### TOPICAL PAST PAPER QUESTIONS WORKBOOK

## IGCSE Mathematics (0580) Paper 2 [Extended]

 $\rm May/June~2012-February/March~2022$ 



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## Introduction

Each topical past paper questions book consists of hundreds of questions and their answer schemes in the form of worksheets. Questions are assigned to each chapter according to their related 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 2 Topical Past Paper Questions Workbook

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6 CONTENTS



# Chapter 1

# Numbers

1. 0580_m22_qp_22 Q: 2	
Work out $\sqrt{5} \times 6^2$ . Give your answer correct to 2 decimal places.	
	 [2]
2. 0580_m22_qp_22 Q: 3	
A journey starts at 2115 one day and ends at 0433 the next day.	
Calculate the time taken, in hours and minutes.	

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

- $3.\ 0580\_m22\_qp\_22\ Q\hbox{:}\ 12$
- (a) Sanjay invests \$700 in an account paying simple interest at a rate of 2.5% per year.

Calculate the value of his investment at the end of 6 years.

\$ ......[3]

(b) Meera invests \$700 in an account paying compound interest at a rate of r% per year. At the end of 17 years the value of her investment is \$1030.35.

Find the value of r.

 $r = \dots$  [3

 $4.\ 0580 \_m22 \_qp \_22 \ Q:\ 15$ 

Without using a calculator, work out  $2\frac{1}{3} \times \frac{11}{14}$ .

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

.....[3]

=	0500	-99	0.00	0.1	$\Omega$	1
Э.	0580	SZZ	qр	21	W:	J

Write down a prime number between 30 and 40.

.....[1]

 $6.\ 0580\_s22\_qp\_21\ Q:\ 2$ 

Calculate  $4^5 - 5^4$ .

.....[1]

 $7.\ 0580\_s22\_qp\_21\ Q:\ 3$ 

Jason starts a run at 10.05 am and finishes at 1.02 pm.

Work out the time Jason takes to complete the run.

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

8. 0580\_s22\_qp\_21 Q: 4

Calculate  $\frac{1-0.7}{0.45-0.38}$ , giving your answer correct to 4 significant figures.

.....[2]

9.  $0580 _{
m s}22 _{
m q}p_{
m 2}1$  Q: 5

Kirsty changes \$380.80 into pounds (£) when £1 = \$1.19.

Calculate the amount Kirsty receives.

£ .....[2]

Write 180 as a product of its prime factors.

 $11.\ 0580\_s22\_qp\_21\ Q:\ 7$ 

## Without using a calculator, work out $\frac{3}{7} - \frac{2}{21}$ .

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

12. 0580\_s22\_qp\_21 Q: 13

Work out  $2 \times 10^{100} - 2 \times 10^{98}$ , giving your answer in standard form.



13. 0580_s22_qp_21 Q: 14	
A train passes through a station at a speed of 108 km/h. The length of the station is 120 m. The train takes 7 seconds to completely pass through the station.	
Work out the length of the train.	
	m [3]
14. 0580_s22_qp_22 Q: 1	
At noon, the temperature is $4 ^{\circ}$ C. At midnight, the temperature is $-9 ^{\circ}$ C.	
Work out the difference in temperature between noon and midnight.	
	°C [1]
15. 0580_s22_qp_22 Q: 3	
Figs cost 43 cents each. Lyra has \$5 to buy some figs.	
Calculate the largest number of figs Lyra can buy and the amount of change, in cents, s	she receives.
figs and figs and	cents change [3]



 $16.\ 0580\_s22\_qp\_22\ Q\hbox{:}\ 4$ 

Find the value of  $\sqrt{68} \times \sqrt{153}$ .

..... [1]

 $17.\ 0580\_s22\_qp\_22\ Q\hbox{:}\ 7$ 

The price of a coat is \$126. In a sale, this price is reduced by 18%.

Find the sale price of the coat.

\$.....[2]

 $18.\ 0580\_s22\_qp\_22\ Q{:}\ 13$ 

Without using a calculator, work out  $4\frac{1}{8} - 2\frac{5}{6}$ . You must show all your working and give your answer as a mixed number in its simplest form.

.....[3]

19. 0580_s22_qp_22 Q: 14	
Carlos invests \$4540 at a rate of $r\%$ per year compound interest. At the end of 10 years he has earned \$1328.54 in interest.	
Calculate the value of $r$ .	
$r = \dots$	[3]
20. 0580_s22_qp_22 Q: 15	
Find the highest common factor (HCF) of $12a^3b$ and $20a^2b^2$ .	
	F03
	[2]

14

21. 0580\_s22\_qp\_23 Q: 8

Without using a calculator, work out  $\frac{2}{9} \div \frac{5}{6}$ .

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

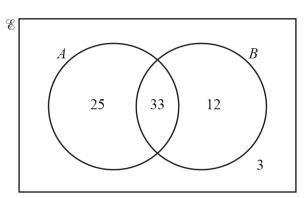
.....[2]

 $22.\ 0580\_s22\_qp\_23\ Q:\ 9$ 

Change  $300\,m/min$  to km/h.

..... km/h [2]

23. 0580\_s22\_qp\_23 Q: 10



Find  $n(A \cap B)'$ .

.....[1]

24. 0580 s22 qp 23 Q: 12	24.	0580	s22	qp	23	Q:	12
--------------------------	-----	------	-----	----	----	----	----

f is a common factor of 14 and 28. m is a common multiple of 10 and 25. p is a prime number.

Work out the largest possible value of  $\frac{f}{mp}$ .

.....[4]

 $25.\ 0580\_s22\_qp\_23\ Q:\ 21$ 

Neha has a piece of ribbon of length 23 cm, correct to the nearest cm. From this ribbon she cuts off a piece with length 87 mm, correct to the nearest mm.

Work out the lower bound and the upper bound for the length of the remaining ribbon. Give your answer in centimetres.

Lower bound = ...... cm

26. 0580\_m21\_qp\_22 Q: 2

Sahil and Anika share \$78 in the ratio 5:8.

Calculate the amount each receives.

 $27.\ 0580\_m21\_qp\_22\ Q:\ 4$ 

By writing each number correct to 1 significant figure, find an estimate for the value of

$$\frac{2.8 \times 82.6}{27.8 - 13.9}$$
.

.....[2]

28.  $0580 _{m21} _{qp} _{22}$  Q: 6

Joseph spends  $\frac{5}{24}$  of one week's earnings to buy a jacket.

The cost of the jacket is \$56.50.

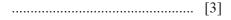
Calculate the amount Joseph earns in a week.

\$ ......[2]

 $29.\ 0580\_m21\_qp\_22\ Q\hbox{: }7$ 

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.



 $30.\ 0580 \ m21 \ qp \ 22\ Q:\ 8$ 

Write  $0.\dot{3}\dot{7}$  as a fraction.



 $31.~0580_{m21}_{qp}_{22}$  Q: 9

Calculate  $4.8 \times 10^6 + 3.7 \times 10^7$ . Give your answer in standard form.

.....[1]

Find the highest common factor (HCF) of 36 and 84.

.....[2]

33. 
$$0580 \text{ m}21 \text{ qp} \text{ 22}$$
 Q: 13

The population of one variety of butterfly is decreasing exponentially at a rate of 34% per year. At the end of 2014, the population was 125.9 million.

Calculate the population at the end of 2019.

..... million [2]

.ES 2021 0580/22/F/M/21 **[Turn over** 

 $34.\ 0580\_m21\_qp\_22\ Q\hbox{:}\ 22$ 

(a) A bag of rice has a mass of 25 kg, correct to the nearest kilogram.

Calculate the lower bound of the total mass of 10 of these bags.

.....kg [1]

**(b)** Virat has 200 metres of wire, correct to the nearest metre. He cuts the wire into *n* pieces of length 3 metres, correct to the nearest 20 centimetres.

Calculate the largest possible value of n.

 $n = \dots$  [3]

 $35.\ 0580\_s21\_qp\_21\ Q{:}\ 8$ 

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]

 $36.\ 0580\_s21\_qp\_21\ \ Q:\ 12$ 

The profit a company makes decreases exponentially at a rate of 0.9% per year. In 2014, the profit was \$9500.

Calculate the profit in 2019.

\$.....[2]

..... [1]

37.  $0580_s21_qp_21$  Q: 13 On a map, a lake has an area of 32 cm<sup>2</sup>. The scale of the map is 1:24000. Calculate the actual area of the lake. Give your answer in km<sup>2</sup>. .....km<sup>2</sup> [2]  $38.\ 0580\_s21\_qp\_21\ Q\hbox{:}\ 20$ The distance between two towns is 600 km, correct to the nearest 10 km. A car takes 8 hours 40 minutes, correct to the nearest 10 minutes, to travel this distance. Calculate the lower bound for the average speed of the car in km/h. .....km/h [3]  $39.\ 0580\_s21\_qp\_22\ Q\hbox{:}\ 2$ Calculate  $\sqrt[4]{0.0256}$ .

40.	0580	s21	qp	22	Q: 7	7

(a	) Com	nlete	these	statements.
(**	, соп	prote	uicse	statements.

The reciprocal of 0.2 is .....

A prime number between 90 and 100 is ......

**(b)**  $\frac{7}{5}$  0.6  $\sqrt{7}$  8  $\sqrt{9}$ 

From this list, write down an irrational number.

.....[1]

 $41.\ 0580\_s21\_qp\_22\ Q;\ 9$ 

Without using a calculator, work out  $\frac{2}{3} \div 1\frac{3}{7}$ .

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

.....[3]

(a) Write 0.00654 in standard form.

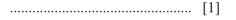
[1]
111
 1 4 1

**(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.



Write  $0.\dot{0}\dot{4}$  as a fraction in its simplest form.

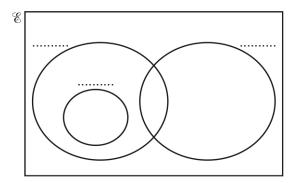


44. 0580\_s21\_qp\_22 Q: 12

- (a)  $\mathscr{E} = \{\text{integers greater than 2}\}$ 
  - $A = \{\text{prime numbers}\}\$
  - $B = \{ \text{odd numbers} \}$
  - $C = \{\text{square numbers}\}\$
  - (i) Describe the type of numbers in the set  $B' \cap C$ .

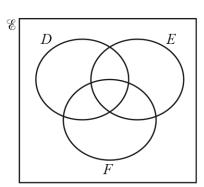


(ii) Complete the set labels on the Venn diagram.



[1]

**(b)** 



Shade the region  $D' \cup (E \cap F)'$ .

[1]

 $45.\ 0580\_s21\_qp\_23\ Q: 1$ 

Write down the number that is 23 less than -1.6.

.....[1]

Jo invests \$600 for 7 years at a rate of 1.5% per year simple interest.

Calculate the total interest earned during the 7 years.



 $47.\ 0580\_s21\_qp\_23\ Q:\ 7$ 

12

18

29

49

91

125

From the list of numbers, write down

(a) a cube number,

.....[1]

(b) a prime number.

.....[1]

 $48.\ 0580\_s21\_qp\_23\ Q:\ 8$ 

Alex changes 190 euros ( $\epsilon$ ) into pounds ( $\epsilon$ ) when  $\epsilon 1 = \epsilon 1.1723$ .

Calculate the amount Alex receives.

Give your answer correct to 2 decimal places.

£ .....[2]

$$49.\ 0580\_s21\_qp\_23\ Q:\ 9$$

Without using a calculator, work out  $1\frac{2}{3} \div 7\frac{1}{2}$ .

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

$$50.\ 0580\_s21\_qp\_23\ Q:\ 16$$

The sides of a regular hexagon are 80 mm, correct to the nearest millimetre.

Calculate the lower bound of the perimeter of the hexagon.



$$51.\ 0580\_s21\_qp\_23\ Q\hbox{:}\ 20$$

Simplify  $2.1 \times 10^p + 2.1 \times 10^{p-1}$ .

Give your answer in standard form.



 $52.\ 0580 \text{w} 21 \text{qp} \text{2} 1$  Q: 1 P is a prime number where 60 < P < 80. *P* is 2 less than a square number. Find the value of P.  $P = \dots [2]$  $53.\ 0580\_w21\_qp\_21\ Q:\ 2$ 

Hank flies from Los Angeles to Shanghai.

(a) The flight departs on Friday 22 July at 21 40. The flight takes 13 hours 35 minutes. The local time in Shanghai is 15 hours ahead of the local time in Los Angeles.

Find the day, date and time in Shanghai when Hank's flight arrives.

**(b)** The cost of the flight is \$920. The exchange rate is \$1 = 6.87 Chinese yuan.

Find the cost of the flight in yuan.

..... yuan [1]

## Appendix A

## Answers

 $1.\ 0580\_m22\_ms\_22\ Q:\ 2$ 

Question	Answer	Marks	Partial Marks
	80.50 cao	2	<b>B1</b> for 80.498 or 80.5 or correctly rounding their more accurate decimal to 2 dp

 $2.\ 0580\_m22\_ms\_22\ Q:\ 3$ 

Question	Answer	Marks	Partial Marks
	7 [h] 18 [min]	1	

 $3.\ 0580\_m22\_ms\_22\ Q\hbox{:}\ 12$ 

Question	Answer	Marks	Partial Marks
(a)	805	3	B2 for 105 or M2 for $\frac{700 \times 2.5 \times 6}{100} + 700$ oe or M1 for $\frac{700 \times 2.5 [\times 6]}{100}$ oe
(b)	2.3[0]	3	<b>M2</b> for $\sqrt[17]{\frac{1030.35}{700}}$ oe or <b>M1</b> for $1030.35 = 700(k)^{17}$ oe for any $k$

4. 0580\_m22\_ms\_22 Q: 15

Question	Answer	Marks	Partial Marks
	$\frac{7}{3}$ oe improper fraction	M1	or $\frac{k}{3} \times \frac{11}{14}$ where $k > 3$
	$1\frac{5}{6}$ cao	A2	<b>A1</b> for $\frac{77}{42}$ or $\frac{11}{6}$ or $1\frac{35}{42}$

Question	Answer	Marks	Partial Marks
	31 or 37	1	

 $6.\ 0580\_s22\_ms\_21\ Q:\ 2$ 

Question	Answer	Marks	Partial Marks
	399	1	

7. 0580\_s22\_ms\_21 Q: 3

Question	Answer	Marks	Partial Marks
	2h 57 min	1	

 $8.\ 0580\_s22\_ms\_21\ Q{:}\ 4$ 

Question	Answer	Marks	Partial Marks
	4.286 cao	2	<b>B1</b> for 4.285[7] or 4.29 or $\frac{30}{7}$ or $4\frac{2}{7}$ or for correctly rounding their more accurate decimal to 4sf

 $9.~0580\_s22\_ms\_21~Q:5$ 

Question	Answer	Marks	Partial Marks
	320	2	<b>M1</b> for 380.8 ÷ 1.19 oe

 $10.\ 0580\_s22\_ms\_21\ Q{:}\ 6$ 

Question	Answer	Marks	Partial Marks
	$2 \times 2 \times 3 \times 3 \times 5$ oe	2	B1 for 2, 2, 3, 3, 5 or M1 for correct factor tree/diagram/table.

11. 0580\_s22\_ms\_21 Q: 7

Question	Answer	Marks	Partial Marks
	$\frac{9}{21}$ and $\frac{2}{21}$ oe	M1	Allow any correct denominator 21k
	$\frac{1}{3}$ cao and correct working	A1	

#### 12. 0580\_s22\_ms\_21 Q: 13

Question	Answer	Marks	Partial Marks
	$1.98 \times 10^{100}$	2	<b>B1</b> for $200 \times 10^{98}$ or $0.02 \times 10^{100}$ or answer with figs 198

 $13.\ 0580\_s22\_ms\_21\ Q{:}\ 14$ 

Question	Answer	Marks	Partial Marks
	90	3	<b>B2</b> for 210 or 0.09 km OR
			M1 for speed × time seen M1 for correct conversion of both km to m and between h and s

 $14.\ 0580\_s22\_ms\_22\ Q\!\!: 1$ 

Question	Answer	Marks	Partial Marks
	13 or –13	1	

 $15.\ 0580\_s22\_ms\_22\ Q:\ 3$ 

Question	Answer	Marks	Partial Marks
	11 27	3	<b>M1</b> for 500 ÷ 43 oe
			M1 for $500$ – their $11 \times 43$ oe their $11$ must be an integer from 2 to $11$

 $16.\ 0580\_s22\_ms\_22\ Q\hbox{:}\ 4$ 

Question	Answer	Marks	Partial Marks
	102	1	

 $17.\ 0580\_s22\_ms\_22\ Q{:}\ 7$ 

Question	Answer	Marks	Partial Marks
	103.32 cao	2	<b>M1</b> for $126 \times \left(1 - \frac{18}{100}\right)$ oe
			or <b>B1</b> for 22.68

Question	Answer	Marks	Partial Marks
	$\frac{33}{8}$ or $\frac{17}{6}$ $2\frac{1}{8} - \frac{5}{6}$	B1	Correct step for dealing with mixed numbers Allow $\frac{33k}{8k}$ or $\frac{17k}{6k}$
	$\frac{99}{24}$ and $\frac{68}{24}$ $[2]\frac{3}{24} - \frac{20}{24}$	M1	Correct method to find common denominator e.g. $4\frac{3}{24}$ and $2\frac{20}{24}$
	$1\frac{7}{24}$ cao and correct working	A1	

 $19.\ 0580\_s22\_ms\_22\ Q\hbox{:}\ 14$ 

Question	Answer	Marks	Partial Marks
	2.6[0] or 2.600	3	<b>M2</b> for $\sqrt[10]{\frac{1328.54 + 4540}{4540}}$
			or <b>M1</b> for 4540 $\times k^{10} = 1328.54 + 4540$ for any $k$
			If 0 scored <b>SC1</b> for answer –11.6 or –11.56

20. 0580\_s22\_ms\_22 Q: 15

Question	Answer	Marks	Partial Marks
	$4a^2b$ final answer		<b>M1</b> for two correct parts out of three from 4, $a^2$ and $b$ in final answer

 $21.\ 0580\_s22\_ms\_23\ Q\hbox{: }8$ 

Question	Answer	Marks	Partial Marks
	$\frac{2}{9} \times \frac{6}{5}$ or $\frac{4}{18} \div \frac{15}{18}$ oe	M1	
	$\frac{4}{15}$ cao	A1	

22. 0580\_s22\_ms\_23 Q: 9

Question	Answer	Marks	Partial Marks
	18	2	M1 for $\frac{300 \times 60}{1000}$ oe or B1 for figs 18 in <i>their</i> answer

#### 23. 0580\_s22\_ms\_23 Q: 10

Question	Answer	Marks	Partial Marks
	40	1	

#### $24.\ 0580\_s22\_ms\_23\ Q\hbox{:}\ 12$

Question	Answer	Marks	Partial Marks
	0.14 oe nfww	4	M3 for $\frac{14}{50 \times 2}$ with at least 2 out of 3 values correct and for the one incorrect value: $f$ must be 1, 2 or 7 $m$ must be a multiple of 50 $p$ must be prime  OR  B1 for $f = 14$ B1 for $m = 50$ B1 for $p = 2$ If 0 scored SC1 for a correct multiple for $m$ , factor for $f$ or prime for $p$

#### $25.\ 0580\_s22\_ms\_23\ Q:\ 21$

Question	Answer	Marks	Partial Marks
	13.75 14.85	3	B2 for one correct answer or both correct answers seen in working then rounded to 3sf or both correct but reversed
			or M1 for 2 correct seen from 23 + 0.5, 23 - 0.5, 8.7 + 0.05 or 8.7 - 0.05 or better

#### $26.\ 0580\_m21\_ms\_22\ Q\hbox{:}\ 2$

Question	Answer	Marks	Partial Marks
	30 48	2	<b>M1</b> for $\frac{78}{5+8} \times k$ oe where $k = 1, 5$ or 8

#### 27. 0580\_m21\_ms\_22 Q: 4

Question	Answer	Marks	Partial Marks
	3, 80, 30 and 10 seen and answer 12	2	M1 for 3 out of 4 correct elements or for all correct but with any trailing zeros If 0 scored SC1 for answer 12

Question	Answer	Marks	Partial Marks
	271.2[0]	2	M1 for $56.50 \div 5$ or $56.50 \times 24$ oe or better

 $29.\ 0580\_m21\_ms\_22\ Q{:}\ 7$ 

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

 $30.\ 0580\_m21\_ms\_22\ Q:\ 8$ 

Question	Answer	Marks	Partial Marks
	$\frac{37}{99}$ oe fraction	1	

31. 0580\_m21\_ms\_22 Q: 9

Question	Answer	Marks	Partial Marks
	4.18×10 <sup>7</sup> cao	1	

 $32.\ 0580\_m21\_ms\_22\ Q:\ 11$ 

Question	Answer	Marks	Partial Marks
	12	2	M1 for $2^2 \times 3^2$ and $2^2 \times 3 \times 7$ or for $2 \times 2 \times 3$ final answer
			or <b>B1</b> for 2, 3, 4 or 6 as final answer

 $33.\ 0580\_m21\_ms\_22\ Q{:}\ 13$ 

Question	Answer	Marks	Partial Marks
	15.8 or 15.76 to 15.77	2	<b>M1</b> for $125.9 \times \left(1 - \frac{34}{100}\right)^5$ oe

#### $34.\ 0580\_m21\_ms\_22\ Q:\ 22$

Question	Answer	Marks	Partial Marks
(a)	245	1	
(b)	69 cao nfww	3	M2 for $\frac{200+0.5}{3-0.1}$ oe or M1 for $200 \pm 0.5$ oe or $3 \pm 0.1$ oe seen

#### $35.\ 0580\_s21\_ms\_21\ Q{:}\ 8$

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

#### $36.\ 0580\_s21\_ms\_21\ Q\hbox{:}\ 12$

Question	Answer	Marks	Partial Marks
	9080 or 9080.13	2	<b>M1</b> for $9500 \times \left(1 - \frac{0.9}{100}\right)^5$

#### $37.\ 0580\_s21\_ms\_21\ Q{:}\ 13$

Question	Answer	Marks	Partial Marks
	1.8432	2	M1 for $\frac{32 \times 24000 \times 24000}{100000 \times 100000}$ oe If 0 scored, SC1 for figs 184[32] as answer

#### $38.\ 0580\_s21\_ms\_21\ Q\hbox{:}\ 20$

Question	Answer	Marks	Partial Marks
20	68 nfww	3	M2 for $\frac{600-5}{8\text{h}40 \text{ to}8\text{h}50}$ or $\frac{590 \text{ to} 600}{8\text{h}40+5[\text{m}]}$ oe
			or M1 for 600 – 5 oe or 8h 40 + 5[m] oe or 520 + 5 oe[m] seen

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

 $40.\ 0580\_s21\_ms\_22\ Q\hbox{:}\ 7$ 

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

 $41.\ 0580\_s21\_ms\_22\ Q:\ 9$ 

Question	Answer	Marks	Partial Marks
	$\frac{2}{3} \times \frac{7}{10}$ or $\frac{14}{21} \div \frac{30}{21}$ oe with common denominator		B1 for $\frac{10}{7}$ oe or M1 for $\frac{2}{3} \times their \frac{7}{10}$
	$\frac{7}{15}$ cao	A1	

 $42.\ 0580\_s21\_ms\_22\ Q\hbox{:}\ 10$ 

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

 $43.\ 0580\_s21\_ms\_22\ Q \hbox{:}\ 11$ 

Question	Answer	Marks	Partial Marks
	$\frac{4}{99}$ cao	1	

 $44.\ 0580\_s21\_ms\_22\ Q:\ 12$ 

Question	Answer	Marks	Partial Marks
(a)(i)	Even square numbers oe	1	

Question	Answer	Marks	Partial Marks
(a)(ii)		1	
(b)	$\bigcap_{F} E$	1	

 $45.\ 0580\_s21\_ms\_23\ Q:\ 1$ 

Question	Answer	Marks	Partial Marks
	-24.6	1	

 $46.\ 0580\_s21\_ms\_23\ Q\hbox{:}\ 5$ 

Question	Answer	Marks	Partial Marks
	63	2	M1 for $600 \times \frac{1.5}{100}$ oe or better If 0 scored SC1 for answer 663

47. 0580\_s21\_ms\_23 Q: 7

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

 $48.\ 0580\_s21\_ms\_23\ Q:\ 8$ 

Question	Answer	Marks	Partial Marks
	162.07 cao	2	<b>M1</b> for 190 ÷ 1.1723

Question	Answer	Marks	Partial Marks
	$\frac{5}{3} \times \frac{2}{15}$ oe or $\frac{10}{6} \div \frac{45}{6}$ oe with common denominator	M2	B1 for $\frac{5}{3}$ oe or $\frac{15}{2}$ oe or M1 for their $\frac{5}{3} \times their \frac{2}{15}$
	$\frac{2}{9}$ cao	A1	

50. 0580\_s21\_ms\_23 Q: 16

Question	Answer	Marks	Partial Marks
	477	2	M1 for $80 - 0.5$ oe or better seen

 $51.\ 0580\_s21\_ms\_23\ Q:\ 20$ 

Question	Answer	Marks	Partial Marks
	2.31×10 <sup>p</sup>	2	<b>B1</b> for $21 \times 10^{p-1}$ or $0.21 \times 10^p$ or answer with figs 231

 $52.\ 0580\_w21\_ms\_21\ Q{:}\ 1$ 

Question	Answer	Marks	Partial Marks
	79	2	<b>B1</b> for 64 or 81 seen or for answer 61, 62, 67, 71 or 73

 $53.\ 0580\_w21\_ms\_21\ Q:\ 2$ 

Question	Answer	Marks	Partial Marks
(a)	Sunday 24 [July] 02 15	3	B1 for Sunday 24th [July] as final answer B2 for 02 15 oe as final answer
			or <b>B1</b> for sight of any of these 12 40 oe, 11 15 oe, 28h 35min, 50 15, 35 15
			or 0215 oe spoilt
			or M1 for departure time + 13h35min + 15h evaluated as a time with one interval correctly added
(b)	6320.4[0]	1	