Write your name here

Surname	Other names

Pearson Edexcel
Level 1/Level 2 GCSE (9–1)

Centre Number | | | | | |

Candidate Number | | | | |

Mathematics

Paper 3 (Calculator)

Higher Tier

Wednesday 8 November 2017 – Morning
Time: 1 hour 30 minutes

Paper Reference
1MA1/3H

You must have: Ruler graduated in centimetres and millimetres, protractor, pair of compasses, pen, HB pencil, eraser, calculator. 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 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.

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 ▶

P49384A

6/6/6/7/2/2/

P 4 9 3 8 4 A 0 1 2 0

Pearson

Answer ALL questions.

Write your answers in the spaces provided.

You must write down all the stages in your working.

1 The table shows information about the heights of 80 children.

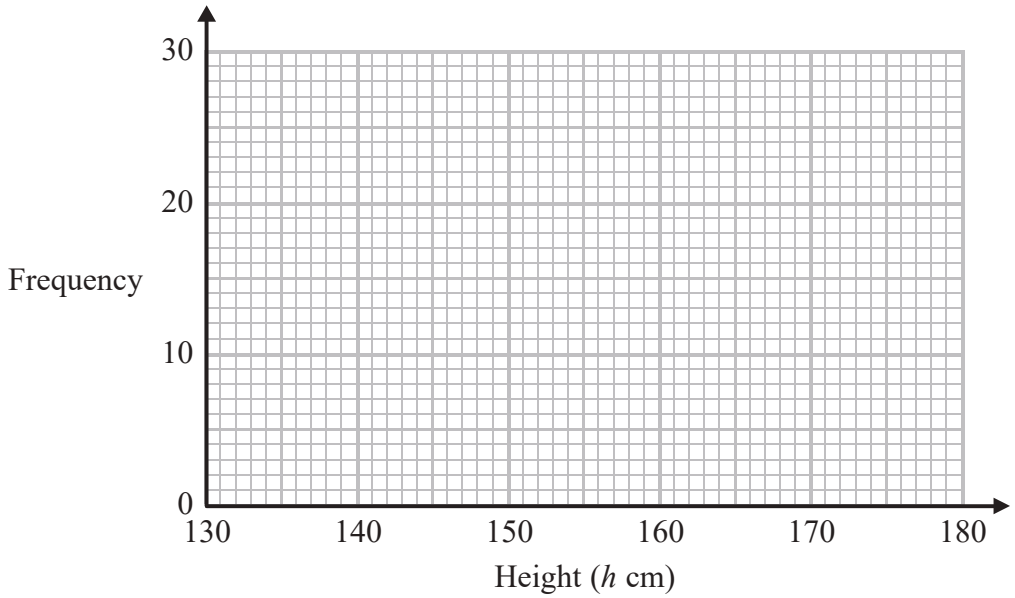
Height (h cm)	Frequency
$130 < h \leqslant 140$	4
$140 < h \leqslant 150$	11
$150 < h \leqslant 160$	24
$160 < h \leqslant 170$	22
$170 < h \leqslant 180$	19

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

.....

(1)

(b) Draw a frequency polygon for the information in the table.



(2)

(Total for Question 1 is 3 marks)

2 In London, 1 litre of petrol costs 108.9p
In New York, 1 US gallon of petrol costs $2.83

1 US gallon = 3.785 litres
£1 = $1.46

In which city is petrol better value for money, London or New York?
You must show your working.

(Total for Question 2 is 3 marks)

3 A gold bar has a mass of 12.5 kg.

The density of gold is 19.3 g/cm^3

Work out the volume of the gold bar.
Give your answer correct to 3 significant figures.

..... cm^3

(Total for Question 3 is 3 marks)

4 There are only blue pens, green pens and red pens in a box.

The ratio of the number of blue pens to the number of green pens is 2 : 5
The ratio of the number of green pens to the number of red pens is 4 : 1

There are less than 100 pens in the box.

What is the greatest possible number of red pens in the box?

.....

(Total for Question 4 is 3 marks)

5 (a) Find the value of the reciprocal of 1.6
Give your answer as a decimal.

.....

(1)

Jess rounds a number, x, to one decimal place.
The result is 9.8

(b) Write down the error interval for x.

.....

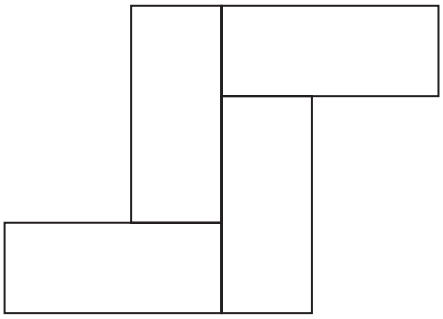
(2)

(Total for Question 5 is 3 marks)

6 Here is a rectangle.

The length of the rectangle is 7 cm longer than the width of the rectangle.

4 of these rectangles are used to make this 8-sided shape.



The perimeter of the 8-sided shape is 70 cm.

Work out the area of the 8-sided shape.

..... cm^2

(Total for Question 6 is 5 marks)

7 Work out $(13.8 \times 10^{7}) \times (5.4 \times 10^{-12})$
Give your answer as an ordinary number.

.....

(Total for Question 7 is 2 marks)

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

DO NOT WRITE IN THIS AREA

8 When a drawing pin is dropped it can land point down or point up.

Lucy, Mel and Tom each dropped the drawing pin a number of times.

The table shows the number of times the drawing pin landed point down and the number of times the drawing pin landed point up for each person.

	Lucy	**Mel**	**Tom**
point down	31	53	16
point up	14	27	9

Rachael is going to drop the drawing pin once.

(a) Whose results will give the best estimate for the probability that the drawing pin will land point up?
Give a reason for your answer.

.....

.....

(1)

Stuart is going to drop the drawing pin twice.

(b) Use all the results in the table to work out an estimate for the probability that the drawing pin will land point up the first time and point down the second time.

.....

(2)

(Total for Question 8 is 3 marks)

9 Jack bought a new boat for £12 500

The value, £V, of Jack's boat at the end of n years is given by the formula

$$V = 12\,500 \times (0.85)^n$$

(a) At the end of how many years was the value of Jack's boat first less than 50% of the value of the boat when it was new?

.....

(2)

A savings account pays interest at a rate of R% per year.
Jack invests £5500 in the account for one year.

At the end of the year, Jack pays tax on the interest at a rate of 40%.
After paying tax, he gets £79.20

(b) Work out the value of R.

.....

(3)

(Total for Question 9 is 5 marks)

10 There are only blue counters, yellow counters, green counters and red counters in a bag.
A counter is taken at random from the bag.

The table shows the probabilities of getting a blue counter or a yellow counter or a green counter.

Colour	blue	yellow	green	red
Probability	0.2	0.35	0.4	

(a) Work out the probability of getting a red counter.

.....

(1)

(b) What is the least possible number of counters in the bag?
You must give a reason for your answer.

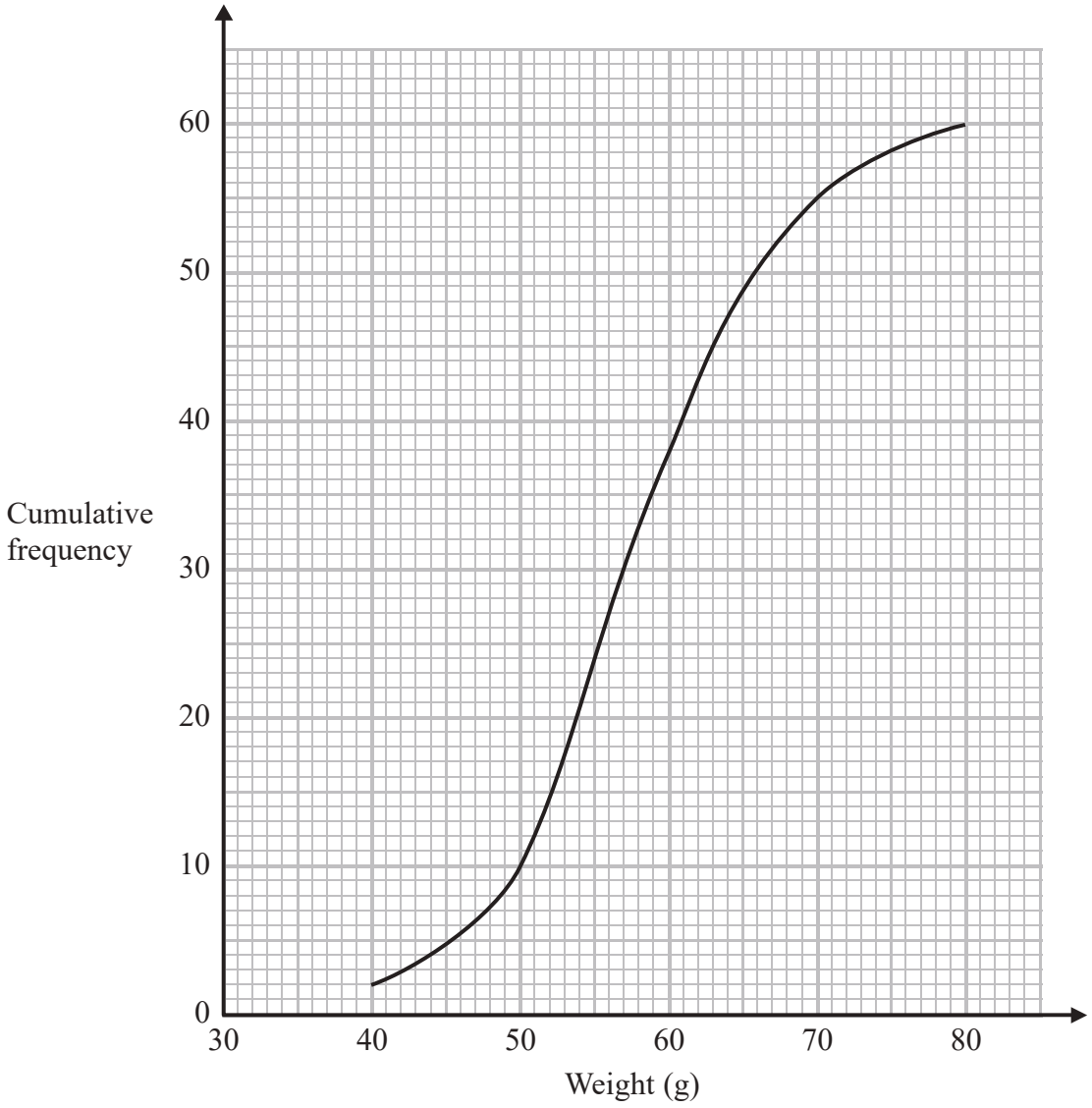
.....

.....

(2)

(Total for Question 10 is 3 marks)

11 The cumulative frequency graph shows information about the weights of 60 potatoes.



(a) Use the graph to find an estimate for the median weight.

..... g

(1)

Jamil says,

"80 − 40 = 40 so the range of the weights is 40 g."

(b) Is Jamil correct?
You must give a reason for your answer.

.....

.....

(1)

(c) Show that less than 25% of the potatoes have a weight greater than 65 g.

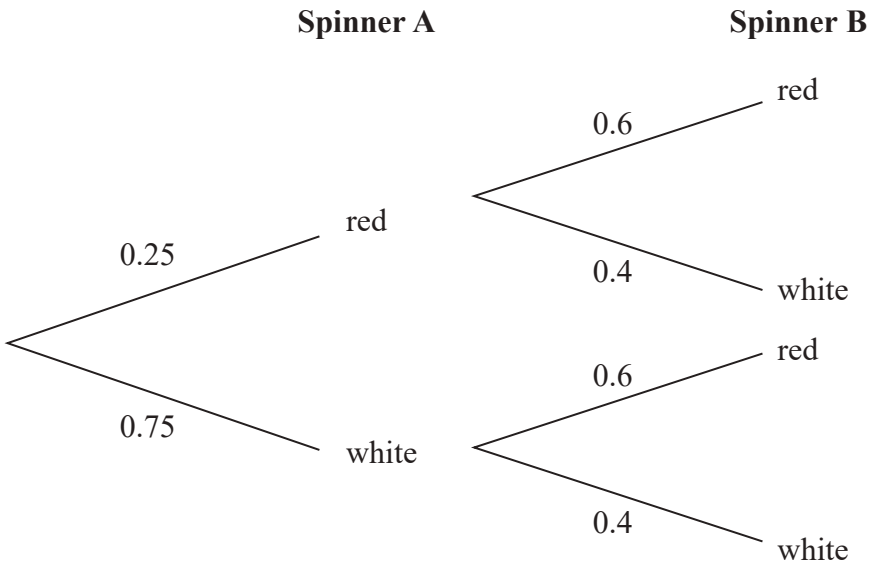
(2)

(Total for Question 11 is 4 marks)

12 Alan has two spinners, spinner **A** and spinner **B**.
Each spinner can land on only red or white.

The probability that spinner **A** will land on red is 0.25
The probability that spinner **B** will land on red is 0.6

The probability tree diagram shows this information.



Alan spins spinner **A** once and he spins spinner **B** once.
He does this a number of times.

The number of times **both** spinners land on red is 24

Work out an estimate for the number of times **both** spinners land on white.

.....

(Total for Question 12 is 3 marks)

13 Write $x^2 + 6x - 7$ in the form $(x + a)^2 + b$ where a and b are integers.

.....

(Total for Question 13 is 2 marks)

14 Cone **A** and cone **B** are mathematically similar.
The ratio of the volume of cone **A** to the volume of cone **B** is 27 : 8

The surface area of cone **A** is 297 cm^2

Show that the surface area of cone **B** is 132 cm^2

(Total for Question 14 is 3 marks)

15 (a) Show that the equation $x^3 + 7x - 5 = 0$ has a solution between $x = 0$ and $x = 1$

(2)

(b) Show that the equation $x^3 + 7x - 5 = 0$ can be arranged to give $x = \dfrac{5}{x^2 + 7}$

(2)

(c) Starting with $x_0 = 1$, use the iteration formula $x_{n+1} = \dfrac{5}{x_n^{\,2} + 7}$ three times to find an estimate for the solution of $x^3 + 7x - 5 = 0$

.....

(3)

(d) By substituting your answer to part (c) into $x^3 + 7x - 5$,
comment on the accuracy of your estimate for the solution to $x^3 + 7x - 5 = 0$

.....

.....

(2)

(Total for Question 15 is 9 marks)

16 The petrol consumption of a car, in litres per 100 kilometres, is given by the formula

$$\text{Petrol consumption} = \frac{100 \times \text{Number of litres of petrol used}}{\text{Number of kilometres travelled}}$$

Nathan's car travelled 148 kilometres, correct to 3 significant figures.
The car used 11.8 litres of petrol, correct to 3 significant figures.

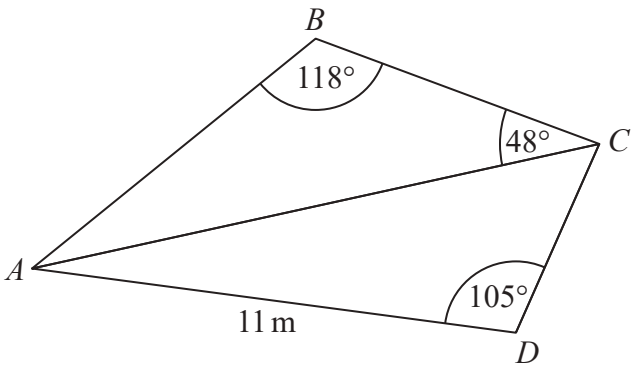
Nathan says,

"My car used less than 8 litres of petrol per 100 kilometres."

Could Nathan be wrong?
You must show how you get your answer.

(Total for Question 16 is 3 marks)

17 *ABC* and *ADC* are triangles.



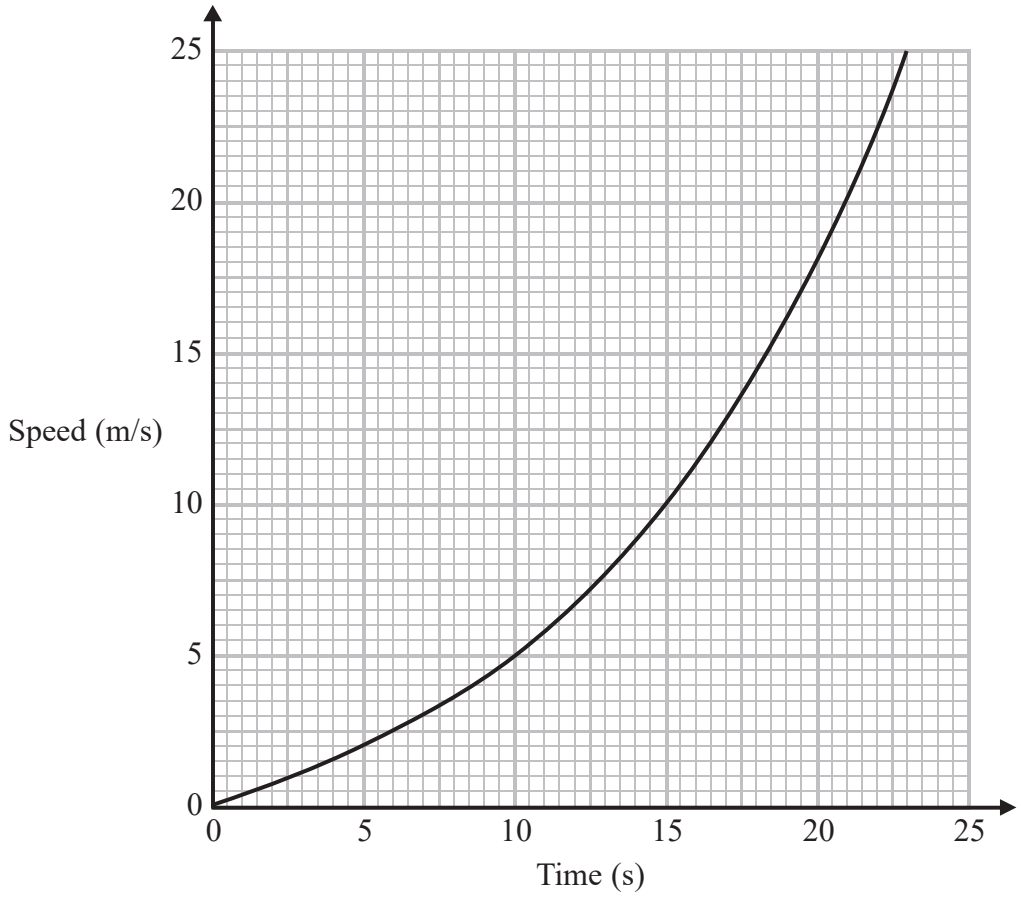
The area of triangle *ADC* is $56\,m^2$

Work out the length of *AB*.
Give your answer correct to 1 decimal place.

..... m

(Total for Question 17 is 5 marks)

18 Here is a speed-time graph for a train.



(a) Work out an estimate for the distance the train travelled in the first 20 seconds.
Use 4 strips of equal width.

..... m

(3)

(b) Is your answer to (a) an underestimate or an overestimate of the actual distance the train travelled?
Give a reason for your answer.

.....

.....

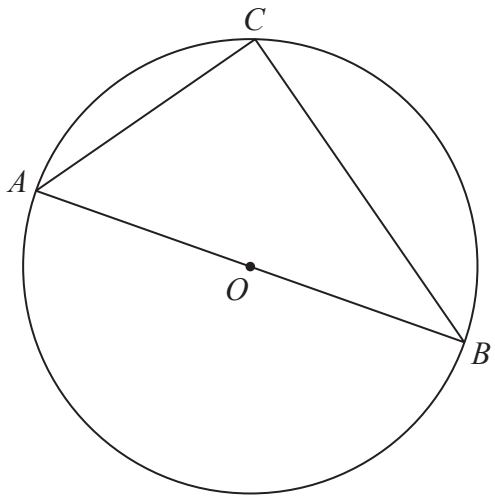
(1)

(Total for Question 18 is 4 marks)

19 Prove algebraically that the straight line with equation $x - 2y = 10$ is a tangent to the circle with equation $x^2 + y^2 = 20$

(Total for Question 19 is 5 marks)

20

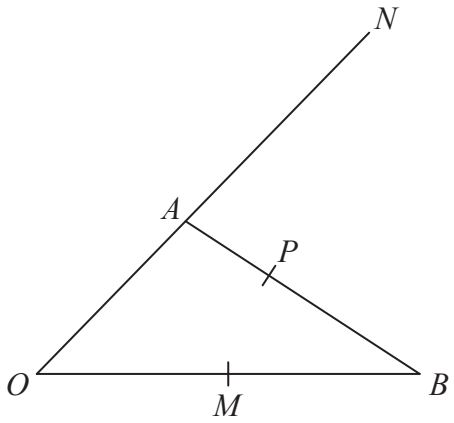


A, *B* and *C* are points on the circumference of a circle, centre *O*.
AOB is a diameter of the circle.

Prove that angle *ACB* is 90°
You must **not** use any circle theorems in your proof.

(Total for Question 20 is 4 marks)

21



OAN, *OMB* and *APB* are straight lines.
$AN = 2OA$.
M is the midpoint of *OB*.

$\overrightarrow{OA} = \mathbf{a}$ $\overrightarrow{OB} = \mathbf{b}$

$\overrightarrow{AP} = k\overrightarrow{AB}$ where *k* is a scalar quantity.

Given that *MPN* is a straight line, find the value of *k*.

.....

(Total for Question 21 is 5 marks)

TOTAL FOR PAPER IS 80 MARKS

Pearson

Mark Scheme (Results)

November 2017

Pearson Edexcel GCSE (9 – 1)
In Mathematics (1MA1)
Higher (Calculator) Paper 3H

edexcel

Edexcel and BTEC Qualifications

Edexcel and BTEC qualifications are awarded by Pearson, the UK's largest awarding body. We provide a wide range of qualifications including academic, vocational, occupational and specific programmes for employers. For further information visit our qualifications websites at www.edexcel.com or www.btec.co.uk. Alternatively, you can get in touch with us using the details on our contact us page at www.edexcel.com/contactus.

Pearson: helping people progress, everywhere

Pearson aspires to be the world's leading learning company. Our aim is to help everyone progress in their lives through education. We believe in every kind of learning, for all kinds of people, wherever they are in the world. We've been involved in education for over 150 years, and by working across 70 countries, in 100 languages, we have built an international reputation for our commitment to high standards and raising achievement through innovation in education. Find out more about how we can help you and your students at: www.pearson.com/uk

November 2017
Publications Code 1MA1_3H_1711_MS

General marking guidance

These notes offer general guidance, but the specific notes for examiners appertaining to individual questions take precedence.

1 All candidates must receive the same treatment. Examiners must mark the last candidate in exactly the same way as they mark the first.

Where some judgement is required, mark schemes will provide the principles by which marks will be awarded; exemplification/indicative content will not be exhaustive. When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the response should be sent to review.

2 All the marks on the mark scheme are designed to be awarded; mark schemes should be applied positively. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme. If there is a wrong answer (or no answer) indicated on the answer line always check the working in the body of the script (and on any diagrams), and award any marks appropriate from the mark scheme.

Questions where working is not required: In general, the correct answer should be given full marks.
Questions that specifically require working: In general, candidates who do not show working on this type of question will get no marks – full details will be given in the mark scheme for each individual question.

3 Crossed out work

This should be marked **unless** the candidate has replaced it with an alternative response.

4 Choice of method

If there is a choice of methods shown, mark the method that leads to the answer given on the answer line.

If no answer appears on the answer line, mark both methods **then award the lower number of marks.**

5 Incorrect method

If it is clear from the working that the "correct" answer has been obtained from incorrect working, award 0 marks.

6 Follow through marks

Follow through marks which involve a single stage calculation can be awarded without working as you can check the answer, but if ambiguous do not award.
Follow through marks which involve more than one stage of calculation can only be awarded on sight of the relevant working, even if it appears obvious that there is only one way you could get the answer given.

7 Ignoring subsequent work

It is appropriate to ignore subsequent work when the additional work does not change the answer in a way that is inappropriate for the question or its context. (eg. an incorrectly cancelled fraction when the unsimplified fraction would gain full marks).

It is not appropriate to ignore subsequent work when the additional work essentially makes the answer incorrect (eg. incorrect algebraic simplification).

8 Probability

Probability answers must be given as a fraction, percentage or decimal. If a candidate gives a decimal equivalent to a probability, this should be written to at least 2 decimal places (unless tenths).

Incorrect notation should lose the accuracy marks, but be awarded any implied method marks.

If a probability fraction is given then cancelled incorrectly, ignore the incorrectly cancelled answer.

9 Linear equations

Unless indicated otherwise in the mark scheme, full marks can be gained if the solution alone is given on the answer line, or otherwise unambiguously identified in working (without contradiction elsewhere). Where the correct solution only is shown substituted, but not identified as the solution, the accuracy mark is lost but any method marks can be awarded (embedded answers).

10 Range of answers

Unless otherwise stated, when an answer is given as a range (e.g 3.5 – 4.2) then this is inclusive of the end points (e.g 3.5, 4.2) and all numbers within the range.

Guidance on the use of abbreviations within this mark scheme	
M	method mark awarded for a correct method or partial method
P	process mark awarded for a correct process as part of a problem solving question
A	accuracy mark (awarded after a correct method or process; if no method or process is seen then full marks for the question are implied but see individual mark schemes for more details)
C	communication mark
B	unconditional accuracy mark (no method needed)
oe	or equivalent
cao	correct answer only
ft	follow through (when appropriate as per mark scheme)
sc	special case
dep	dependent (on a previous mark)
indep	independent
awrt	answer which rounds to
isw	ignore subsequent working

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
1 (a)		$160 < h \leq 170$	B1	correct class interval
(b)		Line segments joining the points (135, 4), (145, 11), (155, 24), (165, 22) and (175, 19)	C2 [C1	for fully correct frequency polygon for points plotted correctly at midpoints of intervals OR joining points with line segments at the correct heights and consistent within the intervals (including end values) OR correct frequency polygon with one point incorrect OR correct frequency polygon with first and last point joined] NB: ignore any histogram drawn and any part of frequency polygon outside range of first and last points plotted
2		New York (supported)	P1 P1 C1	for changing between £ and $, eg 1.089×1.46 (= 1.58(9.)) or 2.83÷1.46 (= 1.93(8.)) or between litres and gallons, eg 1.089×3.785 (= 4.12(1.)) or 2.83÷3.785 (= 0.74(7.)) for a complete process to give values that can be used for comparison, eg "1.938..." ÷ 3.785 (= 0.51(2.)) **or** "1.589..."...× 3.785 (= 6.01(7.)) **or** 1.089 × 3.785 = (4.12(1.)) and 2.83 ÷ 1.46 (= 1.93(8.)) for New York and correct comparative values
3		648	M2 [M1 A1	a complete method, eg 12.5 × 1000 ÷ 19.3 for using volume = mass/density, eg 12500 ÷ 19.3 (condone inconsistent units or incorrect conversions) may be implied by digits 647... or 648...] for answer in range 647 to 648

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
4		15	P1	strategy to start the problem, eg $8:20$ and $20:5$
			P1	process to solve the problem, eg $\frac{5}{33}\times 100$ or $24:60:15$
			A1	cao
5 (a)		0.625	B1	cao
(b)		$9.75 \leq x < 9.85$	B2	for $9.75 \leq x < 9.85$
			[B1	for 9.75 or 9.85 (or $9.84\dot{9}$)]
6		147	P1	starts process, eg uses x and $x + 7$
			P1	starts to work with at least 6 correct sides, may be on the diagram or in an expression
			P1	(dep on previous P1) gives a correct expression for the perimeter, eg $x + x + 7 + x + 7 + x + 7 + x + x + 7 + x + 7 + x + 7$ or adds at least 6 correct sides and equates to 70
			A1	for width = 3.5 oe **and** length = 10.5 oe
			B1	ft (dep P2) for correct area for their x
7		0.000 745 2	M1	digits 7452 seen
			A1	cao

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
8 (a)		Mel (supported)	B1	Mel with reference to greatest number of throws
(b)		$\frac{2}{9}$	M1	selects overall total and multiplies P(point up)×P(point down) eg $\frac{50}{150}\times\frac{100}{150}$ oe (accept $\frac{14}{45}\times\frac{31}{45}$ or $\frac{27}{80}\times\frac{53}{80}$ or $\frac{9}{25}\times\frac{16}{25}$)
			A1	for $\frac{2}{9}$ oe
9 (a)		5	M1	evaluates $(0.85)^n$ or $12\,500 \times (0.85)^n$ for at least one value of n
			A1	cao
(b)		2.4	P1	for a process to find the amount of interest before tax, eg 79.20 ÷ 0.6 (= 132)
			P1	for a process to find value of R, eg "132"÷5500×100
			A1	cao
10 (a)		0.05	B1	for 0.05 oe
(b)		20	C1	for stating that at least 20 required
		Reason	C1	for reason eg explains that number of each colour must be a whole number or that there must be (at least) 1 red counter or shows that 0.05 = $\frac{1}{20}$

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
11 (a)		57	B1	cao
(b)		Decision and reason	C1	Jamil might not be correct and reason, eg the maximum weight could be less than 80 or the minimum weight could be less than 40
(c)		Shown	C1	for evidence of reading from the graph at weight 65 (= 48 to 49) or at cf 45 (= 63)
			C1	eg 25% of 60 is 15 but only 11 potatoes have a weight greater than 65g or 25% of potatoes have a weight greater than 63g
12		48	M1	for 0.25×0.6 (= 0.15) or 0.75×0.4 (= 0.3)
			M1	for 0.25×0.6 (= 0.15) and 0.75×0.4 (= 0.3) or for 24 ÷ "0.15" (= 160)
			A1	cao
13		$(x + 3)^2 - 16$	M1	for $(x + 3)^2$ or $(x^2 + 6x - 7 =) x^2 + 2ax + a^2 + b$
			A1	cao
14		Shown	M1	for $\sqrt[3]{\frac{8}{27}} (= \frac{2}{3})$ or $\sqrt[3]{\frac{27}{8}} (= \frac{3}{2})$ or 2 : 3 or 3 : 2
			M1	for $\left(\sqrt[3]{\frac{8}{27}}\right)^2 (= \frac{4}{9})$ or $\left(\sqrt[3]{\frac{27}{8}}\right)^2 (= \frac{9}{4})$ or 4 : 9 or 9 : 4
			A1	132 from correct arithmetic

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
15 (a)		Shown	M1	for method to establish at least one root between $x = 0$ and $x = 1$, eg f(0) = – 5 and f(1) = 3
			C1	for correct values and a deduction about the roots eg as there is a sign change there must be at least one root between $x = 0$ and $x = 1$ (as f is continuous)
(b)		Shown	C1	for a correct first step in rearrangement, eg $x(x^2 + 7) – 5 = 0$ or $x^3 + 7x = 5$
			C1	for clear and correct steps showing complete rearrangement
(c)	$x_1 = 0.625$ $x_2 = 0.6765327696$ $x_3 = 0.6704483001$	0.6704(483001)	M1 M1 A1	for substitution of 1 into the formula (to get 0.625) for substitution of "$x_1 = 0.625$" and "$x_2 = 0.6765327696$" to give x_2 and x_3 0.6704(483001)
(d)		Comment	M1 C1	substitutes answer to (c) into expression (to get –0.00549...) appropriate comment, eg accurate as answer is close to 0
16		Yes and correct working	B1 P1 A1	for 147.5 or 148.5 or 148.4999... or 11.75 or 11.85 or 11.84999... substitutes $11.8 < \text{UB} \leq 11.85$ and $147.5 \leq \text{LB} < 148$ in the formula to work out petrol consumption for 'Yes' and 8.03(3898305...) from correct working
17		14.4	P1 P1 P1 P1 A1	for start of process, eg $0.5 \times 11 \times CD \times \sin 105 = 56$ for complete process to find CD, eg $(CD =) \dfrac{56}{0.5 \times 11 \times \sin 105}$ oe (= 10.54) for process to find AC, eg $(AC^2 =) 11^2 + [CD]^2 – 2 \times 11 \times [CD] \times \cos 105$ (AC = 17.09) for process to find AB, eg $\dfrac{AB}{\sin 48} = \dfrac{[AC]}{\sin 118}$ answer in range 14.3 to 14.4

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
18 (a)	values 0, 2, 5, 10,18	130	M1	for starting to find area under the curve, eg $0.5\times5\times2$ (= 5)
			M1	for a complete method to find the area under the curve using 4 strips of equal width, eg "5" + $0.5\times5\times(2+5)$ (= 17.5) + $0.5\times5\times(5+10)$ (= 37.5) + $0.5\times5\times(10+18)$ (= 70)
			A1	for 130 or answer in range 130.1 to 132 supported by accurate working
(b)		overestimate with reason	C1	for "overestimate" and appropriate reason linked to method eg area between trapeziums and curve also included
19		Proof	M1	starts process to find point of intersection by substituting, eg $(10 + 2y)^2 + y^2$ (= 20)
		(supported)	M1	for expanding, eg $4y^2 + 20y + 20y + 100$ (3 out of 4 terms correct)
			M1	(dep M2) for 3-term quadratic equation ready for solving, eg $5y^2 + 40y + 80 = 0$
			M1	(dep on previous M1) for method to solve an equation of the form $ay^2 + by + c = 0$, eg by factorising or correct substitution into quadratic formula
			C1	fully correct method leading to $y = -4$ or $x = 2$ or $(y + 4)^2 = 0$ or $(x - 2)^2 = 0$ and statement, eg only one point of intersection so the line is a tangent to the circle
20		Proof	C1	draws OC and considers angles in an isosceles triangle (algebraic notation may be used, eg two angles labelled x)
			C1	finds sum of angles in triangle ABC, eg $x + x + y + y = 180$, or sum of angles at O, eg $180 - 2x + 180 - 2y$
			C1	complete method leading to $ACB = 90$
			C1	complete proof with all reasons given, eg base angles of an isosceles triangle are equal, angles in a triangle add up to 180º, angles on a straight line add up to 180º

Paper: 1MA1/3H				
Question	**Working**	**Answer**	**Mark**	**Notes**
21		$\frac{2}{5}$	P1	for process to find $\overrightarrow{AB}$ (= **b** – **a**) or $\overrightarrow{BA}$ (= **a** – **b**)
			P1	for process to find $\overrightarrow{MN}$ (= $-\frac{1}{2}$**b** + **a** + 2**a**) or $\overrightarrow{PN}$ (= –k(**b** – **a**) + 2**a**) or $\overrightarrow{MP}$ (= $-\frac{1}{2}$**b** + **a** + *k*(**b** – **a**) or $\frac{1}{2}$**b** + (1 – *k*)(**a** – **b**))
			P1	for process to find two of $\overrightarrow{MN}$, $\overrightarrow{PN}$ and $\overrightarrow{MP}$
			P1	for process to find *k*, using $\overrightarrow{MN}$ as a multiple of $\overrightarrow{PN}$ or using $\overrightarrow{MN}$ as a multiple of $\overrightarrow{MP}$ or using $\overrightarrow{PN}$ as a multiple of $\overrightarrow{MP}$
			A1	for $\frac{2}{5}$ oe

Question 2

London	1.089 × 1.46 = \$1.58(9..) per litre	→	1.589... × 3.785 = \$6.01(7..) per gallon
	1.089 × 3.785 = £4.12(1..) per gallon	→	4.121... × 1.46 = \$6.01(7..) per gallon
New York	2.83 ÷ 1.46 = £1.93(8..) per gallon	→	1.938... ÷ 3.785 = £0.51(2..) per litre
	2.83 ÷ 3.785 = \$0.74(7..) per litre	→	0.747... ÷ 1.46 = £0.51(2..) per litre

The table shows the most commonly used approaches. There are of course other approaches that can be used.

Question 9(a)

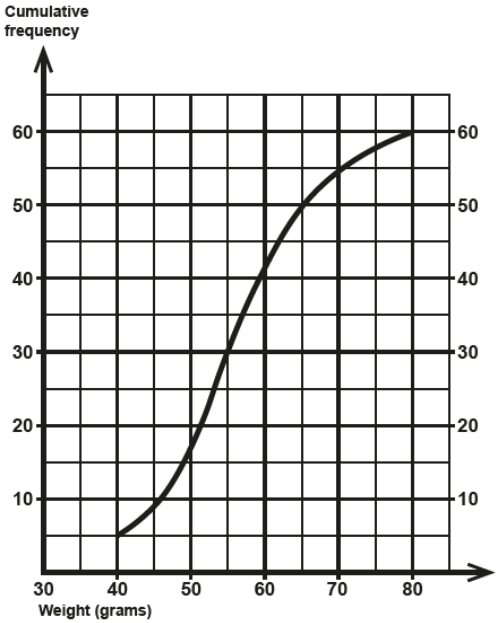
n	$(0.85)^n$	$12\,500 \times (0.85)^n$
1		10 625
2	0.7225	9031.25
3	0.614125	7676.5625
4	0.52200625	6525.078125
5	0.4437053125	5546.316406

Modifications to the mark scheme for Modified Large Print (MLP) papers.

Only mark scheme amendments are shown where the enlargement or modification of the paper requires a change in the mark scheme.

The following tolerances should be accepted on marking MLP papers, unless otherwise stated below:
Angles: ±5º
Measurements of length: ±5 mm

PAPER: 1MA1_3H			
Question		**Modification**	**Mark scheme notes**
1		Numbers in the table have changed to: 130-140: **5**; 140-150: **10**; 150-160: **20**; 160-170: **30**; 170-180: **15** In part (b) Diagram enlarged. Right axis has been labelled. Axes labels moved to the left of the horizontal axis and above the vertical axis. Vertical axis extended so it goes up to 35.	Standard mark scheme with the amendment: Line segments joining the points (135, 5), (145, 10), (155, 20), (165, 30) and (175, 15)
6		Diagram enlarged. Wording added 'Diagram (i) shows'. Shape labelled as 'Diagram (i)'. Wording added 'Diagram (ii)' after '8-sided shape,' Shape labelled as 'Diagram (ii)'.	Standard mark scheme
10		Table turned to vertical format.	Standard mark scheme

PAPER: 1MA1_3H			
Question		**Modification**	**Mark scheme notes**
11		Diagram enlarged and right axis labelled. Axes labels moved to the left of the horizontal axis and above the vertical axis. Graph line moved so it goes through (40, 5) (55, 30) and (65, 50).	Standard mark scheme
			(a) B1 55 cao (b) standard mark scheme (c) standard mark scheme with some adjustments: C1 reads from graph at weight 65 (= 50) or at cf 45 (in range 8 to 9.5) C1 eg 25% of 60 is 15 but only 10 potatoes have a weight greater than 65g or 25% of potatoes have a weight greater than 63g (approx.)

PAPER: 1MA1_3H			
Question		**Modification**	**Mark scheme notes**
12		Diagram enlarged.	Standard mark scheme
17		Diagram enlarged. Angles moved outside of the angle arcs and the angle arcs made smaller. Wording added 'Angle ABC = 118°, Angle BCA = 48°, Angle ADC = 105° and AD = 11cm.'	Standard mark scheme
18		Diagram enlarged and right axis labelled. Axes labels moved to the left of the horizontal axis and above the vertical axis. Graph line moved to go through points (0, 0) (5, 2.5) (10, 5) (20, 17.5) (23.75, 25).	M1 for splitting the area into 4 strips and a method of finding the area of one shape under the graph, eg 0.5×5×2.5 (= 6.25) M1 for complete method to find the area under the curve, eg "6.25" + 0.5×5×(2.5+5) (= 18.5) + 0.5×5×(5+*12*) (= *42.5*) + 0.5×5×(*12*+17.5) (= *73.75*) [figures in italic will be approximate] A1 for value near to 140-141 (b) standard mark scheme
20		Diagram enlarged. Dot at O made bigger.	Standard mark scheme
21		Diagram enlarged.	Standard mark scheme

Pearson Education Limited. Registered company number 872828
with its registered office at 80 Strand, London, WC2R 0RL, United Kingdom