....

C300U101
05

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

Trousers	and	**Top**	and	**Trainers**
Black (B) or Grey (G)		White (W) or Red (R)		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
B	R	P
B	R	Y
G	W	P
G	W	Y
G	R	P
G	R	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]

1/8 oe

Examiner only

(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]

17 + 18 = 35 mins

(ii) Joanie then walks 1·2 km to her friend's house.
This takes 15 minutes. = $\frac{1}{4}$ hr

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

1·2 x 4 = 4·8 kph

(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]

10 - 1 = 9 $\frac{9}{2}$ = 4·5 km.

Examiner only

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

0·61 → 0·62 eg 0·615

(b) Lea takes two science tests.

In the first test, she scores $\frac{18}{25}$. → $\frac{72}{100} = 72\%$

In the second test, she scores $\frac{14}{20}$. → $\frac{70}{100} = 70\%$

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

First test ✓ Second test ☐

Show how you decide. [3]

72% > 70%

Examiner only

6. (a)

n 

3n

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]

Total number of nails = 5n

(b) Each nail weighs 4·5 grams.

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

4·5 x 2 = 9

4·5 x 200 = 900g

÷1000

0·9 kg

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09

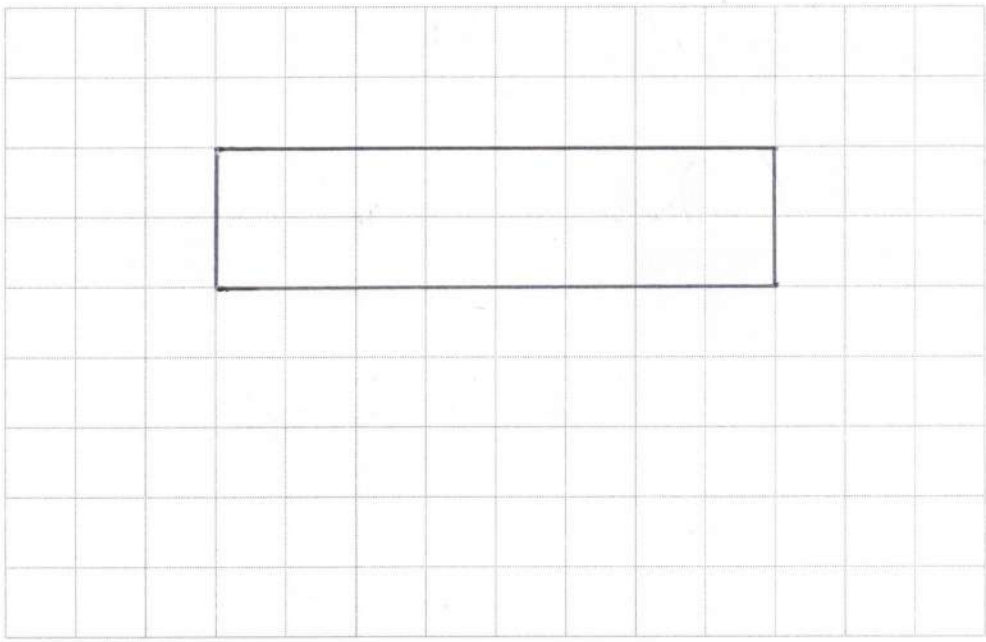
Examiner only

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]

9 x 1
8 x 2
7 x 3

6 x 4
5 x 5

16 x 1
8 x 2
4 x 4



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

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

8 x 2

16 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]

r : d

8 : 16

1 : 2

radius : diameter = 1 : 2

Examiner only

8. (a) Calculate 7×5^2. [2]

$7 \times 25 = 175$

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

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

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

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11

Examiner only

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]

$3\overline{)42} = 14$ £14

(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]

$8\overline{)120} = 15$ $15 \times 12 = 180$ £180

(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]

10% = 1·80

1% = 0·18 2% = £0·36

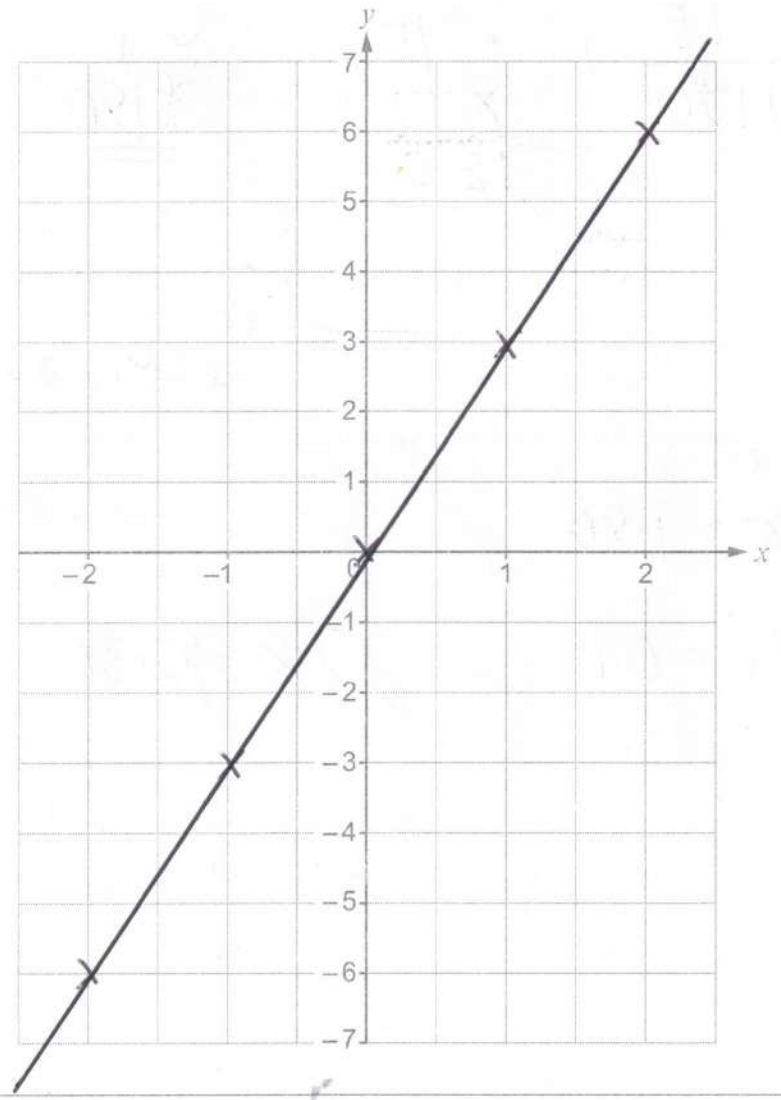
Examiner only

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

x	–2	–1	0	1	2
$y = 3x$	-6	-3	0	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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13

Examiner only

11. (a) The cost of a games console was £342 plus 20% VAT. → $\frac{1}{5}$

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

$$5\overline{)342.0} \quad 068.40$$

$$342.00 + 68.40 = £410.40$$

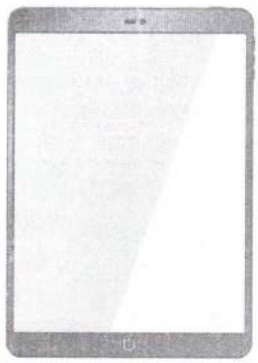
(b)

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]

$$57 \times 6 = 342$$

worth $\frac{3}{4}$ of the value

÷3 → $\frac{1}{4}$ = $3\overline{)342}$ 114

Deposit £ 114

Examiner only

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	

÷5, x2

He tells the supermarket manager that this information is wrong.

Explain why David is correct. [1]

£1 ÷ 5 = 20p 20p x 2 = 40p per 100g

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

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]

50 = £1.50

10 = £0.30

30 = £0.96

10 = 3)0.96 → £0.32

Examiner only

13. (a) Calculate each of the following.

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

$$\begin{array}{r} {}^{1}12{\cdot}{}^{1}1{}^{10} \\ -\ 1{\cdot}36 \\ \hline 10{\cdot}74 \end{array}$$

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

$6 \times 4 = 24$ $= 0{\cdot}24$

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

$\frac{7}{12} - \frac{2}{12} = \frac{5}{12}$

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

Use this to complete the following statement.

$560 \times$ ..... $= 87\,640$ [2]

$\times 1000$, $\times 10$

$1{\cdot}565 \times 100 = 156{\cdot}5$

Examiner only

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]

$$9\overline{)10'800} = 1200 \qquad 48\overline{)1200} = 025$$

$$48 \quad 96 \quad 144 \quad 192, 240$$

$$120 - 96 = 24$$

25 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]

$$246 \times 54 = 9\,84 + 12\,300 = 13\,284$$

$$13284 - 10800 = 2484$$

Neil received £ 2484 more

Examiner only

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. 15 is a very small sample

2. Sample is biased → they're people who are more likely to attend a theatre

etc

Examiner only

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.

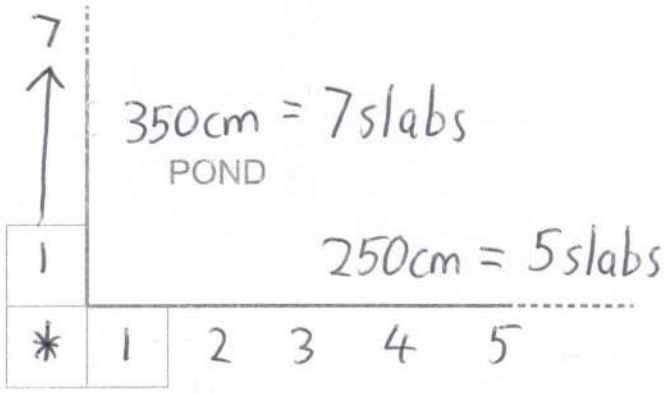


Diagram not drawn to scale

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]

Slabs = edges + corners = 7+7+5+5+4
= 28

Grey = $\frac{3}{4}$ of 28 = 21 White = 7

21
× 5
105

7×6 = 42

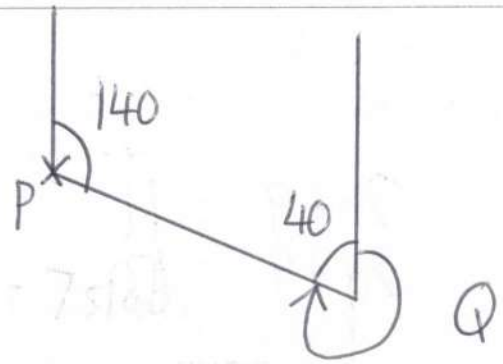
105 + 42

= £147

Examiner only

17. The bearing of Q from P is 140°.

Find the bearing of P from Q. [2]



360 - 40 = 320°

18. The lengths of the three sides of a triangle are in the ratio 3 : 5 : 7. = 15

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

7/15

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

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

60 ÷ 15 = 4

3 x 4 5 x 4 7 x 4

12 cm, 20 cm, 28 cm

Examiner only

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

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

$n=1 \quad 2n+9 = 11 \quad \text{diff} = 2$

$n=2 \quad 2n+9 = 13$

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

$2n < 90$

$n < 45$

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

Number of terms = 44

Examiner only

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]

$ → £
×0.8

65
×48
520

so $65 = £52 (A)

€ → £
÷1.2

60 ÷ 12
= 5

so €60 = £50 (O)

Examiner only

21.

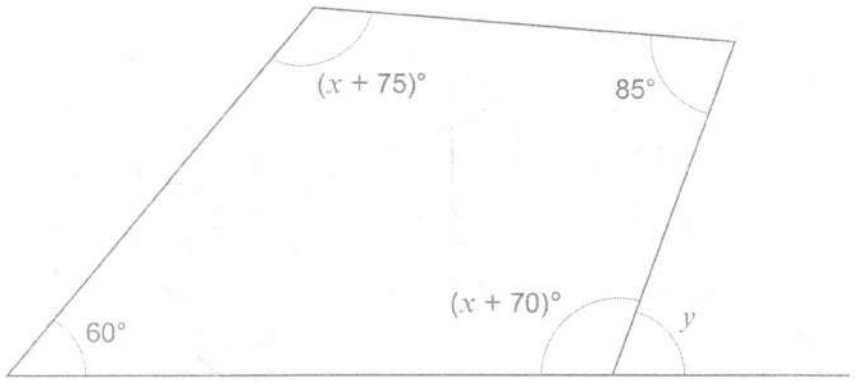


Diagram not drawn to scale

The diagram shows a quadrilateral. $= 360°$

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

$2x + 60 + 75 + 85 + 70 = 360$

$2x = 70$

$x = 35$

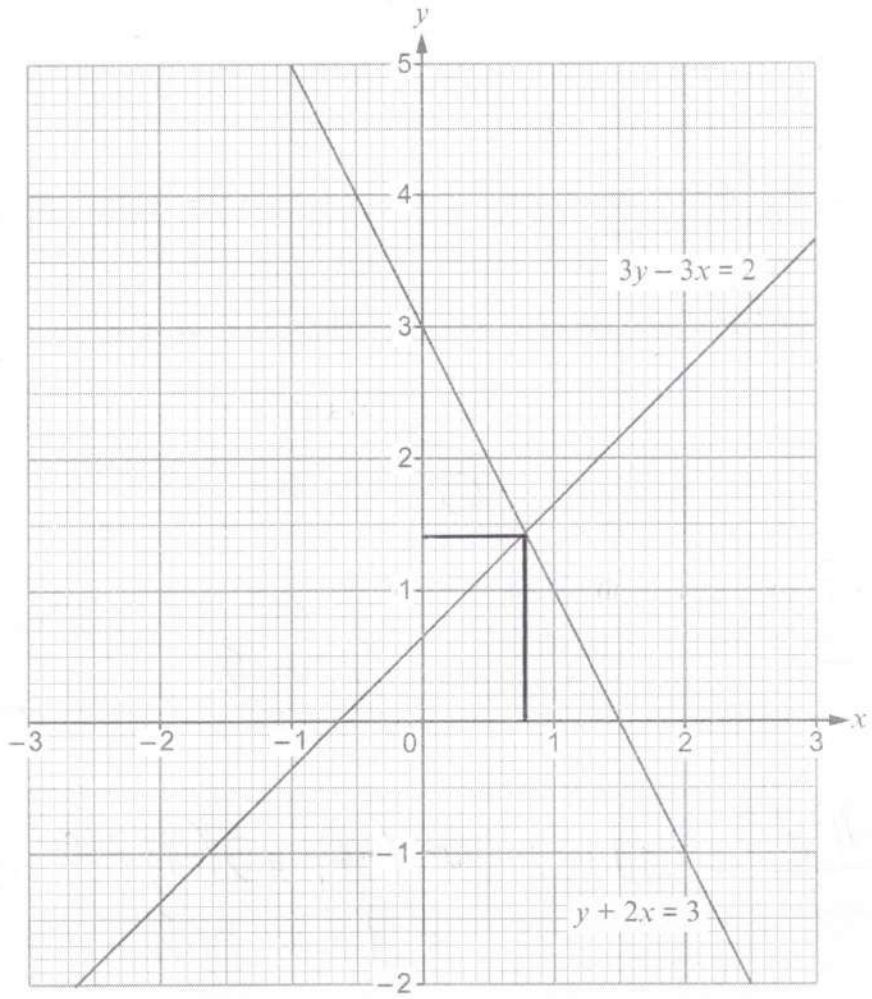
$x + 70 = 105$

$y = 180 - 105$

$y = 75°$

Examiner only

22. (a)



Use the diagram to solve the following simultaneous equations.

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

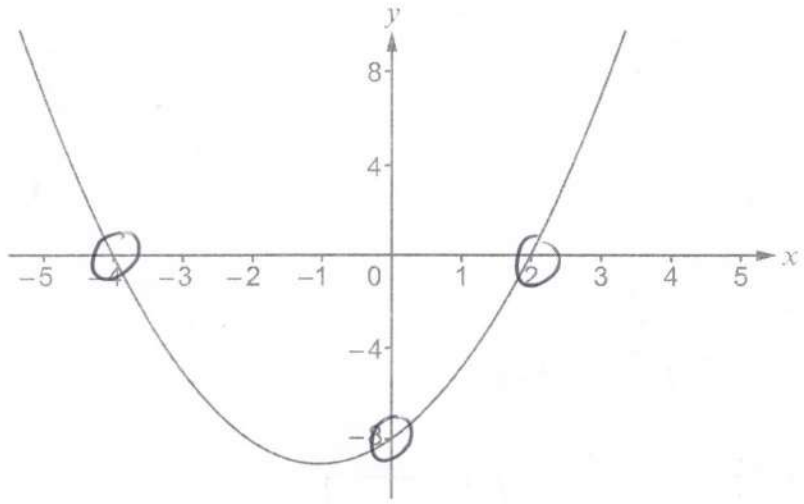
Give your answers correct to 1 decimal place. [2]

$x =$ 0·8 $y =$ 1·4

0·7 1·5 also accepted

Examiner only

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



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

-8

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

$x = \frac{-4+2}{2} = -1$ $\quad y = (-1)^2 + 2(-1) - 8$

$= 1 - 2 - 8$

(-1 , -9)

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

$x =$ -4 or $x =$ 2

Examiner only

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]

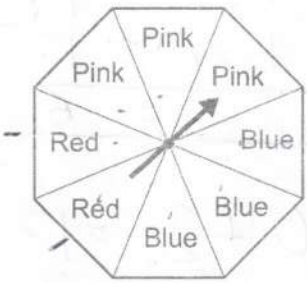
$10\% = 5 \times 10^7$

$\times 7 \quad \times 7$

$70\% = 35 \times 10^7$

$= 3.5 \times 10^8 \ \text{Km}^2$

24.



$R = \frac{2}{8} = \frac{1}{4}$

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

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

$RR = \frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$

Examiner only

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]

$4a + 1c = 9.5$ -①
$5a + 2c = 13$ -②

① x 2 $\quad 8a + 2c = 19$
② $\quad 5a + 2c = 13$
$\quad 3a = 6 \quad a = £2$

② ⇒ $10 + 2c = 13$
$2c = 3 \quad c = £1.50$

Lee = $(3 \times 2) + (2 \times 1.50)$
$= 6 + 3 = 9$

The Lee family pays £9

END OF PAPER