edexcel

Edexcel International Lower Secondary Curriculum Mathematics

Year 9 Achievement Test

Sample Assessment Material
and Sample Mark Scheme

ALWAYS LEARNING

PEARSON

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Contents

Paper PLSC02

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- Examiners should mark according to the mark scheme not according to their perception of where the grade boundaries may lie.
- There is no ceiling on achievement. All marks on the mark scheme should be used appropriately.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- When examiners are in doubt regarding the application of the mark scheme to a candidate's response, the team leader must be consulted.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.

Write your name here

Surname	Other names

Edexcel PLSC

Centre Number	Candidate Number

Mathematics

Year 9
Achievement Test

Sample Assessment Material
Time: 1 hour 20 minutes

Paper Reference
PLSC02

You do not need any other materials.

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.*
- Calculators are allowed.

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.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ▶

S41626A

S 4 1 6 2 6 A 0 1 2 0

PEARSON

SECTION A

Answer ALL questions.

In Section A put a cross in one box ☒ to indicate your answer. If you change your mind, put a line through the box ☒ and then put a cross in another box ☒.
Each question in Section A is worth one mark.

1 what is the highest common factor (HCF) of 40 and 60?

120	20	2	2400
☒	☒	☒	☒

---

2 Jake counted the number of birds in his garden each morning for eight days.
Here are his results.

4 9 6 4 8 4 5 8

What is the median number of birds?

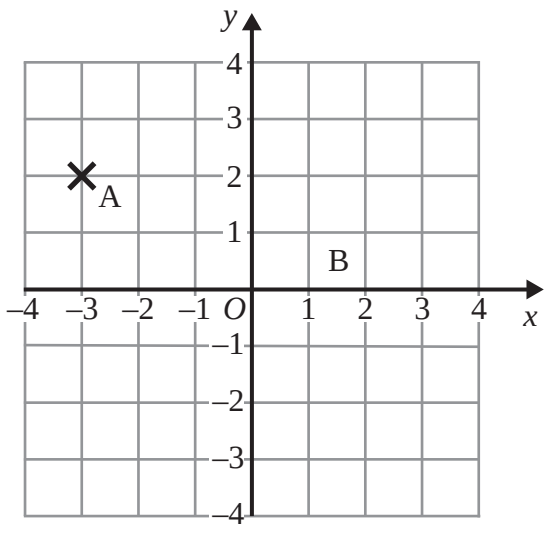
4	5	5.5	6
☒	☒	☒	☒

---

3 What is 0.84 when written as a fraction in its simplest form?

$\frac{84}{100}$	$\frac{42}{50}$	$\frac{17}{20}$	$\frac{21}{25}$
☒	☒	☒	☒

4



What are the coordinates of the point A?

(–2, 3) ☒ (–3, 2) ☒ (2, –3) ☒ (–3, –2) ☒

---

5 Here is a shape.

All the corners are right angles.

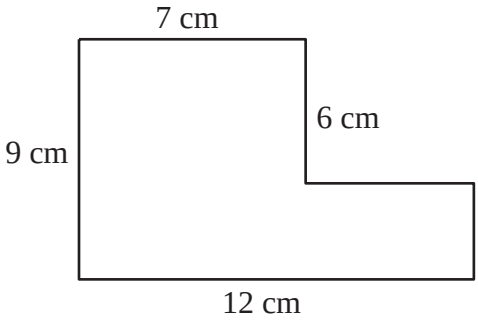


Diagram **NOT** accurately drawn

What is the area of this shape?

78 cm^2 ☒ 99 cm^2 ☒ 108 cm^2 ☒ 150 cm^2 ☒

---

6 There are 30 students in a class.

19 of the students play soccer.

The teacher chooses a student at random.

What is the probability that this student does not play soccer?

$\frac{21}{30}$	$\frac{19}{30}$	$\frac{11}{19}$	$\frac{11}{30}$
☒	☒	☒	☒

---

7 Simplify $8x - 2y + 3x + 6y$

$11x - 8y$	$5x + 8y$	$11x + 4y$	$5x + 4y$
☒	☒	☒	☒

---

8 What is 6.0829 when written correct to two decimal places?

6.08	6.082	6.083	6.09
☒	☒	☒	☒

---

9 *A* is the point (3, 8)

B is the point (7, –2)

Which are the coordinates of the midpoint of the line *AB*?

(4, 6)	(5, 5)	(4, 3)	(5, 3)
☒	☒	☒	☒

---

10 The diagram shows a pair of parallel lines and an isosceles triangle.

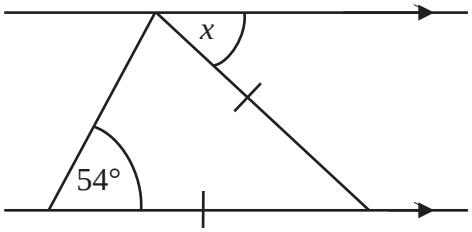


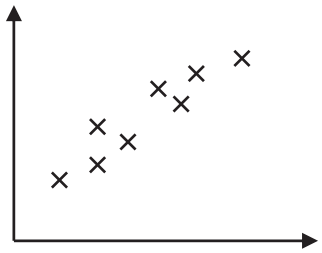
Diagram **NOT** accurately drawn

The size of the angle marked x is

72° ☒ 54° ☒ 63° ☒ 126° ☒

---

11 Here is a scatter graph.



What type of correlation is shown by this graph?

no correlation ☒ negative correlation ☒ increasing correlation ☒ positive correlation ☒

---

12 What is 30 when written as a product of its prime factors?

3 × 10 ☒ 1 × 2 × 3 × 5 ☒ 2, 3, 5 ☒ 2 × 3 × 5 ☒

---

13 The nth term of a sequence is $n^2 + 3$

What is the 7th term of this sequence?

17	10	100	52
☒	☒	☒	☒

---

14 A cuboid has length 12 cm, width 7 cm and height 8 cm.

What is the volume of this cuboid?

472 cm^3	81 cm^3	672 cm^3	27 cm^3
☒	☒	☒	☒

---

15 $\dfrac{52.8 \times 2.6}{6.6 - 5.8}$ =

15	171.25	171.6	10.9
☒	☒	☒	☒

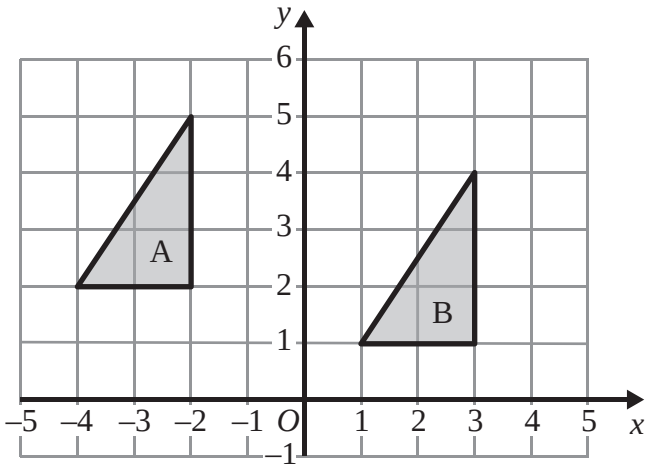
---

16 Work out the value of $3n^3 + m^2$ when

$n = 2$ and $m = -4$

232	40	200	8
☒	☒	☒	☒

17



The vector that describes the translation which maps triangle **A** onto triangle **B** is

$\begin{pmatrix} 6 \\ -2 \end{pmatrix}$ ☒ $\begin{pmatrix} -5 \\ 1 \end{pmatrix}$ ☒ $\begin{pmatrix} -6 \\ 2 \end{pmatrix}$ ☒ $\begin{pmatrix} 5 \\ -1 \end{pmatrix}$ ☒

---

18 Here are the first four terms of an arithmetic sequence

7 10 13 16

An expression for the nth term of this sequence is

$3n + 4$ ☒ $n + 4$ ☒ $4n + 3$ ☒ $n + 3$ ☒

---

19 How many mm^2 are in 7 cm^2?

70 ☒ 49 ☒ 7000 ☒ 700 ☒

---

20 The reciprocal of 9 is

81	3	$\frac{1}{9}$	–9
☒	☒	☒	☒

21 What is 862.451 when rounded to two significant figures?

860	86	862.45	862
☒	☒	☒	☒

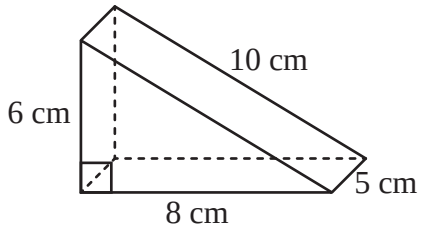
22 The length of a path is 6.7 m correct to one decimal place.

The greatest possible length of the path is

6.49 m	6.74 m	6.55	6.75 m
☒	☒	☒	☒

23 Here is a prism.

Diagram **NOT** accurately drawn



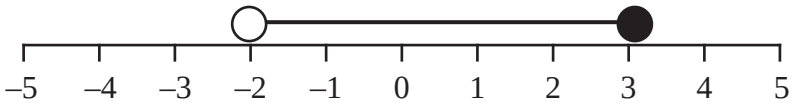
What is the total surface area of the prism?

120 cm^2	216 cm^2	168 cm^2	2400 cm^2
☒	☒	☒	☒

24 When a number is multiplied by 1.05 the number increases exactly by

50%	0.5%	0.05%	5%
☒	☒	☒	☒

25 The number line shows an inequality.



The inequality shown on this number line is

$-2 < x < 3$	$-2 \leqslant x < 3$	$-2 < x \leqslant 3$	$-2 \leqslant x \leqslant 3$
☒	☒	☒	☒

26 Expand the brackets and simplify $3(2x + y) - 2(x - y)$

$4x + y$	$6x - y$	$4x - y$	$4x + 5y$
☒	☒	☒	☒

27 What is $0.\dot{7}$ when written as a fraction?

$\frac{7}{9}$	$\frac{7}{10}$	$\frac{1}{9}$	$\frac{1}{7}$
☒	☒	☒	☒

28 $(a^{\frac{5}{2}})^{-4}$ =

a^{-10} ☒ $a^{-\frac{3}{2}}$ ☒ $a^{\frac{13}{2}}$ ☒ a^{10} ☒

---

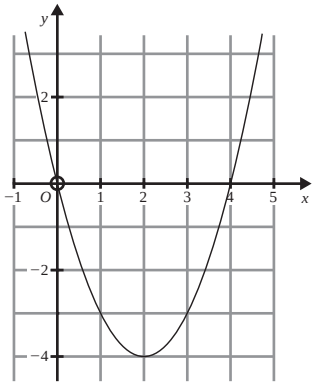
29 **L** is the line with equation $y = 2x - 3$

Which one of the equations below is the equation of a line parallel to **L**?

$y = 4x - 3$ ☒ $2y = 2x + 1$ ☒ $2y = 4x + 1$ ☒ $y = 1 - 2x$ ☒

---

30 Here is a quadratic graph.



The equation of the line of symmetry of this graph is

$y = x + 2$ ☒ $y = 2$ ☒ $x = 2$ ☒ $y = -4$ ☒

TOTAL FOR SECTION A IS 30 MARKS

SECTION B

Answer ALL questions.
You must show all your working.

31 Here are the first four terms in a sequence

8 11 14 17

The sequence continues.

Write down the next **two** terms in this sequence.

..... , ...

(Total for Question 31 is 1 mark)

32 Expand $3(2x - 1)$

.....

(Total for Question 32 is 1 mark)

33 The perimeter of a square is 36 cm.

Three of these squares are joined together to make the rectangle ABCD.

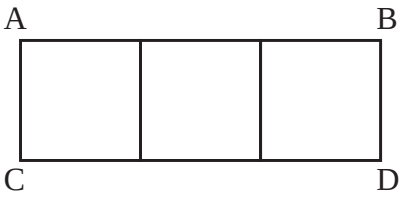


Diagram **NOT** accurately drawn

Work out the perimeter of the rectangle ABCD.

..... cm

(Total for Question 33 is 3 marks)

34 The probability that it will rain tomorrow is $\frac{3}{7}$

(a) What is the probability that it will **not** rain tomorrow?

.....

(1)

Jenny rolls an ordinary fair dice 300 times.

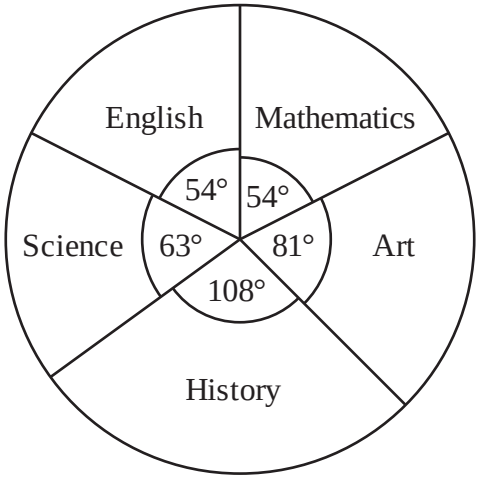
(b) Work out an estimate for the number of times the dice will land on a six.

.....

(1)

(Total for Question 34 is 2 marks)

35 The pie chart shows information about the favourite subject of some students.



(a) Which subject is the mode?

.....

(1)

(b) What fraction of the students said that Art was their favourite subject?

.....

(1)

7 students said Science was their favourite subject.

(c) How many students said History was their favourite subject?

.....

(2)

(Total for Question 35 is 4 marks)

36 (a) Factorise $y^2 - 3y$

.....

(1)

(b) Factorise fully $16a^3b + 24a^2b^2$

.....

(2)

(c) Multiply out the brackets and then simplify $(x - 9)(x + 2)$

.....

(2)

(Total for Question 36 is 5 marks)

---

37 (a) Write $6^8 \times 6^3$ as a single power of 6

.....

(1)

(b) Write $4^9 \div 4^3$ as a single power of 4

.....

(1)

(Total for Question 37 is 2 marks)

38 The diagram shows a quadrilateral.

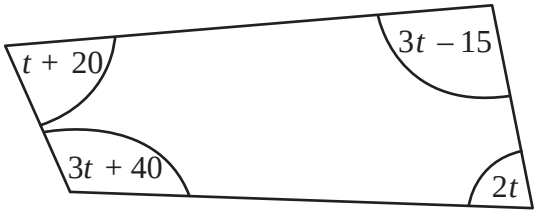


Diagram **NOT** accurately drawn

All angles in the diagram are measured in degrees.

Work out the value of t.

.....

(Total for Question 38 is 3 marks)

39 Suha and Kate share 75 sweets in the ratio 2:3

Suha then gives away 40% of her sweets.

How many sweets does Suha have left?

.....

(Total for Question 39 is 4 marks)

40 The diagram shows a regular pentagon *ABCDE* and a regular hexagon *BFGHJK*.

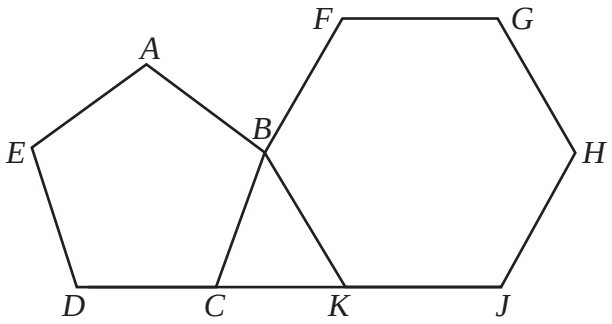


Diagram **NOT** accurately drawn

DCKJ is a straight line.

Work out the size of angle *CBK*.

.....°

(Total for Question 40 is 3 marks)

41 (a) Write 67 000 as a number in standard form.

.....

(1)

(b) Write 8.02×10^{-3} as an ordinary number.

.....

(1)

(c) Work out $(3 \times 10^{12}) \times (2 \times 10^{-7})$

.....

(1)

(Total for Question 41 is 3 marks)

42 A teacher carried out a survey to find out how much time students in his class spent doing homework one night.

The table shows information from the results of his survey.

Time (t minutes)	Frequency		
$0 \leqslant t < 20$	9		
$20 \leqslant t < 40$	5		
$40 \leqslant t < 60$	4		
$60 \leqslant t < 80$	2		

(a) How many students were in the survey?

.....

(1)

(b) Work out an estimate for the mean time.

..... minutes

(3)

(Total for Question 42 is 4 marks)

43 Here is a right-angled triangle.

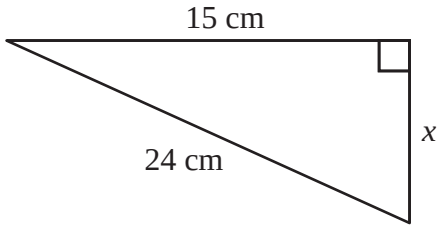


Diagram **NOT** accurately drawn

Work out the length of the side marked x.

Give your answer correct to 1 decimal place.

..... cm

(Total for Question 43 is 3 marks)

44 Solve $8x + 18 = 2(5 - x)$

$x =$ .....

(Total for Question 44 is 3 marks)

45 Solve the simultaneous equations $3x + 2y = 5$

$5x - 2y = 19$

$x =$ .....

$y =$ .....

(Total for Question 45 is 3 marks)

46 Mena has two boxes of counters.

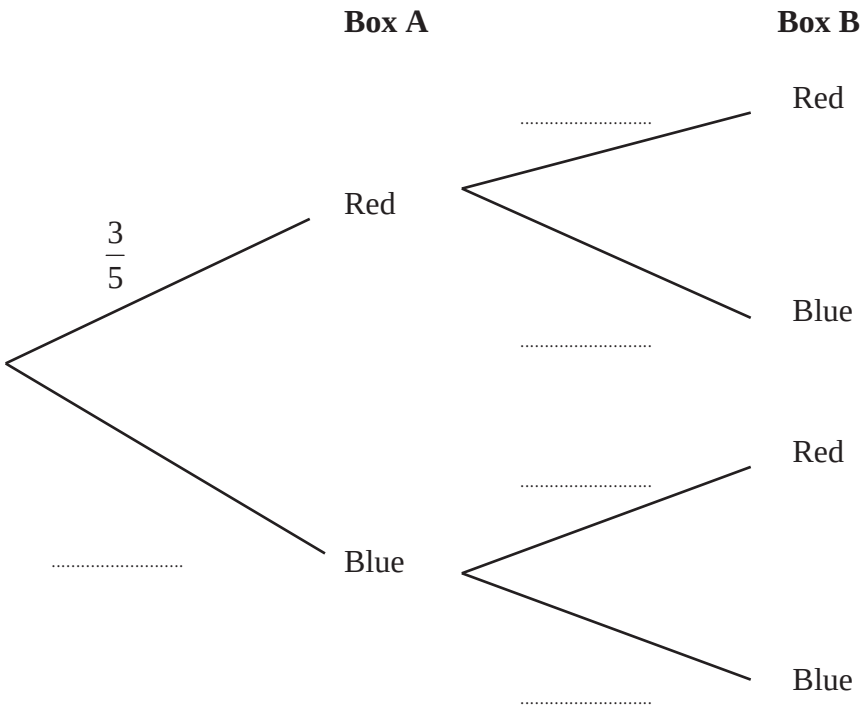
Box A contains 3 red and 2 blue counters.

Box B contains 4 red and 5 blue counters.

Mena takes at random a counter from box A.

She then takes at random a counter from box B.

(a) Complete the probability tree diagram.



(2)

(b) Calculate the probability that Mena takes two red counters.

.....

(2)

(Total for Question 46 is 4 marks)

47 A designer at a manufacturing company is designing a can for a drink.

The can will be in the shape of a cylinder.

It will have

- a volume of 330 cm^3
- a height of 9 cm

Work out the radius of the can.

Give your answer correct to one decimal place.

..... cm

(Total for Question 47 is 2 marks)

TOTAL FOR SECTION B IS 50 MARKS
TOTAL FOR PAPER IS 80 MARKS

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Mark Scheme for paper PLSC02

Section A

Question Number	Answer	Mark
1	B	**1**
2	C	**1**
3	D	**1**
4	B	**1**
5	A	**1**
6	D	**1**
7	C	**1**
8	A	**1**
9	D	**1**
10	A	**1**
11	D	**1**
12	D	**1**
13	D	**1**
14	C	**1**
15	C	**1**
16	B	**1**
17	D	**1**
18	A	**1**
19	D	**1**
20	C	**1**
21	A	**1**
22	D	**1**
23	C	**1**

Question Number	Answer	Mark
24	D	**1**
25	C	**1**
26	D	**1**
27	A	**1**
28	A	**1**
29	C	**1**
30	C	**1**

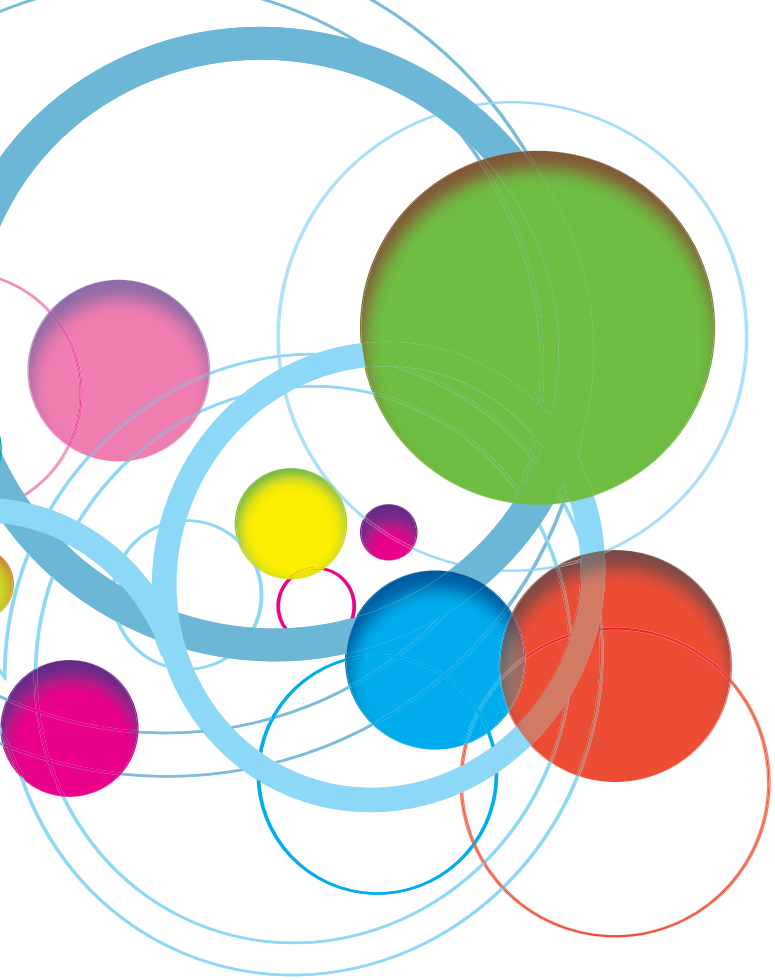
Section B

Question Number	Working	Answer	Mark	Notes
31		20, 23	1	B1 cao
32		$6x - 3$	1	B1 cao
33	36 ÷ 4 = 9 '9' × 8	72	3	M1 for 36 ÷ 4 (=9) M1 for '9' × 8 oe A1 cao
34(a)		$\frac{4}{7}$	1	B1 cao
34(b)	300 ÷ 6	50	1	B1 cao
35(a)		History	1	B1 cao
35(b)		$\frac{81}{360}$	1	B1 for $\frac{81}{360}$ or $\frac{9}{40}$
35(c)	63 ÷ 7 (=9) 108 ÷ 9	12	2	M1 for a fully correct complete method, eg.108 ÷ (63 ÷ 7) oe A1 cao
36(a)		$y(y - 3)$	1	B1 cao
36(b)		$8a^2b(2a + 3b)$	2	M1 for partial correct factorisation with at least 1 letter outside the bracket A1
36(c)	$x^2 - 9x + 2x - 18$	$x^2 - 7x - 18$	2	M1 for 3 out of four terms correct with signs or all 4 terms correct without signs A1 cao
37(a)		6^{11}	1	B1 cao
37(b)		4^6	1	B1 cao
38	$t + 20 + 3t - 15 + 3t + 40 + 2t = 360$ $9t + 45 = 360$ $9t = 315$ $t = 35$	35	3	M1 for clear attempt to add the four given expressions and equate to 360 M1 for correct method to solve a linear equation A1 cao
39	75 ÷ 5 × 2 (=30) '30' – 0.4×'30'	18	4	M1 for 75 ÷ (2 + 3) (=15) M1 for 2×'15' (=30) M1 for 0.6 × '30' oe A1 cao

Question Number	Working	Answer	Mark	Notes
40	360 ÷ 5 = 72 360 ÷ 6 = 60 180 – '72' – '60'	48	3	M1 for 360 ÷ 5(=72) **or** 360÷6(=60) M1 for 180 – '72' – '60' A1 cao **or** M1 for $\frac{5-2}{5}\times 180(=108)$ **or** $\frac{6-2}{6}\times 180(=120)$ M1 for 180 – (180 – '108' – (180 – '120') A1 cao
41(a)		6.7×10^4	1	B1 cao
41(b)		0.00802	1	B1 cao
41(c)		432000	1	B1 for 600 000 or 6×10^5

Question Number	Working	Answer	Mark	Notes
42(a)		20	1	B1
42(b)	10×9 + 30×5 + 50×4 + 70×2 (=580) 580 ÷ 20	29	3	M1 for multiplying frequency by midpoint consistently within the interval, including end points M1 (dep) for Σfx / '20' A1 cao
43	$15^2 + x^2 = 24^2$ $x^2 = \sqrt{}(576 - 225)$	18.7	3	M1 for $15^2 + x^2 = 24^2$ or $24^2 - 15^2$ M1 for $\sqrt{}(576 - 225)$ A1 for 18.7 – 18.73
44	$8x + 18 = 2(5 - x)$ $10x = -8$ $x = -\frac{4}{5}$	2	3	M1 for dealing with 2 outside bracket on LHS or dividing through by 2 M1 for correct method to solve a linear equation A1 for $-\frac{4}{5}$ oe
45	$8x = 24$ $x = 3$ $9 + 2y = 5$ $2y = -4$	$x = 3$, $y = -2$	3	M1 for correct process to eliminate one variable M1 (dep) substitute first found variable back into an equation A1 cao

Question Number	Working	Answer	Mark	Notes
46(a)		LH column : $\frac{2}{5}$ RH column : $\frac{4}{9}; \frac{5}{9}; \frac{4}{9}; \frac{5}{9}$	2	B1 for $\frac{2}{5}$ in LH column B1 for $\frac{4}{9}; \frac{5}{9}; \frac{4}{9}; \frac{5}{9}$ in RH column
46(b)	$\frac{3}{5} \times \frac{4}{9}$	$\frac{12}{45}$	2	M1 for $\frac{3}{5} \times ' \frac{4}{9} '$ A1 for $\frac{12}{45}$ oe ft from candidate's $\frac{4}{9}$
47	$330 = \pi r^2 \times 9$ $r = \sqrt{(330 \div (9\pi))}$	3.4	2	M1 for $330 = \pi r^2 \times 9$ oe A1 for 3.4 – 3.42



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