

Write your name here

Surname

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Pearson Edexcel

Centre Number

Candidate Number

Level 1/Level 2 GCSE (9–1)

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Mathematics

Paper 1 (Non-Calculator)

Foundation Tier

Thursday 24 May 2018 – Morning

Time: 1 hour 30 minutes

Paper Reference

1MA1/1F

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser.
Tracing paper may be used.

Total Marks

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.
- Answer **all** questions.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- You must **show all your working**.
- Diagrams are **NOT** accurately drawn, unless otherwise indicated.
- **Calculators may not be used.**



Information

- The total mark for this paper is 80
- The marks for **each** question are shown in brackets – *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Keep an eye on the time.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

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.CG Maths.

Hints



Pearson

Please note that these worked solutions have neither been provided nor approved by Pearson Education and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

- 1 Write 6324 correct to the nearest thousand.

The 6 is in the thousands place. The 3 in the next place decides whether we round up to 7000 or round down to 6000

(Total for Question 1 is 1 mark)

- 2 (a) Write the following numbers in order of size.
Start with the smallest number.

-6 6 -5 0 12

The more negative or less positive a number, the smaller the number is. Negative numbers are smaller than positive numbers

(1)

- (b) Write the following numbers in order of size.
Start with the smallest number.

0.078 0.78 0.87 0.708

All the units are 0 so compare the tenths then hundredths

(1)

(Total for Question 2 is 2 marks)

- 3 Write 20% as a fraction.

Percent means out of 100

(Total for Question 3 is 1 mark)

4 Here is a list of four fractions.

$$\frac{4}{16}$$

$$\frac{2}{8}$$

$$\frac{15}{60}$$

$$\frac{3}{9}$$

One of these fractions is **not** equivalent to $\frac{1}{4}$

Write down this fraction.

To simplify the fractions, divide the numerator and denominator by the same number. They all simplify to $\frac{1}{4}$ apart from one

.....
(Total for Question 4 is 1 mark)

5 Write down the first even multiple of 7

We can count in 7s to list the multiples of 7

.....
(Total for Question 5 is 1 mark)

6 (a) Simplify $3 \times 4t$

How many t do we have if we have 3 lots of 4t?

.....
(1)

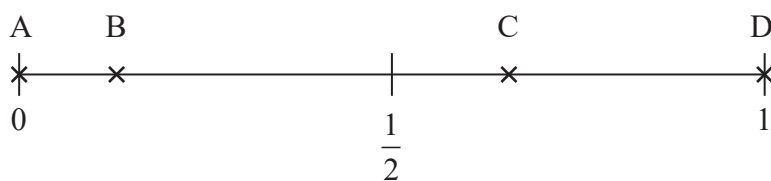
(b) Simplify $8a - 3a + 2a$

$$8a - 3a = 5a$$

.....
(1)

(Total for Question 6 is 2 marks)

- 7 Here is a probability scale.
It shows the probability of each of the events A, B, C and D.



- (a) Write down the letter of the event that is certain.

0 is impossible. 1 is the highest possible probability

.....
(1)

- (b) Write down the letter of the event that is unlikely.

Unlikely means less than half chance but not impossible

.....
(1)

There are 12 counters in a bag.

- 3 of the counters are red.
- 1 of the counters is blue.
- 2 of the counters are yellow.
- The rest of the counters are green.

Caitlin takes at random a counter from the bag.

- (c) Show that the probability that this counter is yellow or green is $\frac{2}{3}$

Work out how many green counters there are.
Add this to the number of yellow counters to get the total number of yellow and green. Then express this number as a fraction of the total number of counters. Simplify the fraction to $\frac{2}{3}$

(3)

(Total for Question 7 is 5 marks)

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- 8 3 kg of meat costs £54
Nina buys 2 kg of the meat.

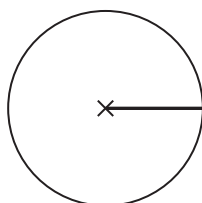
Work out how much Nina pays.

First, divide the £54 by 3 to work out the cost of 1kg. 2kg is 2 lots of 1kg

£

(Total for Question 8 is 2 marks)

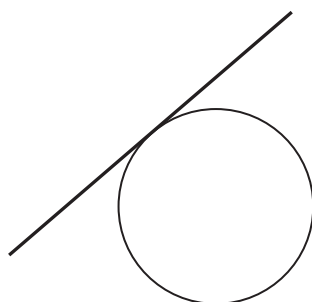
- 9 The centre of this circle is marked with a cross (×).



- (a) Write down the mathematical name of the straight line shown in the circle.

Rad...
(1)

- (b) Write down the mathematical name of the straight line that is touching the circle.



Tan...
(1)

(Total for Question 9 is 2 marks)

10 Tim and three friends go on holiday together for a week.

The 4 friends will share the costs of the holiday equally.

Here are the costs of the holiday.

£1280 for 4 return plane tickets

£640 for the villa

£220 for hire of a car for the week

Work out how much Tim has to pay for his share of the costs.

Find the total cost of the holiday by adding together all the costs. Then divide the cost by the 4 friends

£

(Total for Question 10 is 3 marks)

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11 Write down an example to show that each of the following two statements is **not** correct.

(a) The **factors** of an even number are always even.

Whole numbers which the number can be divided by

Find an odd factor of an even number to disprove the statement

..... (1)

(b) All the digits in odd numbers are odd.

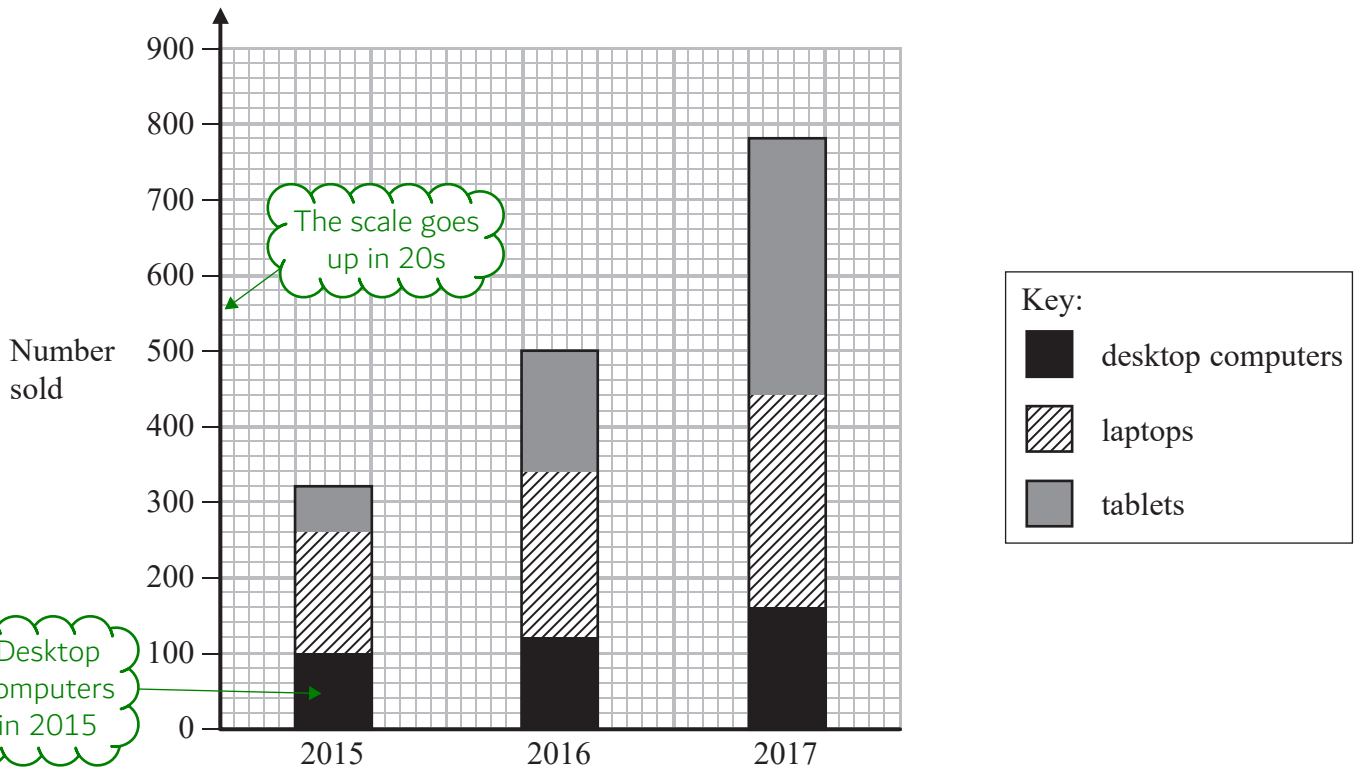
Find an odd number with at least one even digit to disprove the statement

..... (1)

(Total for Question 11 is 2 marks)

12 A shop sells desktop computers, laptops and tablets.

The composite bar chart shows information about sales over the last three years.



(a) Write down the number of desktop computers sold in 2015

.....
(1)

(b) Work out the total number of laptops sold in the 3 years.

Subtract the bottom of the striped bar from the top of the striped bar to calculate how many laptops were sold each year. Add all the results together

.....
(3)

(c) State the item that had the greatest increase in sales over the 3 years.
Give a reason for your answer.

Compare how much each item grew by from 2015 to 2017

.....
(2)

Alex says,

“In 2017, more tablets were sold than desktop computers. This means the shop makes more profit from the sale of tablets than from the sale of desktop computers.”

(d) Is Alex correct?

You must justify your answer.

No, because...

More sales does not necessarily mean more profit

(1)

(Total for Question 12 is 7 marks)

13 A piece of wire is 240 cm long.

Peter cuts two 45 cm lengths off the wire.

He then cuts the rest of the wire into as many 40 cm lengths as possible.

Work out how many 40 cm lengths of wire Peter cuts.

1. Work out how much is cut off in total
2. Subtract what is cut off from 240cm
3. Divide the remaining amount by 40

(Total for Question 13 is 3 marks)

14 Gavin, Harry and Isabel each earn the same monthly salary.

Each month,

Gavin **saves** 28% of his salary and spends the rest of his salary

Harry spends $\frac{3}{4}$ of his salary and **saves** the rest of his salary

the amount of salary Isabel saves : the amount of salary she spends = 3 : 7

Work out who saves the most of their salary each month.

You must show how you get your answer.

All the proportions need to be in the same format to compare them. Decimals are good for comparing.

To convert a percentage to a decimal, divide it by 100.

If $\frac{3}{4}$ is spent, $\frac{1}{4}$ is saved. $\frac{1}{4}$ is ...

There are 10 parts in total in the ratio. 3 out of these 10 parts are saved

(Total for Question 14 is 4 marks)

15 Work out 15% of 160 grams.

10% can be found by dividing 160 by 10. 5% is half of 10%. Adding together 10% and 5% gives 15%

..... grams

(Total for Question 15 is 2 marks)

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16 $P = 4x + 3y$

$x = 5$

$y = -2$

(a) Work out the value of P .

Substitute x for 5 and y for -2

.....
(2)

(b) Expand $4e(e + 2)$

$4e \times e + 4e \times 2$

.....
(2)

(c) Solve $3(m - 4) = 21$

Do opposite operations to cancel out everything from the left side apart from m . Follow BIDMAS backwards to decide what to eliminate first

$m =$
(2)

(Total for Question 16 is 6 marks)

17 There are some chocolates in a box.

$\frac{1}{4}$ of the chocolates contain nuts.

The rest of the chocolates do not contain nuts.

Write down the ratio of the number of chocolates that contain nuts to the number of chocolates that do not contain nuts.

Give your answer in the form $1 : n$

$\frac{1}{4}$ contain nuts so $\frac{3}{4}$ do not contain nuts. Write this as a ratio then simplify it by multiplying or dividing both sides by the same amount so that 1 is on the left

(Total for Question 17 is 2 marks)

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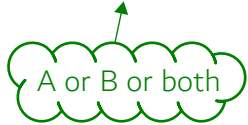
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18 $A = \{\text{multiples of 5 between 14 and 26}\}$

$B = \{\text{odd numbers between 14 and 26}\}$

(a) List the members of $A \cup B$



..... (2)

(b) Describe the members of $A \cap B$



..... (1)

(Total for Question 18 is 3 marks)

19 (a) Work out $2\frac{1}{7} + 1\frac{1}{4}$

Convert the mixed numbers into improper fractions by multiplying the whole number by the denominator then adding the result to the numerator. Then convert the fractions into equivalent fractions with the same denominators

.....
(2)

(b) Work out $1\frac{1}{5} \div \frac{3}{4}$

Give your answer as a mixed number in its simplest form.

Convert the mixed number into an improper fraction by multiplying the whole number by the denominator then adding the result to the numerator. Divide the fractions by keeping the first fraction, changing the sign to multiplication and flipping the second fraction. Then simplify and convert to a mixed number

.....
(2)

(Total for Question 19 is 4 marks)

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20 In a village

the number of houses and the number of flats are in the ratio 7 : 4
the number of flats and the number of bungalows are in the ratio 8 : 5

There are 50 bungalows in the village.

How many houses are there in the village?

Flats are common to both ratios so we need to work out the number of flats.

5 parts of the ratio 8:5 is worth 50. Use this to calculate the worth of 1 part then 8 parts. The worth of 8 parts is the number of flats.

4 parts of the ratio 7:4 represent the same number of flats. Work out the worth of 1 part of this ratio then the worth of 7 to get the number of houses

.....
(Total for Question 20 is 3 marks)

21 Renee buys 5 kg of sweets to sell.
She pays £10 for the sweets.

Renee puts all the sweets into bags.
She puts 250 g of sweets into each bag.
She sells each bag of sweets for 65p.

Renee sells all the bags of sweets.

Work out her percentage profit.

There are 1000g in 1kg so 5kg is 5000g. Work out how many 250g bags go into 5000g to find how many bags she sells.

Multiply the number of bags she sells by the 65p price to work out her income.

$$\text{Profit} = \text{income} - \text{costs}$$

Express the profit as a fraction of the costs then multiply it by 100 to convert it into a percentage

.....%

(Total for Question 21 is 4 marks)

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22 A cycle race across America is 3069.25 miles in length.

Juan knows his average speed for his previous races is 15.12 miles per hour. For the next race across America he will cycle for 8 hours per day.

(a) Estimate how many days Juan will take to complete the race.

$$\begin{array}{c} d \\ \hline S \quad t \end{array}$$

← From the formula triangle, time = distance/speed

Round the distance and speed to rough amounts then calculate the number of hours needed to do the race. Divide the number of hours by 8 to work out the number of days needed

(3)

Juan trains for the race. The average speed he can cycle at increases. It is now 16.27 miles per hour.

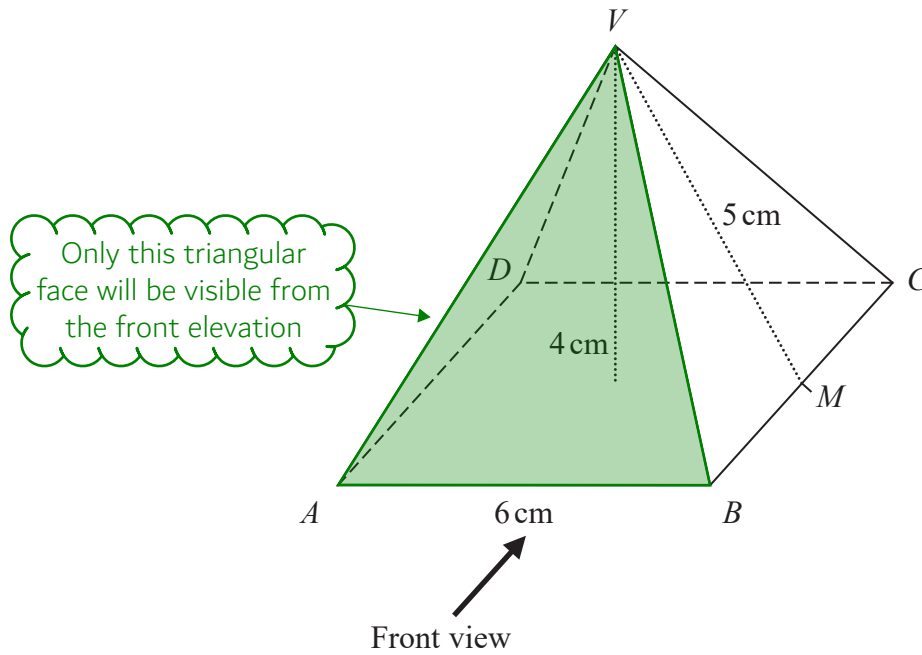
(b) How does this affect your answer to part (a)?

time = distance/speed
What effect does increasing the speed have on the time?

(1)

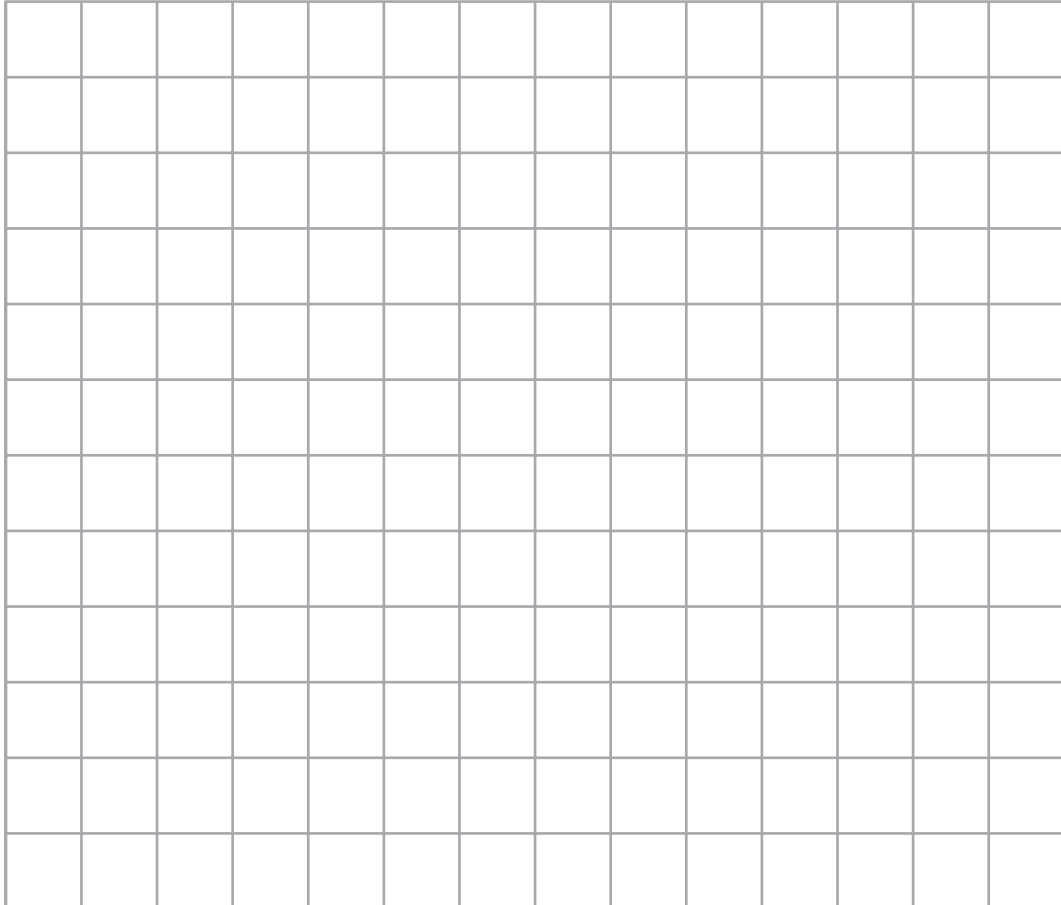
(Total for Question 22 is 4 marks)

23 Here is a solid square-based pyramid, $VABCD$.



The base of the pyramid is a square of side 6 cm.
 The height of the pyramid is 4 cm.
 M is the midpoint of BC and $VM = 5$ cm.

(a) Draw an accurate front elevation of the pyramid from the direction of the arrow.



(2)

(b) Work out the total surface area of the pyramid.

There is a square face and 4 triangular faces. The area of all of these need to be added together.

Area of a square = length squared

$\frac{1}{2} \times \text{base} \times \text{height}$ = area of a triangle

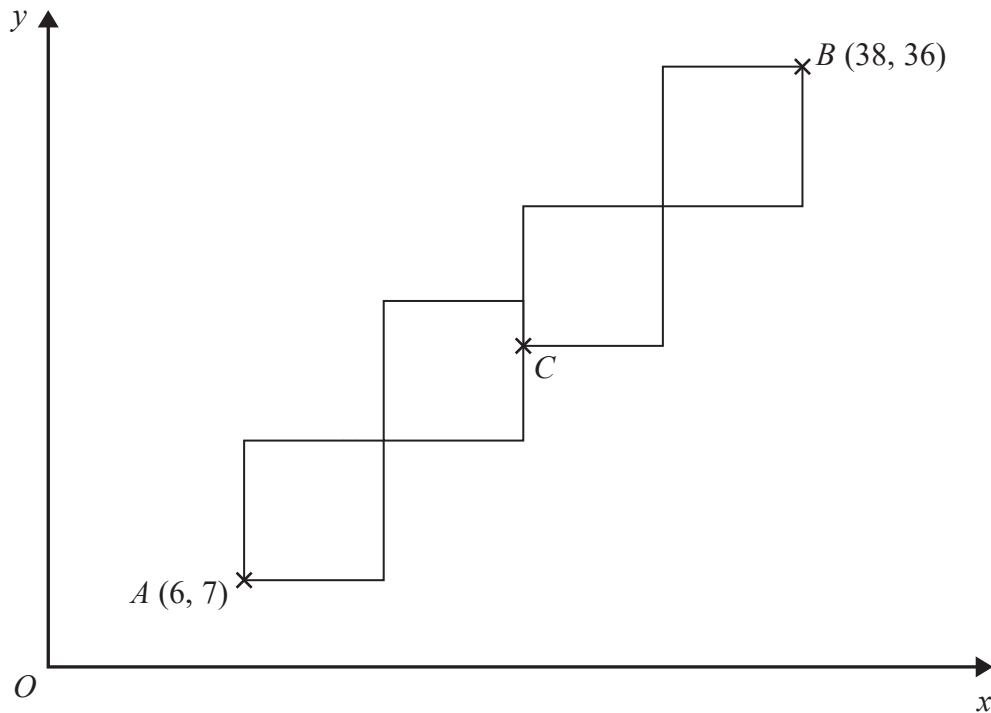
Don't forget to include units as these aren't given

.....
(4)

(Total for Question 23 is 6 marks)

24 A pattern is made from four identical squares.

The sides of the squares are parallel to the axes.



Point A has coordinates $(6, 7)$

Point B has coordinates $(38, 36)$

Point C is marked on the diagram.

Work out the coordinates of C .

C is two squares to the left and two squares down from B . If we work out the length of one of the squares, we can work out the coordinates of C .

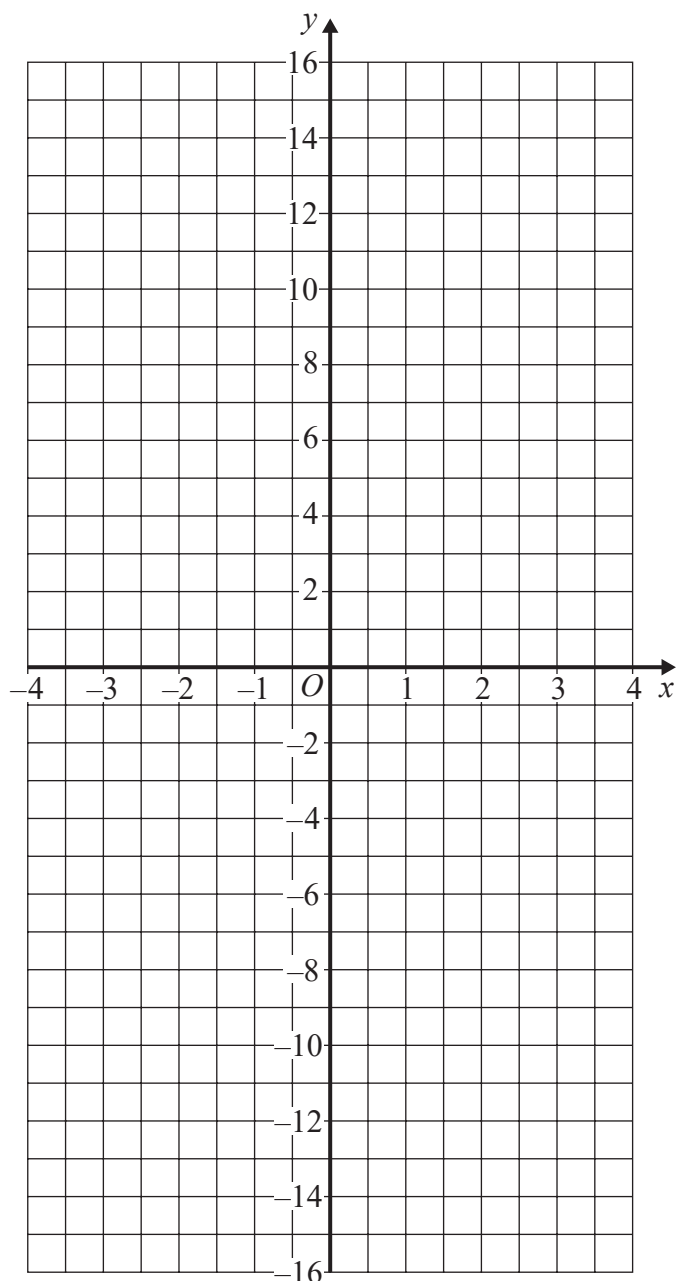
Four squares is the same length as the distance between A and B in the x direction

(.....,))

(Total for Question 24 is 5 marks)

25 On the grid below, draw the graph of $y = 1 - 4x$ for values of x from -3 to 3

It is a straight line graph as there are no powers of x or y . Work out y when $x = -3$ and when $x = 3$. This will give two coordinates on the line. Joining up the two points gives the graph



(Total for Question 25 is 3 marks)

$$26 \quad \mathbf{a} = \begin{pmatrix} 5 \\ 2 \end{pmatrix} \quad \mathbf{b} = \begin{pmatrix} -1 \\ 7 \end{pmatrix}$$

Work out $2\mathbf{a} + \mathbf{b}$ as a column vector.

The top number is the x component and the bottom number is the y component. Work out the x and y components separately.
 $2 \times 5 - 1$ works out the x component

$$\begin{pmatrix} \\ \text{---} \\ \\ \text{---} \end{pmatrix}$$

(Total for Question 26 is 2 marks)

TOTAL FOR PAPER IS 80 MARKS

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