## Positive Indices

$6^4 = 6\times6\times6\times6 = 6^2\times6^2 = 36\times36 = 6^3\times6 = 216\times6 = 1296$

Work out the answers to these.

1. $5^3$    2. $6^2$    3. $7^4$    4. $3^7$    5. $6^3$    6. $8^3$    7. $10^6$
8. $4^5$    9. $5^4$    10. $6^5$    11. $5^6$    12. $9^2$    13. $2^9$    14. $8^3$

## Negative Indices

$6^{-1} = 1/6$, $6^{-2} = 1/(6\times6) = 1/36 = 1/6^2$, $6^{-3} = 1/(6\times6\times6) = 1/6^3 = 1/216$

Work out the answers to these.

1. $4^{-3}$    2. $6^{-2}$    3. $7^{-3}$    4. $5^{-2}$    5. $10^{-1}$    6. $10^{-2}$    7. $10^{-3}$

## Fractional Indices

$6^{1/2} = \sqrt{6}$,   $6^{1/3} = \sqrt[3]{6}$,   $6^{2/3} = (\sqrt[3]{6})^2$

## Things to play with

Is there a pattern to any of the following:

$$3^{n+2} - 3^n \text{ where } 0 < n < 9$$

$$4^{2n} + 4^{n+2} \text{ where } 0 < n < 9$$

$$5^n - 3^n \text{ where } 0 < n < 9$$