

TOPICAL PAST PAPER WORKBOOK

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**IGCSE Mathematics (0580)**  
**Paper 1 & 3 [Core]**

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Years: 2020 - 2021



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# Introduction

Each topical past paper book consists of hundreds of questions and their answer schemes, in the form of worksheets. Questions are assigned to each chapter according to their corresponding topic. Topics, in turn, are based on the items of the latest Cambridge IGCSE or AS/A level syllabus content. This book's specifications are as follows:

Title: IGCSE Mathematics (0580) Paper 1 and 3 [Core] Topical Past Paper Workbook

Subtitle: Exam Practice Worksheets With Answer Scheme

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# Chapter 1

## Numbers

1. 0580\_m21\_qp\_12 Q: 4

Write down a multiple of 9 between 100 and 110.

..... [1]

---

2. 0580\_m21\_qp\_12 Q: 15

Find the lowest common multiple (LCM) of 18 and 21.

..... [2]

---

3. 0580\_s21\_qp\_11 Q: 19

Write down an irrational number,  $n$ , where  $31 < n < 32$ .

$n =$  ..... [1]

---

4. 0580\_s21\_qp\_12 Q: 2

Write down all the factors of 42.

..... [2]

---

5. 0580\_s21\_qp\_12 Q: 13

(a) Complete these statements.

The reciprocal of 0.2 is .....

A prime number between 90 and 100 is ..... [2]

(b)

$\frac{7}{5}$     0.6     $\sqrt{7}$     8     $\sqrt{9}$

From this list, write down an irrational number.

..... [1]

---

6. 0580\_s21\_qp\_12 Q: 23

Work out the lowest common multiple (LCM) of 24 and 54.

..... [2]

---

7. 0580\_s21\_qp\_13 Q: 9

12    18    29    49    91    125

From the list of numbers, write down

(a) a cube number,

..... [1]

(b) a prime number.

..... [1]

---



8. 0580\_w20\_qp\_11 Q: 3

Write  $\frac{60}{105}$  in its simplest form.

..... [1]

---

9. 0580\_w20\_qp\_12 Q: 1

Write two hundred thousand and seventeen in figures.

..... [1]

---

10. 0580\_w20\_qp\_12 Q: 21

Write 825 as the product of its prime factors.

..... [2]

---

11. 0580\_w20\_qp\_33 Q: 2

(a) Using numbers from 55 to 85, write down

(i) a multiple of 23,

..... [1]

(ii) a factor of 120,

..... [1]

(iii) a common multiple of 8 and 12,

..... [1]

(iv) a number that is **both square and odd**,

..... [1]

(v) a number that has exactly 2 factors.

..... [1]

(b) Write 220 as the product of its prime factors.

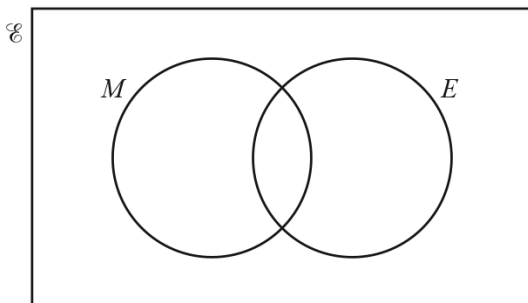
..... [2]

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12. 0580\_s21\_qp\_13 Q: 20

(a) A group of 120 students take two tests, mathematics and English. Here is some information about the number of students who pass mathematics ( $M$ ) and who pass English ( $E$ ).

- 61 students pass mathematics.
- 27 students pass both mathematics and English.
- 19 students do not pass mathematics and do not pass English.

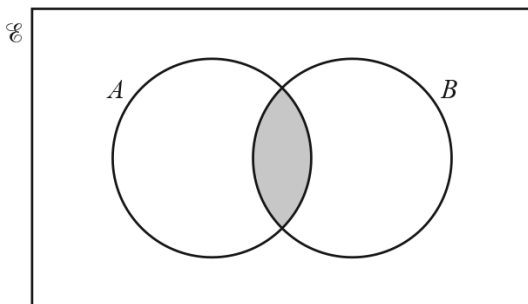


(i) Complete the Venn diagram. [3]

(ii) Use the Venn diagram to find  $n(E)$ .

..... [1]

(b)

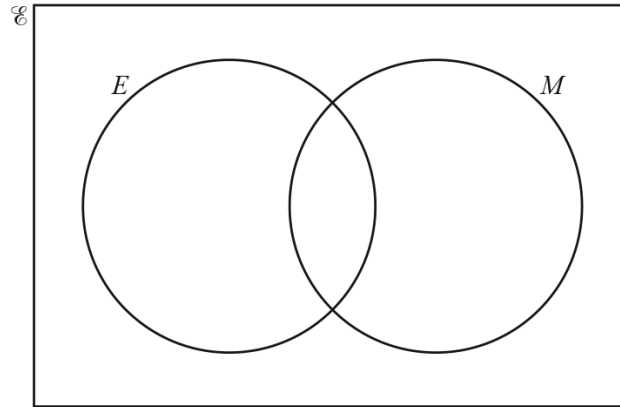


Use set notation to describe the shaded region.

..... [1]

13. 0580\_s21\_qp\_31 Q: 9

- (a)  $\mathcal{U} = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12\}$   
 $E = \{x: x \text{ is an even number}\}$   
 $M = \{x: x \text{ is a multiple of } 3\}$



(i) Complete the Venn diagram. [2]

(ii) Write down  $n(E \cup M)$ . ..... [1]

(iii) A number is chosen at random from the universal set  $\mathcal{U}$ .  
 Write down the probability that the number is in the set  $E \cap M$ .  
 ..... [2]

(b) Meg says that an even number cannot be a prime number.

Is she correct?  
 Give a reason for your answer.

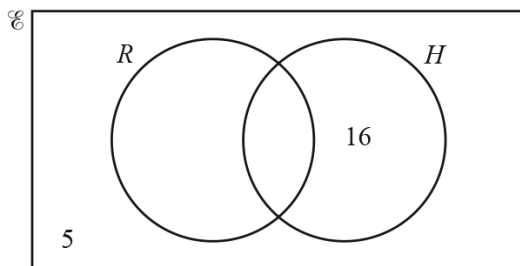
..... because ..... [1]

14. 0580\_w20\_qp\_13 Q: 21

- $\mathcal{E}$  = {children in a group}
- $R$  = {children who own a rabbit}
- $H$  = {children who own a hamster}

There are 40 children in the group.  
 19 children own a rabbit.  
 27 children own a hamster.

(a) Complete the Venn diagram.



[2]

(b) Write down  $n(R \cap H)$ .

..... [1]

15. 0580\_m21\_qp\_12 Q: 3

Calculate the value of  $\sqrt{7.29}$ .

..... [1]

16. 0580\_s21\_qp\_12 Q: 5

The formula for changing a temperature measured in Celsius ( $^{\circ}\text{C}$ ) to Fahrenheit ( $^{\circ}\text{F}$ ) is

$$F = \frac{9C}{5} + 32.$$

Use this formula to change  $65^{\circ}\text{C}$  to Fahrenheit.

.....  $^{\circ}\text{F}$  [2]

17. 0580\_w20\_qp\_12 Q: 8

Work out the difference in temperature between  $-6^{\circ}\text{C}$  and  $5^{\circ}\text{C}$ .

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

18. 0580\_w20\_qp\_13 Q: 7

(a) This table shows the temperature, in °C, at midnight and at 3 pm for four cities on the same day.

City	Temperature at midnight (°C)	Temperature at 3 pm (°C)
Sydney	21	28
Oslo	-3	1
Toronto	-18	-8
Seoul	-5	4

Use the table to complete this statement.

The city with the biggest difference in temperature between midnight and 3 pm

is ..... with a difference of .....°C. [2]

(b) The temperature at midnight in Moscow was -11 °C.  
At 3 pm the temperature has increased by 5 °C.

Work out the temperature at 3 pm.

.....°C [1]

19. 0580\_s21\_qp\_13 Q: 4

Write as a fraction in its simplest form.

(a) 72%

..... [1]

(b) 0.004

..... [1]

20. 0580\_w20\_qp\_12 Q: 6

Write these in order of size, starting with the smallest.

$$\frac{11}{27} \quad 41\% \quad 0.4 \quad \frac{16}{39}$$

..... < ..... < ..... < ..... [2]  
*smallest*

21. 0580\_m21\_qp\_12 Q: 16

(a) Write 567 000 000 in standard form.

..... [1]

(b)  $6.5 \times 10^{-2}$     $6.1 \times 10^{-1}$     $6.2 \times 10^2$     $6.79 \times 10^1$     $6.18 \times 10^2$     $6.35 \times 10^{-2}$ Calculate the product of the largest number and the smallest number from this list.  
Give your answer in standard form.

..... [2]

22. 0580\_s21\_qp\_11 Q: 17

(a) Write  $\frac{1}{2 \times 2 \times 2 \times 2 \times 2}$  as a power of 2.

..... [1]

(b) (i)  $3^{18} \div 3^t = 3^6$ Find the value of  $t$ . $t =$  ..... [1](ii) Simplify.  
 $8w^{10} \times 6w^5$ 

..... [2]

23. 0580\_s21\_qp\_12 Q: 11

Calculate  $\sqrt[4]{0.0256}$ .

..... [1]

24. 0580\_s21\_qp\_12 Q: 14

Find the value of  $x$  when  $7^x \div 7^4 = 7^9$ . $x =$  ..... [1]

25. 0580\_s21\_qp\_12 Q: 21

(a) Write 0.006 54 in standard form.

..... [1]

(b) The number  $1.467 \times 10^{102}$  is written as an ordinary number.

Write down the number of zeros that follow the digit 7.

..... [1]

26. 0580\_s21\_qp\_13 Q: 19

(a) Write 0.000 74 in standard form.

..... [1]

(b) Calculate  $4.6 \times 10^2 \times 6.7 \times 10^5$ .

Give your answer in standard form, correct to 2 significant figures.

..... [2]

27. 0580\_w20\_qp\_11 Q: 4

Calculate.

$$\sqrt{\frac{1}{0.01} - 8^2}$$

..... [1]

28. 0580\_w20\_qp\_13 Q: 8

Calculate.

$$\frac{4}{\sqrt{0.0025}}$$

..... [1]



29. 0580\_w20\_qp\_31 Q: 3

(a)

8    15    18    33    39    41    51    57    60    81

From this list, write down

(i) a factor of 54,

..... [1]

(ii) a multiple of 19,

..... [1]

(iii) a prime number.

..... [1]

(b) Write down the reciprocal of 64.

..... [1]

(c) (i) Write  $4.81 \times 10^{-3}$  as an ordinary number.

..... [1]

(ii) Write 75 000 in standard form.

..... [1]

(iii) Calculate  $\frac{6.3 \times 10^2}{7 \times 10^{-3}}$ .

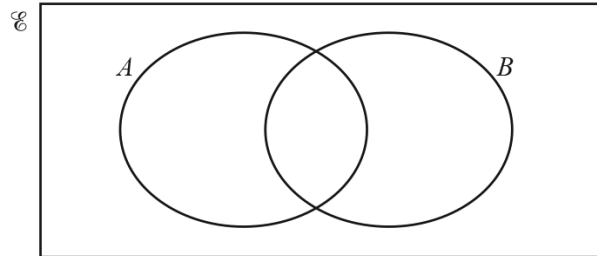
Write your answer in standard form.

..... [2]

(d) (i)

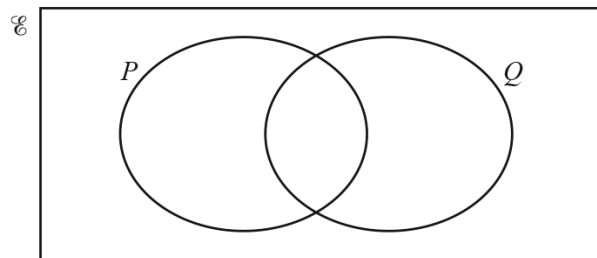
$$\begin{aligned} \mathcal{E} &= \{2, 4, 8, 16, 32, 64\} \\ A &= \{\text{square numbers}\} \\ B &= \{\text{cube numbers}\} \end{aligned}$$

Use this information to complete the Venn diagram.



[2]

(ii) On this Venn diagram, shade the region  $P \cup Q$ .



[1]

30. 0580\_m21\_qp\_12 Q: 19

**Without using a calculator,** work out  $2\frac{1}{4} \times 3\frac{2}{3}$ .

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

..... [3]

31. 0580\_s21\_qp\_11 Q: 2

(a) Find the value of  $\sqrt{225}$ .

..... [1]

(b) Write down the reciprocal of  $\frac{2}{3}$ .

..... [1]

(c) Work out three-quarters of one-third.

..... [1]

(d) Work out  $-7 - (6 - 8)$ .

..... [1]

---

32. 0580\_s21\_qp\_11 Q: 16

**Without using a calculator**, work out  $1\frac{3}{8} - \frac{5}{6}$ .

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

..... [3]

---

# Appendix A

## Answers

1. 0580\_m21\_ms\_12 Q: 4

	Answer	Mark	Partial Marks
	108	1	

2. 0580\_m21\_ms\_12 Q: 15

	Answer	Mark	Partial Marks
	126	2	<b>B1</b> for $126k$ as final answer $k \neq 1$ or <b>M1</b> for $[18 = ]2 \times 3 \times 3$ and $[21 = ]3 \times 7$ or 2 correct factor trees or 18, 36, 54, ... and 21, 42, 63,.. or $2 \times 3 \times 3 \times 7$ or better

3. 0580\_s21\_ms\_11 Q: 19

	Answer	Mark	Partial Marks
	An irrational number satisfying inequality	1	

4. 0580\_s21\_ms\_12 Q: 2

	Answer	Mark	Partial Marks
	1, 2, 3, 6, 7, 14, 21, 42	2	<b>B1</b> for 6 correct, no errors or 7 correct and 1 error or all seen but 1 or 2 extra numbers or $1 \times 42, 2 \times 21, 3 \times 14, 6 \times 7$

5. 0580\_s21\_ms\_12 Q: 13

	Answer	Mark	Partial Marks
(a)	5 97	2	<b>B1</b> for each
(b)	$\sqrt{7}$	1	

6. 0580\_s21\_ms\_12 Q: 23

	Answer	Mark	Partial Marks
	216	2	<b>B1</b> for $216k$ as final answer $k \neq 1$ or <b>M1</b> for $[24=] 2 \times 2 \times 2 \times 3$ and $[54=] 2 \times 3 \times 3 \times 3$ or 2 correct factor trees or correct tables or a list of multiples of both 24 and 54 with at least 3 of each or $2 \times 2 \times 2 \times 3 \times 3 \times 3$

7. 0580\_s21\_ms\_13 Q: 9

	Answer	Mark	Partial Marks
(a)	125	1	
(b)	29	1	

8. 0580\_w20\_ms\_11 Q: 3

	Answer	Mark	Partial Marks
	$\frac{4}{7}$ cao	1	

9. 0580\_w20\_ms\_12 Q: 1

	Answer	Mark	Partial Marks
	200 017	1	

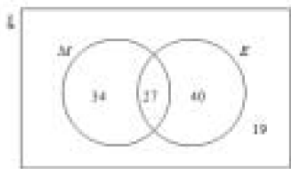
10. 0580\_w20\_ms\_12 Q: 21

	Answer	Mark	Partial Marks
	$3 \times 5^2 \times 11$ or $3 \times 5 \times 5 \times 11$	2	<b>B1</b> for 3, 5, 5, 11 May be seen in a factor tree or table

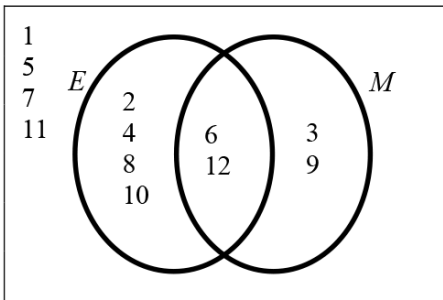
11. 0580\_w20\_ms\_33 Q: 2

	Answer	Mark	Partial Marks
(a)(i)	69	1	
(a)(ii)	60	1	
(a)(iii)	72	1	
(a)(iv)	81	1	
(a)(v)	59 or 61 or 67 or 71 or 73 or 79 or 83	1	
(b)	$2^2 \times 5 \times 11$ or $2 \times 2 \times 5 \times 11$	2	<b>B1</b> for 2, 2, 5, 11 or <b>M1</b> for correct factor tree/diagram/list/table

12. 0580\_s21\_ms\_13 Q: 20

	Answer	Mark	Partial Marks
(a)(i)		3	<b>B2</b> for 2 or 3 numbers in the correct place or <b>B1</b> for 1 correct number in the correct place
(a)(ii)	67	1	<b>FT</b> <i>their</i> diagram
(b)	$A \cap B$	1	

13. 0580\_s21\_ms\_31 Q: 9

	Answer	Mark	Partial Marks
(a)(i)		2	<b>B1</b> for 2 or 3 regions correct
(a)(ii)	8	1	<b>FT</b> <i>their</i> (a)(i)
(a)(iii)	$\frac{1}{6}$ oe	2	<b>FT</b> <i>their</i> (a)(i) <b>B1FT</b> for 2 or <i>their</i> $n(E \cap M)$
(b)	No 2 is even and a prime oe	1	

14. 0580\_w20\_ms\_13 Q: 21

	Answer	Mark	Partial Marks
(a)	8, 11	2	<b>B1</b> for one correct or for <i>their</i> two values adding to 19
(b)	11	1	<b>FT</b> <i>their</i> 11

15. 0580\_m21\_ms\_12 Q: 3

	Answer	Mark	Partial Marks
	2.7[0]	1	

16. 0580\_s21\_ms\_12 Q: 5

	Answer	Mark	Partial Marks
	149	2	<b>M1</b> for $9 \times 65 \div 5$ [+32]

17. 0580\_w20\_ms\_12 Q: 8

	Answer	Mark	Partial Marks
	11	1	

18. 0580\_w20\_ms\_13 Q: 7

	Answer	Mark	Partial Marks
(a)	Toronto 10	2	<b>B1</b> for each
(b)	-6	1	

19. 0580\_s21\_ms\_13 Q: 4

	Answer	Mark	Partial Marks
(a)	$\frac{18}{25}$ cao	1	
(b)	$\frac{1}{250}$ cao	1	

20. 0580\_w20\_ms\_12 Q: 6

	Answer	Mark	Partial Marks
	0.4 $\frac{11}{27}$ 41% $\frac{16}{39}$	2	<b>B1</b> for 3 in correct order or <b>M1</b> for [0].407..., [0].41 and [0].410....

21. 0580\_m21\_ms\_12 Q: 16

	Answer	Mark	Partial Marks
(a)	$5.67 \times 10^8$	1	
(b)	$3.937 \times 10^1$	2	<b>M1</b> for $6.35 \times 10^{-2} \times k$ or $j \times 6.2 \times 10^2$ where $j$ and $k$ are another number from the list or <b>B1</b> for $6.35 \times 10^{-2}$ and $6.2 \times 10^2$ selected or for figs 3937

22. 0580\_s21\_ms\_11 Q: 17

	Answer	Mark	Partial Marks
(a)	$2^{-5}$	1	
(b)(i)	12	1	
(b)(ii)	$48w^{15}$ final answer	2	<b>B1</b> for answer $48w^k$ or $kw^{15}$ ( $k \neq 0$ )

23. 0580\_s21\_ms\_12 Q: 11

	Answer	Mark	Partial Marks
	0.4 or $\frac{2}{5}$	1	

24. 0580\_s21\_ms\_12 Q: 14

	Answer	Mark	Partial Marks
	13 cao	1	

25. 0580\_s21\_ms\_12 Q: 21

	Answer	Mark	Partial Marks
(a)	$6.54 \times 10^{-3}$	1	
(b)	99	1	

26. 0580\_s21\_ms\_13 Q: 19

	Answer	Mark	Partial Marks
(a)	$7.4 \times 10^{-4}$	1	
(b)	$3.1 \times 10^8$	2	<b>B1</b> for figs 31 or $3.082 \times 10^8$



27. 0580\_w20\_ms\_11 Q: 4

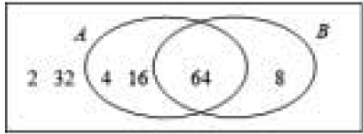

	Answer	Mark	Partial Marks
	6	1	

28. 0580\_w20\_ms\_13 Q: 8

	Answer	Mark	Partial Marks
	80	1	

29. 0580\_w20\_ms\_31 Q: 3

	Answer	Mark	Partial Marks
(a)(i)	18	1	
(a)(ii)	57	1	
(a)(iii)	41	1	
(b)	$\frac{1}{64}$	1	

	Answer	Mark	Partial Marks
(c)(i)	[0].00481 cao	1	
(c)(ii)	$7.5 \times 10^4$	1	
(c)(iii)	$9 \times 10^4$	2	<b>B1</b> for figs 9
(d)(i)		2	<b>B1</b> for 4 or 5 numbers in the correct place
(d)(ii)		1	

30. 0580\_m21\_ms\_12 Q: 19

	Answer	Mark	Partial Marks
	$\frac{9}{4}$ and $\frac{11}{3}$ oe improper fractions	<b>M1</b>	
	$\frac{99}{12}$ oe improper fraction	<b>A1</b>	
	$8\frac{1}{4}$ cao final answer	<b>A1</b>	dep on 1st <b>A1</b> If <b>M0</b> scored, <b>SC1</b> for $\frac{9}{4}$ or $\frac{11}{3}$ oe improper fraction

31. 0580\_s21\_ms\_11 Q: 2

	Answer	Mark	Partial Marks
(a)	15	<b>1</b>	
(b)	$1\frac{1}{2}$ oe	<b>1</b>	
(c)	$\frac{1}{4}$ oe	<b>1</b>	
(d)	-5	<b>1</b>	

32. 0580\_s21\_ms\_11 Q: 16

	Answer	Mark	Partial Marks
	$\frac{11}{8} \left[ \frac{-5}{6} \right]$ $\frac{3}{8} + \frac{1}{6}$	<b>B1</b>	Correct step for dealing with mixed number Allow $\frac{11k}{8k}$
	$\frac{33}{24}$ and $\frac{20}{24}$ $\frac{9}{24}$ and $\frac{4}{24}$	<b>M1</b>	Correct method to find common denominator e.g. $1\frac{9}{24}$ and $\frac{20}{24}$
	$\frac{13}{24}$ cao	<b>A1</b>	