TOPICAL PAST PAPER QUESTIONS WORKSHEETS

IGCSE Mathematics (0580) Paper 2
[Short-answer questions]

Exam Series: May/June 2012 - May/June 2024

Format Type A:
Answers to all questions are provided as an appendix

Introduction

Each Topical Past Paper Questions Compilation contains a comprehensive collection of hundreds of questions and corresponding answer schemes, presented in worksheet format. The questions are carefully arranged according to their respective chapters and topics, which align with the latest IGCSE or AS/A Level subject content. Here are the key features of these resources:

1. The workbook covers a wide range of topics, which are organized according to the latest syllabus content for Cambridge IGCSE or AS/A Level exams.

2. Each topic includes numerous questions, allowing students to practice and reinforce their understanding of key concepts and skills.

3. The questions are accompanied by detailed answer schemes, which provide clear explanations and guidance for students to improve their performance.

4. The workbook's format is user-friendly, with worksheets that are easy to read and navigate.

5. This workbook is an ideal resource for students who want to familiarize themselves with the types of questions that may appear in their exams and to develop their problem-solving and analytical skills.

Overall, Topical Past Paper Questions Workbooks are a valuable tool for students preparing for IGCSE or AS/A level exams, providing them with the opportunity to practice and refine their knowledge and skills in a structured and comprehensive manner. To provide a clearer description of this book's specifications, here are some key details:

- Title: Cambridge IGCSE Mathematics (0580) Paper 2 Topical Past Papers

- Subtitle: Exam Practice Worksheets With Answer Scheme

- Examination board: Cambridge Assessment International Education (CAIE)

- Subject code: 0580

- Years covered: May/June 2012 - May/June 2024

- Paper: 2

- Number of pages: 1610

- Number of questions: 1958

Contents

Chapter 1

Numbers

1. 0580_m24_qp_22 Q: 1

A night bus runs from 21 50 to 05 18 the next day.

Work out the number of hours and minutes that the night bus runs.

.... h ....min [1]

2. 0580_m24_qp_22 Q: 2

Calculate $\sqrt{5.76} + 2.8^3$.

.... [1]

3. 0580_m24_qp_22 Q: 11

Without using a calculator, work out $1\frac{1}{4} - \frac{5}{6}$.

You must show all your working and give your answer as a fraction in its simplest form.

.... [3]

4. 0580_m24_qp_22 Q: 14

A train, 1750 metres long, is travelling at 55 km/h.

Calculate how long it will take for the whole train to completely cross a bridge that is 480 metres long. Give your answer in seconds, correct to the nearest second.
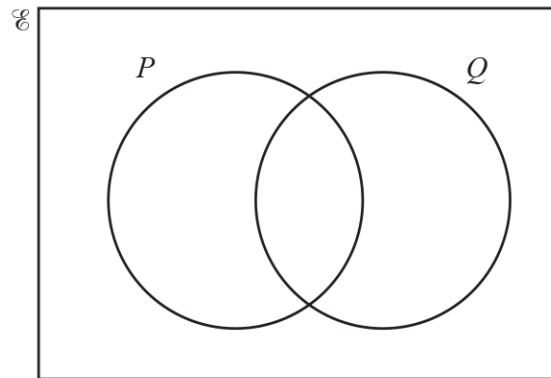
.... s [3]

5. 0580_m24_qp_22 Q: 16

x is an integer.

$\mathcal{E} = \{x : 1 \leqslant x \leqslant 10\}$
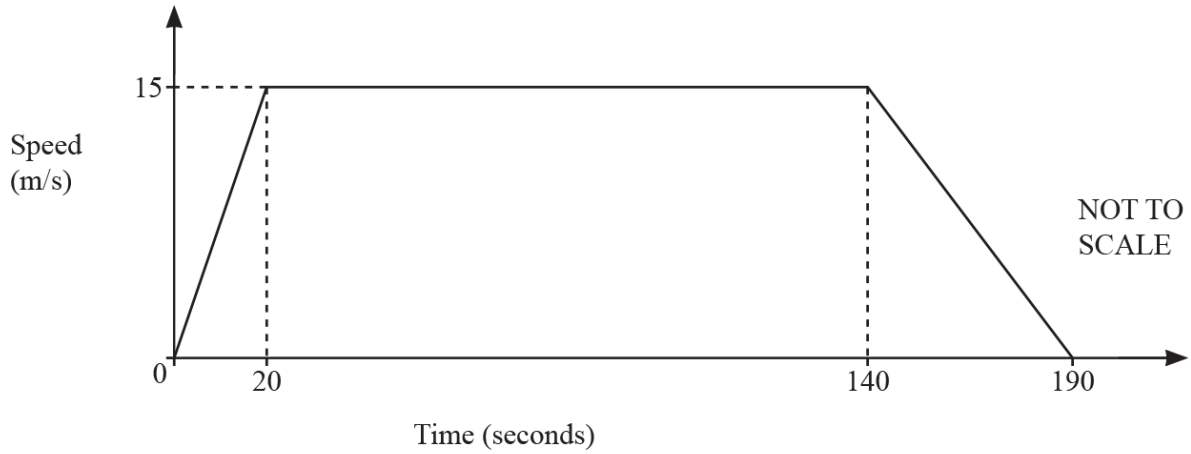$P = \{x : x \text{ is an even number}\}$
$Q = \{x : x \text{ is a multiple of 5}\}$

Complete the Venn diagram. [2]

6. 0580_m24_qp_22 Q: 19

The speed–time graph shows information about a bus journey.

Calculate the total distance travelled by the bus.

.... m [3]

7. 0580_s24_qp_21 Q: 4

Find the greatest **odd** number that is a factor of 140 and a factor of 210.

.... [2]

8. 0580_s24_qp_21 Q: 5

Calculate.

(a) $\sqrt[3]{343} - \sqrt{40.96}$

.... [1]

(b) $(192 + 4 \times 16)^{1.25}$

.... [1]

---

9. 0580_s24_qp_21 Q: 9

The value of a car is $8000.
Each year the value of the car decreases exponentially by 25%.

Calculate the value of this car after 3 years.

$ .... [2]

---

10. 0580_s24_qp_21 Q: 10

Amir invests $1500 in an account.
The account pays compound interest at a rate of r % per year.
At the end of 8 years the value of his investment is $1656.73 .
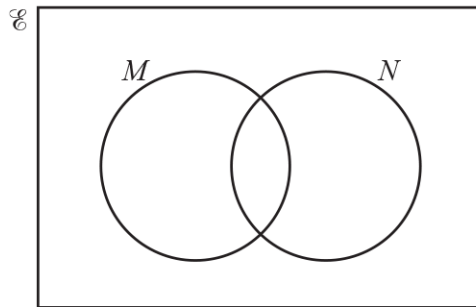
Find the value of r.

$r = $ .... [3]

11. 0580_s24_qp_21 Q: 15

Write $0.14\dot{6}$ as a fraction in its simplest form.
You must show all your working.

.... [3]
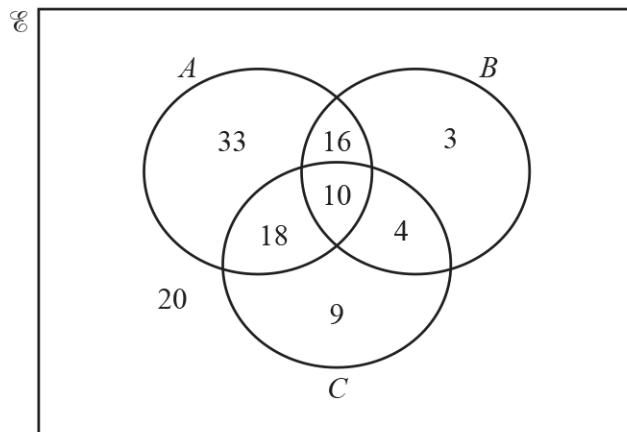
---

12. 0580_s24_qp_21 Q: 16

(a) In the Venn diagram, shade the region $M' \cap N'$.

[1]

(b) Find $n(B \cap (A' \cup C))$.

.... [1]

13. 0580_s24_qp_22 Q: 1

The temperature at midnight is −4 °C.
The temperature at noon is 25 °C.

Work out the difference between these two temperatures.

.... °C [1]

14. 0580_s24_qp_22 Q: 2

A gardener charges $6.55 for each hour he works plus a fixed charge of $15.50 .

Calculate the total amount he charges when he works for 4 hours.

$ .... [2]

15. 0580_s24_qp_22 Q: 4

Jonah has $750.
He spends $\frac{1}{4}$ of this money on travel and some of this money on food.
He now has $437.50 .

Work out the fraction of the $750 he spends on food.

.... [3]

16. 0580_s24_qp_22 Q: 5

The table shows part of a tram timetable.

Newpoint	Westhill
10 30	11 17
12 18	
13 30	14 17

All the trams take the same number of minutes to complete the journey from Newpoint to Westhill.

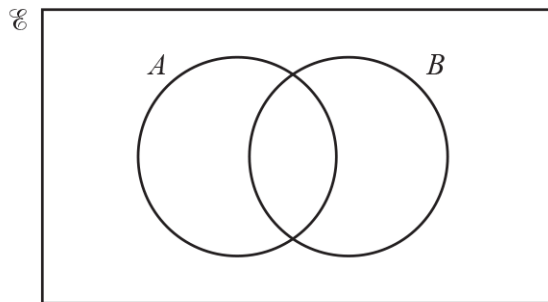Complete the table.

[2]

17. 0580_s24_qp_22 Q: 6

Write 0.04628 correct to 2 significant figures.

.... [1]

18. 0580_s24_qp_22 Q: 7

On the Venn diagram, shade the region $A \cup B$.   [1]

19. 0580_s24_qp_22 Q: 8

Kai invests $5000 in an account paying simple interest at a rate of r % per year.
At the end of 8 years, the value of his investment is $5700.

Find the value of r.

$r =$ .... [3]

20. 0580_s24_qp_22 Q: 10

Write 174 000 in standard form.

.... [1]

21. 0580_s24_qp_22 Q: 11

A company surveys 40 of its employees.
In the survey, 3 employees say they walk to work.
The company has a total of 1240 employees.

Find the expected number of employees in the company who walk to work.

.... [2]
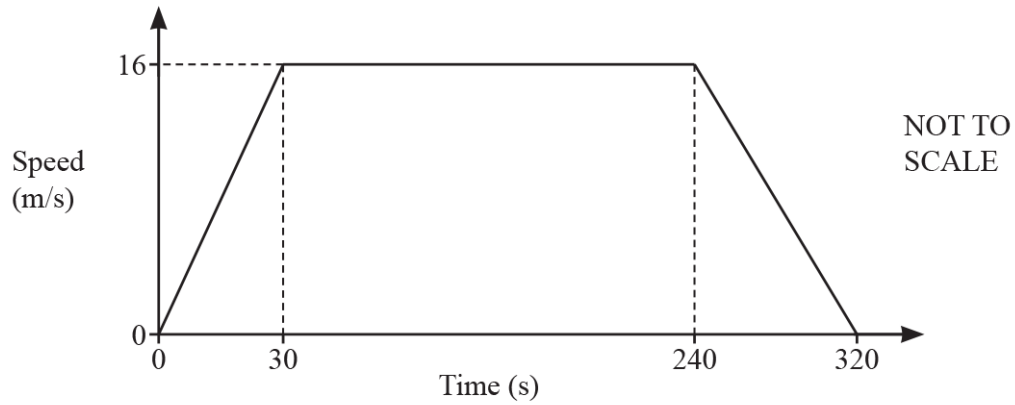
22. 0580_s24_qp_22 Q: 13

Without using a calculator, work out $2\frac{1}{4} \div 1\frac{7}{8}$.

You must show all your working and give your answer as a mixed number in its simplest form.

.... [3]

23. 0580_s24_qp_22 Q: 16

The speed–time graph shows information about a car journey.

(a) Find the deceleration of the car between 240 and 320 seconds.

.... m/s^2 [1]

(b) Calculate the total distance the car travels during the 320 seconds.

.... m [3]

24. 0580_s24_qp_22 Q: 17
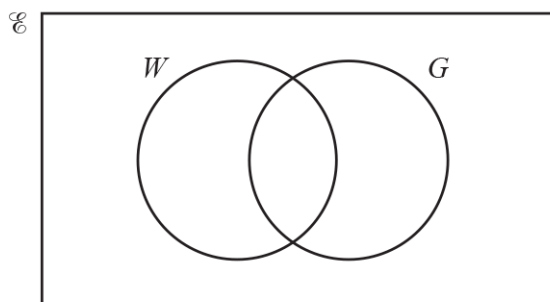
W = {students who walk to school}
G = {students who wear glasses}

There are 20 students in a class.

- 8 walk to school
- 3 wear glasses and walk to school
- 2 do not wear glasses and do not walk to school.

Complete the Venn diagram.

[2]

25. 0580_s24_qp_23 Q: 1

Write the number two million two thousand and two in figures.

.... [1]

26. 0580_s24_qp_23 Q: 2

Put one pair of brackets into this calculation to make it correct.

$$5 \; - \; 4 \; \times \; 3 \; - \; 9 \; - \; 2 \; = \; 0$$

[1]

27. 0580_s24_qp_23 Q: 7

The scale of a map is   1 : 40 000.
On the map the distance between two villages is 37 cm.

Calculate the actual distance between the two villages.
Give your answer in kilometres.

.... km [2]
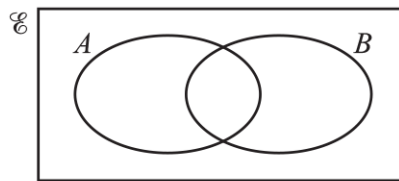
28. 0580_s24_qp_23 Q: 8

Without using a calculator, work out $\dfrac{3}{7} - \dfrac{1}{14}$.

You must show all your working and give your answer as a fraction in its simplest form.

.... [2]

29. 0580_s24_qp_23 Q: 13

(a)

Shade the region $A \cup B'$.   [1]

(b)
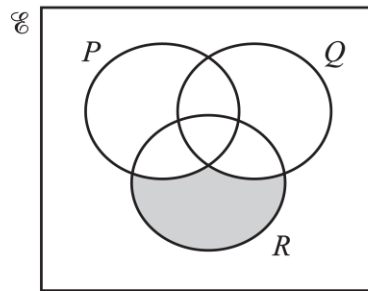
Use set notation to describe the shaded region.

.... [1]

30. 0580_s24_qp_23 Q: 17

Work out, giving each answer in standard form.

(a) $\left(2.1 \times 10^{101}\right) \times \left(8 \times 10^{101}\right)$

.... [2]

(b) $\left(2.1 \times 10^{101}\right) + \left(2.1 \times 10^{100}\right)$

.... [2]

31. 0580_s24_qp_23 Q: 21

Write the recurring decimal $0.4\dot{1}$ as a fraction in its simplest form.
You must show all your working.

.... [2]

32. 0580_m23_qp_22 Q: 1

| 12 | 15 | 27 | 29 | 91 | 93 |

From the list of numbers, write down

(a) a cube number

.... [1]

(b) a prime number.

.... [1]

33. 0580_m23_qp_22 Q: 3
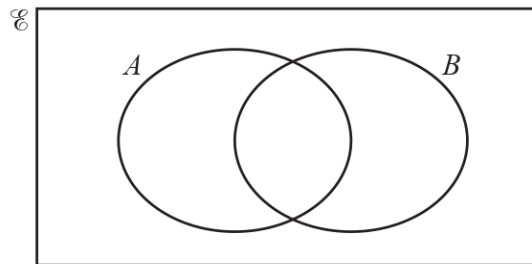
On the Venn diagram, shade the region $A \cap B$.   [1]

34. 0580_m23_qp_22 Q: 6

Without using a calculator, work out $\dfrac{4}{7} \div 8$.

You must show all your working and give your answer as a fraction in its simplest form.

.... [2]

35. 0580_m23_qp_22 Q: 8

Calculate 0.3^2 .
Give your answer in standard form.

.... [2]

36. 0580_m23_qp_22 Q: 11

Find the highest common factor (HCF) of $12x^{12}$ and $16x^{16}$.

.... [2]

37. 0580_m23_qp_22 Q: 21

A car travels 14 km, correct to the nearest kilometre.
This takes 12 minutes, correct to the nearest minute.

Calculate the lower bound of the speed of the car.
Give your answer in kilometres per minute.

.... km/min [3]

38. 0580_s23_qp_21 Q: 2

A train journey starts at 21 43.
It takes 8 hours and 32 minutes.

Find the time the journey finishes.

.... [1]

39. 0580_s23_qp_21 Q: 4

By writing each number in the calculation correct to 1 significant figure, work out an estimate for the value of

$$\frac{6.7 \times 2.1}{18 - 5.9}.$$

You must show all your working.

.... [2]

40. 0580_s23_qp_21 Q: 7

The scale of a map is 1 : 125 000.
On a map, the length of an island is 9.4 cm.

Calculate the actual length of the island, giving your answer in kilometres.

.... km [2]

41. 0580_s23_qp_21 Q: 10

Without using a calculator, work out $2\frac{1}{7} \div \frac{5}{9}$.

You must show all your working and give your answer as a mixed number in its simplest form.

.... [3]

42. 0580_s23_qp_21 Q: 13

Anya invests $6000 in an account that pays compound interest at a rate of r% per year.
At the end of 8 years, the account has earned $621.70 in interest.

Calculate the value of r.

$r =$ .... [3]

43. 0580_s23_qp_22 Q: 1

Find the temperature that is $8\,^{\circ}\text{C}$ colder than $-5\,^{\circ}\text{C}$.

....$^{\circ}\text{C}$ [1]

Appendix A

Answers

1. 0580_m24_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	7h 28min	**1**	

2. 0580_m24_ms_22 Q: 2

	24.352	**1**	

3. 0580_m24_ms_22 Q: 11

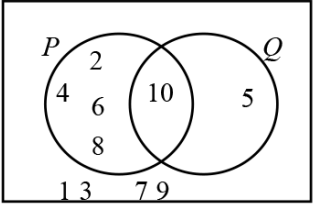| Question	Answer	Marks	Partial Marks
	$\frac{5}{4}$ or $\frac{1}{4}+\frac{1}{6}$	**B1**	Correct method for dealing with mixed number Allow $\frac{5k}{4k}$
	$\frac{15}{12}$ and $\frac{10}{12}$	**M1**	Correct method to find common denominator e.g. $[1]\frac{3}{12}$ and $\frac{10}{12}$
	$\frac{5}{12}$ cao	**A1**	

4. 0580_m24_ms_22 Q: 14

	146 cao	**3**	**M2** for $\dfrac{1750 + 480}{55 \times 1000} \times 60 \times 60$ oe
			or **M1** for distance = 1750 + 480 oe
			or $\dfrac{55 \times 1000}{60 \times 60}$ oe soi
			or correctly writing *their* whole number of seconds from a more accurate answer seen

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5. 0580_m24_ms_22 Q: 16

		2	**B1** for two sections correct out of four

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6. 0580_m24_ms_22 Q: 19

	2325	**3**	**M2** for correct method for total area e.g. $\dfrac{1}{2} \times 15 \times (190 + 120)$
			or **M1** for correct method for one area e.g. $\dfrac{1}{2} \times 20 \times 15$, $(140 - 20) \times 15$ or $\dfrac{1}{2} \times (190 - 140) \times 15$ oe

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7. 0580_s24_ms_21 Q: 4

	35	**2**	**B1** for answer 5, 7 or 70 or **M1** for $2 \times 2 \times 5 \times 7$ and $2 \times 3 \times 5 \times 7$ or two correct factor trees or tables or $5 \times 7 \times k$ seen

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8. 0580_s24_ms_21 Q: 5

(a)	0.6 or $\dfrac{3}{5}$	**1**	
(b)	1024	**1**	

9. 0580_s24_ms_21 Q: 9

	3375	**2**	**M1** for $8000 \times \left(1 - \dfrac{25}{100}\right)^3$ oe

10. 0580_s24_ms_21 Q: 10

	1.25 or 1.250…	**3**	**M2** for $\sqrt[8]{\dfrac{1656.73}{1500}}$ oe or **M1** for $1656.73 = 1500(k)^8$ oe for any k
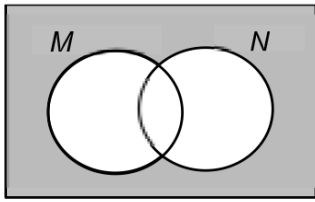
11. 0580_s24_ms_21 Q: 15

	$146.\dot{4}\dot{6} - 1.\dot{4}\dot{6}$ oe	**M1**	
	$\dfrac{29}{198}$ cao	**A2**	**A1** for $\dfrac{145}{990}$ oe If M0 scored **SC1** for $\dfrac{k}{990}$ with insufficient working.

12. 0580_s24_ms_21 Q: 16

(a)		**1**	
(b)	17	**1**	

13. 0580_s24_ms_22 Q: 1

Question	Answer	Mark	Partial Marks
	29	**1**	

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14. 0580_s24_ms_22 Q: 2

	41.7[0]	**2**	**M1** for $6.55 \times 4 + 15.5$

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15. 0580_s24_ms_22 Q: 4

	$\frac{1}{6}$ or equivalent fraction	**3**	**B2** for $\frac{625}{750}$ oe or **M2** for $750 - \frac{750}{4} - 437.5$ oe or **M1** for $750 - \frac{750}{4}$ oe or $\frac{750}{4} + 437.5$ oe or $\frac{437.5}{750}$ oe

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16. 0580_s24_ms_22 Q: 5

	13 05 or 1 05pm	**2**	 **M1** for 47 [minutes]
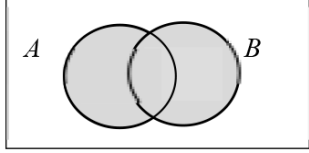
compiled by examinent.com

17. 0580_s24_ms_22 Q: 6

	0.046 cao	**1**	

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18. 0580_s24_ms_22 Q: 7

Question	Answer	Mark	Partial Marks
		1	

19. 0580_s24_ms_22 Q: 8

	Answer	Mark	Partial Marks
	1.75	3	**M2** for $\dfrac{(5700-5000)[\times 100]}{5000\times 8}$ oe or $\dfrac{(5700-5000)\times 100}{5000[\times 8]}$ oe or **M1** for $[5700-5000] = \dfrac{5000\times 8\times r}{100}$ oe or **B1** for 87.5 or 0.14 or 1.14 If 0 scored **SC1** for answer 14.25

20. 0580_s24_ms_22 Q: 10

	Answer	Mark	
	1.74×10^5	1	

21. 0580_s24_ms_22 Q: 11

	Answer	Mark	Partial Marks
	93	2	**M1** for $\dfrac{3}{40}[\times 1240]$ oe or $\dfrac{1240}{40}[\times 3]$ oe or $\dfrac{40}{3} = \dfrac{1240}{x}$ oe

22. 0580_s24_ms_22 Q: 13

	$\dfrac{9}{4} \times \dfrac{8}{15}$ oe or $\dfrac{18}{8} \div \dfrac{15}{8}$ oe with common denominator	**M2**	**B1** for $\dfrac{9}{4}$ oe or $\dfrac{15}{8}$ oe or **M1** for $\dfrac{their\,9}{4} \times \dfrac{8}{their\,15}$ oe
	$1\dfrac{1}{5}$ cao	**A1**	dep on M2

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23. 0580_s24_ms_22 Q: 16

(a)	0.2 oe	**1**	
(b)	4240	**3**	**M2** for $\dfrac{1}{2} \times (210 + 320) \times 16$ oe or **M1** for one area correct

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24. 0580_s24_ms_22 Q: 17

	2	**B1** for 2 sections out of 4 correct

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25. 0580_s24_ms_23 Q: 1

Question	Answer	Marks	Partial Marks
	2 002 002	**1**	

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26. 0580_s24_ms_23 Q: 2

	$5 - (4 \times 3 - 9) - 2$	**1**

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27. 0580_s24_ms_23 Q: 7

| | 14.8 | **2** | **M1** for 1 cm represents 0.4 km soi
or **B1** for figs 148 as answer |
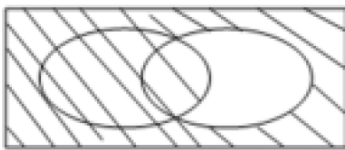
28. 0580_s24_ms_23 Q: 8

| | $\frac{6}{14}$ and $\frac{1}{14}$ oe | **M1** | Allow any correct denominator 14k |
| | $\frac{5}{14}$ cao | **A1** | |

29. 0580_s24_ms_23 Q: 13

Question	Answer	Marks	Partial Marks
(a)		1	
(b)	$R \cap (P \cup Q)'$ or $R \cap P' \cap Q'$ oe	1	

30. 0580_s24_ms_23 Q: 17

| (a) | 1.68×10^{203} | **2** | **B1** for 16.8×10^{202} |
| (b) | 2.31×10^{101} | **2** | **B1** for figs 231 |

31. 0580_s24_ms_23 Q: 21

| | $41.11... - 4.11...$ oe | **M1** | |
| | $\frac{37}{90}$ cao | **A1** | If **M0** scored **SC1** for answer $\frac{37}{90}$ with insufficient working. |
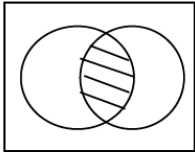
32. 0580_m23_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
1(a)	27	**1**	
1(b)	29	**1**	

33. 0580_m23_ms_22 Q: 3

3	Correct shading	**1**	

34. 0580_m23_ms_22 Q: 6

6	$\dfrac{4}{7} \times \dfrac{1}{8}$ oe or $\dfrac{4}{7} \div \dfrac{56}{7}$ oe	**M1**	
	$\dfrac{1}{14}$ cao	**A1**	

35. 0580_m23_ms_22 Q: 8

Question	Answer	Marks	Partial Marks
8	9×10^{-2}	**2**	**B1** for 0.09 oe or **M1** for *their* decimal correctly converted to standard form if negative power

36. 0580_m23_ms_22 Q: 11

11	$4x^{12}$ final answer	**2**	**B1** for $4x^{k}$ or kx^{12} or for $4x^{12}$ seen then spoiled

37. 0580_m23_ms_22 Q: 21

| 21 | 1.08 | | 3 | **M2** for $\dfrac{13\,to\,14}{12+0.5}$ oe or $\dfrac{14-0.5}{12\,to\,13}$ oe <br> or **M1** for $14+0.5$ oe or $14-0.5$ oe <br> or $12+0.5$ oe or $12-0.5$ oe |

38. 0580_s23_ms_21 Q: 2

Question	Answer	Marks	Partial Marks
	06 15 or 6:15 am	1	

39. 0580_s23_ms_21 Q: 4

Question	Answer	Marks	Partial Marks
	$\dfrac{7\times 2}{20-6}$	**M1**	
	1 nfww	**A1**	If 0 scored **SC1** for 3 correct roundings or for all correct but with any trailing zeros

40. 0580_s23_ms_21 Q: 7

Question	Answer	Marks	Partial Marks
	11.75	2	**M1** for $\dfrac{9.4\times 125000}{100\times 1000}$ oe or **B1** for figs 1175 or 1 cm : 1.25 km

41. 0580_s23_ms_21 Q: 10

Question	Answer	Marks	Partial Marks
	$\dfrac{15}{7}\times\dfrac{9}{5}$ oe or $\dfrac{135}{63}\div\dfrac{35}{63}$ oe with common denominator	**M2**	**B1** for $\dfrac{15}{7}$ oe or **M1** for $\dfrac{their\,15}{7}\times\dfrac{9}{5}$ oe

Question	Answer	Marks	Partial Marks
	$3\dfrac{6}{7}$ cao	**A1**	

42. 0580_s23_ms_21 Q: 13

Question	Answer	Marks	Partial Marks
	1.24[0…]	**3**	**M2** $\sqrt[8]{\dfrac{6000+621.70}{6000}}$ oe or **M1** for $6000+621.70=6000\left(k\right)^{8}$ oe

43. 0580_s23_ms_22 Q: 1

Question	Answer	Marks	Partial Marks
	−13	**1**	

44. 0580_s23_ms_22 Q: 2

Question	Answer	Marks	Partial Marks
	108	**2**	**B1** for 47 or 61 identified

45. 0580_s23_ms_22 Q: 4

Question	Answer	Marks	Partial Marks
	8.75	**2**	**M1** for $\dfrac{3.5\times250000}{100\times1000}$ oe or **B1** for figs 875 or 1 cm : 2.5 km

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