**Indices Rules - Advanced**

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| Name : | Class : | Date : |

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| **1)** Evaluate, giving your answer as a simplified fraction      a)  $15^{-1}$     b)  $5^{-2}$     c)  $3^{-3}$ | [3]   |
| **2)** Give your answer in the form  $\frac{1}{a^{b}}$, where a and b are positive integers        $2^{-1}$ | [1]   |
| **3)** Give your answer in the form  $a^{b}$, where a and b are integers        $\frac{1}{2^{5}}$ | [1]   |
| **4)** Give your answer in the form  $\frac{a}{b^{c}}$, where a,b and c are positive integers        $3×5^{-5}$ | [1]   |
| **5)** Give your answer in the form  $\frac{a}{b^{c}}$, where a,b and c are integers        $-1×7^{-4}$ | [1]   |
| **6)** Evaluate      a)  $121^{\frac{1}{2}}$     b)  $64^{\frac{1}{3}}$     c)  $64^{\frac{2}{3}}$ | [4]   |
|      d)  $4^{\frac{3}{2}}$ |  |
| **7)** Evaluate, giving your answer as an integer or simplified fraction      a)  $25^{-\frac{1}{2}}$     b)  $(\frac{1}{7})^{2}$     c)  $(\frac{1}{7})^{-3}$ | [3]   |
| **8)** Evaluate the following, giving your answer as a simplified fraction      a)  $(\frac{27}{8})^{\frac{2}{3}}$     b)  $(\frac{4}{25})^{-\frac{3}{2}}$ | [2]   |
| **9)** Give the following expression in index form      a)  $\sqrt{3}$     b)  $\sqrt[3]{3}$     c)  $\sqrt[6]{2}$ | [5]   |
|      d)  $\sqrt{5^{3}}$     e)  $\frac{1}{(\sqrt[3]{5})^{2}}$ |  |
| **10)** Show the following as a power of 3        $81$ | [1]   |
| **11)** Show the following as a power of 2        $4^{2}$ | [1]   |
| **12)** Show the following as a power of 49        $\sqrt{7}$ | [1]   |

**Solutions for the assessment Indices Rules - Advanced**

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| **1)**  a)  $\frac{1}{15}$ |      b)  $\frac{1}{25}$ |
|      c)  $\frac{1}{27}$ | **2)**  $\frac{1}{2}$ |
| **3)**  $2^{-5}$ | **4)**  $\frac{3}{5^{5}}$ |
| **5)**  $-\frac{1}{7^{4}}$ |  |
| **6)**  a) 11 |      b) 4 |
|      c) 16 |      d) 8 |
| **7)**  a)  $\frac{1}{5}$ |      b)  $\frac{1}{49}$ |
|      c)  $343$ |  |
| **8)**  a)  $\frac{9}{4}$ |      b)  $\frac{125}{8}$ |
| **9)**  a)  $3^{\frac{1}{2}}$ |      b)  $3^{\frac{1}{3}}$ |
|      c)  $2^{\frac{1}{6}}$ |      d)  $5^{\frac{3}{2}}$ |
|      e)  $\frac{1}{5^{\frac{2}{3}}}or5^{-\frac{2}{3}}$ | **10)**  $3^{4}$ |
| **11)**  $2^{4}$ | **12)**  $49^{\frac{1}{4}}$ |