

NOME ..... DATA ..... CLASSE .....

### VERIFICA

Applicare le regole seguenti e le proprietà delle potenze per risolvere gli esercizi.

Se  $a \neq 0$ :

•  $a^0 = 1$

•  $a^{-1} = \frac{1}{a}$

•  $a^{-n} = \frac{1}{a^n}$

Se  $a \geq 0$ :

•  $a^{\frac{1}{2}} = \sqrt{a}$

•  $a^{\frac{1}{n}} = \sqrt[n]{a}$

•  $a^{\frac{m}{n}} = \sqrt[n]{a^m}$

1. Calcolare le seguenti potenze senza utilizzare la calcolatrice:

(a)  $4^{-2} =$

(b)  $2^{-3} =$

(c)  $6^{-1} =$

(d)  $7^{-1} =$

(e)  $9^{\frac{1}{2}} =$

(f)  $64^{\frac{1}{2}} =$

(g)  $16^{\frac{1}{4}} =$

(h)  $27^{\frac{1}{3}} =$

(i)  $1^{\frac{1}{3}} =$

(j)  $5^{-2} =$

(k)  $16^{\frac{3}{4}} =$

(l)  $4^{\frac{5}{2}} =$

(m)  $9^{\frac{7}{2}} =$

(n)  $25^{\frac{3}{2}} =$

(o)  $8^{-\frac{1}{3}} =$

2. Completare le seguenti espressioni senza utilizzare la calcolatrice:

(a)  $3^? = \frac{1}{81}$

(b)  $2^? = \frac{1}{2}$

(c)  $5^? = \frac{1}{125}$

(d)  $36^? = 6$

(e)  $36^? = \frac{1}{6}$

(f)  $7^? = 49$

(g)  $7^? = 343$

(h)  $17^? = \frac{1}{17}$

(i)  $125^? = 5$

(j)  $\frac{1}{2} = 2^?$

(k)  $\frac{1}{4} = 2^?$

(l)  $\frac{1}{100} = 10^?$

(m)  $\frac{1}{a^3} = a^?$

(n)  $\sqrt{m} = m^?$

(o)  $\frac{1}{p^2} = p^?$

(p)  $\sqrt[3]{q} = q^?$

(q)  $\sqrt[3]{q^2} = q^?$

(r)  $\sqrt[5]{q^2} = q^?$

3. Usare la calcolatrice per calcolare:

(a) $8^{-1}$	(b) $20^{-1}$	(c) $\left(\frac{1}{2}\right)^{-1}$	(d) $\left(\frac{1}{4}\right)^{-1}$
(e) $15^{-2}$	(f) $20^{-3}$	(g) $81^{\frac{3}{2}}$	(h) $243^{\frac{3}{5}}$
(i) $16^{-\frac{1}{4}}$	(j) $144^{\frac{3}{2}}$	(k) $169^{\frac{7}{2}}$	(l) $121^{\frac{3}{2}}$

4. Semplificare le seguenti espressioni:

(a) $a^6 \times a^{-7} =$	(b) $\frac{a^7}{a^{-3}} =$	(c) $\frac{a^{-5}}{a^{-9}} =$
(d) $a^{-4} \times a^{-2} =$	(e) $(a^2)^{-1}$	(f) $(a^2)^{-3} =$
(g) $(a^{-2})^{-4} =$	(h) $(a^{\frac{1}{2}})^5 =$	(i) $(a^3)^{-\frac{1}{2}} =$
(j) $(a^6)^{\frac{1}{3}} =$	(k) $(a^9)^{-\frac{1}{3}} =$	(l) $(a^{-12})^{-\frac{1}{4}} =$
(m) $\left(\frac{a}{b}\right)^2 =$	(n) $(a^2 \times b^{-4})^3 =$	(o) $(a^3 b^{\frac{1}{2}})^4 =$
(p) $(a^2 b^{-2})^{-2} =$	(q) $\left(\frac{a^2}{b^3}\right)^4 =$	(r) $(m^{-1} n^3)^{-2} =$
(s) $\left(\frac{a^6}{b^{10}}\right)^{\frac{1}{2}} =$	(t) $\left(\frac{a^2}{m^4}\right)^{-\frac{1}{2}} =$	(u) $\left(\frac{a^8 b^2}{c^6}\right)^{-\frac{1}{2}} =$
(v) $\left(\frac{m^2}{x}\right)^{-1} =$	(w) $\left(\frac{x^2 y}{z^3}\right)^{-4} =$	(x) $\left[\left(a^3 b^{-8}\right)^{-\frac{1}{3}}\right]^2 =$

5. (a) Esprimere  $81^{-\frac{1}{2}}$  come frazione con numeratore e denominatore interi.  
(b) Semplificare  $a^6 : a^2$   
(c) Trovare il valore di  $x$  che verifica l'uguaglianza:  $2 \times 4^x = 64$