

IGCSE Cambridge Topical Past Papers

MATHEMATICS 9-1

0980 Paper 3

2020 — 2025

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1 - (0980/32_Summer_2020_Q2)

(a) Jeremy goes on holiday.

He parks his car in the airport car park from

10 00 on Tuesday 17 July to 17 00 on Saturday 28 July.

The car park charges are shown below.

Monday to Friday	\$14 per day
Saturday and Sunday	\$8 per day

Part days are charged as full days

Find the total cost of parking his car.

\$ [3]

(b) At the airport, Jeremy buys a ring for \$53 and a watch for \$65.

Work out how much change he receives from \$120.

\$ [2]

(c) The plane flies from Melbourne to Tokyo at an average speed of 783 km/h.

The distance from Melbourne to Tokyo is 8352 km.

The plane leaves Melbourne at 09 52 local time.

The local time in Tokyo is 2 hours behind the local time in Melbourne.

Find the local time in Tokyo when the plane arrives.

..... [4]

(d) In Tokyo, Jeremy buys a bracelet for 2050 yen.

The exchange rate is 1 yen = \$0.0125 .

Calculate the price of the bracelet in dollars.

Give your answer correct to the nearest dollar.

\$ [2]

(e) The plane ticket costs \$680 plus a tax of 16%.

Find the total cost of this ticket.

\$ [2]

2 - (0980/32_Summer_2020_Q4)

Alexa, Ben and Chloe own a restaurant.

(a) Alexa records some temperatures.

Fridge 4°C Cool box -3°C Freezer -19°C

(i) Find the difference in temperature between the fridge and the cool box.

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

(ii) Find the difference in temperature between the cool box and the freezer.

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

(iii) The temperature in the cold room is 5°C lower than the fridge.

Find the temperature in the cold room.

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

(b) Alexa, Ben and Chloe share the profits from their restaurant in the ratio $2 : 6 : 7$.
One year the restaurant makes a profit of \$60 000.

Work out how much each receives.

Alexa = \$

Ben = \$

Chloe = \$ [3]

(c) They invest \$12 000 at a rate of $n\%$ per year simple interest.
At the end of 3 years the value of the investment is \$12 900.

Find the value of n .

$n =$ [3]

3 - (0980/31_Winter_2020_Q1)

Sean is the manager of a museum.

- (a) He buys a Chinese pot costing 1200 yuan.
The exchange rate is \$1 = 6.4 yuan.

Work out the cost of this pot in dollars.

..... [1]

- (b) Sean records the maximum and minimum temperatures, in °C, at the museum.
Some of the results for one week are shown in the table.

Day	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Maximum temperature (°C)	8	12	15	14	11	7	4
Minimum temperature (°C)	−5	−2	−4	−1	3		

- (i) Find the difference between the maximum temperature and the minimum temperature on Wednesday.

..... °C [1]

- (ii) The minimum temperature on Saturday was 2°C higher than the minimum temperature on Monday.

Find the minimum temperature on Saturday.

..... °C [1]

- (iii) In this week the range of temperatures was 23°C.

Find the minimum temperature on Sunday.

..... °C [1]

- (c) These are the opening times for the museum.

Monday to Friday 0900 to 1700
Saturday and Sunday 1000 to 1600

During opening hours the museum has 4 security guards working.
Each guard works a maximum of 30 hours each week.

Work out the smallest number of guards needed each week.

..... [4]

- (d) The entry price to the museum is \$18.
This price is increased by 28%.

Find the increased entry price.

..... [2]

4 - (0980/31_Winter_2020_Q3)

(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 4.81×10^{-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]

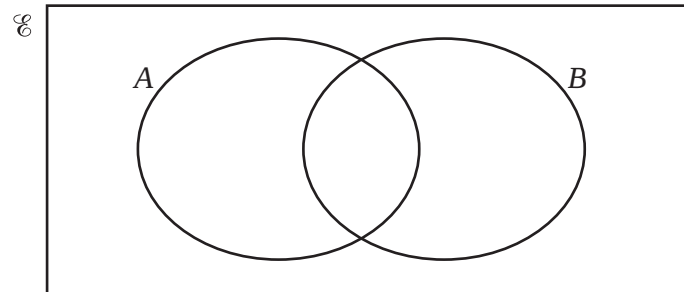
(d) (i)

$$\mathcal{E} = \{2, 4, 8, 16, 32, 64\}$$

$$A = \{\text{square numbers}\}$$

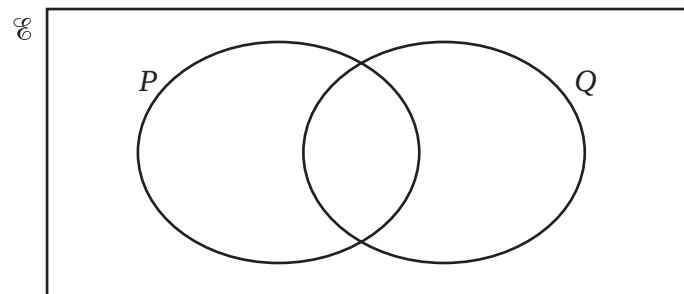
$$B = \{\text{cube numbers}\}$$

Use this information to complete the Venn diagram.



[2]

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



[1]

5 - (0980/31_Winter_2020_Q5)

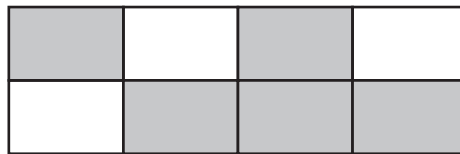
(a) Write one hundred and twenty thousand and twenty in figures.

..... [1]

(b) Find the value of $\sqrt{3481}$.

..... [1]

(c)



(i) Write down the fraction of the rectangle that is shaded.

..... [1]

(ii) Find the percentage of the rectangle that is **not** shaded.

..... % [1]

(d) Write these numbers in order, starting with the smallest.

 27% $\frac{5}{17}$ 0.268 $\frac{7}{29}$

..... < < < [2]

smallest

(e) Write 0.3728 correct to 1 decimal place.

..... [1]

- (f) Write down the value of 19^0 .

..... [1]

- (g) The height, h metres, of a tower is 128m, correct to the nearest metre.

Complete the statement about the value of h .

..... $\leq h <$ [2]

- (h) Find the highest common factor (HCF) of 126 and 180.

..... [2]

- (i) Write down an irrational number with a value between 6 and 7.

..... [1]

6 - (0980/32_Summer_2021_Q1)

Alex is building a house.

The materials cost $1\frac{1}{2}$ times the cost of the land.

The wages cost $1\frac{1}{4}$ times the cost of the land.

(a) Show that the ratio of costs, in its simplest form, is land : materials : wages = 4 : 6 : 5.

[2]

(b) The wages cost \$47 500.

Show that the total cost of land, materials and wages is \$142 500.

[2]

(c) Work out the cost of

(i) the land,

\$ [2]

(ii) the materials.

\$ [1]

(d) Alex borrows \$28 000 for 6 years at a rate of 5.5% per year compound interest.

Calculate the amount he repays at the end of the 6 years.

Give your answer correct to the nearest dollar.

\$ [3]

(e) When Alex sells the house, he makes a profit of 27% on the \$142 500.

Calculate the selling price of the house.

\$ [2]

7 - (0980/32_Summer_2021_Q3)

Pierre travels from his home in Lyon to Singapore.

- (a) He travels by train from Lyon to Paris.
The train leaves Lyon at 9.05 am and arrives in Paris at 1.30 pm.

(i) Write 1.30 pm in the 24-hour clock system.

..... [1]

(ii) Work out, in hours and minutes, the time the train journey takes.

..... h min [1]

- (b) He then travels by plane from Paris to Singapore.
The plane leaves Paris at 1635 on Thursday and arrives in Singapore 13 hours and 45 minutes later.
The local time in Singapore is 6 hours ahead of the local time in Paris.

Work out the day and time in Singapore when the plane arrives.

Day Time [3]

- (c) The distance from Paris to Singapore is 10 736 kilometres.

Work out the average speed of the plane.

..... km/h [2]

- (d) Pierre buys a watch for 400 Singapore dollars.
The exchange rate is 1 Singapore dollar = 0.658 euros.

Work out the cost of the watch in euros.

..... euros [1]

- (e) Pierre stays at a hotel in Singapore for 5 nights.
The cost per night of the room is \$170.
His total hotel bill is \$975.40 .

Calculate how much Pierre spends on other hotel items.

\$ [2]

8 - (0980/32_Summer_2021_Q4)

- (a) Put a ring around the fraction that is equivalent to $\frac{7}{12}$.

$$\frac{35}{62} \quad \frac{20}{36} \quad \frac{49}{84} \quad \frac{82}{144} \quad \frac{64}{110}$$

[1]

- (b) Write these numbers in order, starting with the smallest.

$$\frac{7}{12} \quad 0.6 \quad 58\% \quad \frac{8}{13} \quad \frac{2}{3}$$

$$\text{.....} < \text{.....} < \text{.....} < \text{.....} < \text{.....} \quad [2]$$

smallest

- (c) Write 0.724 as a fraction in its simplest form.

..... [1]

- (d) The mass, m grams, of a ball is 415 g, correct to the nearest 5 grams.

Complete the statement about the value of m .

$$\text{.....} \leq m < \text{.....} \quad [2]$$

- (e) Ruth uses three-quarters of a bag of flour to make one cake.

Work out the number of bags of flour she needs to buy to make 7 cakes.

..... [3]

- (f) A tin of soup costs \$ t and a packet of biscuits costs \$ p .

- (i) 3 tins of soup and 2 packets of biscuits cost \$15.50.

Complete the equation.

$$3t + 2p = \text{.....} \quad [1]$$

- (ii) 5 tins of soup and 4 packets of biscuits cost \$28.50.

Write down another equation in terms of t and p .

..... [1]

- (iii) Solve the two simultaneous equations.
You must show all your working.

$$t = \text{.....}$$

$$p = \text{.....} \quad [3]$$

9 - (0980/31_Winter_2021_Q1)

(a) 14 17 25 27 30 36 48

From the list, write down

(i) the square root of 289,

..... [1]

(ii) a factor of 81,

..... [1]

(iii) a common multiple of 3 and 5.

..... [1]

(b) A, B and C are three **consecutive** whole numbers.

- A is a prime number.
- B is a cube number.
- C is a square number.
- $A + B + C$ is less than 40.

Find A, B and C.

A =

B =

C = [2]

(c) Put **one** pair of brackets into each of these calculations to make them correct.

(i) $4 \times 3 + 7 \div 2 = 20$

[1]

(ii) $51 - 12 \div 3 + 6 = 19$

[1]

(d) Write down

(i) the reciprocal of 8,

..... [1]

(ii) the value of 14^0 .

..... [1]

(e) Calculate.

(i) 5^4

..... [1]

(ii) $\sqrt[3]{6859}$

..... [1]

(iii) $16^{-\frac{1}{2}}$

..... [1]

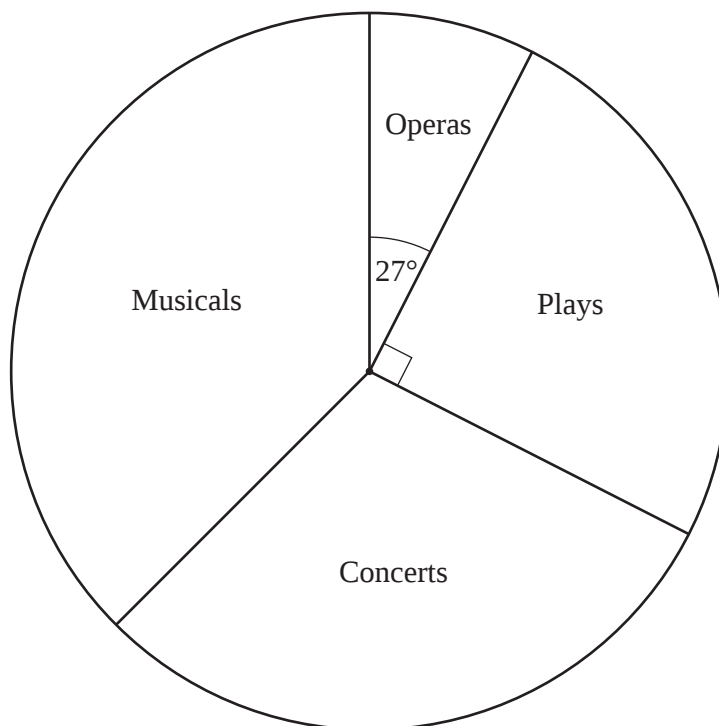
10 - (0980/31_Winter_2021_Q2)

- (a) In one year, a theatre sells four hundred and ninety-six thousand and fifty tickets.

Write this number in figures.

..... [1]

- (b) The theatre is used for performances of operas, plays, concerts and musicals.
The pie chart shows information about the number of each type of performance.



- (i) Complete these statements.

The type of performance shown the most is

The sector angle for this type of performance is degrees. [2]

- (ii) Write down the percentage of performances that are plays.

..... % [1]

- (iii) The theatre is used for 320 performances in the year.

Calculate the number of opera performances.

..... [2]

- (iv) The number of concert performances is in the ratio classical music : popular music = 7 : 5.
There are 56 classical music concerts.

Find the number of popular music concerts.

..... [2]

- (c) The table shows the prices of a child ticket and a senior ticket for a play.

Adult	Child	Senior
\$	\$15.50	\$35

Alex buys tickets for 2 adults, 3 children and 1 senior.
He pays a total of \$159.50 .

Complete the table.

[2]

- (d) Last week the cost of a ticket for a musical was \$65.
This week the same ticket costs \$55.90 .

Find the percentage reduction in the cost of this ticket.

..... % [2]

1 - (0980/32_Summer_2020_Q2)

(a)	150	3	M2 for $9 \times 14 + 3 \times 8$ oe or M1 for 9×14 or 3×8 oe
(b)	2	2	M1 for $120 - (53 + 65)$ oe
(c)	18 32	4	M1 for $8352 \div 783$ A1 for 10 h 40 min M1 for the correct adjustment of the 2 hours
(d)	26	2	M1 for 2050×0.0125 soi 25.625
(e)	788.8[0]	2	M1 for $680 \times (1 + \frac{16}{100})$ oe

2 - (0980/32_Summer_2020_Q4)

(a)(i)	7	1	
(a)(ii)	16	1	
(a)(iii)	-1	1	
(b)	8000 24000 28000	3	B2 for one correct or M2 for $\frac{60000}{2+6+7} \times k$ or M1 for $\frac{60000}{2+6+7}$
(c)	2.5	3	M1 for $\frac{12900-12000}{3}$ M1dep for $\frac{\text{their } 300}{12000} [\times 100]$

3 - (0980/31_Winter_2020_Q1)

(a)	187.5[0]	1	
(b)(i)	19	1	
(b)(ii)	-3	1	
(b)(iii)	-8	1	
(c)	7 nfww	4	M1 for $8 \times 5 + 6 \times 2$ oe and M2 for <i>their</i> $52 \times 4 \div 30$ oe or M1 for <i>their</i> 52×4 oe or <i>their</i> $52 \div 30$ oe
(d)	23.04	2	M1 for $18 \times (1 + \frac{28}{100})$ oe or B1 for 5.04

4 - (0980/31_Winter_2020_Q3)

(a)(i)	18	1	
(a)(ii)	57	1	
(a)(iii)	41	1	
(b)	$\frac{1}{64}$	1	
(c)(i)	[0].00481 cao	1	
(c)(ii)	7.5×10^4	1	
(c)(iii)	9×10^4	2	B1 for figs 9
(d)(i)		2	B1 for 4 or 5 numbers in the correct place
(d)(ii)		1	

5 - (0980/31_Winter_2020_Q5)

(a)	120 020	1	
(b)	59	1	
(c)(i)	$\frac{5}{8}$	1	
(c)(ii)	37.5	1	
(d)	$\frac{7}{29}$ 0.268 27% $\frac{5}{17}$	2	B1 for 3 in the correct order or M1 for .27 .29... [.268] .24...
(e)	0.4	1	
(f)	1	1	
(g)	127.5 128.5	2	B1 for each or SC1 for both correct but reversed
(h)	18	2	B1 for an answer of 2 or 3 or 6 or 9 or $2 \times 3 \times 3$ or 2×3^2 as final answer or for [126 =] $2 \times 3 \times 3 \times 7$ or $2 \times 3^2 \times 7$ and [180 =] $2 \times 2 \times 3 \times 3 \times 5$ or $2^2 \times 3^2 \times 5$ or for complete correct list of factors for 126 and 180
(i)	Any irrational number between 6 and 7	1	

6 - (0980/32_Summer_2021_Q1)

(a)	$1 : 1.5 : 1.25$ or $1 : 1\frac{1}{2} : 1\frac{1}{4}$	B1	
	Working shown leading to $4 : 6 : 5$	M1	
(b)	$47500 \div 5 \times (4 + 6 + 5)$	M2	M1 for $47500 \div 5$
(c)(i)	38 000	2	M1 for $142500 \div 15 [\times 4]$ or $47500 \div 5 [\times 4]$ oe soi
(c)(ii)	57 000	1	FT for 95 000 – <i>their</i> (c)(i)
(d)	38 608 cao	3	M1 for $28000 \times \left(1 + \frac{5.5}{100}\right)^6$ oe A1 for 38 607.5... or 38 607.6 or 38 607 or 38 610 or 38 600 B1 for <i>their</i> correctly rounded answer
(e)	180 975	2	M1 for $142500 \times \left(1 + \frac{27}{100}\right)$ oe or B1 for 38 475

7 - (0980/32_Summer_2021_Q3)

(a)(i)	13 30	1	
(a)(ii)	4 [h] 25 [min]	1	
(b)	Friday 12 20	3	B1 for Friday, as final answer B2 for 12 20, as final answer or B1 for [0]6 20 or 22 35 or 19h 45 min or 12 20 seen then spoilt or M1 for <i>their</i> arrival time of flight + 6 hours
(c)	780.8	2	M1 for $10\,736 \div \text{time of flight}$
(d)	263.2[0] cao	1	
(e)	125.4[0] cao	2	M1 for $975.4 - 5 \times 170$ or better

8 - (0980/32_Summer_2021_Q4)

(a)	$\frac{49}{84}$	1	
(b)	58% $\frac{7}{12}$ 0.6 $\frac{8}{13}$ $\frac{2}{3}$	2	B1 for 4 in correct order or M1 for 0.583[...], [0.6], 0.58, 0.615[...] or 0.61 or 0.62, 0.66[...] or 0.67 or 0.667 or 0.7 oe
(c)	$\frac{181}{250}$ cao	1	
(d)	412.5 417.5	2	B1 for each If 0 scored, SC1 for both correct but reversed
(e)	6	3	M1 for $7 \times \frac{3}{4}$ oe A1 for 5.25 or $5\frac{1}{4}$
(f)(i)	15.5[0]	1	
(f)(ii)	$5t + 4p = 28.5$ [0]	1	
(f)(iii)	For correct method to eliminate one variable	M1	FT <i>their</i> two linear equations
	$[t =] 2.5$	A1	
	$[p =] 4$	A1	If 0 scored, SC1 for 2 values satisfying one of the correct equations or <i>their</i> (f)(i) or (f)(ii) or SC1 if no working shown, but 2 correct answers

9 - (0980/31_Winter_2021_Q1)

(a)(i)	17	1	
(a)(ii)	27	1	
(a)(iii)	30	1	
(b)	7, 8, 9	2	M1 for any 2 conditions in final answer from: A prime or B cube or C square or consecutive $A + B + C < 40$
(c)(i)	$4 \times (3 + 7) \div 2 = 20$	1	
(c)(ii)	$(51 - 12) \div 3 + 6 = 19$	1	
(d)(i)	$\frac{1}{8}$ or 0.125	1	
(d)(ii)	1	1	
(e)(i)	625	1	
(e)(ii)	19	1	
(e)(iii)	$\frac{1}{4}$ or 0.25	1	

10 - (0980/31_Winter_2021_Q2)

(a)	496050	1	
(b)(i)	Musicals 135	2	B1 for each
(b)(ii)	25	1	
(b)(iii)	24	2	M1 for $\frac{27}{360}[\times 320]$ oe or $\frac{320}{360}[\times 27]$ oe
(b)(iv)	40	2	M1 for $\frac{56}{7}[\times k]$ oe where $k = 5$ or 12
(c)	39	2	M1 for $159.50 - 3 \times 15.5 - 35$ or better
(d)	14	2	M1 for $\frac{65 - 55.9[0]}{65} [\times 100]$ oe or $\left(1 - \frac{55.9[0]}{65}\right) [\times 100]$ oe or $[100 -] \frac{55.9[0]}{65} \times 100$ oe

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