

# Higher powers



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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?



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.

