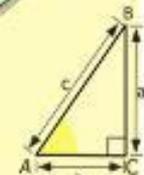
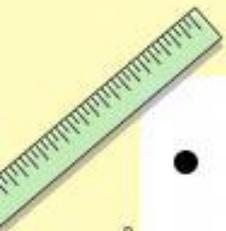


История зарождения математики

Подготовила
учитель математики
Белова О.А.

ОГКОУ Шуйский детский дом-
школа
2016 г.



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



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

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

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

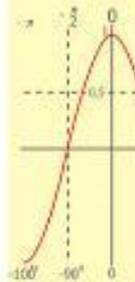
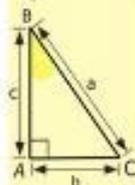
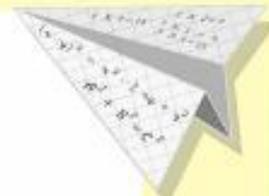
школа
2016 г.

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

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

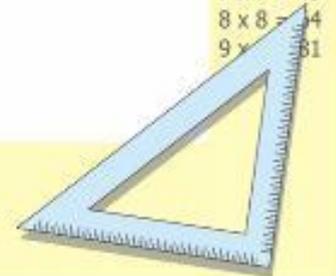
$$x = 70$$

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

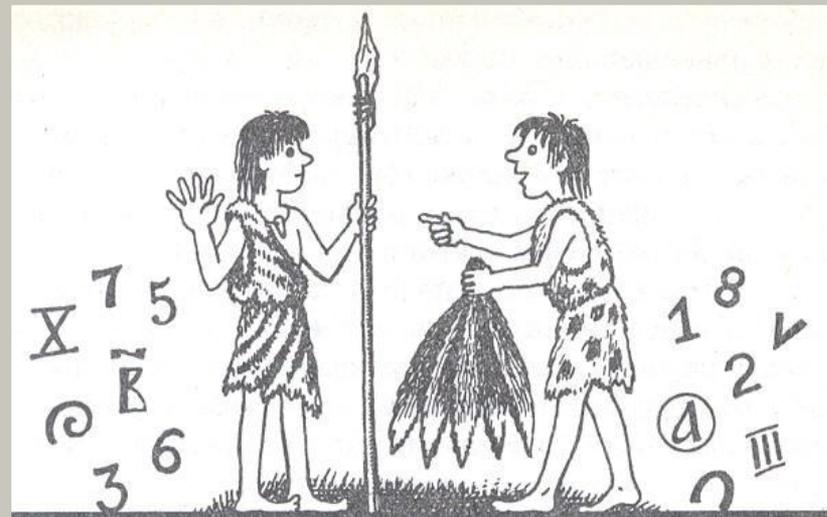
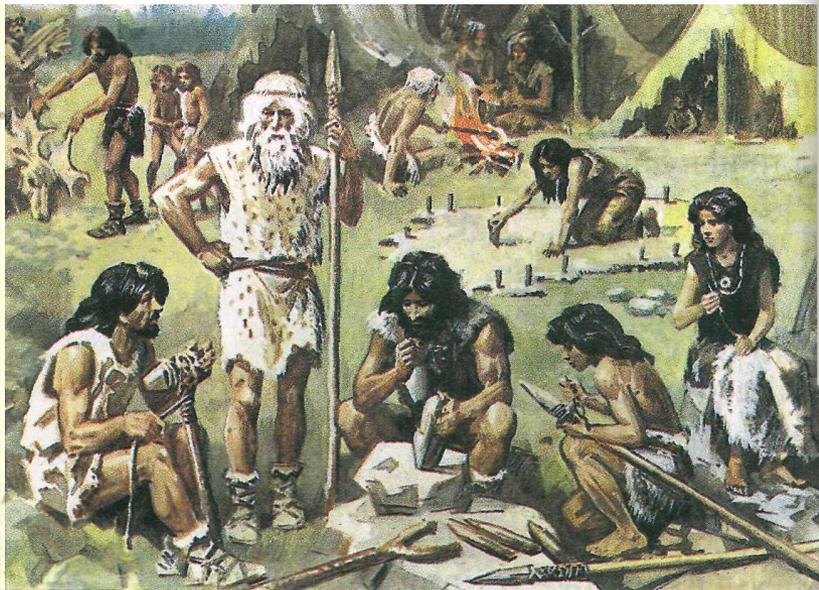


$$y = \cos$$

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



Самой древней математической деятельностью был счет, для которого использовали пальцы рук и



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

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

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

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

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

$$x = 70$$

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

$$\begin{aligned} 5 \times 5 &= 25 \\ 6 \times 6 &= 36 \\ 7 \times 7 &= 49 \\ 8 \times 8 &= 64 \\ 9 \times 9 &= 81 \end{aligned}$$

Точно датировать возникновение важнейших понятий — целого числа, величины, фигуры — невозможно. Когда возникла письменность, представление о них уже сложилось. К этому времени были выработаны и различные системы письменной нумерации целых

▽ 1	◁▽ 11	≡▽ 21	≡▽ 31	≡▽ 41	≡▽ 51
▽▽ 2	◁▽▽ 12	≡▽▽ 22	≡▽▽ 32	≡▽▽ 42	≡▽▽ 52
▽▽▽ 3	◁▽▽▽ 13	≡▽▽▽ 23	≡▽▽▽ 33	≡▽▽▽ 43	≡▽▽▽ 53
▽▽▽▽ 4	◁▽▽▽▽ 14	≡▽▽▽▽ 24	≡▽▽▽▽ 34	≡▽▽▽▽ 44	≡▽▽▽▽ 54
▽▽▽▽▽ 5	◁▽▽▽▽▽ 15	≡▽▽▽▽▽ 25	≡▽▽▽▽▽ 35	≡▽▽▽▽▽ 45	≡▽▽▽▽▽ 55
▽▽▽▽▽▽ 6	◁▽▽▽▽▽▽ 16	≡▽▽▽▽▽▽ 26	≡▽▽▽▽▽▽ 36	≡▽▽▽▽▽▽ 46	≡▽▽▽▽▽▽ 56
▽▽▽▽▽▽▽ 7	◁▽▽▽▽▽▽▽ 17	≡▽▽▽▽▽▽▽ 27	≡▽▽▽▽▽▽▽ 37	≡▽▽▽▽▽▽▽ 47	≡▽▽▽▽▽▽▽ 57
▽▽▽▽▽▽▽▽ 8	◁▽▽▽▽▽▽▽▽ 18	≡▽▽▽▽▽▽▽▽ 28	≡▽▽▽▽▽▽▽▽ 38	≡▽▽▽▽▽▽▽▽ 48	≡▽▽▽▽▽▽▽▽ 58
▽▽▽▽▽▽▽▽▽ 9	◁▽▽▽▽▽▽▽▽▽ 19	≡▽▽▽▽▽▽▽▽▽ 29	≡▽▽▽▽▽▽▽▽▽ 39	≡▽▽▽▽▽▽▽▽▽ 49	≡▽▽▽▽▽▽▽▽▽ 59
△ 10	△ 20	△ 30	△ 40	△ 50	

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

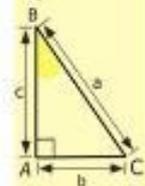
$$a + b = c$$

$$\sin 30^\circ$$

$$x = 25 + 45$$

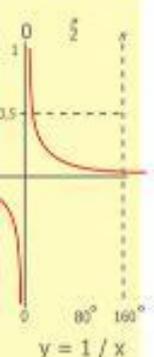
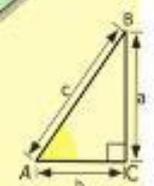
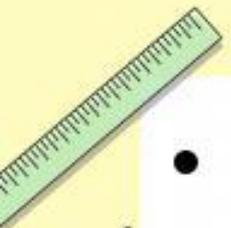
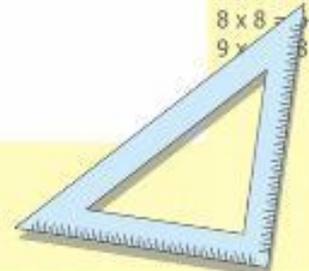
$$x = 70$$

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



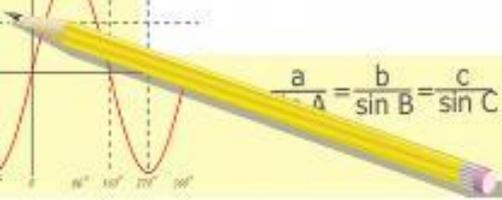
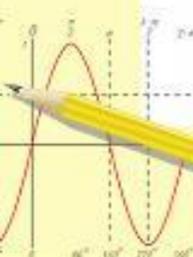
$$y = \cos$$

- 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



$$y = 1/x$$

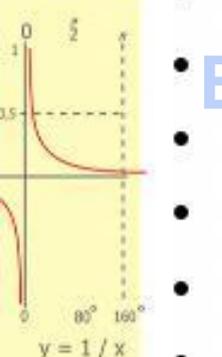
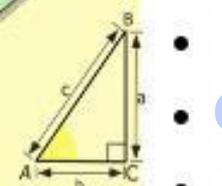
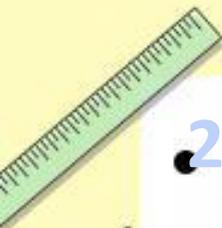
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



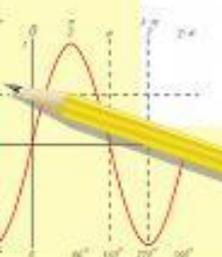
2000—1700 гг. до н. э. — первые дошедшие до нас математические тексты: два египетских папируса и многочисленные глиняные таблички из древнего Вавилона, содержащие формулировки и



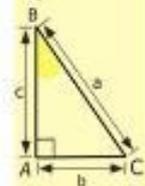
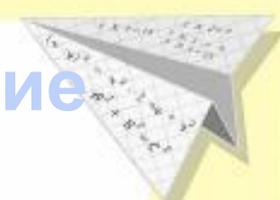
Вавилонская глиняная табличка, содержащая геометрические задачи. Начало II тысячелетия до н.э. Квадрат поделен на различные фигуры, площадь которых ученик должен вычислить.



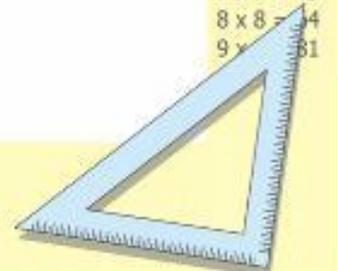
$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



$$\frac{a}{\Delta} = \frac{b}{\sin B}$$



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



Наиболее замечательное достижение этого

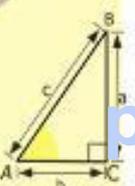
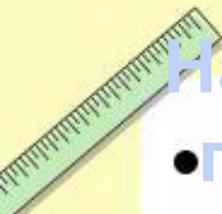
- периода — создание в древнем Вавилоне
- элементов алгебры и открытие правила
- решения квадратных уравнений. Вавилоняне
- умели также находить приближенные
- значения квадратных корней из
- неквадратных чисел. Им были известны
- правила суммирования арифметической
- прогрессии натуральных

Вавилонский способ
приближенного вычисления квадратных корней

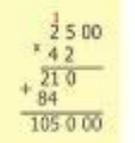
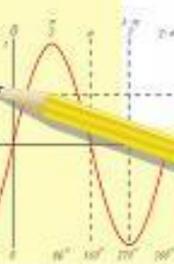
4000 лет назад

Способ найден при раскопках на
клинописных табличках.

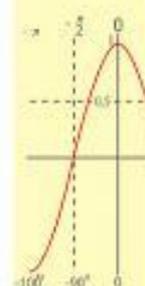
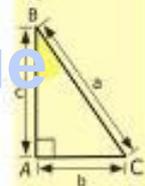
Число $x = a^2 + b$,
где a^2 ближайший к числу x точный
квадрат

$$\sqrt{a^2 + b} \approx a + \frac{b}{2a}$$
$$\sqrt{28} = \sqrt{5^2 + 3} \approx 5 + \frac{3}{2 \cdot 5} = 5,3.$$


$y = 1/x$

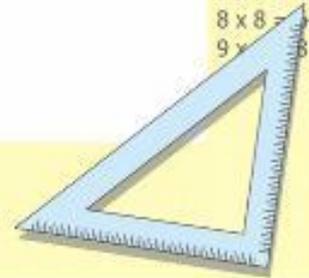

$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 5000 \\ + 10000 \\ \hline 105000 \end{array}$$


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



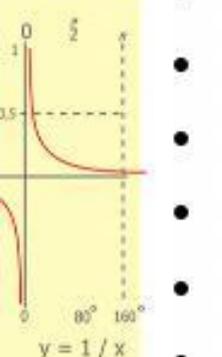
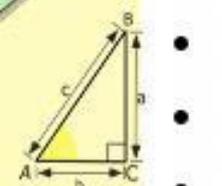
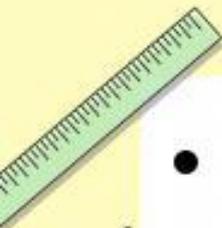
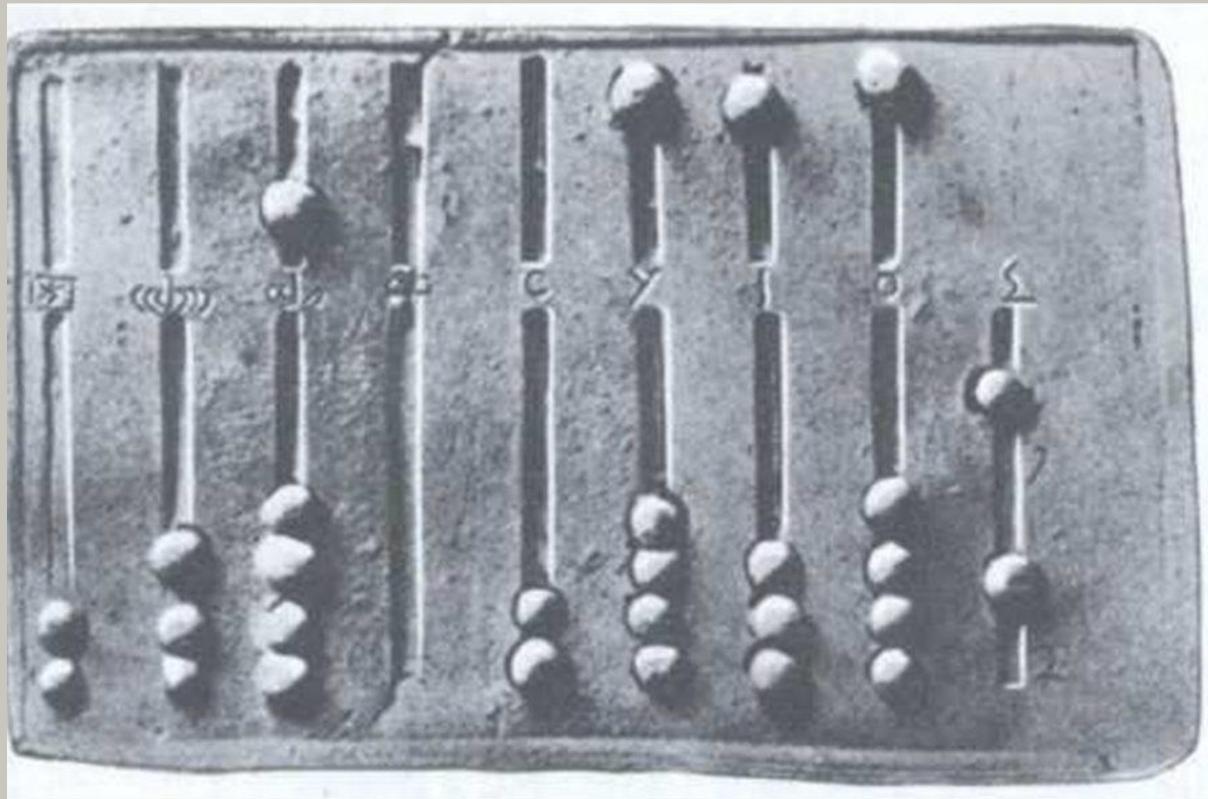
$y = ax^2 + bx + c$

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

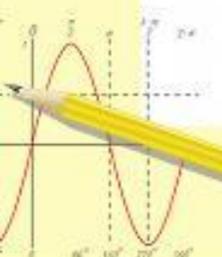


$(x-y)^2 = x^2 - y^2$

Абак – первые математические счёты



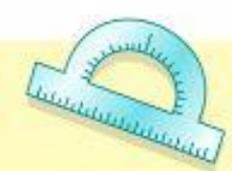
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$



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

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

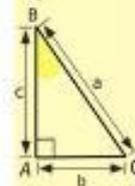
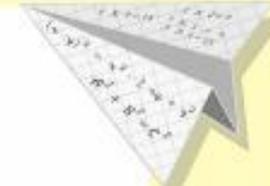
$\sin 90^\circ = 1$



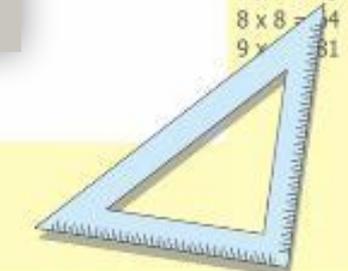
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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

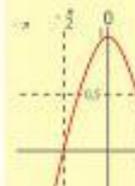
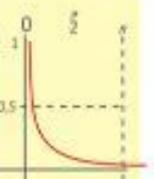
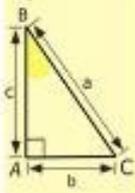
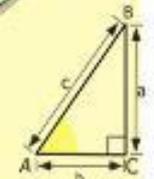
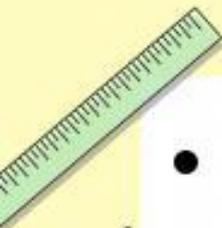


$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



Возникновение математики как науки относится к VI в. до н. э.

В Пифагорейской научной школе было начато построение геометрии как отвлеченной науки

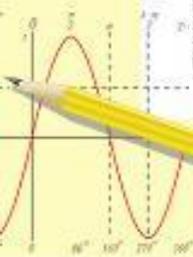
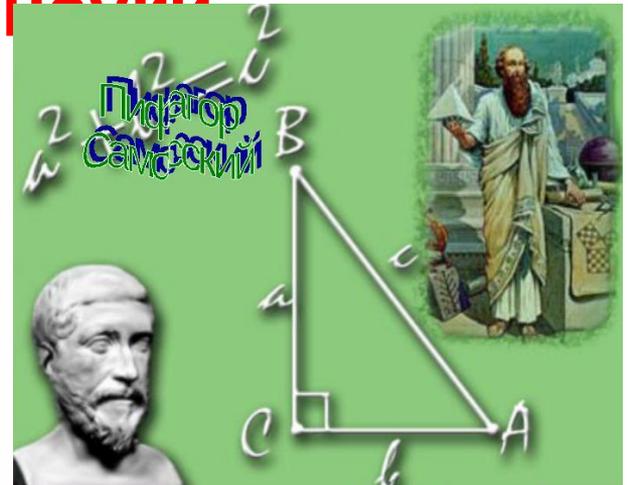
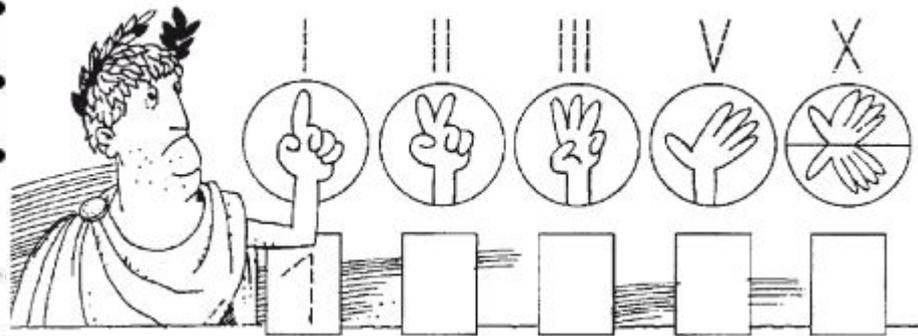


$$y = 1/x$$

$$y = \cos$$

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

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



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

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

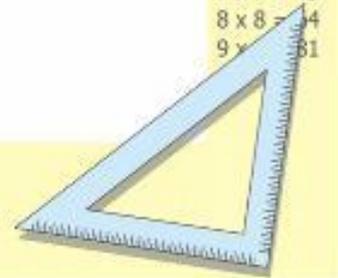
$$\sin 90^\circ = 1$$



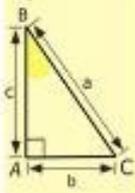
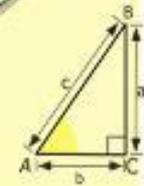
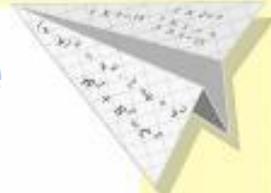
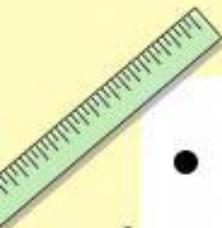
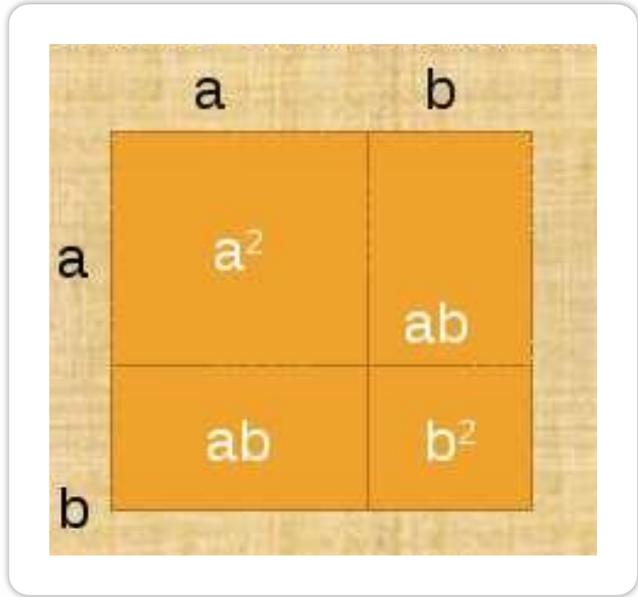
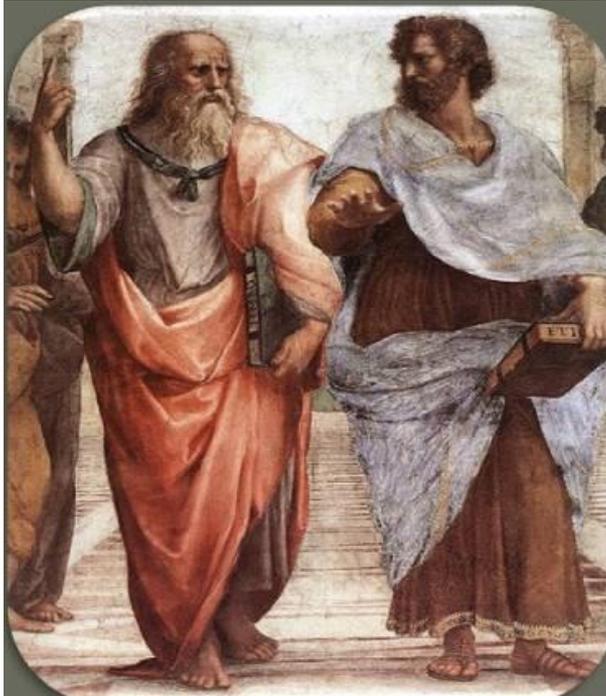
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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

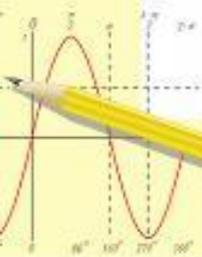


• V в. до н. э. — В Пифагорейской школе
 • сделано величайшее открытие о
 несоизмеримости стороны квадрата и его
 диагонали.



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

- 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



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

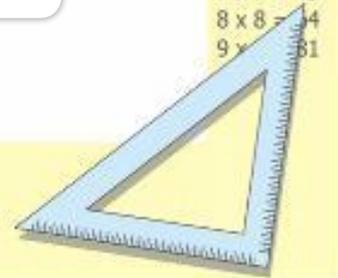
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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

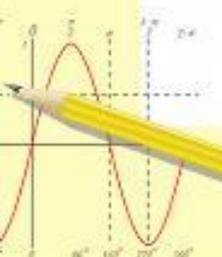
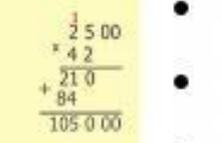
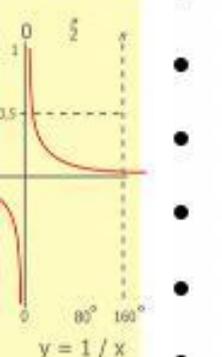
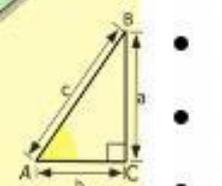
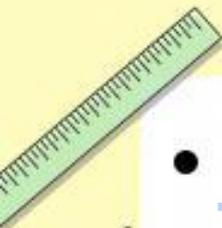
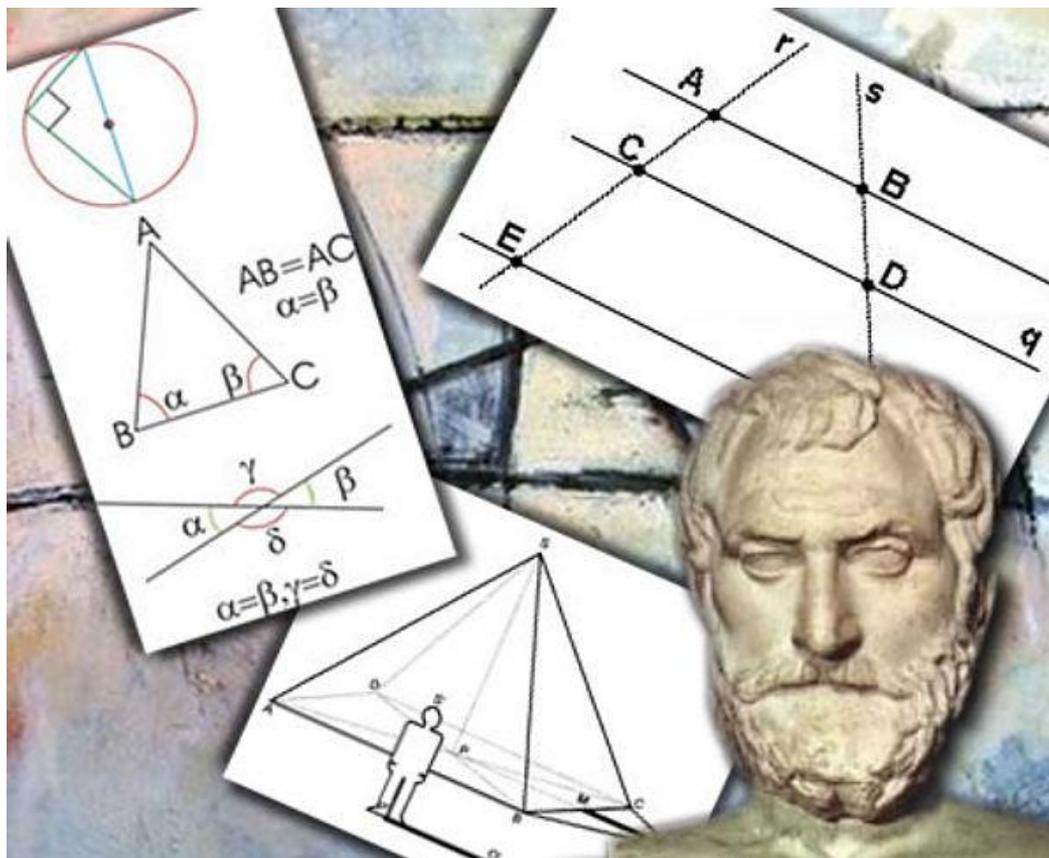


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



V в. до н. э. (вторая половина) — создана так называемая геометрическая алгебра



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

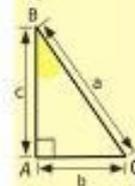
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

$\sin 90^\circ = 1$

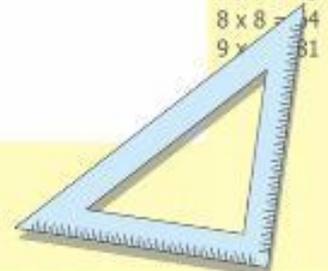


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

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

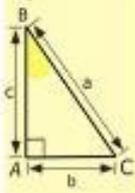
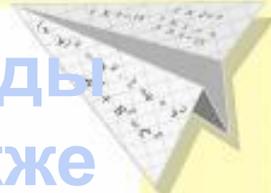
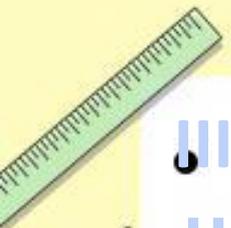
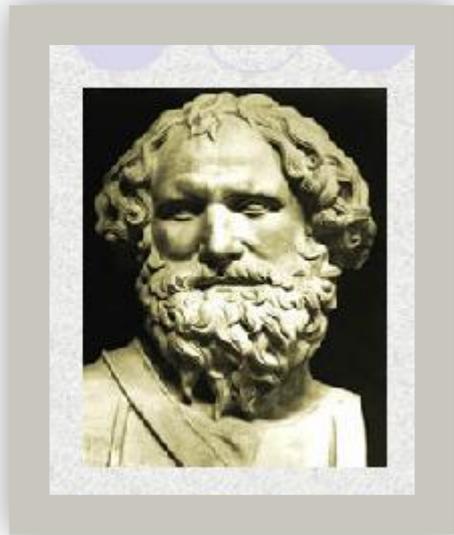
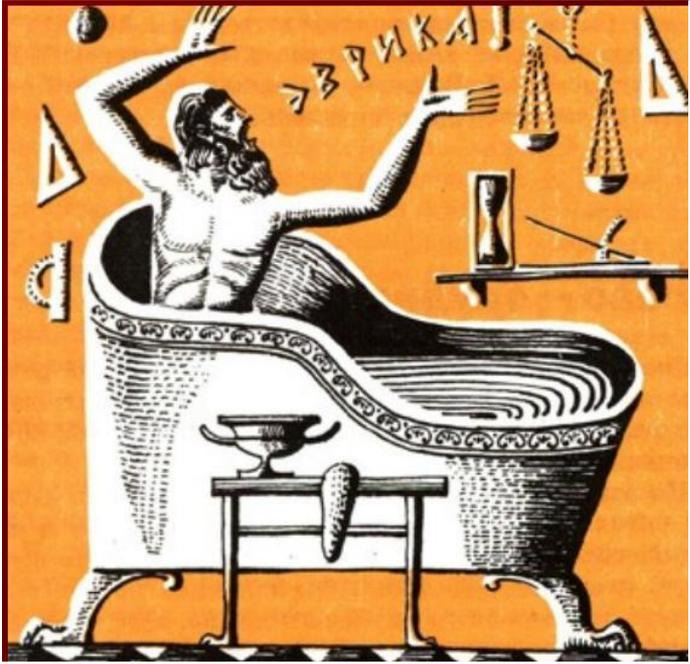


2 x 2 =	4
3 x 3 =	9
4 x 4 =	16
5 x 5 =	25
6 x 6 =	36
7 x 7 =	49
8 x 8 =	64
9 x 9 =	81



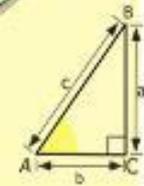
III в. до н. э. — Архимед разработал методы нахождения площадей и объемов, а также методы определения касательных и наибольших и наименьших значений

РОДИЧИН



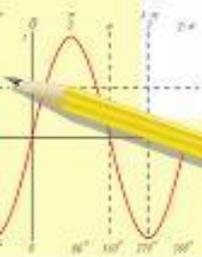
$$y = \infty$$

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



$$y = 1/x$$

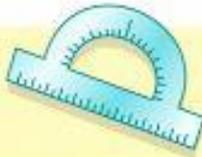
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 8400 \\ \hline 105000 \end{array}$$



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

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

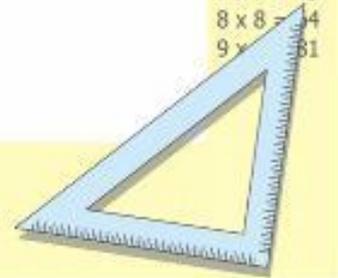
$$\sin 90^\circ = 1$$



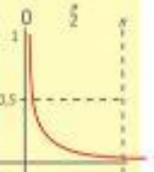
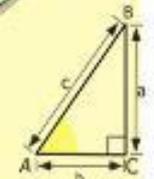
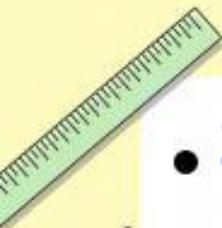
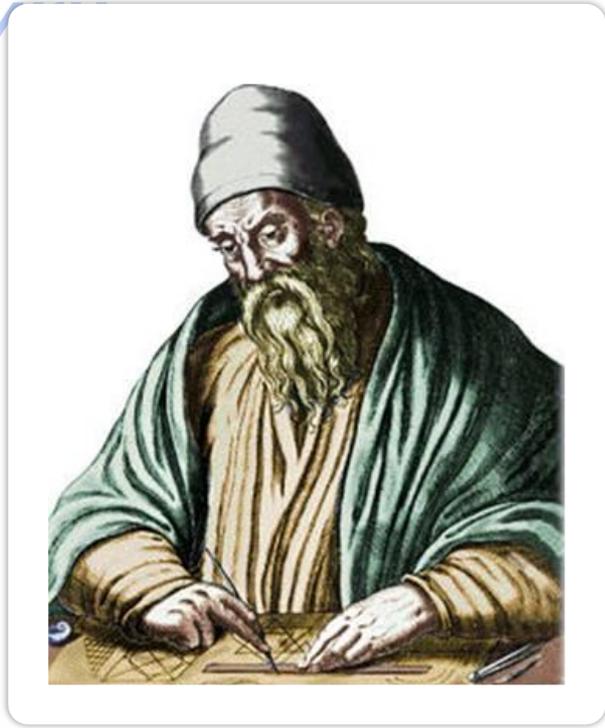
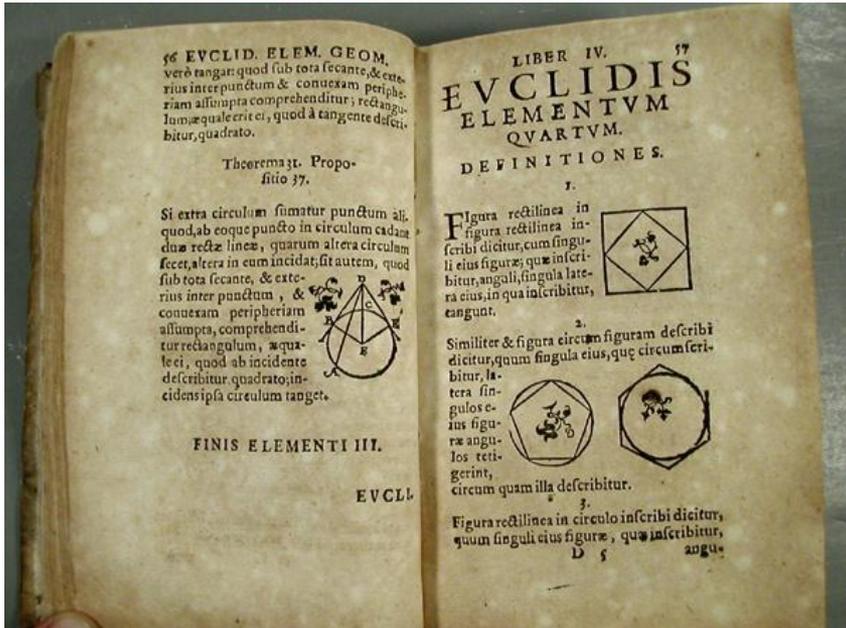
$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

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

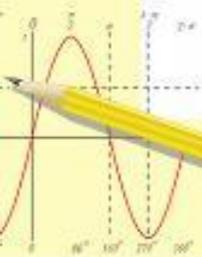


● 300 г. до н. э. — Евклид создал «Начала», в которых подвел итог всему предшествующему развитию античной математики



$y = 1/x$

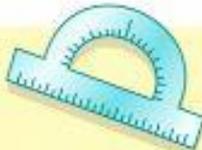
$$\begin{array}{r} 1 \\ 2 \overline{) 500} \\ \underline{42} \\ 210 \\ \underline{84} \\ 10500 \end{array}$$



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

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

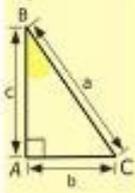
$\sin 90^\circ = 1$



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

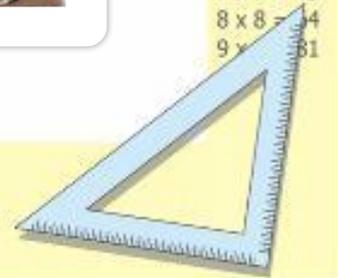
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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

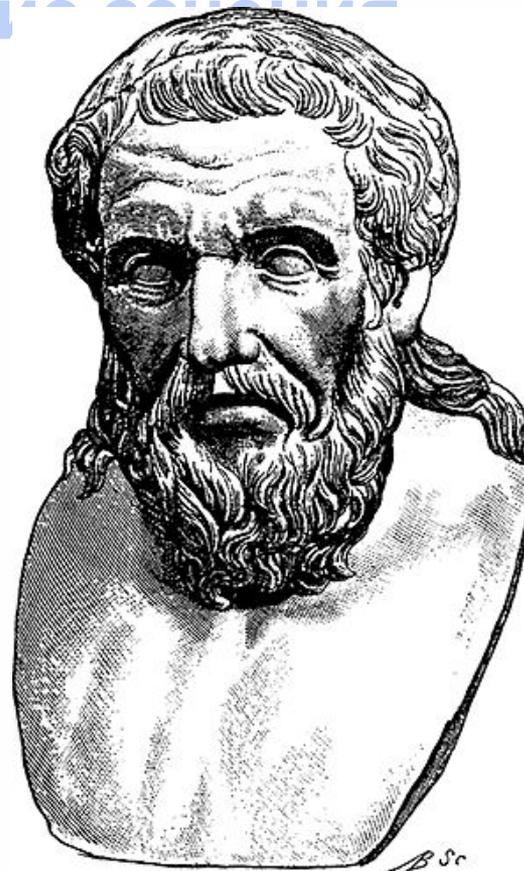
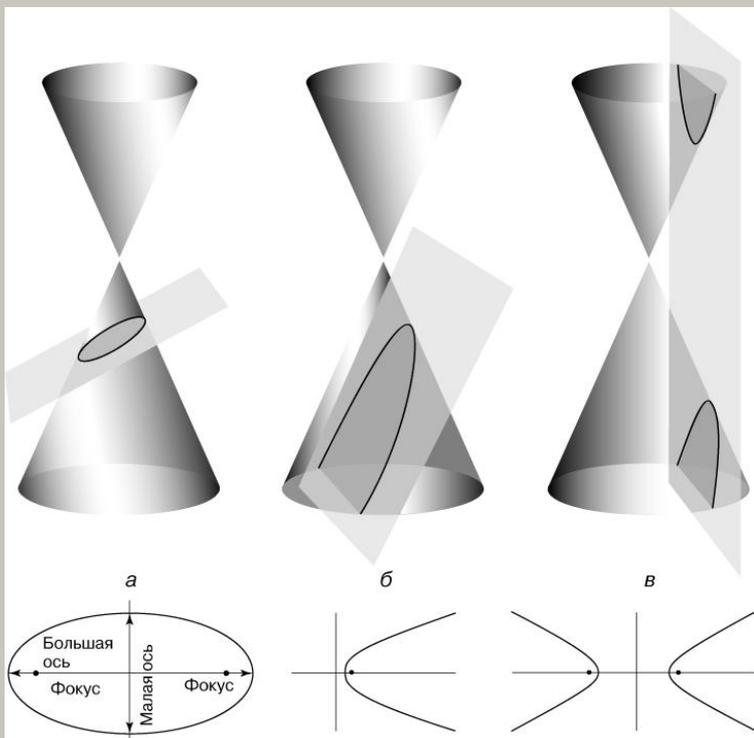


$y = \cos$

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



III—II вв. до н. э. — Аполлоний систематически и всесторонне исследовал конические сечения



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

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

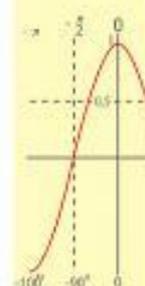
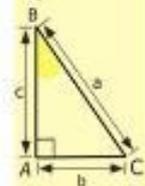
$$\sin 90^\circ = 1$$

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

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

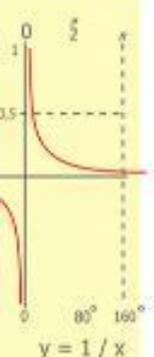
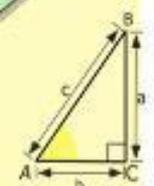
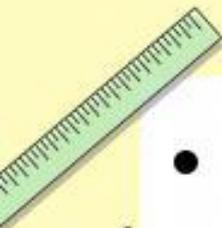
$$x = 70$$

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



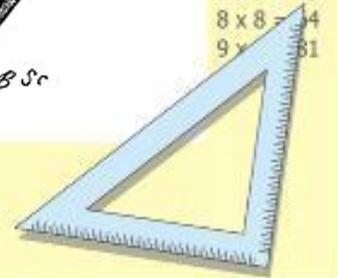
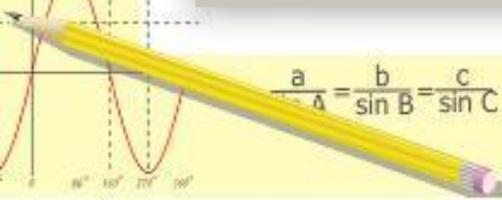
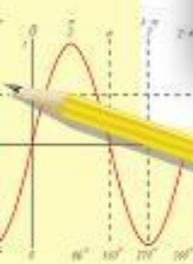
$$y = \sin x$$

- 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

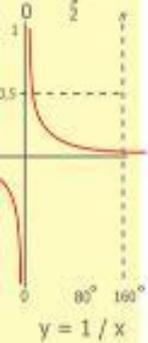
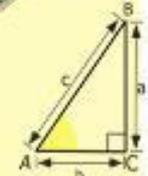
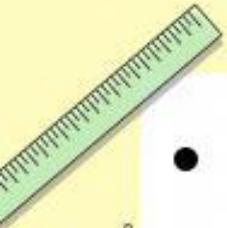
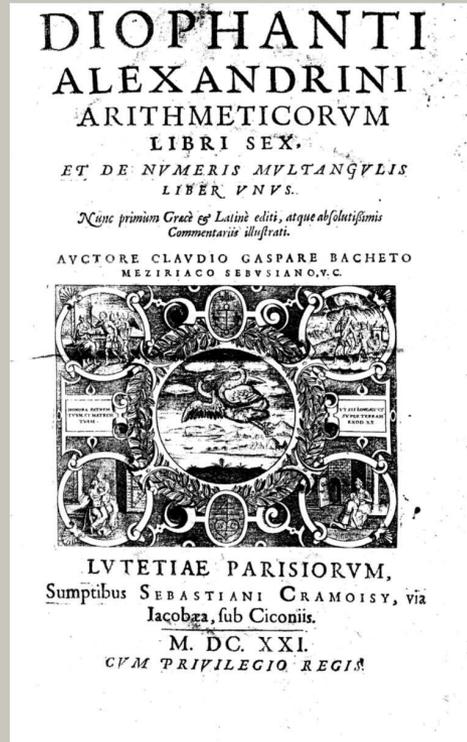


$$y = 1/x$$

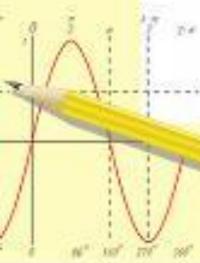
$$\begin{array}{r} 2500 \\ \times 42 \\ \hline 2100 \\ + 840 \\ \hline 105000 \end{array}$$



III в. н. э. — Диофант Александрийский написал «Арифметику»



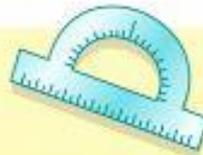
$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$



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

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

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

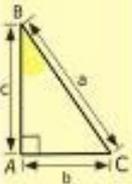


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

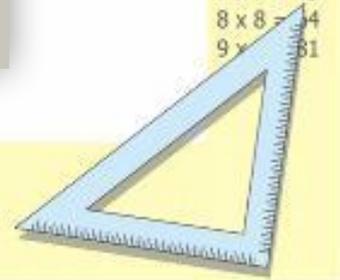
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

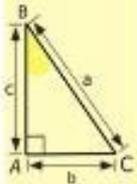
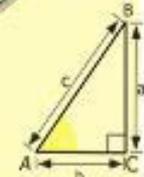
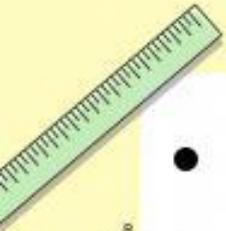
$$(x+y)(x-y) = x^2 - y^2$$



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



Спасибо за внимание!

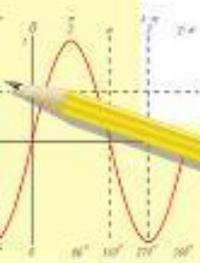
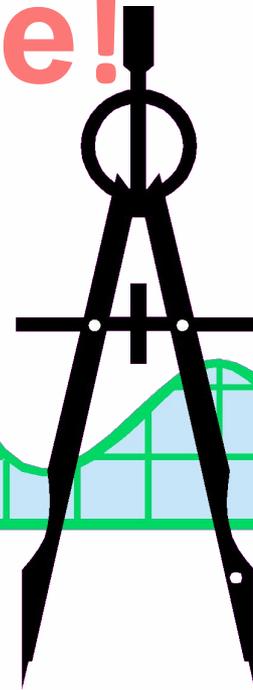
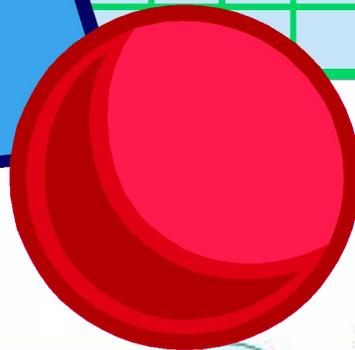
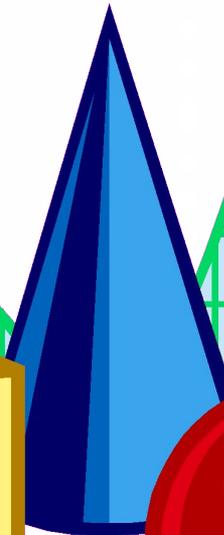
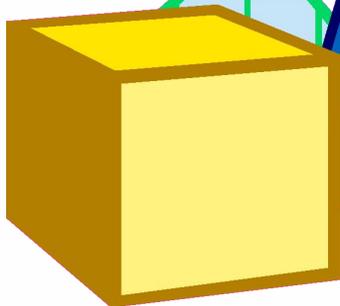


$$y = 1/x$$

$$y = \sin x$$

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

- $2 \times 2 = 4$
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$$\sin 90^\circ = 1$$



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

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

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

$$x = 70$$

