

**SMART EXAM RESOURCES**  
**SUBJECT: CAMBRIDGE INTERNATIONAL MATH**  
**TOPIC: NUMBERS**  
**SUB-TOPIC: POWERS AND ROOTS**  
**SET-2-QP-MS**

**1** Work out  $64^{\frac{1}{3}}$ .

..... [1]

**MARK SCHEME:**

4 only	1	
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2 Expand the brackets and simplify.

$$(\sqrt{a} + \sqrt{b})(\sqrt{a} - \sqrt{b})$$

..... [2]

Rationalise the denominator.

$$\frac{1}{\sqrt{7} + \sqrt{6}}$$

..... [1]

Work out the value of

$$\frac{1}{\sqrt{9} + \sqrt{8}} + \frac{1}{\sqrt{8} + \sqrt{7}} + \frac{1}{\sqrt{7} + \sqrt{6}} + \frac{1}{\sqrt{6} + \sqrt{5}} + \frac{1}{\sqrt{5} + \sqrt{4}}$$

..... [2]

## MARK SCHEME:

(a)	$a - b$	2	<b>M1</b> for $\sqrt{a}\sqrt{a} - \sqrt{a}\sqrt{b} + \sqrt{b}\sqrt{a} - \sqrt{b}\sqrt{b}$ oe
(b)	$\sqrt{7} - \sqrt{6}$	1	
(c)	1	2	<b>M1</b> for at least 3 of $\sqrt{9} - \sqrt{8} + \sqrt{8} - \sqrt{7} \dots \dots - \sqrt{4}$ or <b>B1</b> for $\sqrt{9} - \sqrt{4}$

**3** Work out  $4^{-\frac{3}{2}}$ .

..... [2]

## MARK SCHEME:

$[\pm] \frac{1}{8}$	<b>2</b>	<b>M1</b> for correct first step e.g. $\frac{1}{\frac{1}{3}}$ or $\sqrt{4^3}^{-1}$ $4^2$ or <b>B1</b> for 2 or 64 seen
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**4** Work out the exact value of  $\sqrt{2\frac{7}{9}}$ .

..... [2]

**MARK SCHEME:**

$[\pm] \frac{5}{3}$ or $1\frac{2}{3}$ or $1.\dot{6}$	<b>2</b>	<b>B1</b> for $\frac{25}{9}$
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**5** Work out the value of  $32^{\frac{2}{5}}$ .

..... [1]

**MARK SCHEME:**

4	1
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**6** Work out  $4^{\frac{3}{2}}$ .

..... [1]

**MARK SCHEME:**

8	1	
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7 Work out  $(\sqrt{5})^4$ .

..... [1]

**MARK SCHEME:**

25	<b>1</b>
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**8**

$$p = 5 \times 10^7$$

Work out  $p^3$ .

Give your answer in standard form.

..... [2]

## MARK SCHEME:

$1.25 \times 10^{23}$	<b>2</b>	<b>B1</b> for correct answer not in standard form seen
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