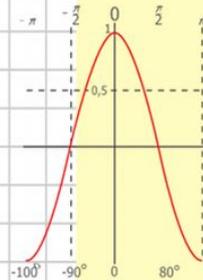
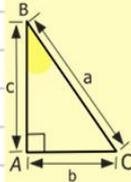
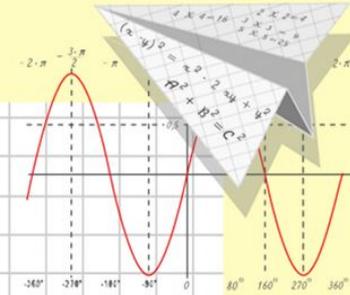
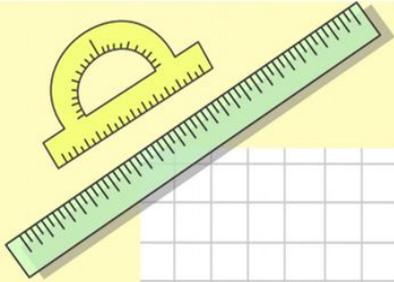


Математик

а

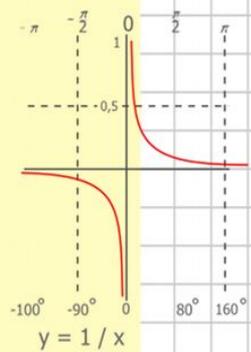
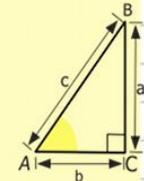
Наибольший общий делитель.

Учитель математики: Солдатова Людмила Станиславовна



$y = \cos x$

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



$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

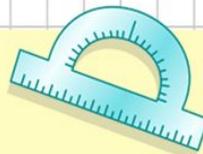


$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

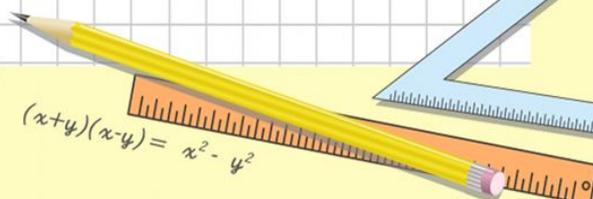


$$\sin 90^\circ = 1$$



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

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



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

Задача

Антон купил на «День Учителя» 54 розы и 36 хризантем.

Какое наибольшее число букетов может составить мальчик?



Background collage of mathematical elements:

- Top left: A green ruler.
- Top right: A 3D geometric shape with formulas like $(x-y)^2 = x^2 - 2xy + y^2$ and $x^2 - y^2 = (x+y)(x-y)$.
- Left side: A right-angled triangle with sides a, b, c and vertices A, B, C ; a graph of $y = 1/x$ with points $0, \frac{\pi}{2}, \pi$ and $80^\circ, 160^\circ$; a multiplication problem:
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$
; a sine wave graph with angles $0, 80^\circ, 160^\circ, 270^\circ, 360^\circ$.
- Right side: A right-angled triangle with sides a, b, c and vertices A, B, C ; a sine wave graph with points $-\pi, -\frac{\pi}{2}, 0$ and $-100^\circ, -90^\circ, 0$; a list of multiplication facts: $2 \times 2 = 4$, $3 \times 3 = 9$, $4 \times 4 = 16$, $5 \times 5 = 25$, $6 \times 6 = 36$, $7 \times 7 = 49$, $8 \times 8 = 64$, $9 \times 9 = 81$.
- Bottom: A yellow pencil, a blue ruler, and algebraic formulas: $\sin B = \frac{a}{c}$, $\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$, $\sin 90^\circ = 1$, $\begin{cases} y=1 \\ x=25+45 \\ \hline x=70 \end{cases}$, and $(x+y)(x-y) = x^2 - y^2$.

Решение

Найдем все делители чисел **54** и **36**.

54 делится на **1, 2, 3, 6, 9, 18, 27, 54**.

36 делится на **1, 2, 3, 4, 6, 9, 18, 36**.



Decorative elements on the page include:

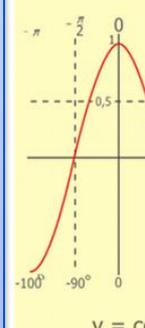
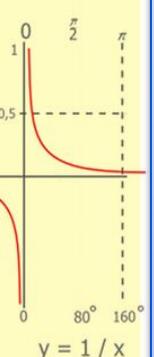
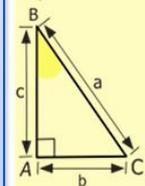
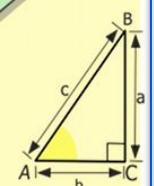
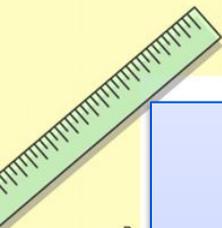
- A green ruler at the top left.
- A right-angled triangle with sides a , b , and c at the top left.
- A graph of the function $y = 1/x$ at the middle left.
- A multiplication table at the bottom left:
$$\begin{array}{r} 1 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$
- A sine wave graph at the bottom left.
- A yellow pencil at the bottom left.
- A blue protractor at the bottom center.
- A blue set square at the bottom right.
- A list of multiplication facts on the right side: $2 \times 2 = 4$, $3 \times 3 = 9$, $x \times 4 = 16$, $x \times 5 = 25$, $x \times 6 = 36$, $x \times 7 = 49$, $x \times 8 = 64$, $x \times 9 = 81$.
- A right-angled triangle with sides a , b , and c at the top right.
- A graph of a sine wave at the middle right.
- A list of equations at the bottom right: $y = \sin 90$, $x = 25y + 45$, $y = 1$, $x = 25 + 45$, $x = 70$, and the difference of squares formula $(x+y)(x-y) = x^2 - y^2$.
- A small paper airplane at the top right.

Общими делителями являются числа:

1, 2, 3, 6, 9, 18.

Значит из купленных цветов можно
составить

1, 2, 3, 6, 9 или *18* букетов.



$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 840 \\ \hline 105000 \end{array}$$

- 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



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

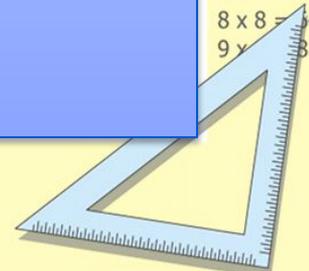
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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



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

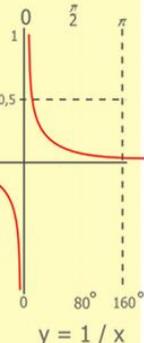
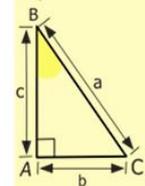
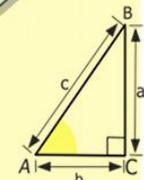
$$(x+y)(x-y) = x^2 - y^2$$



ОТВЕТ

Наибольшее количество букетов

18



$\frac{1}{2} 500$
 $\times 42$
 $\hline 210$
 $+ 84$
 $\hline 105000$

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

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

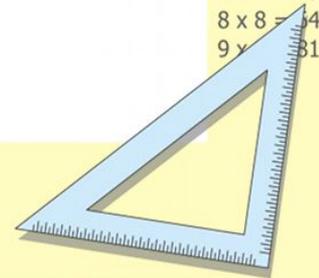
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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



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

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



А сейчас давайте разложим эти числа, **54** и **36**, на простые множители

$$54 \mid 2$$

$$36 \mid 2$$

$$54 = 2 * \cancel{3} * 3 * 3$$

$$27 \mid 3$$

$$18 \mid 2$$

$$36 = 2 * \cancel{2} * 3 * 3$$

$$9 \mid 3$$

$$9 \mid 3$$

$$3 \mid 3$$

$$3 \mid 3$$

$$1$$

$$1$$

Вычеркнем из разложения первого числа множители, которых нет в разложении второго.

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

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

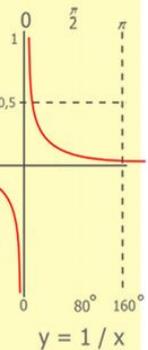
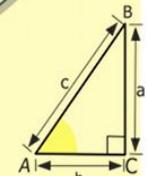
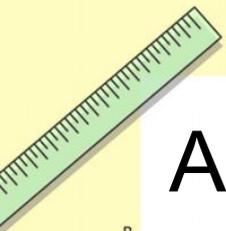
$$\sin 90^\circ = 1$$

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

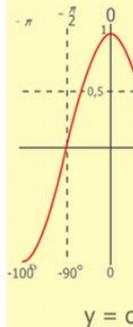
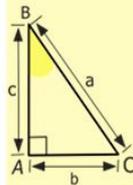
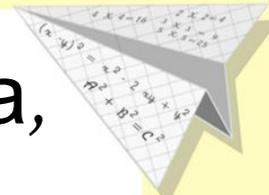
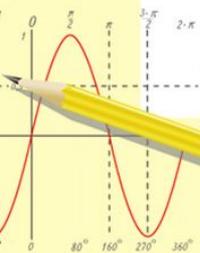
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

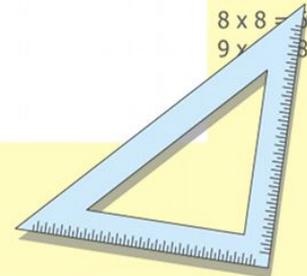
$$(x+y)(x-y) = x^2 - y^2$$

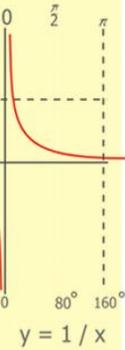
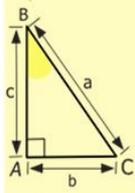
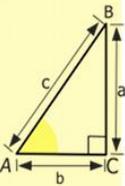
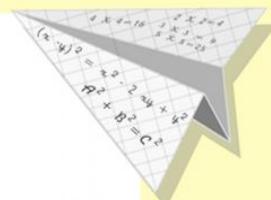
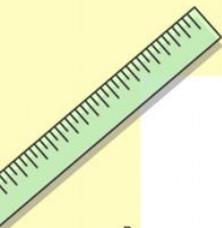


$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



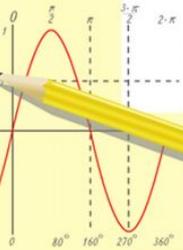
$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$





$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

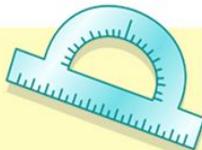
- 2 x 2 = 4
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$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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

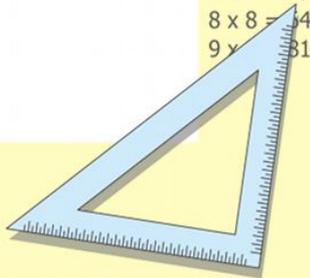
$$\sin 90^\circ = 1$$



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

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

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



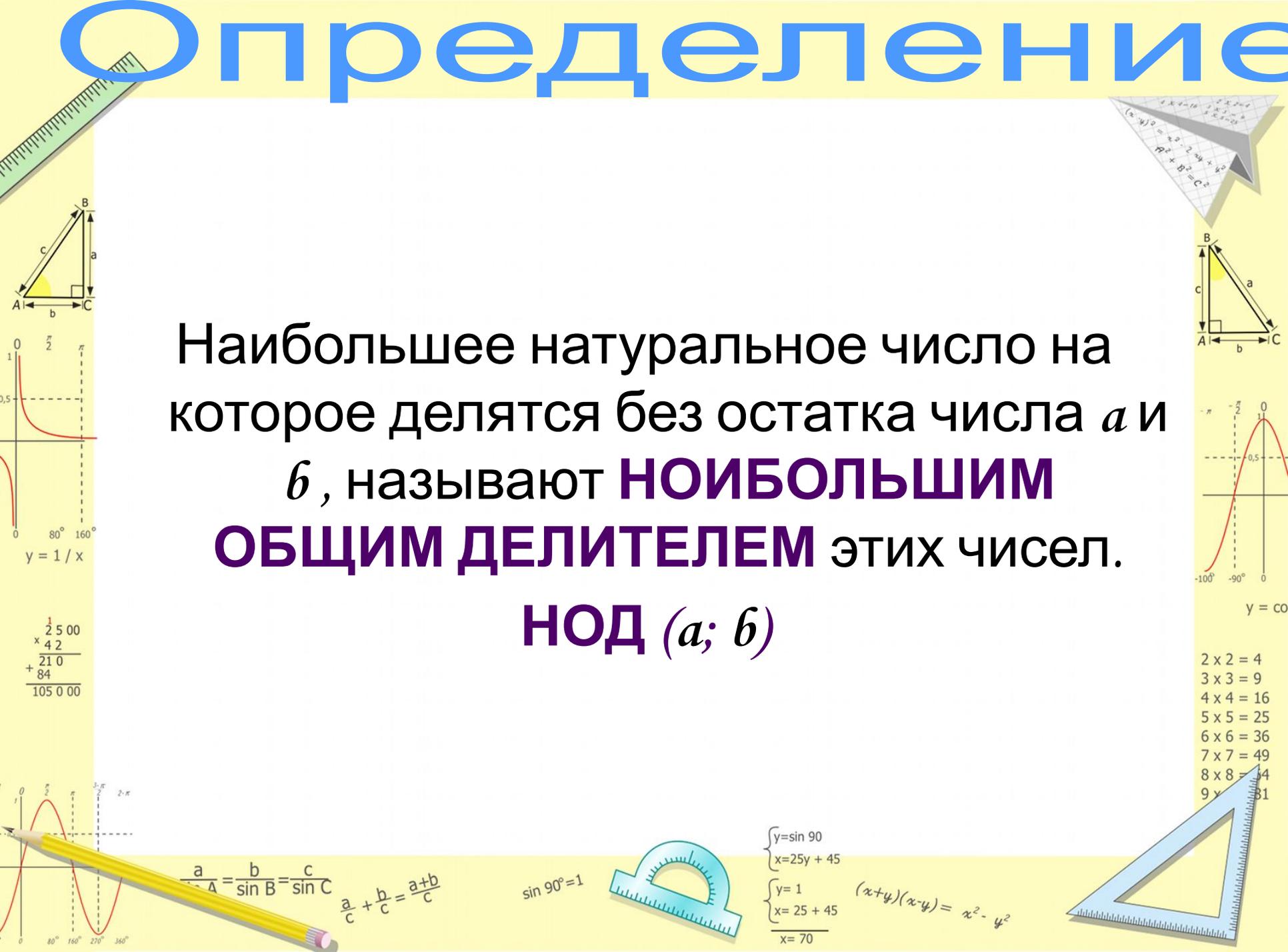
Оставшиеся множители перемножим.

НОД(54, 36) = 2 * 3 * 3 = 18.

Определение

Наибольшее натуральное число на которое делятся без остатка числа a и b , называют **НОИБОЛЬШИМ ОБЩИМ ДЕЛИТЕЛЕМ** этих чисел.

НОД ($a; b$)



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

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

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

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

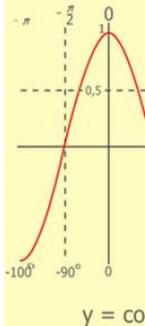
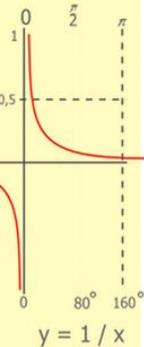
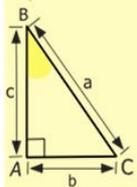
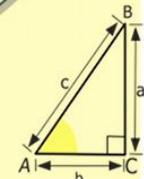
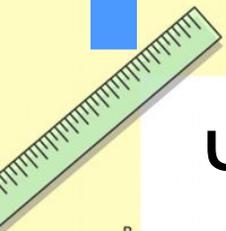
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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

Правило

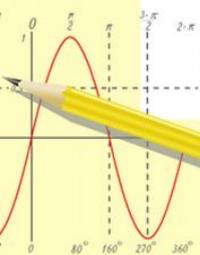
Чтобы найти **НАИБОЛЬШИЙ ОБЩИЙ ДЕЛИТЕЛЬ** нескольких натуральных чисел, надо:

- Разложить их на простые множители;
- Выбрать числа, входящие в разложение каждого из данных чисел на простые множители;
- Найти произведение этих выбранных чисел.



$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

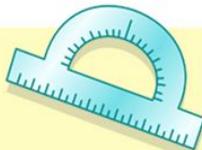
$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



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

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

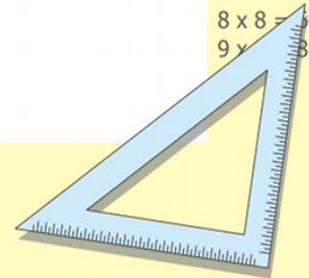
$$\sin 90^\circ = 1$$



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

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

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



Теперь давайте найдём разложение чисел

24 и 35

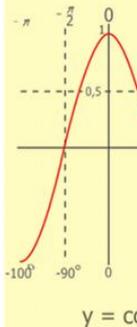
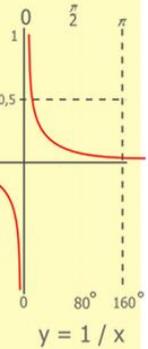
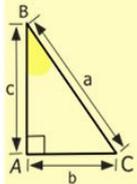
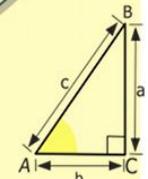
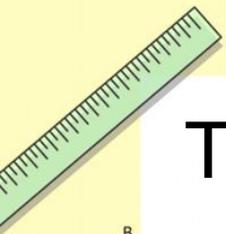
24 | 2
 12 | 2
 6 | 2
 3 | 3
 1

35 | 5
 7 | 7
 1

$$24 = 2 \cdot 2 \cdot 2 \cdot 3$$

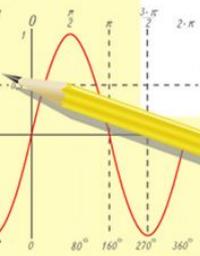
$$35 = 5 \cdot 7$$

$$\text{НОД}(24; 35) = 1$$



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

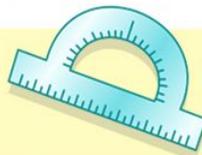
- 2 x 2 = 4
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$$\frac{a}{A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

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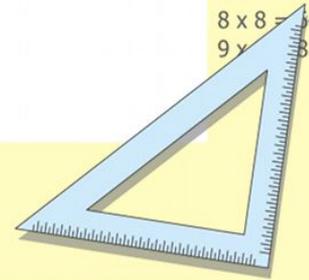
$$\sin 90^\circ = 1$$



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

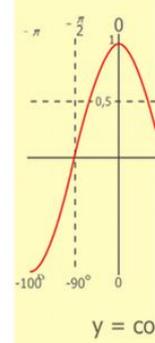
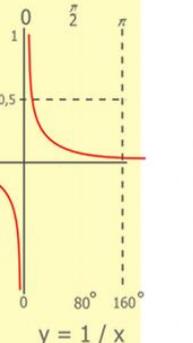
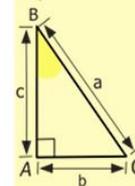
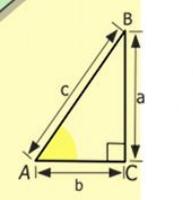
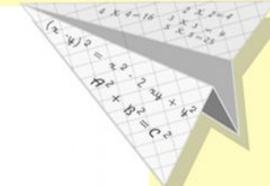
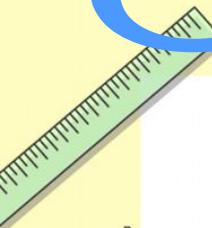
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



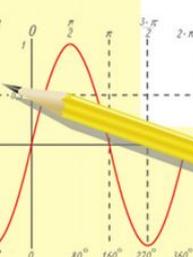
Определение

Натуральные числа называют **ВЗАИМНО ПРОСТЫМИ**, если их **НАИБОЛЬШИЙ ОБЩИЙ ДЕЛИТЕЛЬ** равен *1*.



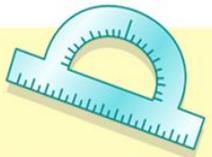
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$

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



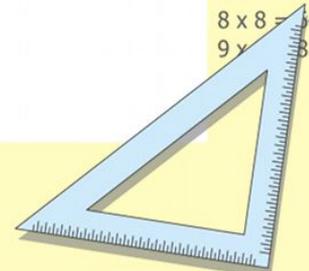
$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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

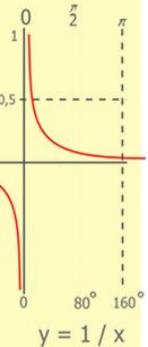
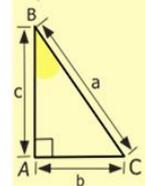
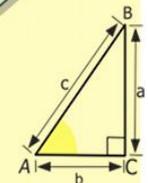
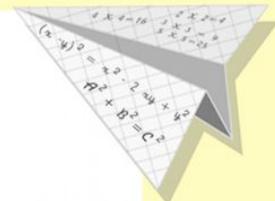
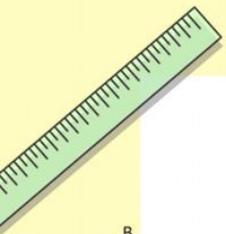


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$
$$\frac{x}{70}$$

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

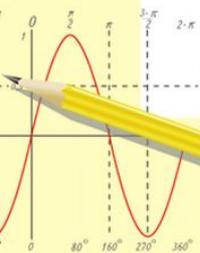


СПАСИБО ЗА ВНИМАНИЕ!!!



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

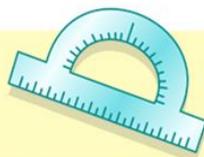
- $2 \times 2 = 4$
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- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$
- $9 \times 9 = 81$



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

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

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



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

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

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

