IGCSE (9-1) Edexcel Past Papers

MATHEMATICS A

Paper 1H, HR

2020 — 2025

1 - (4MA1/1H_Summer_2020_Q6) - *Numbers And The Number System*

A rocket travelled 100 km at an average speed of 28 440 km/h.

Work out how long it took the rocket to travel the 100 km.
Give your answer in seconds, correct to the nearest second.

..... seconds

(Total for Question is 3 marks)

2 - (4MA1/1H_Summer_2020_Q5) - *Numbers And The Number System*

(a) Write 5.7×10^{-3} as an ordinary number.

.....

(1)

(b) Write 800 000 in standard form.

.....

(1)

(c) Work out $\dfrac{3 \times 10^5 - 2.7 \times 10^4}{6 \times 10^{-2}}$

.....

(2)

3 – (4MA1/1H_Summer_2020_Q9) – *Numbers And The Number System*

In a sale, normal prices are reduced by 20%

A bag costs 1080 rupees in the sale.

Work out the normal price of the bag.

..... rupees

(Total for Question is 3 marks)

4 - (4MA1/1H_Summer_2020_Q10) - *Numbers And The Number System*

$A = 2 \times 3^{43}$
$B = 16 \times 3^{37}$

(a) Find the highest common factor (HCF) of A and B.

.....

(1)

(b) Express the number $A \times B$ as a product of powers of its prime factors.
Give your answer in its simplest form.

.....

(2)

5 - (4MA1/1H_Summer_2020_Q13) - *Numbers And The Number System*

Jan invests \$8000 in a savings account.
The account pays compound interest at a rate of x% per year.

At the end of 6 years, there is a total of \$8877.62 in the account.

Work out the value of x.
Give your answer correct to 2 decimal places.

$x =$ .....

(Total for Question is 3 marks)

6 – (4MA1/1H_Summer_2020_Q17) – *Numbers And The Number System*

A metal block has a mass of 5 kg, correct to the nearest 50 grams.
The block has a volume of $(1.84 \times 10^{-3})\,m^3$, correct to 3 significant figures.

Work out the upper bound for the density of the block.
Give your answer in kg/m^3 correct to 1 decimal place.
Show your working clearly.

..... kg/m^3

(Total for Question is 4 marks)

ANSWERS

1 – (4MA1/1H_Summer_2020_Q6) – *Numbers And The Number System*

$100 \div 28\,440\ (= 0.0035\ldots)$ **or** $28\,440 \div (60 \times 60)\ (= 7.9)$		3	M1
'0.0035...' × 60 × 60 **or** 100 ÷ '7.9'			M1
	13		A1 for 12.65 – 13
			Total 3 marks

2 – (4MA1/1H_Summer_2020_Q5) – *Numbers And The Number System*

(a)		0.0057	1	B1
(b)		8×10^5	1	B1
(c)	$\frac{273000}{6\times10^{-2}}$		2	M1 for 273 000 **or** digits 455
		4 550 000		A1 for 4 550 000 or 4.55×10^6 oe
				Total 4 marks

3 – (4MA1/1H_Summer_2020_Q9) – *Numbers And The Number System*

E.g. $1 - 0.2\ (= 0.8)$ **or** $100(\%) - 20(\%)\ (= 80(\%))$ **or** $\frac{1080}{80}\ (= 13.5)$ oe		3	M1
E.g. $1080 \div 0.8$ or $1080 \div 80 \times 100$ or '13.5' × 100 $1080 \times 100 \div 80$			M1 for a complete method
	1350		A1
			Total 3 marks

4 – (4MA1/1H_Summer_2020_Q10) – *Numbers And The Number System*

(a)		2×3^{37}	1	B1
(b)	$2 \times 3^{43} \times 2^4 \times 3^{37}$ **or** $2^5 \times 3^p\ (p \neq 80)$ **or** $2^q \times 3^{80}\ (q \neq 5)$		2	M1
		$2^5 \times 3^{80}$		A1
				Total 3 marks

5 – (4MA1/1H_Summer_2020_Q13) – *Numbers And The Number System*

$8000 \times \left(\frac{100+x}{100}\right)^6 = 8877.62$ oe **or** $8000 \times \left(1+\frac{x}{100}\right)^6 = 8877.62$ oe **or** $8000 \times (1+x\%)^6 = 8877.62$ **or** $8000 \times y^6 = 8877.62$ oe		3	M1
$\left(\frac{8877.62}{8000}\right)^{\frac{1}{6}}\ (=1.0175\ldots)$ or $(1.1097...)^{\frac{1}{6}}\ (=1.0175\ldots)$			M1
	1.75		A1
			Total 3 marks

6 – (4MA1/1H_Summer_2020_Q17) – *Numbers And The Number System*

5025 **or** 5.025 **or** 4975 **or** 4.975		4	B1	Accept $5024.\dot{9}$ for 5025 or $5.024\dot{9}$ for 5.025
1.845×10^{-3} oe **or** 1.835×10^{-3} oe			B1	Accept $1.844\dot{9} \times 10^{-3}$ for 1.845×10^{-3}
$\frac{5.025}{1.835\times10^{-3}}(=2738.4...)$ oe			M1	for correct substitution into $\frac{m_{UB}}{v_{LB}}$ where $5 < m_{UB} \leq 5.025$ **and** $1.835 \times 10^{-3} \leq v_{LB} < 1.84 \times 10^{-3}$
	2738.4		A1	dep on correct working
				Total 4 marks

7 – (4MA1/1H_Summer_2020_Q19) – *Numbers And The Number System*

$\frac{6}{3-\sqrt{7}}\times\frac{3+\sqrt{7}}{3+\sqrt{7}}$ or $\frac{6}{3-\sqrt{7}}\times\frac{-3-\sqrt{7}}{-3-\sqrt{7}}$			M1	
$\frac{6(3+\sqrt{7})}{3^2-7}$ **or** $\frac{6(3+\sqrt{7})}{2}$ **or** $\frac{6(-3-\sqrt{7})}{-3^2+7}$ **or** $\frac{6(-3-\sqrt{7})}{-2}$			M1	(numerator may be expanded or denominator may be 4 terms which need to be all correct)
	$9+3\sqrt{7}$	3	A1	dep on M2 for $9+3\sqrt{7}$ **or** $3(3+\sqrt{7})$ from correct working
				Total 3 marks

8 – (4MA1/1HR_Summer_2020_Q1) – *Numbers And The Number System*

e.g. $\frac{15}{4}$		3	M1	for $3\frac{3}{4}$ expressed as an improper fraction
e.g. $\frac{\cancel{15}^{5}}{4}\times\frac{7}{\cancel{9}^{3}}$ **OR** $\frac{105}{36}$ oe			M1	correct cancelling or multiplication of numerators and denominators without cancelling
e.g. $\frac{\cancel{15}^{5}}{4}\times\frac{7}{\cancel{9}^{3}}=\frac{35}{12}=2\frac{11}{12}$ **or** $\frac{15}{4}\times\frac{7}{9}=\frac{105}{36}=\frac{35}{12}=2\frac{11}{12}$ **or** $\frac{15}{4}\times\frac{7}{9}=\frac{105}{36}=2\frac{33}{36}=2\frac{11}{12}$	shown		A1	dep on M2, for conclusion to $2\frac{11}{12}$ from correct working – either sight of the result of the multiplication e.g. $\frac{105}{36}$ oe must be seen **or** correct cancelling prior to the multiplication to $\frac{35}{12}$ NB: use of decimals scores no marks
				Total 3 marks