Cambridge IGCSE

**Cambridge International Examinations**
Cambridge International General Certificate of Secondary Education

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| CANDIDATE NAME | | | | | | | | | |
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*1223789761*

**MATHEMATICS** **0580/37**

Paper 3 (Core) **May/June 2014**

**2 hours**

Candidates answer on the Question Paper.

Additional Materials: Electronic calculator
Tracing paper (optional)
Geometrical instruments

**READ THESE INSTRUCTIONS FIRST**

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
You may use an HB pencil for any diagrams or graphs.
Do not use staples, paper clips, glue or correction fluid.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** questions.
If working is needed for any question it must be shown below that question.
Electronic calculators should be used.
If the degree of accuracy is not specified in the question, and if the answer is not exact, give the answer to three significant figures. Give answers in degrees to one decimal place.
For $\pi$, use either your calculator value or 3.142.

At the end of the examination, fasten all your work securely together.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total of the marks for this paper is 104.

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

This document consists of **16** printed pages.

**1** **(a)** Mr and Mrs Da Silva fly from Manchester to Orlando.
The plane takes off at 11 10 and arrives in Orlando 8 hours 20 minutes later.
The time in Orlando is 5 hours behind the time in Manchester.

Work out the local time in Orlando when the plane arrives.

*Answer(a)* ..... [2]

**(b)** Mr and Mrs Da Silva stay in a hotel for 16 nights.
The cost of their room is $115 per night.

Work out the total cost.

*Answer(b)* $..... [1]

**(c)** At the end of their holiday Mr Da Silva changes $862 into pounds (£) at a rate of £1 = $1.5972 .

**(i)** Calculate how many pounds he receives.
Give your answer correct to the nearest pound.

*Answer(c)*(i) £..... [3]

**(ii)** Mr Da Silva invests £430 of this money for 3 years at a rate of 4% per year simple interest.

Calculate the total amount of money he has at the end of 3 years.

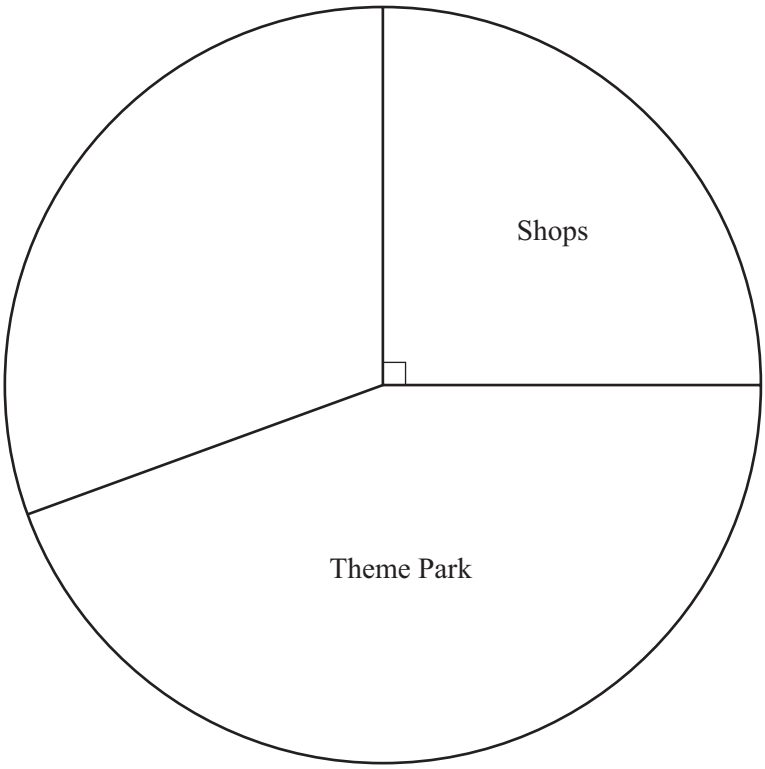
*Answer(c)*(ii) £..... [2]

**(d)** On holiday Mr and Mrs Da Silva went to the places listed in the table.
The total time spent in these places was 216 hours.

| Activity | Time (hours) | Angle in pie chart |
|---|---|---|
| Shops | 54 | 90° |
| Theme Park | | 160° |
| Water Park | 48 | |
| Beach | | |

**(i)** Complete the table. [3]

**(ii)** Complete the pie chart.
Label each of the sectors.




[2]

**(iii)** Write down the percentage of time they spent in shops.

*Answer(d)*(iii) ..... % [1]

**2** Ricardo owns a restaurant.

**(a)** Ricardo has a piece of lamb of mass 4.5 kg.
He cooks it for 20 minutes per kilogram and then for a further 20 minutes.

For how long does he cook the piece of lamb?

*Answer(a)* ..... h ..... mins [2]

**(b)** Ricardo serves three different types of potatoes.
Their masses are in the ratio mashed : roasted : boiled = 3 : 7 : 2 .

Find the mass of roasted potatoes when the total mass is 4.8 kg.

*Answer(b)* ..... kg [2]

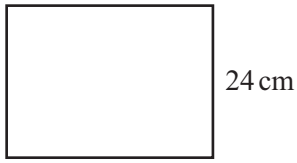
**(c)** On Wednesday evening there are 72 guests in the restaurant.
$\frac{3}{8}$ of them order vegetarian lasagne.

Work out how many guests order vegetarian lasagne.

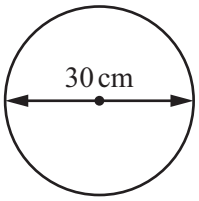
*Answer(c)* ..... [1]

**(d)** Ricardo serves two types of pizza.
One is rectangular and the other is circular.

Pizza A




Pizza B

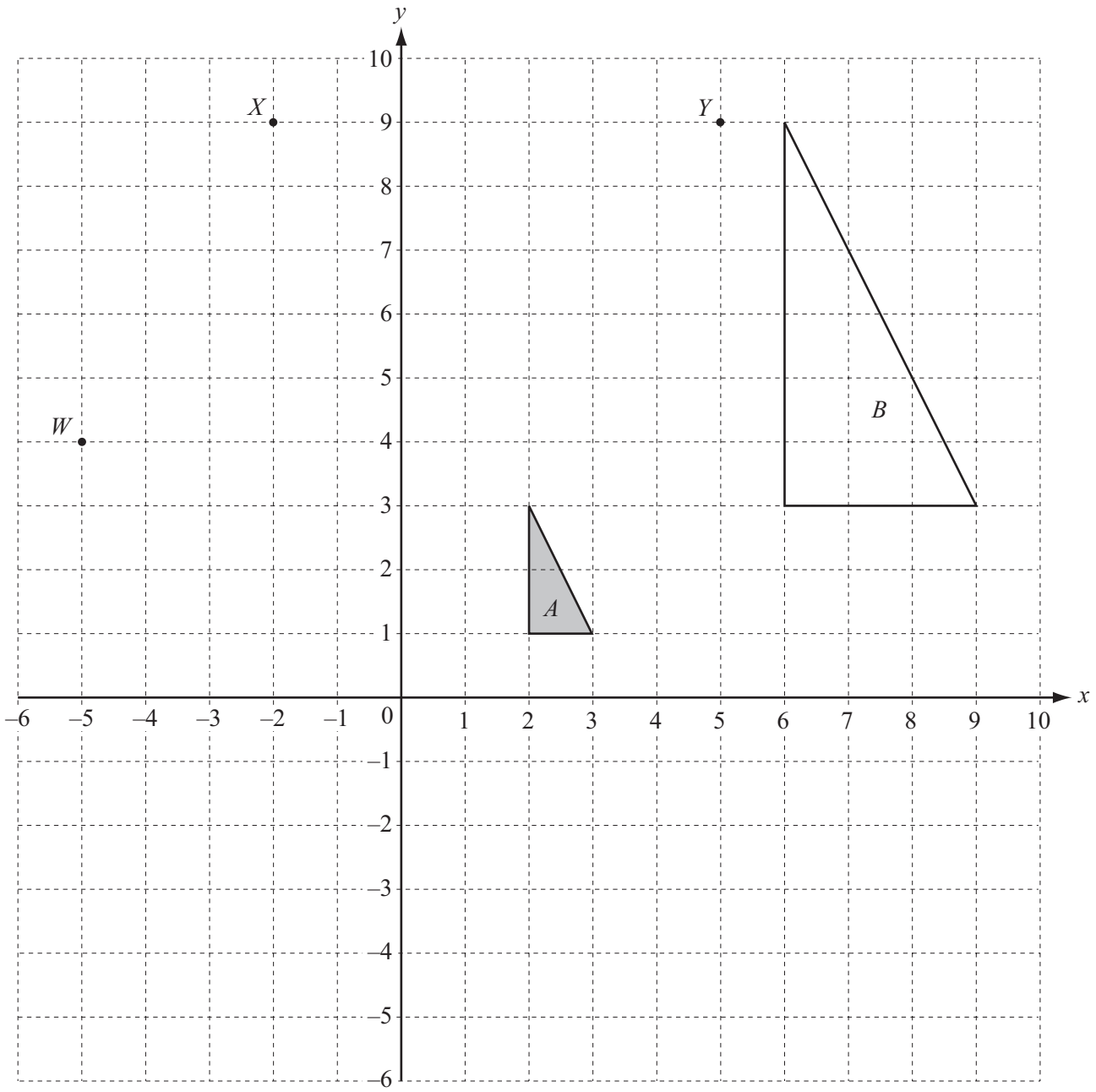



NOT TO SCALE

Complete the statement below.

The area of Pizza ..... is larger than the area of Pizza ..... by ..... $cm^2$. [5]

**3**




**(a) (i)** Reflect triangle $A$ in the line $x = -1$. [2]

**(ii)** Rotate triangle $A$ through 180° about (0, 0). [2]

**(iii)** Describe fully the **single** transformation that maps triangle $A$ onto triangle $B$.

*Answer(a)*(iii) .....

..... [3]

**(b)** The squares on the grid each have area 1 $cm^2$.

Work out the area of triangle *B*.

*Answer(b)* ..... $cm^2$ [2]

**(c)** **(i)** Write down the co-ordinates of point *W*.

*Answer(c)*(i) (..... , .....) [1]

**(ii)** Plot point *Z* (2, 4). [1]

**(iii)** *WXYZ* is a quadrilateral.

Write down the mathematical name of this quadrilateral.

*Answer(c)*(iii) ..... [1]

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**4** **(a)** Find

**(i)** $16^3$,

*Answer(a)*(i) ..... [1]

**(ii)** $\sqrt{2.25}$,

*Answer(a)*(ii) ..... [1]

**(iii)** $2^0$.

*Answer(a)*(iii) ..... [1]

**(b)** Write down a prime number between 50 and 60.

*Answer(b)* ..... [1]

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**[Turn over**

**5** Patrice records the number of goals scored by his football team in each of 20 matches.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| 2 | 4 | 8 | 3 | 9 | 2 | 11 | 8 | 9 | 0 |
| 1 | 2 | 5 | 0 | 4 | 2 | 1 | 2 | 3 | 7 |

**(a) (i)** Find the median.

*Answer(a)*(i) ..... [2]

**(ii)** Write down the mode.

*Answer(a)*(ii) ..... [1]

**(iii)** Find the range.

*Answer(a)*(iii) ..... [1]

**(iv)** Calculate the mean.

*Answer(a)*(iv) ..... [2]

**(b)** Two football teams play the same number of matches.
The mean number of goals scored by XR United is 4.5 and the range is 2.
The mean number of goals scored by Pool City is 4.5 and the range is 8.

**(i)** What does the information tell you about the number of goals scored by each team?

*Answer(b)*(i) ..... [1]

**(ii)** What does the difference in the ranges tell you?

*Answer(b)*(ii) ..... [1]

**(c)** The attendance at a football match was 75 546.

Write 75 546 correct to

**(i)** the nearest ten,

*Answer(c)*(i) ..... [1]

**(ii)** two significant figures.

*Answer(c)*(ii) ..... [1]

**(d)** Mikhail buys 4 child tickets at $\$c$ each. He also spends \$152 on other tickets.
Juan buys 9 child tickets at $\$c$ each. He also spends \$86 on other tickets.
Mikhail and Juan both pay the same total amount of money for their tickets.

Write an equation and solve it to calculate the value of $c$.

*Answer(d)* $c$ = ..... [3]

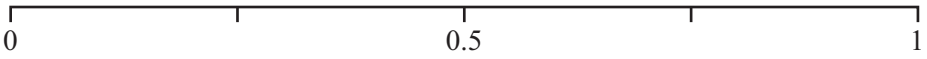
**6** Cartons of drink are sold in boxes of 12.
Each box contains,

- 5 blackcurrant drinks
- 3 orange drinks
- 2 lemon drinks
- 2 peach drinks.

**(a) (i)** Zahira buys a box and chooses a drink at random.
Write down the drink she is most likely to choose.

*Answer(a)*(i) ..... [1]

**(ii)** Draw an arrow on the probability scale to show the probability that she chooses an orange drink.




[1]

**(b)** A shop buys 500 boxes.
Work out the number of peach drinks.

*Answer(b)* ..... [1]

**(c) (i)** A lorry delivers a total of 10 250 boxes.

Work out the number of drinks delivered.
Write your answer in standard form.

*Answer(c)*(i) ..... [2]

**(ii)** The lorry travels 375 km in 7.5 hours.

Calculate the average speed of the lorry.

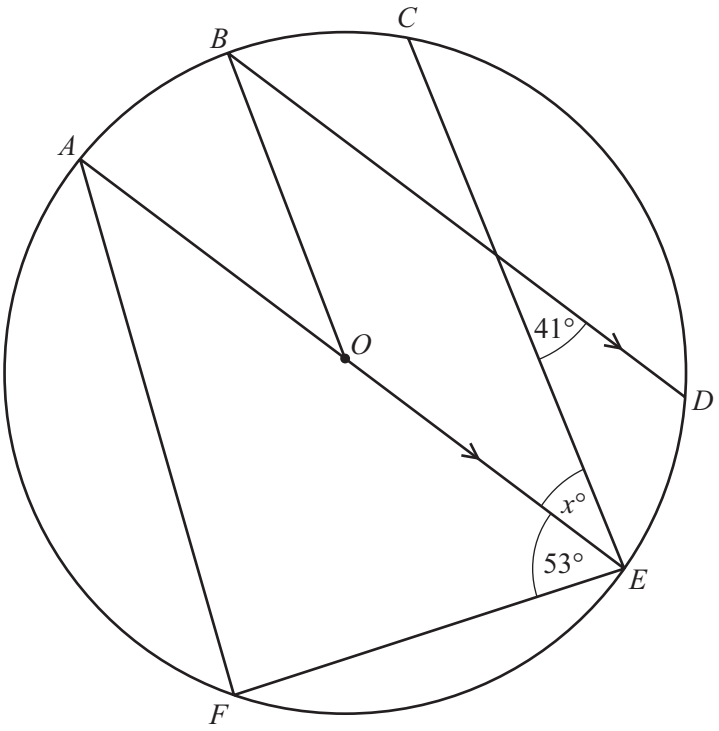
*Answer(c)*(ii) ..... km/h [1]

**(d)** Each box costs $8.75 .
Carmen buys 5 boxes and pays with a $50 note.

Calculate how much change she receives.

*Answer(d)* $..... [2]

**7**




NOT TO SCALE

*A*, *B*, *C*, *D*, *E* and *F* are points on the circumference of a circle centre *O*.
*AE* is a diameter of the circle and *AE* is parallel to *BD*.

**(a)** Write down the mathematical name of the line

**(i)** *OB*,

*Answer(a)*(i) ..... [1]

**(ii)** *BD*.

*Answer(a)*(ii) ..... [1]

**(b)** Find angle *FAE*.

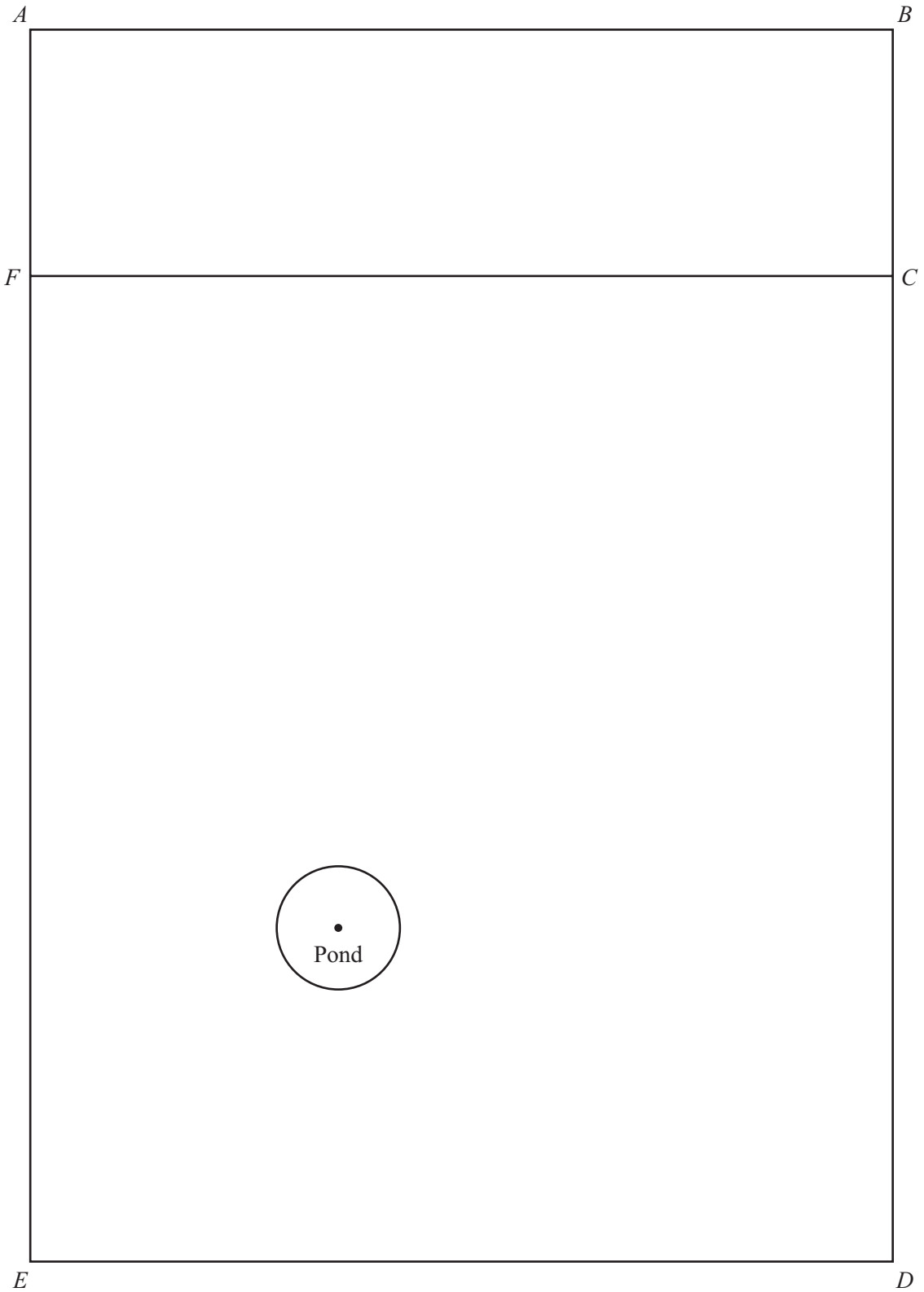
*Answer(b)* Angle *FAE* = ..... [2]

**(c)** Find the value of *x*.
Give a reason for your answer.

*Answer(c)* $x$ = ..... because .....

..... [2]

**8** The scale drawing shows a farmyard *ABCF* and a field *CDEF*.
The scale is 1 centimetre represents 10 metres.




Scale: 1 cm to 10 m

**(a)** Find the actual length of *BD*.

*Answer(a) BD* = ..... m [1]

**(b)** Calculate the actual area of the farmyard.

*Answer(b)* ..... $m^2$ [2]

**(c)** Horses are kept in the field *CDEF*.
The horses graze in a region

- more than 50 m from *EF*

and

- more than 20 m from the **edge** of the pond.

Construct these two loci on the scale drawing.
Shade the region where the horses can graze. [5]

**(d)** Tarik walks across the farmyard from *B* to the fence *CF*.
His path is equidistant from *AB* and *BC*.

**Using a straight edge and compasses only** construct his path.
**Show all your construction lines clearly**. [2]

**(e)** Tarik buys 3 cows costing $495 each.
He later sells the cows for a total of $2836.35 .

Work out the percentage profit.

*Answer(e)* ..... % [3]

**(f)** The diameter of the pond is 20 m.

Calculate the circumference of the pond.

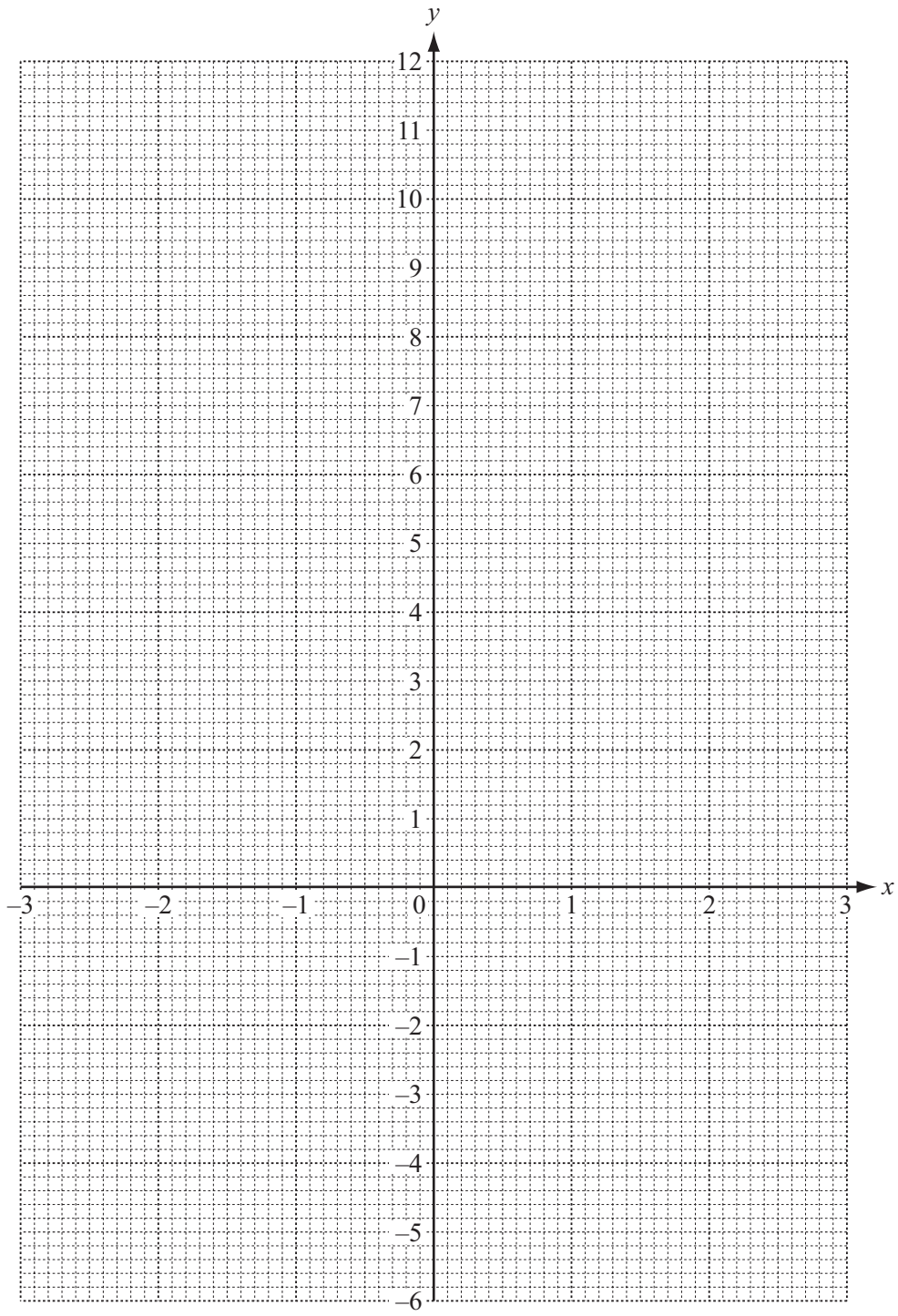
*Answer(f)* ..... m [2]

**9** **(a)** **(i)** Complete the table for $y = x^2 - 2x - 4$.

| $x$ | –3 | –2 | –1 | 0 | 1 | 2 | 3 |
|---|---|---|---|---|---|---|---|
| $y$ | | 4 | | –4 | | –4 | –1 |

[3]

**(ii)** On the grid, draw the graph of $y = x^2 - 2x - 4$ for $-3 \leqslant x \leqslant 3$.

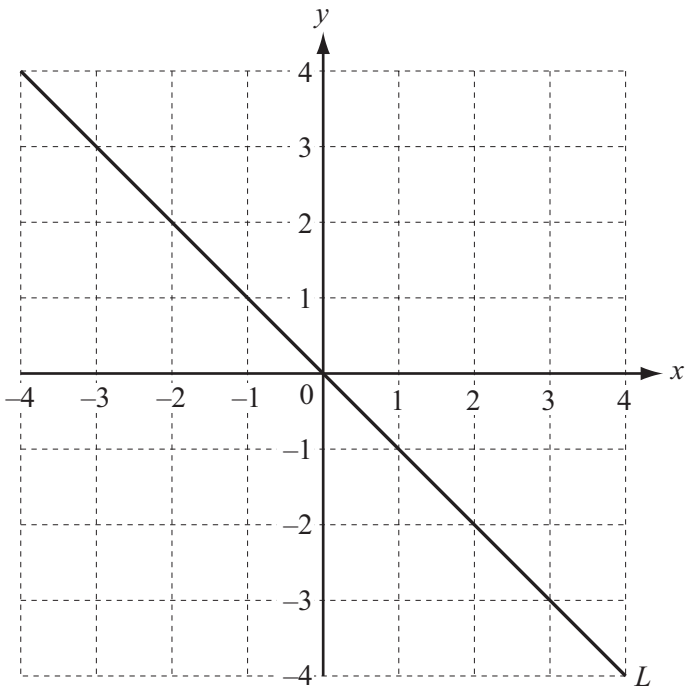



[4]

**(iii)** Use your graph to solve the equation $x^2 - 2x - 4 = -2$.

*Answer(a)*(iii) $x =$ ..... or $x =$ ..... [2]

**(b)**




Write down the equation of a line which is parallel to line $L$.

*Answer(b)* ..... [3]

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**Question 10 is printed on the next page.**

**10** **(a)** Solve.

**(i)** $3x = 10.5$

*Answer(a)*(i) $x =$ ..... [1]

**(ii)** $4x - 3 = 17$

*Answer(a)*(ii) $x =$ ..... [2]

**(b)** Simplify.

$4p - 5p + 3p$

*Answer(b)* ..... [1]

**(c)** Factorise.

$5x + 15y$

*Answer(c)* ..... [1]

**(d)** Expand the brackets and simplify.

$4(x - 2) - 3(x - 7)$

*Answer(d)* ..... [2]

**(e)** Make $a$ the subject of the formula.

$3(a + b) = a + 2.$

*Answer(e)* $a =$ ..... [3]