SMART EXAM RESOURCES
SUBJECT: CAMBRIDGE INTERNATIONAL MATHH
TOPIC: NUMBERS
SUBTOPIC: PRIME FACTORS

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1 Leaving your answer as the product of prime factors, find

(i) the highest common factor (HCF) of a, b and c,

Answer(b)(i) ..... [1]

MARK SCHEME:

(i)	$3^2 \times 5^2$	**1**

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2 $a = 2^3 \times 3 \times 5^2$ $b = 2^2 \times 3^2 \times 7^6$

(a) Find, giving each answer as the product of prime factors,

(i) the highest common factor (HCF) of a and b,

Answer(a)(i) ..... [1]

(ii) $\sqrt{b}$.

Answer(a)(ii) ..... [1]

(b) ap is a cube number.

Find the smallest integer value of p.

Answer(b) ..... [1]

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MARK SCHEME:

(a)	**(i)**	$2^2 \times 3$	**1**
	(ii)	$2 \times 3 \times 7^3$	**1**
(b)		45	**1**

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3 $a = 2^5 \times 3^2 \times 7^3$ $b = 2^3 \times 3^4 \times 5$

Leaving your answer as the product of prime factors, find

(a) b^2,

..... [1]

(b) the highest common factor (HCF) of a and b,

.

..... [1]

(c) the lowest common multiple (LCM) of a and b.

..... [2]

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MARK SCHEME:

(a)	$2^6 \times 3^8 \times 5^2$	**1**	
(b)	$2^3 \times 3^2$	**1**	
(c)	$2^5 \times 3^4 \times 5^{[1]} \times 7^3$	**2**	**B1** for 3 of 4 factors correct

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4 Write 36 as a product of prime factors.

..... [2]

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MARK SCHEME:

$2\times2\times3\times3$ or $2^2\times3^2$	**2**	**M1** for 2 and 3 as factors

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5 Write 90 as the product of its prime factors.

..... [2]

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MARK SCHEME:

	$2 \times 3 \times 3 \times 5$ or $2 \times 3^2 \times 5$ final answer	**2**	**M1** for 2, 3 and 5 seen as factors

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6 **(a)** Express 175 as the product of its prime factors.

..... [2]

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MARK SCHEME:

	$5 \times 5 \times 7$ or $5^2 \times 7$	**2**	**B1** for 5 and 7 identified as factors

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7 Written as the product of their prime factors,

$7056 = 2^4 \times 3^2 \times 7^2$ and $8232 = 2^3 \times 3 \times 7^3$.

Giving your answers as the product of prime factors, find

(a) the highest common factor (HCF) of 7056 and 8232,

..... [1]

(b) the lowest common multiple (LCM) of 7056 and 8232,

..... [1]

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MARK SCHEME:

(a)	$\frac{4}{15}$ cao	**1**	
(b)	$\frac{9}{11}$ oe	**1**	

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Written as the product of its prime factors, $540 = 2^2 \times 3^3 \times 5$.

8 **(a)** Write 360 as a product of its prime factors.

..... [2]

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MARK SCHEME:

	$2^3 \times 3^2 \times 5$ must be in index form	**2**	**M1** for three steps in a 'factor tree' or 'factor ladder' or **B1** for $2^p \times 3^q \times 5$

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