Multiply powers

Maths

Mr Clasper

Multiply powers

1. 3^4 can be written as 3 × 3 × 3 × 3. Write each expression in a similar way.

a) 3^5

b) 5^3

c) 7^7

2. Simplify each expression.

a) $2^3 × 2^4$

b) $4^3 × 4$

c) $17^8 × 17^2$

d) $(-3)^9 × (-3)^{91}$

3. State whether each is true or false. For any false statements work out the correct answer.

a) $5^{-3} × 5^7 = 25^4$

b) $9^{-3} × 9^4 = 9$

c) $(-13)^4 × (-13)^{-4} = 0$

d) $27^{-3} × 27^{-8} = 27^{11}$

4. Simplify the following.

a) $7^{0.7} × 7^{2.3}$

b) $10^{2.3} × 10^{0.7}$

c) $213^{-0.36} × 213^{1.36}$
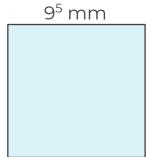
Multiply powers

5. For each equation find the value of m.

a) $9^2 \times m^3 = 9^5$

b) $13^m \times 13^7 = 13^{20}$

c) $(-2)^{-5} \times (-2)^m = (-2)^{-10}$

d) $4^m \times 4^m \times 4^m = 4^{15}$

7. A square has a side length of 9^5 mm. Calculate the area of the square. Give your answer as a power of 9

9^5 mm

Answers

Multiply powers

1. 3^4 can be written as $3 \times 3 \times 3 \times 3$. Write each expression in a similar way.

a) 3^5 $3 \times 3 \times 3 \times 3 \times 3$

b) 5^3 $5 \times 5 \times 5$

c) 7^7 $7 \times 7 \times 7 \times 7 \times 7 \times 7 \times 7$

2. Simplify each expression.

a) $2^3 \times 2^4$ 2^7

b) $4^3 \times 4$ 4^4

c) $17^8 \times 17^2$ 17^{10}

d) $(-3)^9 \times (-3)^{91}$ $(-3)^{100}$

3. State whether each is true or false. For any false statements work out the correct answer.

a) $5^{-3} \times 5^7 = 25^4$ False. 5^4

b) $9^{-3} \times 9^4 = 9$ True

c) $(-13)^4 \times (-13)^{-4} = 0$ False. $(-13)^0 = 1$

d) $27^{-3} \times 27^{-8} = 27^{11}$ False. 27^{-11}

4. Simplify the following.

a) $7^{0.7} \times 7^{2.3}$ 7^3

b) $10^{2.3} \times 10^{0.7}$ 10^3

c) $213^{-0.36} \times 213^{1.36}$ $213^1 = 213$

Multiply powers
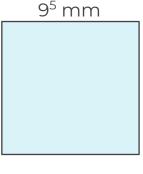
5. For each equation find the value of m.

a) $9^2 \times m^3 = 9^5$ m = 9

b) $13^m \times 13^7 = 13^{20}$ m = 13

c) $(-2)^{-5} \times (-2)^m = (-2)^{-10}$ m = -5

d) $4^m \times 4^m \times 4^m = 4^{15}$ m = 5

7. A square has a side length of 9^5 mm. Calculate the area of the square. Give your answer as a power of 9

9^5 mm

9^{10} mm^2