Centre No.						Paper Reference								Surname	Initial(s)
Candidate No.						5	5	0	4	/	0	4		Signature	

Paper Reference(s)

5504/04

Examiner's use only

Team Leader's use only

Edexcel GCSE

Mathematics A – 1387

Paper 4 (Calculator)

Intermediate Tier

Tuesday 15 June 2004 – Morning

Time: 2 hours

Materials required for examination

Ruler graduated in centimetres and millimetres, protractor, compasses, pen, HB pencil, eraser, calculator. Tracing paper may be used.

Items included with question papers

Nil

Instructions to Candidates

In the boxes above, write your centre number, candidate number, your surname and initials, and your signature.
Check that you have the correct question paper.
Answer **ALL** the questions in the spaces provided in this question paper.
You must NOT write on the formulae page or any blank pages. Anything you write on these pages will gain NO credit.
If you need more space to complete your answer to any question, use additional answer sheets.

Information for Candidates

The total mark for this paper is 100. This paper has 24 questions. There are three blank pages.
The marks for the individual questions and parts of questions are shown in round brackets: e.g. (**2**).
Calculators may be used.
If your calculator does not have a π button, take the value of π to be 3.142 unless the question instructs otherwise.

Advice to Candidates

Show all stages in any calculations.
Work steadily through the paper. Do not spend too long on one question.
If you cannot answer a question, leave it and attempt the next one.
Return at the end to those you have left out.

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Edexcel
Success through qualifications

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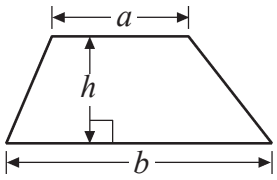
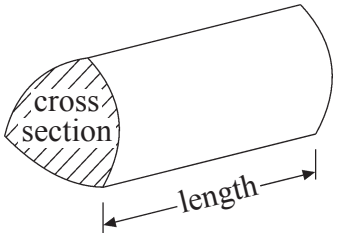
Intermediate Tier Formulae

You must not write on this page.
Anything you write on this page will gain NO credit

Area of trapezium = $\frac{1}{2}(a+b)h$



Volume of prism = area of cross section × length



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Answer ALL TWENTY FOUR questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. The diagram shows a sketch of triangle *ABC*.

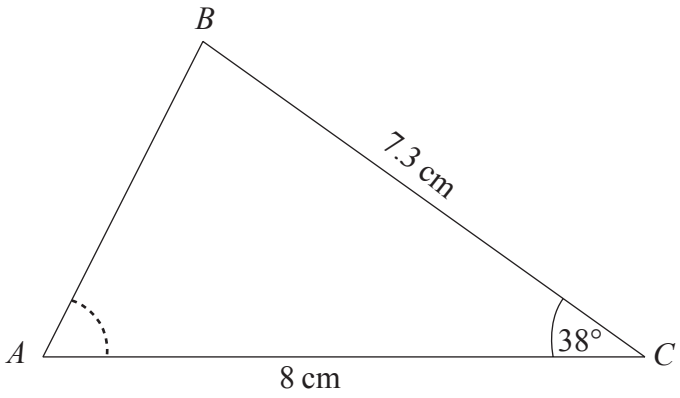

Diagram **NOT** accurately drawn

BC = 7.3 cm.
AC = 8 cm.
Angle *C* = 38°.

(a) Make an accurate drawing of triangle *ABC*.
The line *AC* has been accurately drawn.

A ——————————————— *C*

(2)

(b) Measure the size of angle *A* on your diagram.

.....°

(1)

Page Total

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2. A group of students visited the USA.
The table shows information about the numbers of hamburgers the students bought on the visit.

Number of hamburgers	Number of students
0	1
1	1
2	4
3	8
4	8
5	7

(a) Work out the total number of hamburgers that these students bought.

.....

(3)

One of these students bought a pair of sunglasses in the USA.
He paid $35.50
In England, an identical pair of sunglasses costs £26.99
The exchange rate is £1 = $1.42

(b) In which country were the sunglasses cheaper, and by how much?
Show all your working.

.....

(3)

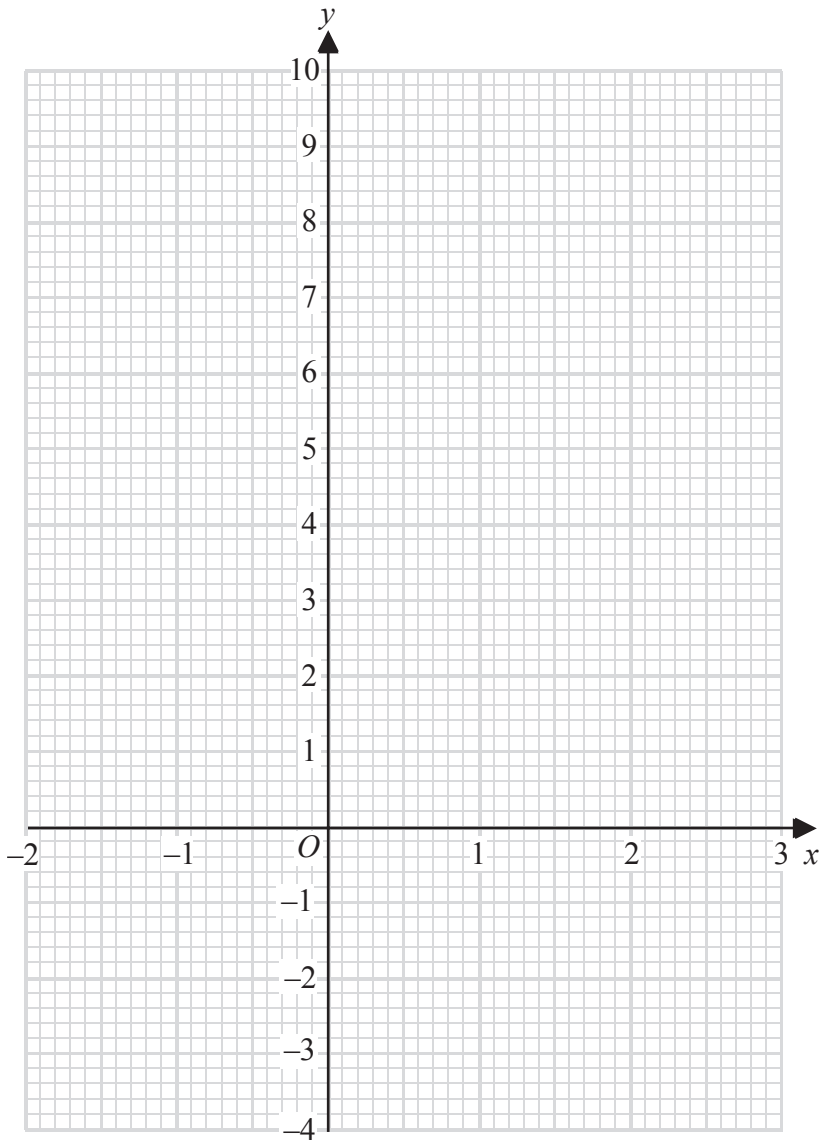
Leave blank

3. (a) Complete the table of values for $y = 2x + 3$

x	–2	–1	0	1	2	3
y		1	3			

(2)

(b) On the grid, draw the graph of $y = 2x + 3$



(2)

(c) Use your graph to find

(i) the value of y when $x = –1.3$

$y =$ .....

(ii) the value of x when $y = 5.4$

$x =$ .....

(2)

Page Total

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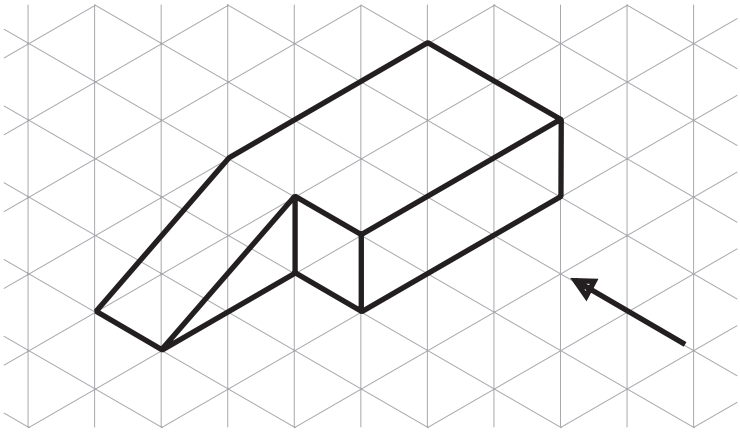
4. The diagram shows a solid object.



(a) In the space below, sketch the front elevation from the direction marked with an arrow.

(2)

(b) In the space below, sketch the plan of the solid object.

(2)

Leave blank

5. Martin cleaned his swimming pool.
He hired a cleaning machine to do this job.
The cost of hiring the cleaning machine was

£35.50 for the first day,
then £18.25 for each extra day.

Martin's total cost of hiring the machine was £163.25

(a) For how many days did Martin hire the machine?

..... days
(3)

Martin had to buy some cleaning materials.
The cost of the cleaning materials was £64.00 plus VAT at $17\frac{1}{2}$ %.

(b) Work out the total cost of the cleaning materials.

£ .....
(2)

Martin filled the pool with 54 000 gallons of water.
He paid £2.38 for each 1000 gallons of water.

(c) Work out the total amount he paid for 54 000 gallons of water.

£ .....
(2)

Page Total

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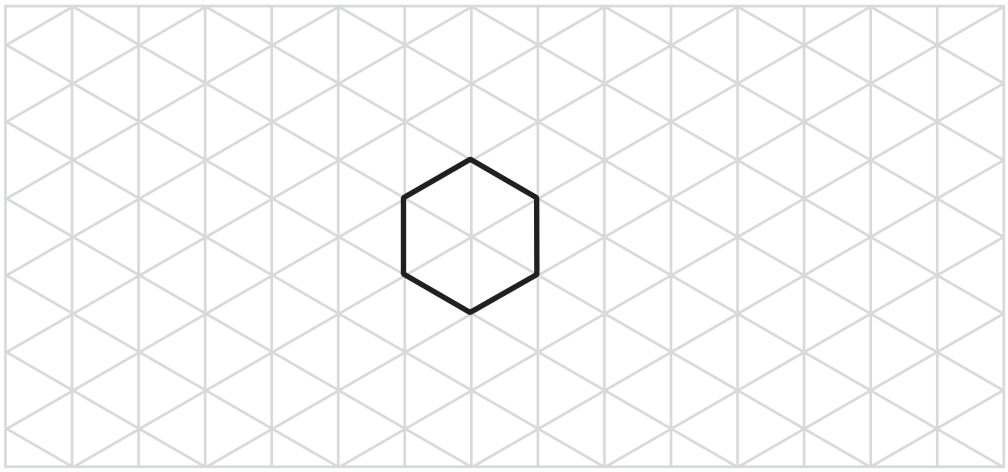
6. On the grid, show how this shape will tessellate.
You should draw at least 8 shapes.



(2)

7. This is a list of ingredients for making a pear & almond crumble for 4 people.

Ingredients for **4** people.
80 g plain flour
60 g ground almonds
90 g soft brown sugar
60 g butter
4 ripe pears

Work out the amount of each ingredient needed to make a pear & almond crumble for **10** people.

..... g plain flour

..... g ground almonds

..... g soft brown sugar

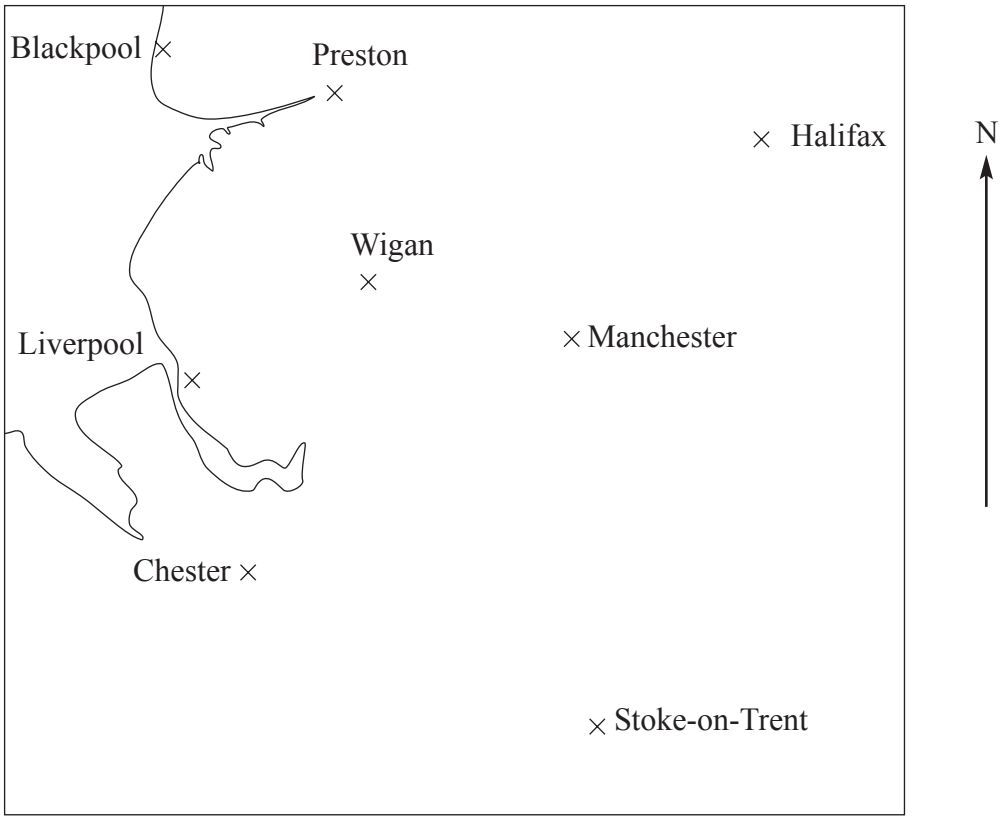
..... g butter

..... ripe pears

(3)

Leave blank

8. This is a map of part of Northern England.



Scale: 1 cm represents 10 km

(a) Measure and write down the bearing of

(i) Halifax from Wigan,

.....°

(ii) Preston from Manchester.

.....°

(2)

A radio station in Manchester transmits programmes.
Its programmes can be received anywhere within a distance of 30 km.

(b) On the diagram, shade the region in which the programmes can be received.

(2)

Page Total

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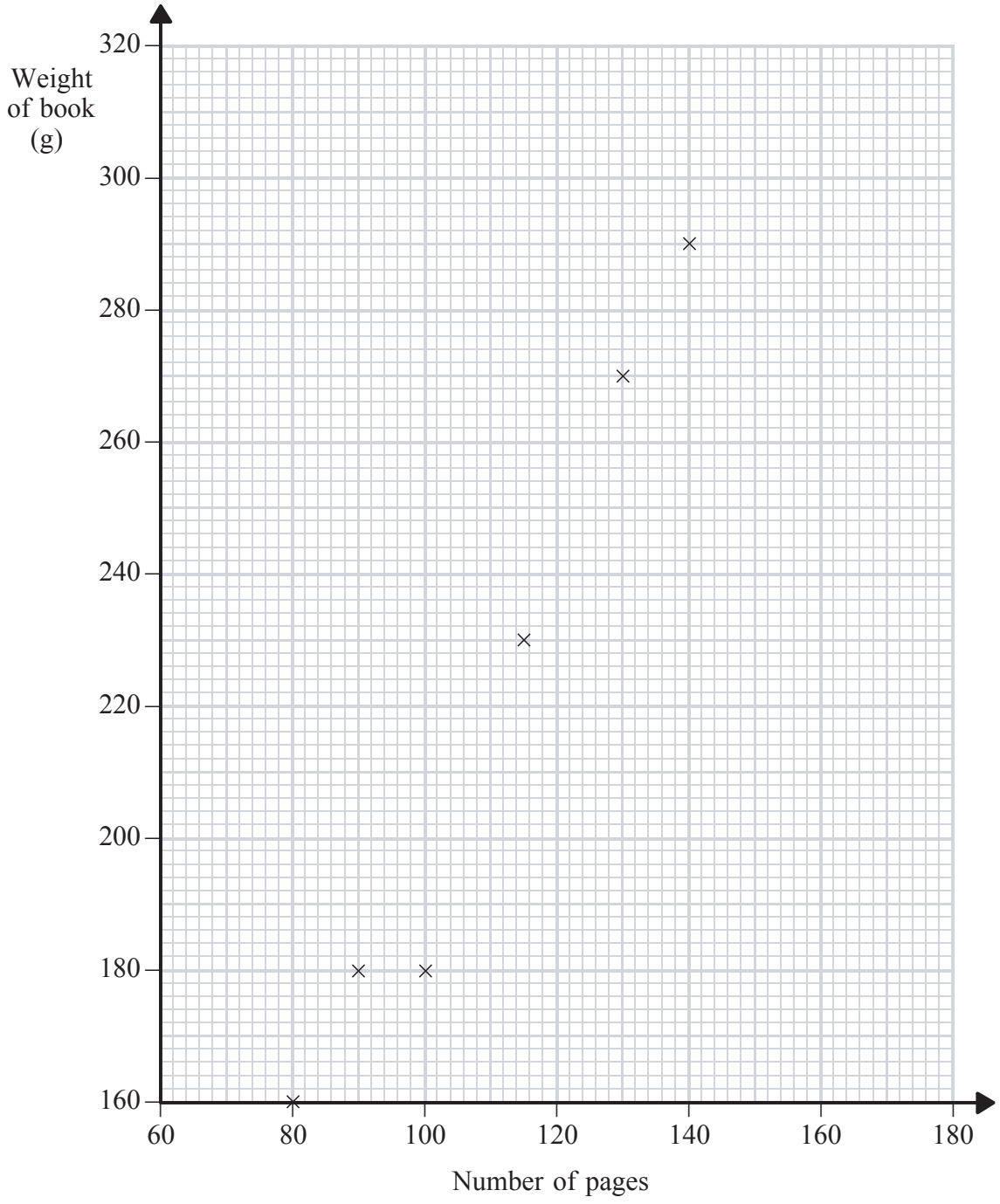
9. The table shows the number of pages and the weight, in grams, for each of 10 books.

Number of pages	80	130	100	140	115	90	160	140	105	150
Weight (g)	160	270	180	290	230	180	320	270	210	300

(a) Complete the scatter graph to show the information in the table.
The first 6 points in the table have been plotted for you.

(1)



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(b) For these books, describe the relationship between the number of pages and the weight of a book.

.....

.....

(1)

(c) Draw a line of best fit on the scatter diagram.

(1)

(d) Use your line of best fit to estimate

(i) the number of pages in a book of weight 280 g,

..... pages

(ii) the weight of a book with 120 pages.

..... g

(2)

10. (a) Write these five fractions in order of size.
Start with the smallest fraction.

$\frac{3}{4}$ $\frac{1}{2}$ $\frac{3}{8}$ $\frac{2}{3}$ $\frac{1}{6}$

.....

(2)

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

65% $\frac{3}{4}$ 0.72 $\frac{2}{3}$ $\frac{3}{5}$

.....

(2)

Page Total

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11. The table shows the number of computer games sold in a supermarket each month from January to June.

Jan	Feb	Mar	Apr	May	Jun
147	161	238	135	167	250

(a) Work out the three month moving averages for this information.

....

(2)

In a sale, a supermarket took 20% off its normal prices.
On Fun Friday, it took 30% off its sale prices.

Fred says, "That means there was 50% off the normal prices".

(b) Fred is wrong. Explain why.

(2)

Leave blank

12. The manager of a school canteen has made some changes.
She wants to find out what students think of these changes.

She uses this question on a questionnaire.

"What do you think of the changes in the canteen?"

☐ Excellent ☐ Very good ☐ Good

(a) Write down what is wrong about this question.

.....

.....

.....

(1)

This is another question on the questionnaire.

"How much money do you normally spend in the canteen?"

☐ A lot ☐ Not much

(b) (i) Write down one thing that is wrong with this question.

.....

.....

.....

(1)

(ii) Design a better question for the canteen manager to use.
You should include some response boxes.

(2)

Page Total

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13. (a) Solve $20y - 16 = 18y - 9$

$y =$ .....
(3)

(b) Solve $\frac{40 - x}{3} = 4 + x$

$x =$ .....
(3)

14. Eggs are sold in boxes.
A small box holds 6 eggs.
A large box holds 12 eggs.

Hina buys x small boxes of eggs.
Hina also buys 4 less of the large boxes of eggs than the small boxes.

(a) Find, in terms of x, the total number of eggs in the **large** boxes that Hina buys.

.....
(1)

(b) Find, in terms of x, the total number of eggs that Hina buys.
Give your answer in its simplest form.

.....
(2)

Leave blank

15. The equation

$$x^3 - 2x = 67$$

has a solution between 4 and 5
Use a trial and improvement method to find this solution.
Give your answer correct to one decimal place.
You must show **ALL** your working.

$x =$ .....
(4)

16. A nanosecond is 0.000 000 001 second.

(a) Write the number 0.000 000 001 in standard form.

.....
(1)

A computer does a calculation in 5 nanoseconds.

(b) How many of these calculations can the computer do in 1 second?
Give your answer in standard form.

.....
(2)

Page Total

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17. Use your calculator to work out the value of $\dfrac{6.27\times4.52}{4.81+9.63}$

(a) Write down all the figures on your calculator display.

.....

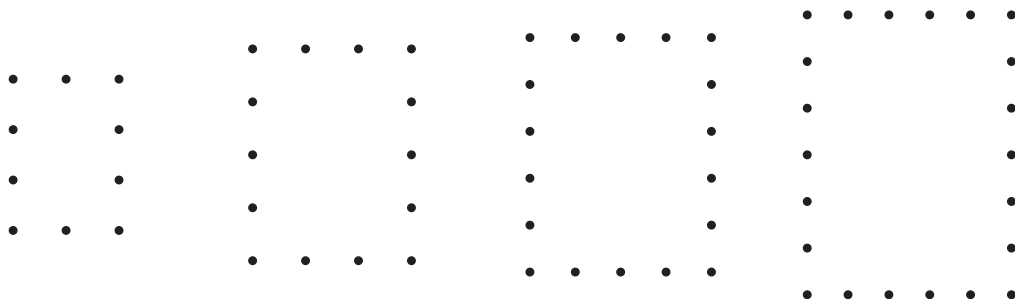
(2)

(b) Write your answer to part (a) to an appropriate degree of accuracy.

.....

(1)

18. Here are some patterns made from dots.



Pattern number 1 | Pattern number 2 | Pattern number 3 | Pattern number 4

Write down a formula for the number of dots, d, in terms of the Pattern number, n.

.....

(2)

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19.

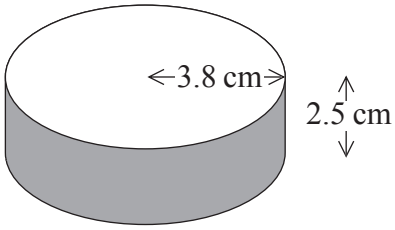

Diagram **NOT** accurately drawn

An ice hockey puck is in the shape of a cylinder with a radius of 3.8 cm, and a thickness of 2.5 cm.

It is made out of rubber with a density of 1.5 grams per cm^3.

Work out the mass of the ice hockey puck.
Give your answer correct to 3 significant figures.

..... grams

(4)

Page Total

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20.

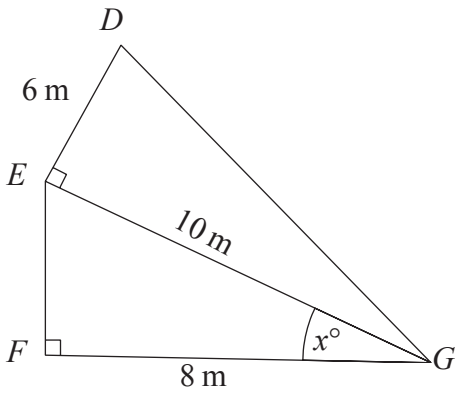

Diagram **NOT** accurately drawn

$DE = 6$ m.
$EG = 10$ m.
$FG = 8$ m.
Angle $DEG = 90°$. Angle $EFG = 90°$.

(a) Calculate the length of DG.
Give your answer correct to 3 significant figures.

..... m
(3)

(b) Calculate the size of the angle marked $x°$.
Give your answer correct to one decimal place.

°
.....
(3)

Do not write here

Leave blank

21. Solve the simultaneous equations

$$6x - 2y = 33$$

$$4x + 3y = 9$$

$x =$ .....

$y =$ .....

(4)

22.

Pictures **NOT** accurately drawn

A 20 Euro note is a rectangle 133 mm long and 72 mm wide.
A 500 Euro note is a rectangle 160 mm long and 82 mm wide.

Show that the two rectangles are **not** mathematically similar.

(3)

Page Total

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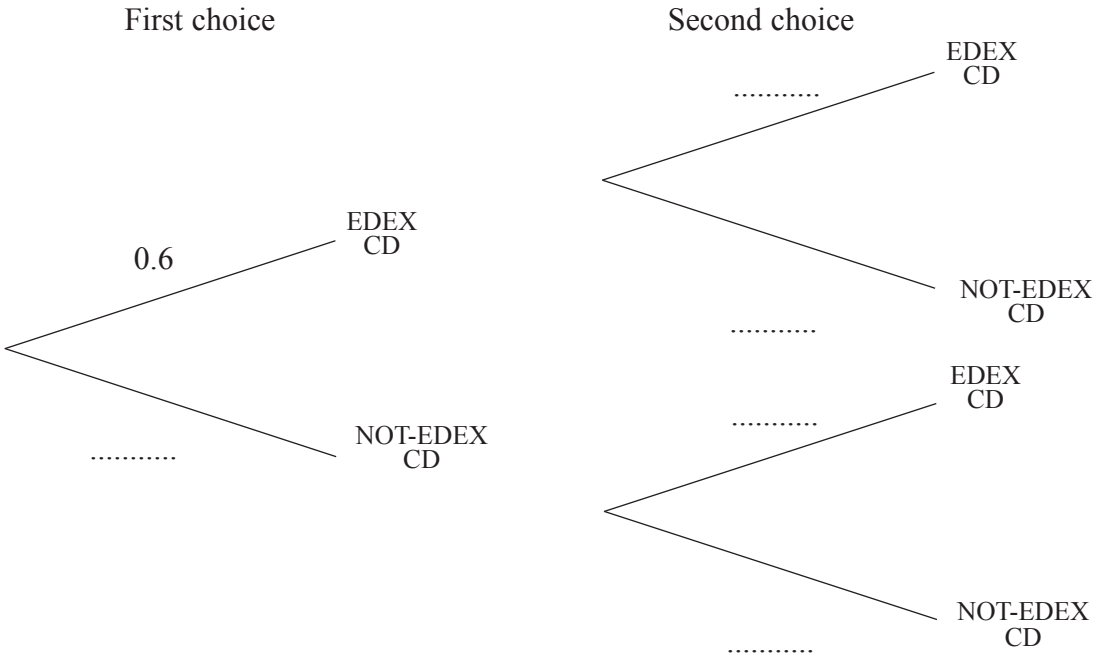
23. Amy has 10 CDs in a CD holder.
Amy's favourite group is Edex.
She has 6 Edex CDs in the CD holder.

Amy takes one of these 10 CDs at random.
She writes down whether or not it is an Edex CD.
She puts the CD back in the holder.
Amy again takes one of these 10 CDs at random.

(a) Complete the probability tree diagram.



(2)

Amy had 30 CDs.
The mean playing time of these 30 CDs was 42 minutes.

Amy sold 5 of her CDs.
The mean playing time of the 25 CDs left was 42.8 minutes.

(b) Calculate the mean playing time of the 5 CDs that Amy sold.

..... minutes
(3)

Leave blank

24. A company bought a van that had a value of £12 000
Each year the value of the van depreciates by 25%.

(a) Work out the value of the van at the end of three years.

£ .....
(3)

The company bought a new truck.
Each year the value of the truck depreciates by 20%.
The value of the new truck can be multiplied by a single number to find its value at the end of four years.

(b) Find this single number as a decimal.

.....
(2)

TOTAL FOR PAPER: 100 MARKS

END

Page Total