

Higher powers



Higher powers

1. True or false?

a) $3 \times 3 \times 3 \times 3 = 3^4$

b) $4 \times 4 \times 4 \times 4 \times 4 = 4^5$

c) $a \times a \times a \times a \times a \times a = 6a$

d) $6 \times 4 = 6^4$

2. Evaluate.

a) 2^3 b) 2^4 c) 2^5 d) 2^6

What do you notice?

3. Evaluate using a calculator

a) 3^3 b) 3^4 c) 3^5 d) 3^6

What do you notice?

4. Show that $3^3 \times 3^3 = 3^6$

5. Evaluate without a calculator.

a) 10^3 b) 10^4

c) 10^5 d) 10^6



Higher powers

6. Use $<$, $>$ or $=$ to compare.

a) $3 \times 3 \times 3$ 3^3

b) Two cubed 2^4

c) 4^3 3^4

d) 8^4 7^3

e) One million 10^7

f) 10^7 $(10^6 \times 10)$

g) $(\frac{1}{2})^5$ 0.5^5

7. a) Which of the number cards give a positive answer?

$(-3)^2$ $(-3)^3$ $(-3)^4$ $(-3)^5$ $(-3)^6$

b) Is the statement always, sometimes or never true?

Any number raised to an even power gives a positive answer.

c) Place the number cards in descending order.



Answers



Higher powers

1. True or false?

a) $3 \times 3 \times 3 \times 3 = 3^4$ True

b) $4 \times 4 \times 4 \times 4 \times 4 = 4^5$ True

c) $a \times a \times a \times a \times a \times a = 6a$ False

d) $6 \times 4 = 6^4$ False

2. Evaluate.

a) 2^3 8 b) 2^4 16 c) 2^5 32 d) 2^6 64

What do you notice?

Each answer is double the previous.

3. Evaluate using a calculator

a) 3^3 27 b) 3^4 81 c) 3^5 243 d) 3^6 729

What do you notice?

Each answer is three times the previous.

4. Show that $3^3 \times 3^3 = 3^6$

$$3^3 \times 3^3 = 27 \times 27 = 729 \quad 3^6 = 729$$

5. Evaluate without a calculator.

a) 10^3 1,000 b) 10^4 10,000

c) 10^5 100,000 d) 10^6 1,000,000



Higher powers

6. Use $<$, $>$ or $=$ to compare.

a) $3 \times 3 \times 3 = 3^3$

b) Two cubed $< 2^4$

c) $4^3 < 3^4$

d) $8^4 > 7^3$

e) One million $< 10^7$

f) $10^7 = (10^6 \times 10)$

g) $(\frac{1}{2})^5 = 0.5^5$

7. a) Which of the number cards give a positive answer?

$(-3)^2$ ✓

$(-3)^3$

$(-3)^4$ ✓

$(-3)^5$

$(-3)^6$ ✓

b) Is the statement always, sometimes or never true? **Always**

Any number raised to an even power gives a positive answer.

c) Place the number cards in descending order.

$(-3)^6$

$(-3)^4$

$(-3)^2$

$(-3)^3$

$(-3)^5$

