

## **Exponents**

## **Laws of exponents**

$$a^x \times a^y = a^{x+y}$$

$$\frac{a^{x}}{a^{y}} = a^{x-y}$$

$$(a^x)^y$$

$$\left(\frac{a}{b}\right)^n = \frac{a^n}{b^n}$$

 $a^0 = 1$ , a is all real numbers

$$0^0 = 0$$

$$a^{-x} = \frac{1}{a^x}$$

$$\frac{1}{a^{-x}} = a^x$$

$$\sqrt{a} = a^{\frac{1}{2}}$$

$$\sqrt[3]{a} = a^{\frac{1}{3}}$$

$$\sqrt[n]{a} = a^{\frac{1}{n}}$$

IBDP Mathematics Applications and interpretation (SL) Exponents



$$a^{x} x a^{y} = a^{x+y}$$

$$\frac{a^{x}}{a^{y}} = a^{x-y}$$

1. Simplify $3^2 \times 3^4$ using the exponent laws.
2. Simplify $k^1 \times k^9$ using the exponent laws.
3. Simplify $x^3 \times 3^2$ using the exponent laws.

## IBDP Mathematics Applications and interpretation (SL) Exponents



$$(a^{x})^{y}$$

$$(ab)^{x}$$

$$\left(\frac{a}{b}\right)^{n} = \frac{a^{n}}{b^{n}}$$

$$a^{0} = 1, a \text{ is all real numbers}$$

$$0^{0} = 0$$

Write (5<sup>2</sup>)<sup>3</sup> without brackets.
 Write (k<sup>3</sup>)<sup>5</sup> without brackets.

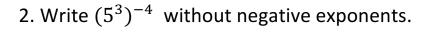
## IBDP Mathematics Applications and interpretation (SL) Exponents



$$a^{-x} = \frac{1}{a^x}$$

$$\frac{1}{a^{-x}} = a^x$$

1. V	Vrite	$3^{-3}$	without	negative	exponents.
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3. Write  $(27)^{-\frac{2}{3}}$  without negative exponents.