

*Arkalyk state pedagogical Institute named after
Y. Altynsarin*



Theme:
Power

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" People unfamiliar with algebra can not imagine the wonderful things that can be achieved with the help of ... called science."

G.W Leibniz

* Determination of a natural indicator



Powers of a with natural exponent n is the product of n factors, each of which is equal to a .

$$a^n = \underbrace{a \cdot a \cdot \dots \cdot a}_{n \text{ raz}}$$

* Properties with a natural indicator of the degree of



$$a^m \cdot a^n = a^{m+n}$$

$$a^m \div a^n = a^{m-n}$$

$$(ab)^n = a^n b^n$$

$$(a^m)^n = a^{mn}$$

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

e
q
u
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,
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* Determination of the zero indicator

$$a^0 = 1$$

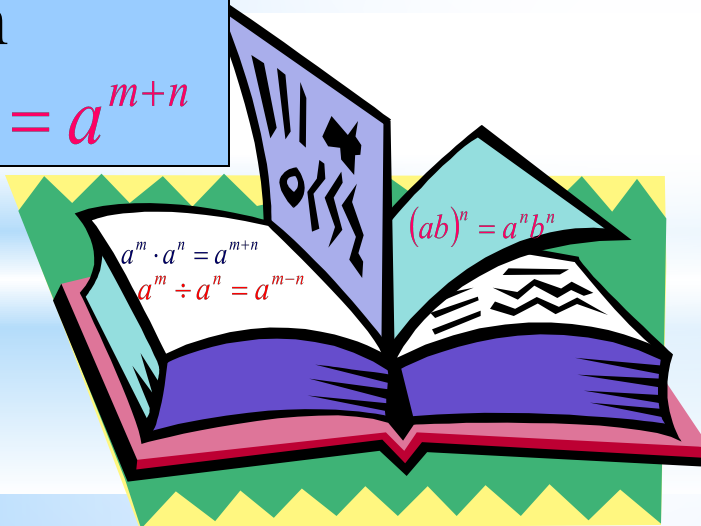
* Multiplying powers with the same bases

For any
number a and
any positive
integers m and
 n

$$a^m \cdot a^n = a^{m+n}$$

$$a^m \cdot a^n = a^{m+n}$$

Multiplying powers
with the same bases
of the base is left
unchanged, and the
figures add up

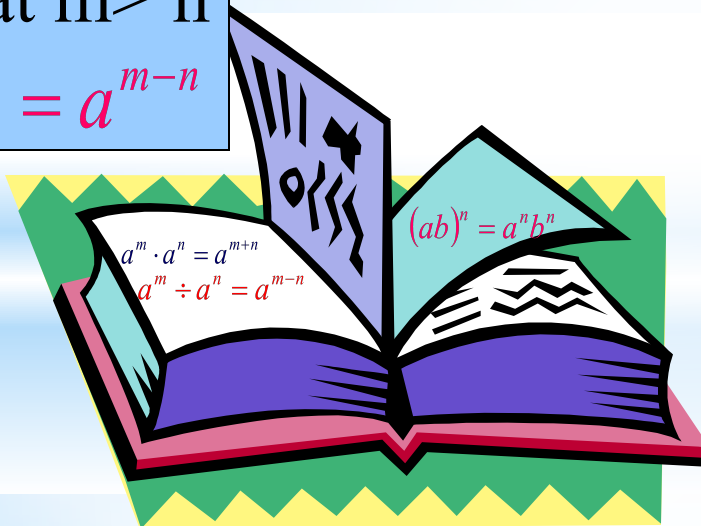


* The division of powers with the same bases

For any arbitrary natural number $a \neq 0$ and m and n , such that $m > n$

$$a^m \div a^n = a^{m-n}$$

$$a^m \div a^n = a^{m-n}$$



When dividing powers with the same base bases are left unchanged , and the dividend is subtracted from the index index divider

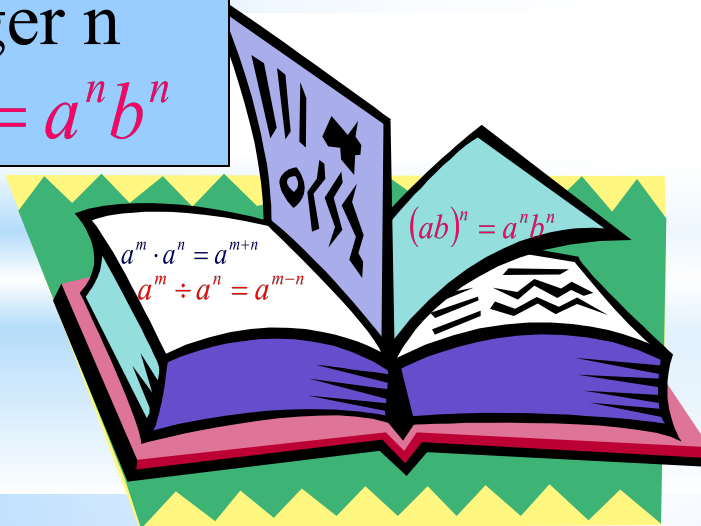
* Exponentiation works

For any numbers a and b and any positive integer n

$$(ab)^n = a^n b^n$$

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With the construction of the power works erected in the degree of each factor and multiply the results



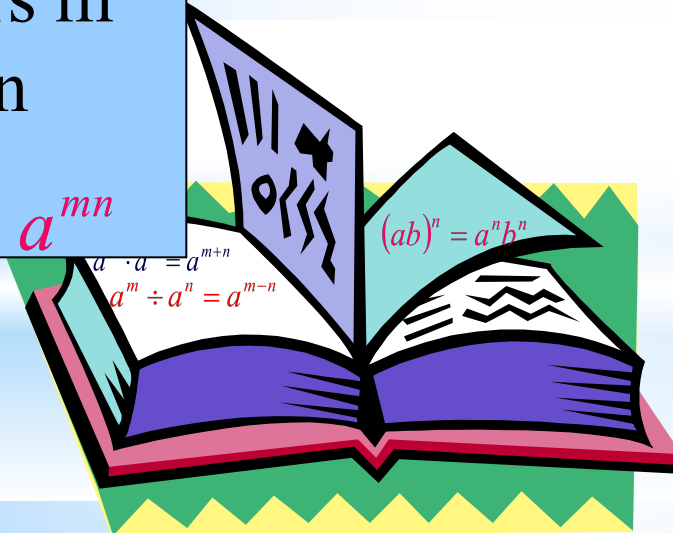
*Exponentiation degree

For any
number and a
random
natural
numbers m
and n

$$(a^m)^n = a^{mn}$$

$$(a^m)^n = a^{mn}$$

With the
construction of the
degree of the power
base is left
unchanged , and the
figures are
multiplied



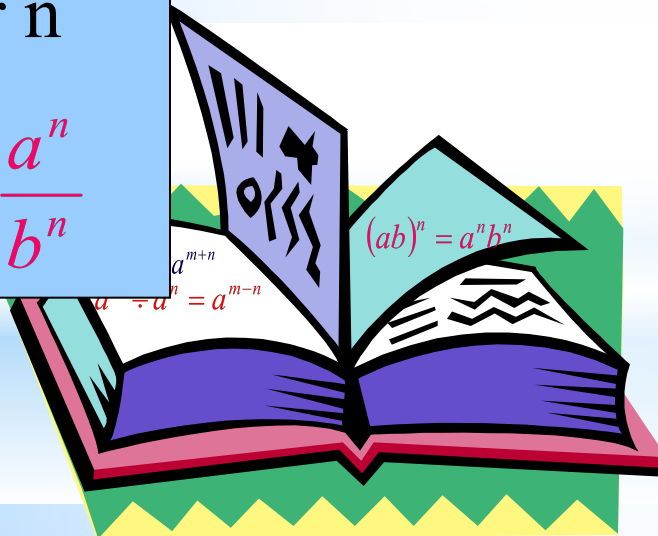
*Exponentiation fraction

For any numbers a and $b > 0$ and any positive integer n

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

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

With the construction of the power fraction erected in the degree of the numerator and denominator of the fraction



History of the number of degree



In his famous book "Arithmetic" Diophantus of Alexandria described the first natural degree



Rene Descartes in his
"geometry" (1637),
we find the current
designation of degrees
 a^2, a^3, \dots

*" Silences " Game

1. Follow these steps:

$$x^{11} \cdot x \cdot x^2 ; \quad x^{14} : x^5 ; \quad (a^4)^3 ; \quad (-3a)^2.$$

2. Compare the expression to zero :

$$(-5)^7; \quad (-6)^{18}; \quad (-4)^{11} \cdot (-4)^8 \quad (-5)^{18} \cdot (-5)^6; \quad -(-4)^8.$$

3. Calculate the value of the expression :

$$-1 \cdot 3^2; \quad (-1 \cdot 3)^2 \quad 1 \cdot (-3)^2; \quad -(2 \cdot 3)^2; \quad 1^2 \cdot (-3)^2$$

THE GAME " THE PAIR OF NUMBERS "

1) $2xy \cdot 3x^2y^5$	1) $-5x^4y^5$
2) $3xy^3 \cdot x^3y^6$	2) $-x^5y^{10}z^3$
3) $-0,6ac^3 \cdot (-8)a^2c^4$	3) $6a^3c^5$
4) $-5a^2c \cdot 2ac \cdot (-0,6c^3)$	4) $6x^3y^6$
5) $xy^3z^3 \cdot x \cdot x^3y^7$	5) $-9x^4y^6z^2$
	6) $4,8a^3c^7$
	7) $2x^4y^9$

***ANSWERS :**

(1, 4)

(2, 7)

(3, 6)

(4, 3)

(5, 2)

Computational pause

$$1) c^3 \cdot c^5 =$$

$$6) c^7 : c^5 =$$

$$2) c^8 : c^6 =$$

$$7) (c^4)^3 \cdot c =$$

$$3) (c^4)^3 =$$

$$8) c^4 \cdot c^5 \cdot c^0 =$$

$$4) c^3 \cdot c^5 : c^6 =$$

$$9) c^{16} : c^8 =$$

$$5) c^{14} \cdot c^8 =$$

$$10) (c^5)^3 =$$

* Comparing expressions

Compare without performing calculations. Find the correct inequalities. From their respective letters make up the name of the architect, the project is the building of the Bolshoi Theater in Moscow was built in 1825 :

Я $(-15)^{10} < 0$

С $(-3,2)^{13} > 0$

Б $-4,1^{12} < 0$

М $-(-2)^{62} > 0$

О $(-6,5)^4 > (-8,4)^3$

В $(-3,4)^2 > -3,4^2$

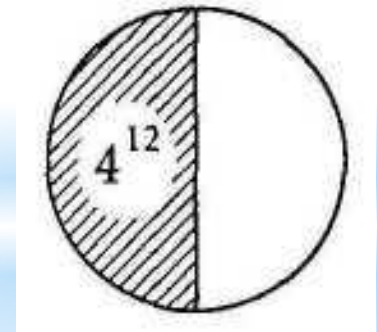
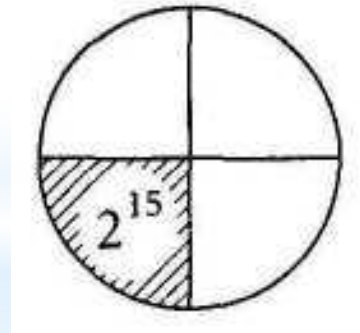
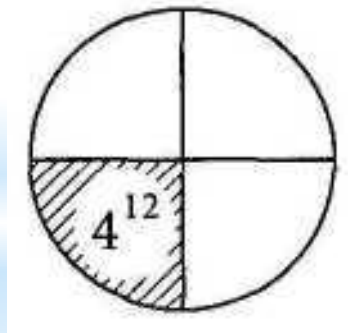
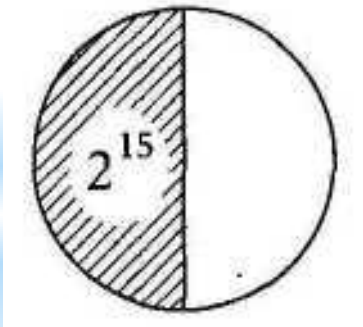
Д $x^{101} \cdot x^{21} < 0$

Е $\frac{(-15)^4}{-15^4} < 0$



*What number illustrates a circle?

Find out how many shows a circle, if the shaded portion shows a specified number . A record in the form of a degree .



Reflection

<i>I know</i>	<i>I learned</i>	<i>I want to know</i>

**THANK YOU FOR
ATTENTION**

