

**GCSE EQUIVALENCY
FOUNDATION MATHEMATICS
CALCULATOR**

SAMPLE PAPER 1

**Calculator and Non-
Calculator**

With Answers

**For Practice and
Self-assessment**

NAME

SURNAME

SCHOOL/UNIVERSITY
APPLIED FOR

CONTACT NUMBER

DATE

Time Allowed 1 Hour

- 1 In addition to this paper you may need
- 2 A ruler
- 3 A protractor
- 4 A pair of compasses

Instructions to Candidates

- 1 Write your name and other details in the spaces above
- 2 Answer all questions in the spaces provided
- 3 Additional sheets may be used
- 4 Calculators **MAY BE USED** in this paper

Information to candidates

- 1 The marks available are given at the end of each question and part questions eg (2)
- 2 There are 18 questions in this paper

Advice to candidates

- 1 Work steadily through the paper
- 2 Don't spend too long on one question
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Total	

Examiners
Signature



Certificate No 22336

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

1. 5 kg of apples cost £7
2 kg of apples and 3 kg of pears cost £5.65
Work out the cost of 1 kg of pears.

(Total 3 marks.)

-
2. (a) Use your calculator to work out the value of.

46.5×132
 $0.38^2 - 0.24^2$

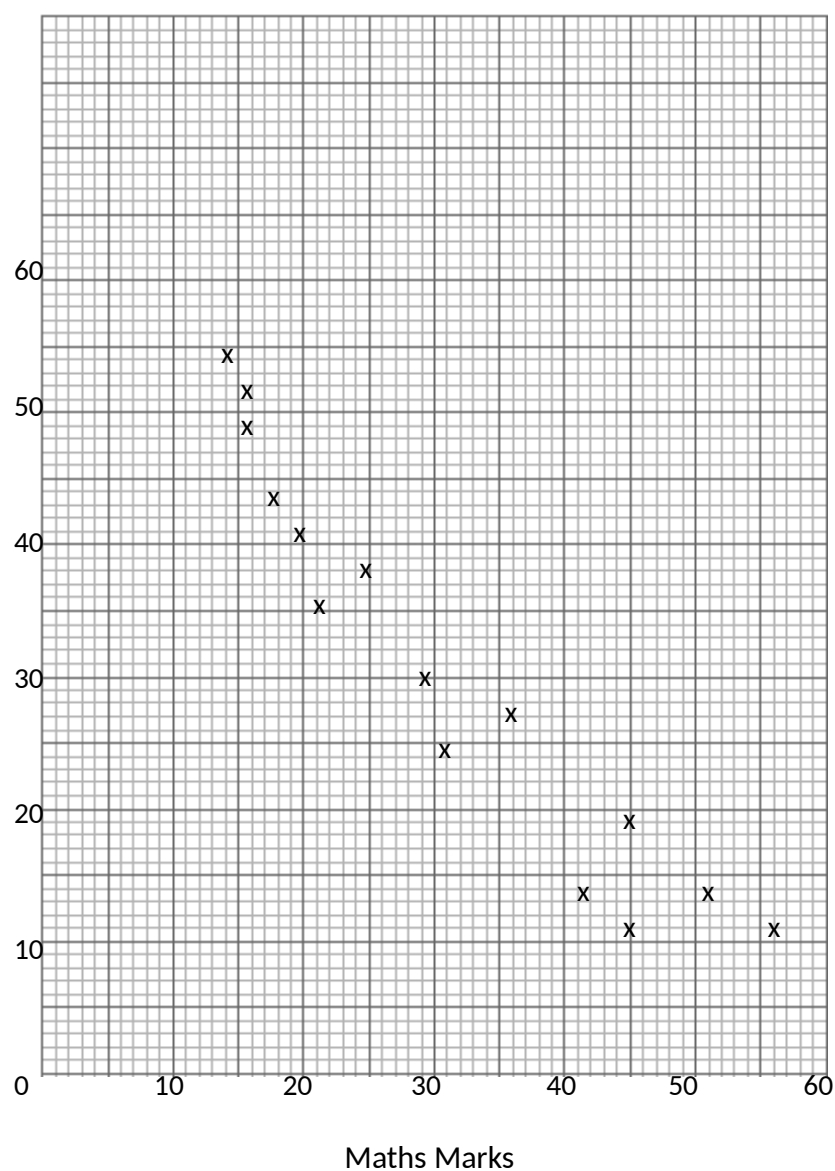
Write down all the figures on your calculator display.

(2)

- (b) Write your answer to part (a) correct to 3 significant figures.

(Total 3 marks)

3. The scatter graph shows the maths mark and the art mark for each of the 15 students.



- (a) What type of correlation does this scatter graph show.

(1)

- (b) Draw the line of best fit.

(1)

Sarah has not got a maths mark. Her art mark is 23.

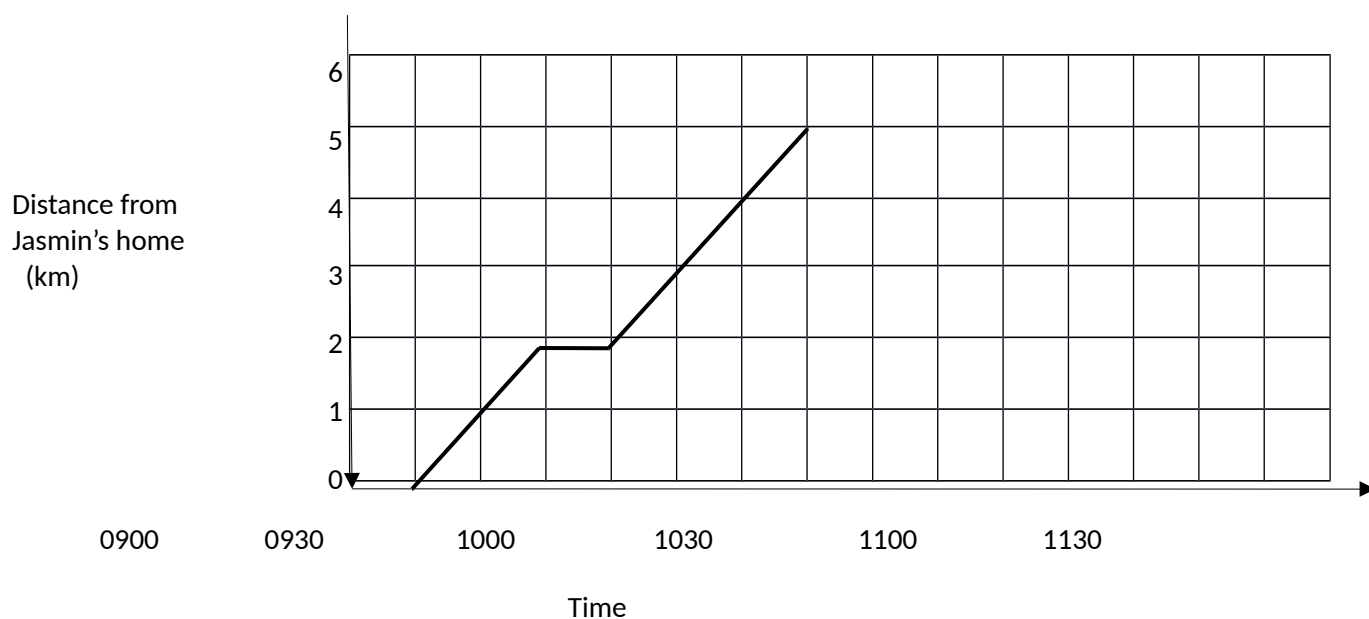
- (c) Use your line of best fit to estimate a maths mark for Sarah.

Art mark

(1)

(Total 3 marks)

4. Jasmin walked from her home to the park.
Here is a travel graph for Jasmin's journey from her home to the park.



- (a) For how long did she stop.

-----minutes
(1)

Jasmin stayed at the park for half an hour.
She then walked home at a speed of 7.5 km/h.

- (b) Complete the travel graph.

(3)

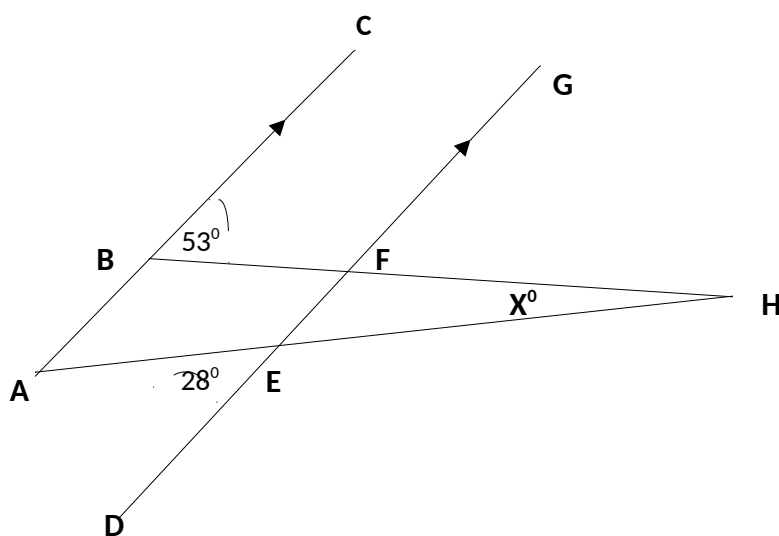
(Total 4 marks)

5. Solve the following: $5x + 2 = 2x + 17$

$x =$ _____
(Total 2 marks)

6.

Diagram NOT
accurately drawn.



ABC and $DEFG$ are parallel.
 AEH and BFH are straight lines.

Work out the size of the angle marked x° .

(Total 3 marks)

7. (a) Factorise fully. $6x + 12y$

(2)

(b) Factorise. $4k + 8m + 24$

(2)
(Total 4 marks)

8. Here are some people's ages in years.

62	27	33	44	47
30	22	63	67	54
69	56	63	50	25
31	63	42	48	51

(a) In the space below, draw an ordered stem and leaf diagram to show these ages.
You must include a key.

(3)

(b) From the above data write down the median value.

(1)

(Total 4 marks)

9. Jim is travelling home from holiday by plane.
He buys some food and drink on the plane.

Price List	
Cheese Roll	£3.50
Crisps	£1.20
Chocolate Bar	£1.30
Coffee	£2.50
Tea	£2.00
Orange Juice	£2.20

Exchange rate £1 = 1.25 euros

Tim buys two cheese rolls, a coffee and an orange juice.
He pays part of the cost with a 10 euro note.
He pays the rest of the cost in pounds (£).

How much does Jim pay in pounds?

£ _____
(Total 4 marks)

-
10. In a sale, normal prices are reduced by 20%
The sale price of the coat is £52

Work out the normal price of the coat.

£ _____
(Total 3 marks)

11. The table shows information about the number of hours 40 children watched television in one evening.

Number of hours (h)	Frequency	Mean number of hours (h)	Mean number of hours (h) \times Frequency
$0 \leq h < 1$	3		
$1 \leq h < 2$	8		
$2 \leq h < 3$	7		
$3 \leq h < 4$	10		
$4 \leq h < 5$	12		

- (a) Find the class interval that contains the median.

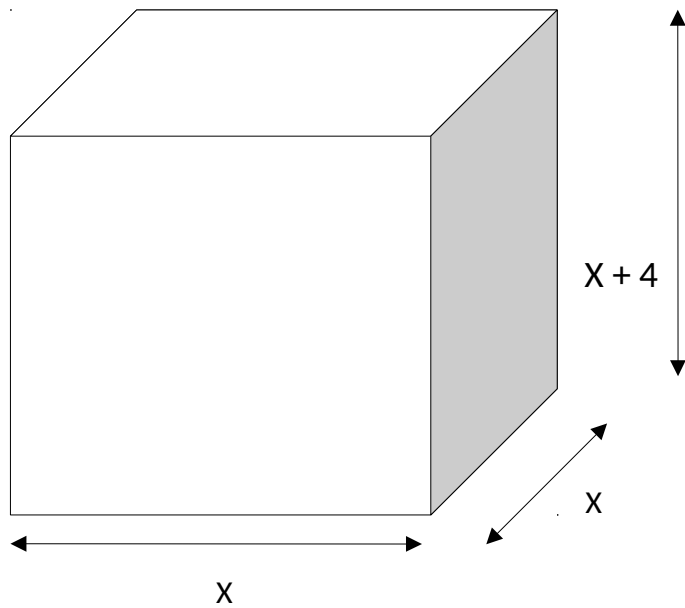
(2)

- (b) Work out an estimate for the mean number of hours.

(3)
(Total 5 marks)

12. The diagram shows a cuboid.

Diagram NOT accurately drawn.



A cuboid has a square base of side X cm.

The height of the cuboid is $(X + 4)$ cm.

If x has a value of 5, work out the volume of the cuboid.

(Total 4 marks)

13. Simplify $c + c + c$

.....
(1)

Simplify $2e \times 3f$

.....
(1)

Simplify $9p + 2t - 2p + 3t$

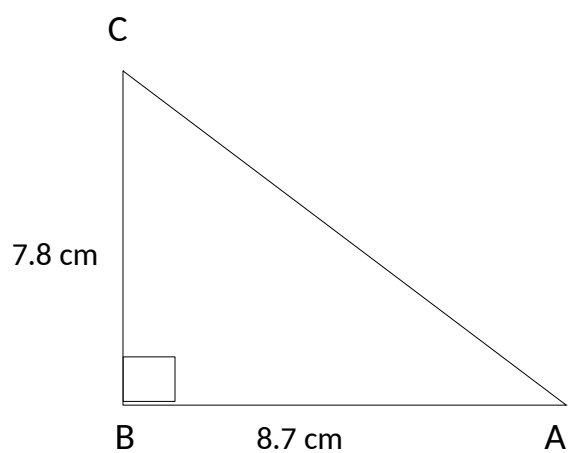
.....
(1)

(Total 3 marks)

- 14.

Diagram NOT

accurately drawn



ABC is a right-angled triangle.

Angle $B = 90^\circ$.

$CB = 7.8$ cm

$AB = 8.7$ cm.

Work out the length of AC .

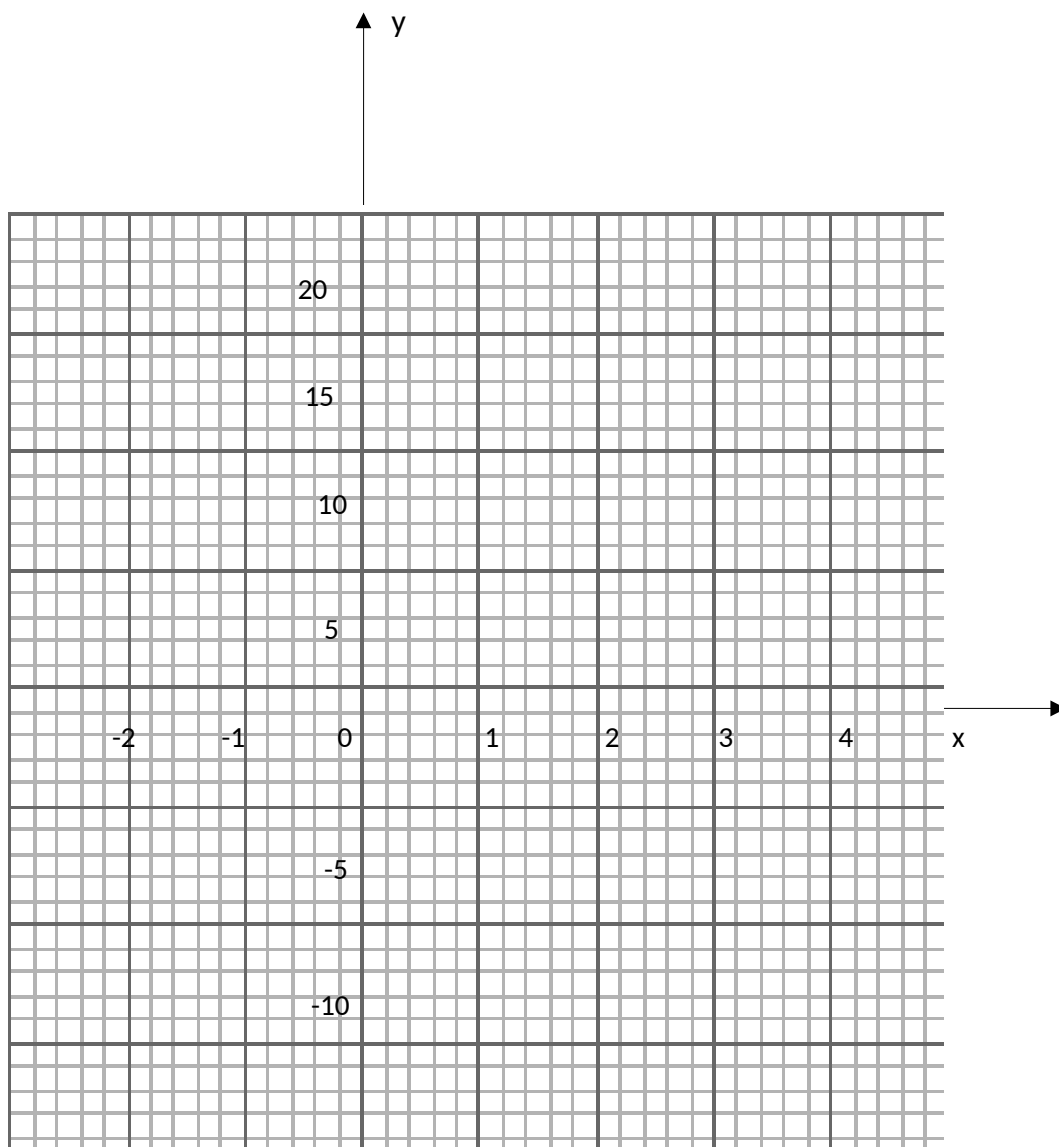
Give your answer correct to 2 decimal places.

(Total 3 marks)

15. (a) Complete the table of values for $y = 5x - 2$

x	-2	-1	0	1	2	3	4
y			0				

- (b) On the grid, draw the graph of $y = 5x - 2$ for $-2 \leq x \leq 5$ (2)



(Total 4 marks)

16. Bridget fills some empty flowerpots completely with compost.

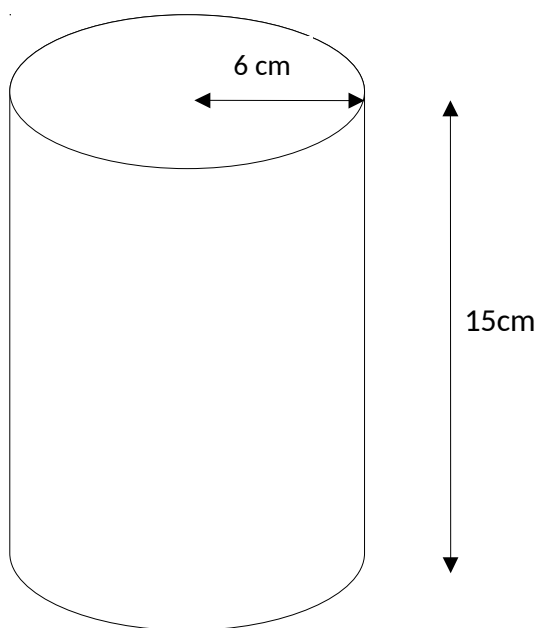


Diagram NOT
accurately drawn

Each flowerpot is in the shape of a cylinder of height 15 cm and radius 6 cm.

She has a 15 litre bag of compost.

Volume of a cylinder $V = \pi r^2 h$

She fills up each flowerpot completely.

How many flowerpots can she fill?

You must show your working.

($1000\text{cm}^3 = 1 \text{ litre}$)

(Total 4 marks)

17. Patrick wants to invest £4000 for 2 years.
He can choose between two different banks.

Bank A

Earns 3% per annum

Simple interest.

Each year's interest is paid by cheque.

Bank B

Earns 3.2% per annum

Compound interest.

Patrick wants to earn as much interest on his investment as possible.

Work out the interest for both banks.

Which bank should Patrick choose?

You must show all your working.

(Total 4 marks)

(Total marks for this paper 64)

FOUNDATION MATHEMATICS SAMPLE PAPER

NON-CALCULATOR

2013-2015A

NAME SURNAME SCHOOL/UNIVERSITY APPLIED FOR CONTACT NUMBER DATE

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Total	

Examiners Signature



Certificate No 22336

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all stages in your working.

Calculators must not be used.

1. Write 32 out of 80 as a percentage.

_____ %
(Total 2 marks)

2. John sows 300 wildflower seeds.
The probability of a seed flowering is 0.7

Work out an estimate for the number of these seeds that will flower.

_____ %
(Total 2 marks)

3. (a) Express 120 as a product of its prime factors.

(2)

(b) Find the highest common factor (HCF) of 90 and 120.

(1)

(c) Work out the Lowest Common Multiple (LCM) of 60 and 96.

(1)

(Total 4 marks)

4. Here are the ingredients for making 12 small cakes.

Ingredients for 12 small cakes

180 g margarine

180 g sugar

200 g plain flour

1 teaspoon baking powder

2 eggs

Alison is going to make 30 of the small cakes.

(a) Work out how much margarine she needs.

_____g
(2)

Anna is going to make 18 of the small cakes.

(b) Work out how much flour she needs.

_____g
(2)

(Total 4 marks)

5. $V = 3b + 2b^2$

(a) Find the value of V when $b = +4$

(b) Simplify $m^6 \times m^7$

(2)

(c) Simplify x^0

(1)

(d) Simplify $\sqrt{16y^2}$

(1)

(2)

(Total 6 marks)

-
6. A School canteen offers four different meal choices.
Students can choose salad or pizza or meat pie or fish.

The table shows the probability that a student will choose salad or meat pie or fish.

Meal	Salad	Pizza	Meat Pie	Fish
Probability	0.2		0.23	0.16

One student is chosen at random from these students who are going to use the canteen.

Work out the probability that the student

(i) chooses meat pie or fish.

(1)

(ii) chooses pizza.

(2)

(Total 3 marks)

7. Janice asks 100 students if they like Biology or Chemistry or Physics best.

38 of the students are girls.

21 of these girls like Biology best.

18 boys like Physics best.

7 out of 23 students who like Chemistry best are girls.

Work out the number of students who like Biology best.

	Biology	Chemistry	Physics	Total
Boys				
Girls				
Total				

(Total 4 marks)

8. Mrs Butler is planning a party for 70 children.
She will give each child a party bag to take home.
She will put a hat and a toy in each party bag.

Party bags are sold in packs of 12.

Hats are sold in packs of 8.

Toys are sold in packs of 9.

Mrs Butler buys the smallest possible number of packs of hats, toys and bags.

Mrs Butler can fill more party bags than she needs.

How many more?

(Total 4 marks)

9. Write down an estimation for the values of the following calculations.

(a) $\frac{3.75}{0.94 + 1.8}$

(1)

(b) $\frac{2.8 \times 3.79}{1.84}$

(1)

(c) $\frac{0.335 \times 2.89}{1.095 \times 3.94}$

(2)

(Total 4 marks)

10. Last year Kerry's take home pay was £15000
She spent 40% of her take home pay on rent.

She used the rest of her take home pay for living expenses, clothes and entertainment
in the ratio 3 : 1 : 2

How much did Kerry spend on entertainment last year?

£ _____
(Total 4 marks)

11. $1.54 \times 450 = 693$

Use this result to write down the answer too.

(i) 1.54×45

(1)

(ii) 1.54×4.5

(1)

(iii) 0.154×0.45

(1)
(Total 3 marks)

12. **(a)** Expand $3(4x + y)$

(1)

(b) Expand $5p(p - 3)$

(1)

(c) Expand and simplify $y + 8(y - 3)$

(2)

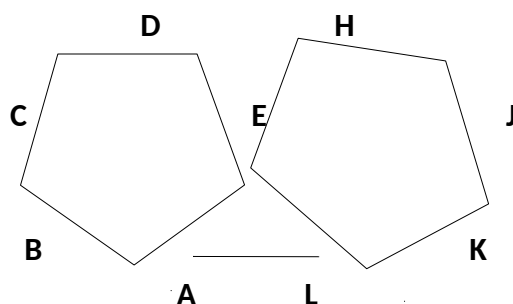
(d) Expand and simplify $2t - 3(2t + 5)$

(2)

(Total 6 marks)

13.

Diagram NOT
accurately drawn.



$ABCDE$ and $EHJKL$ are regular pentagons.
 AEL is an equilateral triangle.

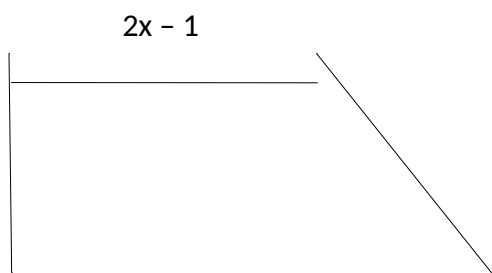
Work out the size of angle DEH .

(Total 4 marks)

Page 8

14. The diagram shows a trapezium.

Diagram NOT
accurately drawn.



$$2x$$

$$3x - 2$$

$$3x - 1$$

In the diagram all measurements are in centimetres.

The perimeter of the trapezium is 36 cm.

If the value of $x = 4$

Work out the area of the trapezium.

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

(Total 5 marks)

- 15** Hannah is going to play one badminton match and one tennis match.
The probability that she will win the badminton match is $\frac{9}{10}$.
The probability that she will win the tennis match is $\frac{2}{5}$.

(a) Complete the probability tree diagram.

	Badminton		Tennis
		$\frac{2}{5}$	Hannah wins
	Hannah wins		
$\frac{2}{10}$		Hannah does not win
		Hannah wins
.....	Hannah does not win		
		Hannah does not win

(2)

(b) Work out the probability that Hannah will win both matches.

(Total 4 marks)

16. Jim has £x.
 Gemma has £4 more than Jim.
 Jo has £2 less than Jim
 The total money they have is £23

Use this information to write down an equation in x

.....
(2)

Solve the equation to find how much money Jim has,

£
(Total 4 marks)

17 Solve the following equations.

(a) $5x - 2 = 28$

(b) $3 + 2y = 12$

X = Y =
(Total 4 marks)

(Total marks for this paper 68)

ANSWER SHEET PAST PAPER 2011-12A

Calculator Non-Calculator

1	1 kg apples = £1.40 3kg pears = £2.85 1kg pears =£0.95 or 95p	1	32/80 x 100 = 40%
2a b	70714.28571 70700	2	300 x 0.7 = 210

3a b c	Negative Correlation Line of best fit drawn 38 or 39 approximately	3a b c	$2^3 \times 3 \times 5$ 30 480															
4a b	10 mins Complete graph 10.40 – 11.10	4a b	$2.5 \times 180 = 450\text{g}$ $1.5 \times 200 = 300\text{g}$															
5	$3x = 15$ so $x = 5$	5a b c d	$V = -12 + 32$ $V = 20$ m^{13} 1 $4y^3$															
6	$FEH = 28^\circ$ $EFH = 127^\circ$ so $x = 25^\circ$	6(i) (ii)	0.39 0.41															
7a b	$6(x + 2y)$ $(K + 10)(K + 3)$	7	<table><tr><td>G</td><td>B</td><td></td></tr><tr><td>B</td><td>21</td><td>28</td></tr><tr><td>P</td><td>10</td><td>18</td></tr><tr><td>Ch</td><td>7</td><td>10</td></tr></table> = 49 Students	G	B		B	21	28	P	10	18	Ch	7	10			
G	B																	
B	21	28																
P	10	18																
Ch	7	10																
8a b	<table><tr><td>2</td><td>2 5 7</td><td></td></tr><tr><td>3</td><td>0 1 3</td><td></td></tr><tr><td>4</td><td>2 4 7 8</td><td></td></tr><tr><td>5</td><td>0 1 4 6</td><td></td></tr><tr><td>6</td><td>2 3 3 3 7 9</td><td></td></tr></table> $3 \mid 3 = 33$ 48 <u>49</u> 50	2	2 5 7		3	0 1 3		4	2 4 7 8		5	0 1 4 6		6	2 3 3 3 7 9		8	Party Bags = $x6$ Hats = $x9$ Toys = $x8$ 2 more bags
2	2 5 7																	
3	0 1 3																	
4	2 4 7 8																	
5	0 1 4 6																	
6	2 3 3 3 7 9																	
9	Total purchases £11.70 $10\text{€} = \text{£}8$ $\text{£}11.70 - \text{£}8 = \text{£}3.70$ to pay	9a b c	$\frac{4}{3} = 1\frac{1}{3}$ $\frac{3 \times 4}{2} = 6$ $= \frac{1}{4}$															
10	$52 \div 80 \times 100$ Normal price £65.00	10	40% Rent = £6000 $\text{£}9000 \div 6 = \text{£}1500 = 1 \text{ part}$ $\text{£}3000 = 2 \text{ parts}$ $\text{£}4500 = 3 \text{ parts}$ Entertainment = £3000															
11	Class interval = $3 \leq h < 4$ Total $120 \div 40$ mean = 3	11(i) (ii) (iii)	69.3 6.93 0.0693															
12	$5 \times 5 \times 9 = 225\text{cm}^3$	12	$12x + 3y$ $5p^2 + 5p$ $Y + 8y - 24 = 9y - 24$ $2t - 6t - 15 = -4t - 15$															
13	$3c - 6ef - 7p = 5t$	13	$108 + 108 + 60 = 276$ $360 - 276 = 84$															
14	$8.7^2 + 7.8^2 = a^2$ $75.69 + 60.84 = 136.53$ $\sqrt{136.53} = 11.68$	14	$10x - 4 = 36$ $10x = 40$ $x = 4$ Area = 72															
15	Values x -2 -1 0 1 2 3 4 y -12 -7 -2 3 8 13 18	15	$\frac{2}{5}$ $\frac{9}{10}$ $\frac{3}{5}$															

	Draw Graph		$\text{Ans} = \frac{18}{50} \text{ or } \frac{9}{25}$ $\frac{1}{10} \quad \frac{2}{5}$ $\frac{3}{5}$
16	$15L = 15000\text{cm}^2$ $V = \pi r^2 h = \pi \times 6^2 \times 15 = 1695.6$ $15000 \div 1695.6 = 8.85$ Ans 8 flower pots	16a b	$\text{Jim} = x$ $\text{Gemma} = x + 4$ $\text{Jo} = x - 2$ $\text{Total} = 3x + 2 = 23$ $3x = 21 \quad x = 7$
17	Compound Intrest $3\% = \text{£}120 \text{ year 1}$ $3\% = \text{£}123.60 \text{ year 2}$ Totaal Intrest = £243.60 Simple Intrest $3.2\% = \text{£}128$ $x^2 = \text{£}256$ Patrick chooses Bank B	17	$5x - 2 = 28$ $5x = 28 + 2$ $5x = 30 \quad \text{so } x = 6$ $3 + 2y + 12$ $2y = 12 - 3$ $2y = 9$ $Y = 4.5$