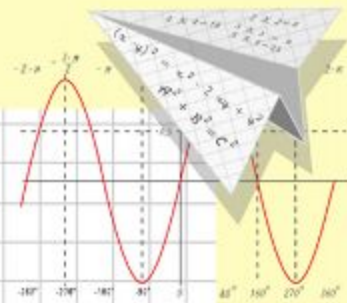


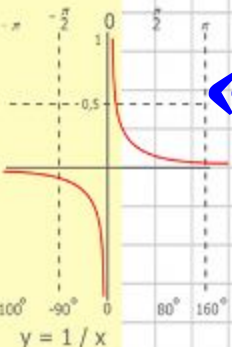
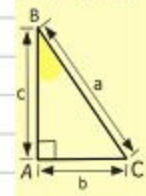
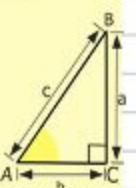
# Математик

а



## Урок обобщения знаний по теме:

# «Формулы сокращённого умножения»



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

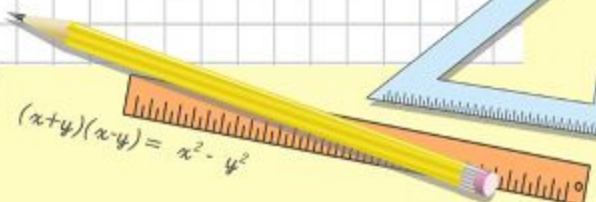
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$



$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$



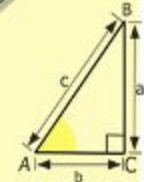
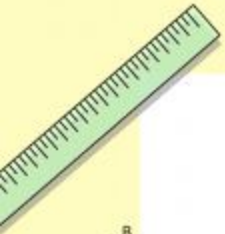
$$(x+y)(x-y) = x^2 - y^2$$

## Цели урока:

1. Повторить и обобщить пройденный материал по теме «Формулы сокращённого умножения».
2. Закрепить умения и навыки применения формул сокращённого умножения на решении математических задач.

## План урока:

1. Организационный момент.
2. Устная работа.
3. Обобщение пройденного материала.
4. Самостоятельная работа.
5. Подведение итогов урока.
6. Домашнее задание.



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

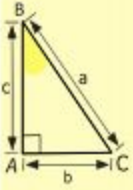
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$



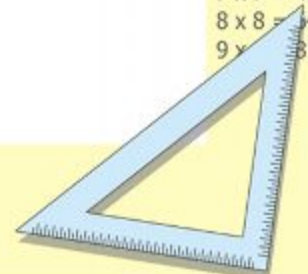
$$\begin{array}{l} y = \sin 90 \\ y = 25 + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{array}$$

$$(x+y)(x-y) = x^2 - y^2$$



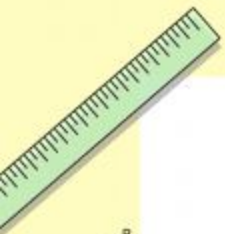
$$y = \cos$$

$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



# 1. Устная работа:

- Замените \* одночленом так, чтобы получившееся равенство было тождеством



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

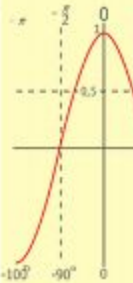
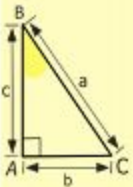
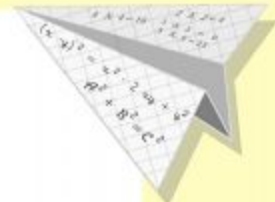
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

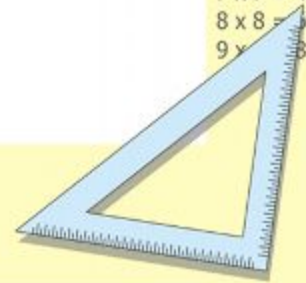
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



$$y = \cos$$

$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



# Замените \* одночленом так, чтобы получившееся равенство было тождеством

$$(* + 2b)^2 = a^2 + 4ab + 4b^2$$

**a**

$$(10 - *)^2 = 100 - 40m + 4m^2$$

**2m**

$$(2a + *) (2a - *) = 4a^2 - 9b^2$$

**3b**

$$(5x + *) (5x - *) = 25x^2 - 0,16y^2$$

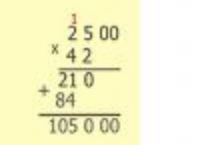
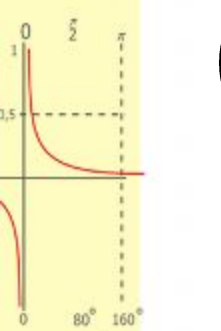
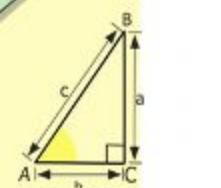
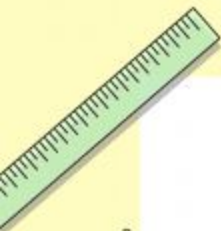
**0,4 y**

$$x^2 - y^2 = (x + *) (* - *)$$

**y, x, y**

$$(x - 4)^2 = * - * + *$$

**x<sup>2</sup>, 8x, 16**



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

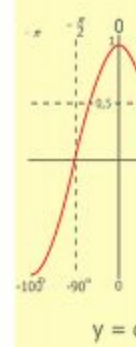
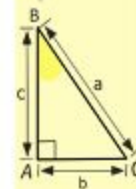
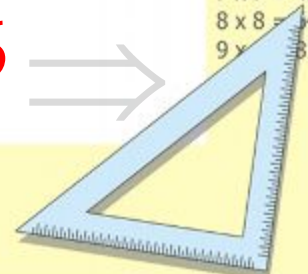
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$

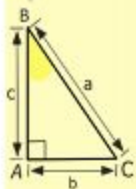
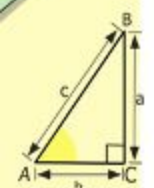
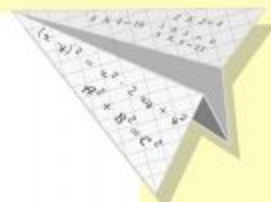
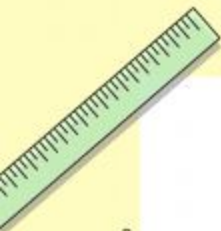


- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81

# Формулы сокращённого умножения

1.

2.



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$
- $9 \times 9 = 81$



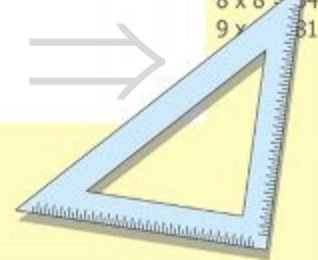
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

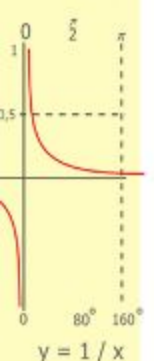
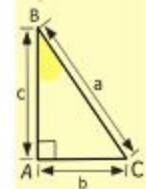
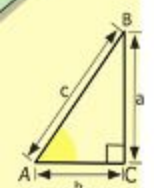
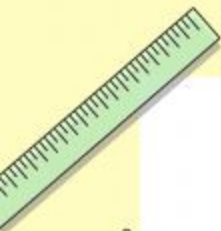
$$(x+y)(x-y) = x^2 - y^2$$



# Формулы сокращённого умножения

*Квадрат суммы и разности двух выражений:*

$$(a \pm b)^2 = a^2 \pm 2ab + b^2$$



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



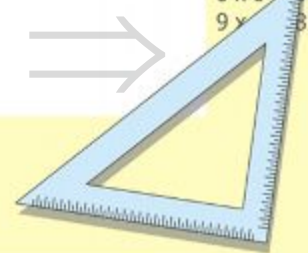
$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

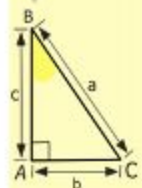
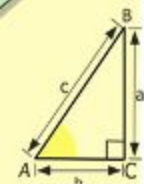
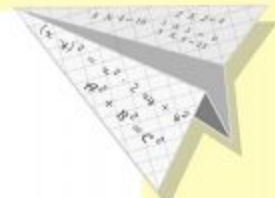
$$(x+y)(x-y) = x^2 - y^2$$



# Формулы сокращённого умножения

*Разность квадратов:*

$$a^2 - b^2 = (a - b)(a + b)$$



$$\begin{array}{r} 1 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$
- $9 \times 9 = 81$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

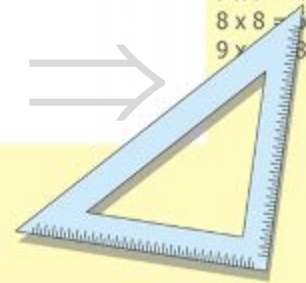
$$\sin 90^\circ = 1$$



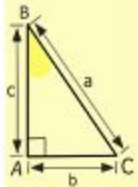
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$

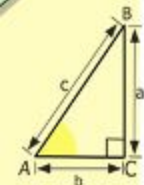
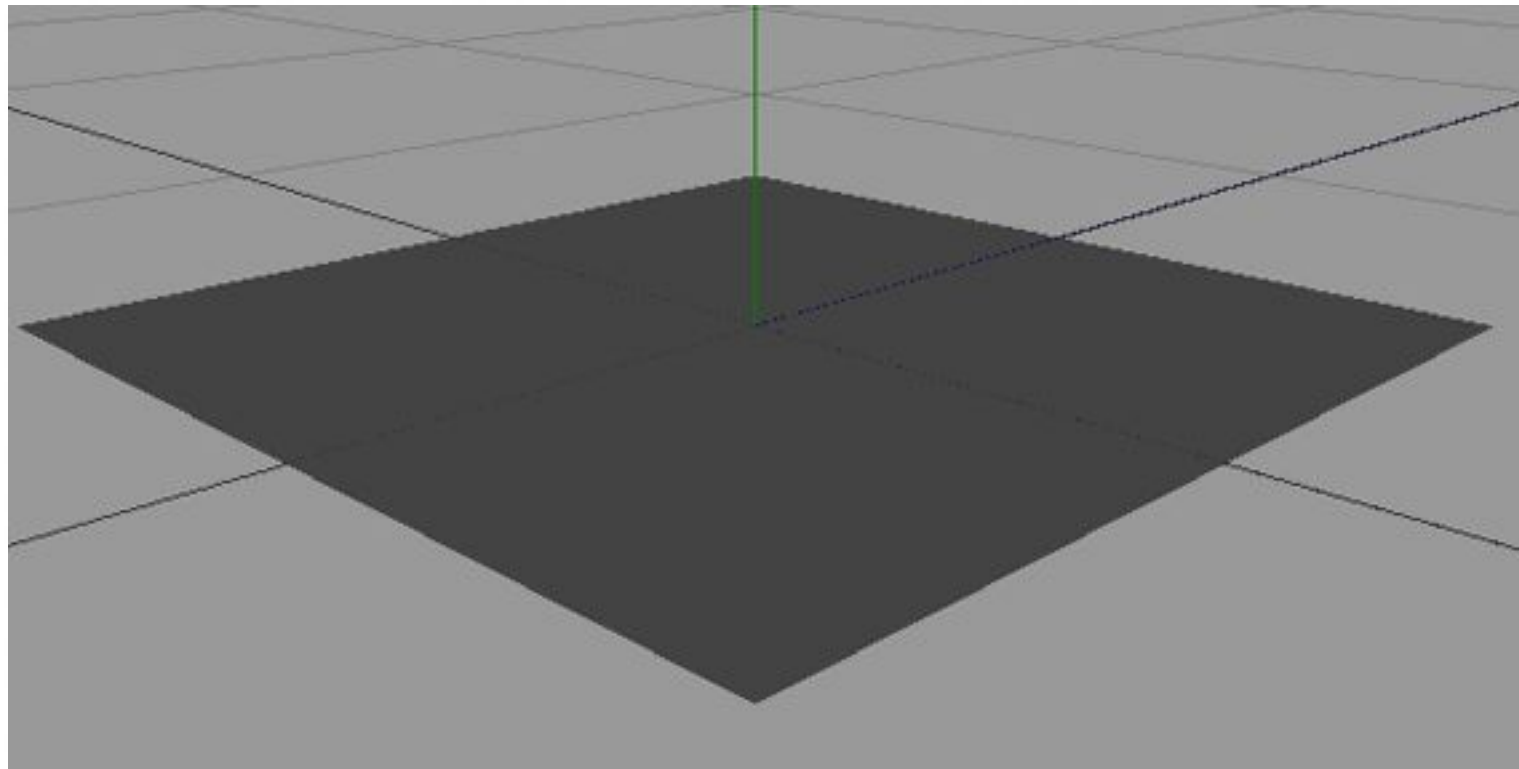


# Двухмерное измерение



$$y = \cos$$

- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



$$y = 1/x$$

$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

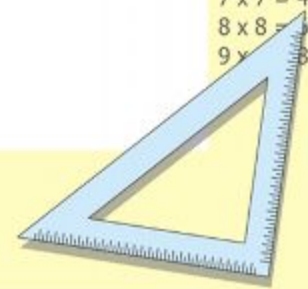
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

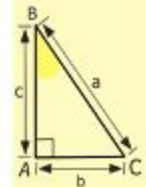
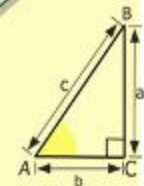
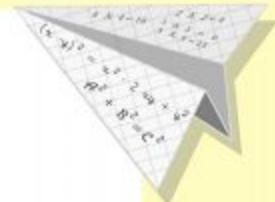
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$





Высчитать площадь  
поверхности стола с  
измерениями 36 дм  
и 44 дм.



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- 2 x 2 = 4
- 3 x 3 = 9
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

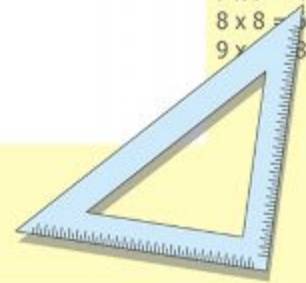
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$



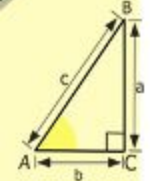
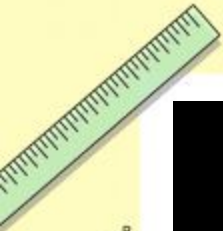
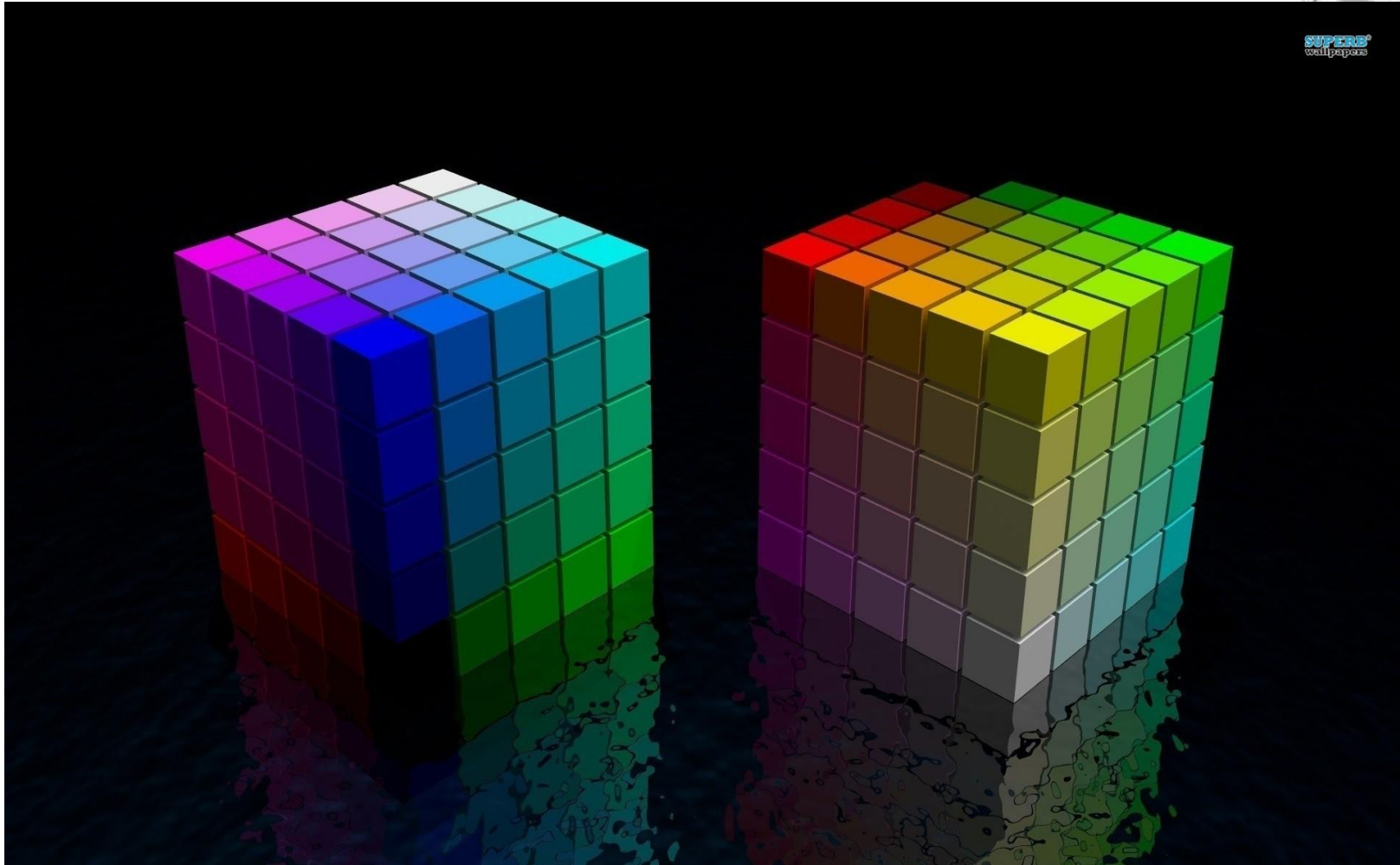
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



# Трёхмерное измерение

SUPERB®  
wallpapers



$$\begin{array}{r} 1 \\ \times 2500 \\ \hline 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

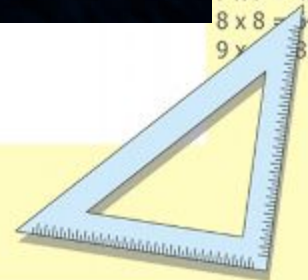
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



Найти значения выражения

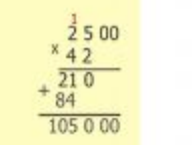
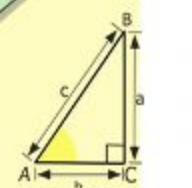
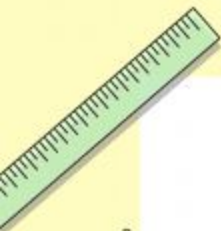
$$(5x-1)(25x^2+5x+1) \text{ при } x=-2.$$

Решить уравнение

$$(0,5-6x)(0,25+3x+36x^2)=0,125$$

Упростить выражение

$$\frac{x^3 - 64y^3}{(x+4y)^2 - 4xy}$$



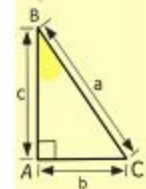
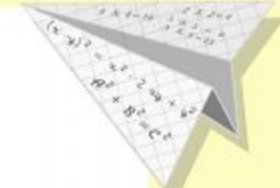
$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

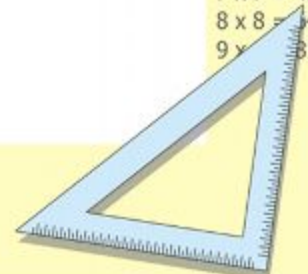


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
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- 7 x 7 = 49
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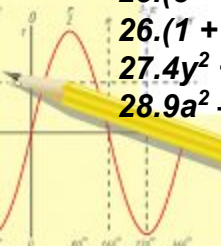
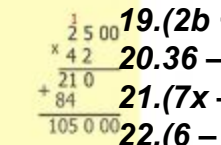
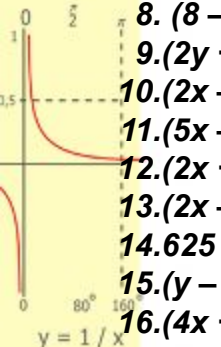
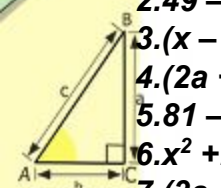
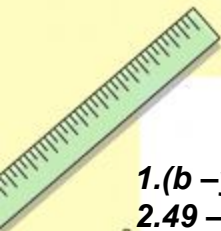
# Найди ошибки в правой части

## 1 вариант

1.  $(b - y)^2 = b - 2by - y^2$
2.  $49 - c^2 = (49 - c)(49 + c)$
3.  $(x - 10)^2 = x^2 - 20x + 10$
4.  $(2a + 1)^2 = 4a^2 + 2a + 1$
5.  $81 - b^2 = (b - 9)(9 + b)$
6.  $x^2 + 2xy + y^2 = (x + y)$
7.  $(3a - 2b)^2 = 9a^2 + 12ab + 4b^2$
8.  $(8 - x)(8 + x) = 64 + x^2$
9.  $(2y + 1)^2 = 2y^2 + 4y + 1$
10.  $(2x - 1)^2 = 4x^2 + 1$
11.  $(5x - 1)(5x + 1) = 5x^2 + 1$
12.  $(2x + 3)^2 = 4x^2 + 6x + 9$
13.  $(2x - 5)^2 = 4x^2 - 20x + 5$
14.  $625 - 16a^2 = (25 + 16a)(25 + 16a)$
15.  $(y - 4)(y + 4) = y^2 - 4$
16.  $(4x + 2)(2 - 4x) = 4 - 4x^2$
17.  $(x + 1)^2 = 1 - x + x^2$
18.  $121 - 4y^2 = (11 - 4y)(11 + 4y)$
19.  $(2b + 3a)^2 = 2b^2 + 6ab + 9a^2$
20.  $36 - x^2 = (36 - x)(36 + x)$
21.  $(7x - 3)(7x + 3) = 49x^2 - 3$
22.  $(6 - 2y)^2 = 36 + 12y + 4y^2$
23.  $(10 + 2a)(2a + 10) = 100 + 4a^2$
24.  $(8k + 3)^2 = 64k + 48k + 9$
25.  $(3 + 2y)(3 + 2y) = 9 + 4y^2$
26.  $(1 + x)^2 = 1 + x + x^2$
27.  $4y^2 + 4y + 1 = (4y + 1)^2$
28.  $9a^2 - 4b^2 = (9a - 4b)(9a + 4b)$

## 2 вариант

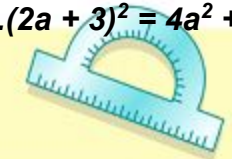
1.  $(2b + 3a)^2 = 2b^2 + 6ab + 9a^2$
2.  $16 - x^2 = (16 - x)(16 + x)$
3.  $(7x - 4)(7x + 4) = 49x^2 - 4$
4.  $(8 - a)(8 + a) = 64 + a^2$
5.  $(2x + 1)^2 = 2x^2 + 4x + 1$
6.  $(2a - 1)^2 = 4a^2 + 1$
7.  $(a - 4)(a + 4) = a^2 - 4$
8.  $(a + 1)^2 = 1 - a + a^2$
9.  $121 - 4a^2 = (11 - 4a)(11 + 4a)$
10.  $(6 - 2a)^2 = 36 + 12a + 4a^2$
11.  $(5 + 2a)(2a + 5) = 25 + 4a^2$
12.  $(8a + 3)^2 = 64a + 48a + 9$
13.  $(3 + 2y)(3 - 2y) = 9 + 4y^2$
14.  $(1 + a)^2 = 1 + a + a^2$
15.  $9a^2 - 4b^2 = (3a - 4b)(3a + 4b)$
16.  $(2x + 1)^2 = 4x^2 + 2x + 1$
17.  $81 - x^2 = (x - 9)(9 + x)$
18.  $x^2 + 2xy + y^2 = (x + y)$
19.  $(3x - 2y)^2 = 9x^2 + 12xy + 4y^2$
20.  $(x - y)^2 = x - 2xy - y^2$
21.  $49 - x^2 = (49 - x)(49 + x)$
22.  $4a^2 + 4a + 1 = (4a + 1)^2$
23.  $(a - 10)^2 = a^2 - 20a + 10$
24.  $(4a + 2)(2 - 4a) = 4 - 4a^2$
25.  $(2a - 5)^2 = 4a^2 - 20a + 5$
26.  $625 - 16x^2 = (25 + 16x)(25 + 16x)$
27.  $(5a - 1)(5a + 1) = 5a^2 + 1$
28.  $(2a + 3)^2 = 4a^2 + 6a + 9$



$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

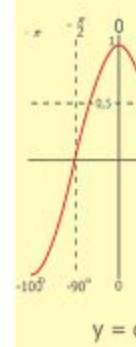
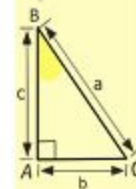
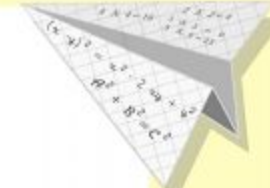
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$$\sin 90^\circ = 1$$

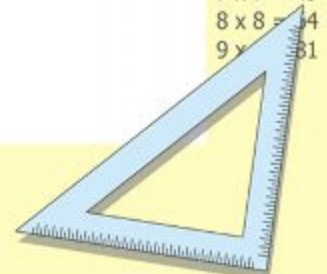


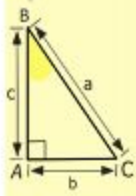
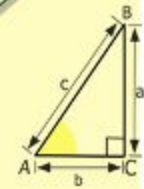
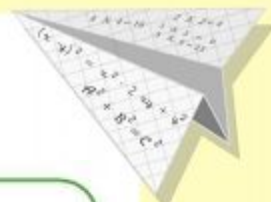
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81





$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

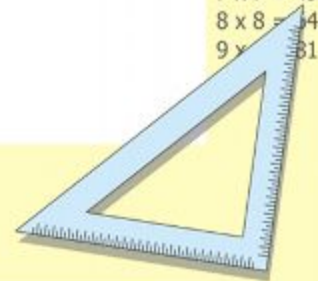
$$\sin 90^\circ = 1$$



$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

$$(x+y)(x-y) = x^2 - y^2$$



# Домашнее задание

**№ 1. ПРЕДСТАВЬТЕ В ВИДЕ МНОГОЧЛЕНА:**

$$(y + 15)^2;$$

$$(-7x - 1)^2;$$

$$(-4n^3 + n)(n + 4n^3)$$

$$(-6a^2 - 2b^4)(6a^2 - 2b^4)$$

**№ 2. РАЗЛОЖИТЕ НА МНОЖИТЕЛИ:**

$$y^5 - 25y^3$$

$$a^3 - 2a^2 + 18 - 9a$$

$$16x + 8x^2 + x^3$$

$$a^5 b^2 + 27a^2 b^5$$

**№ 3. УПРОСТИТЕ ВЫРАЖЕНИЕ:**

$$(x + 7)^2 - 10x$$

$$2c(1+c) - (c-2)(c+2)$$

$$(3a + p)(3a - p) + p^2$$

$$4a(a - 2) - (a - 4)^2$$

**№ 4. РЕШИТЕ УРАВНЕНИЕ:**

$$(x^2 - 1)(x^2 + 3) = (x^2 + 1)^2 + x$$

$$y^3 + 3y^2 - y - 3 = 0$$

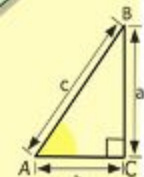
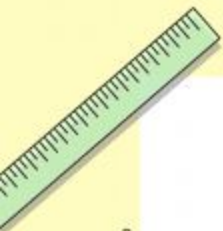
$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

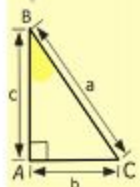
$$\sin 90^\circ = 1$$

$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

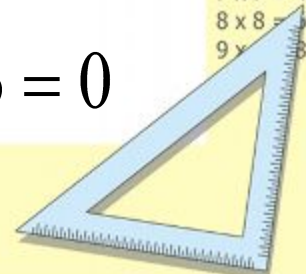
$$(x+y)(x-y) = x^2 - y^2$$



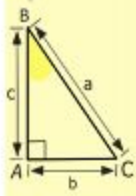
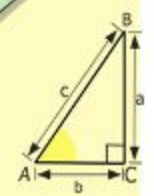
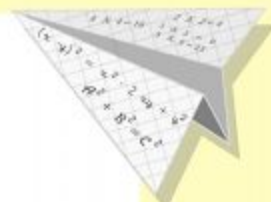
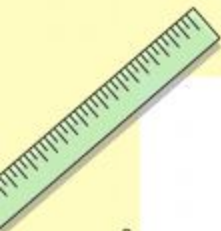
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$



$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



# Спасибо за урок!



$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

- $2 \times 2 = 4$
- $3 \times 3 = 9$
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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