

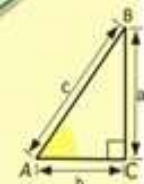
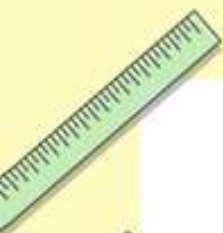
Сызрань 2018

Выступление
на Окружном марафоне педагогических инноваций
Секция учителей математики
в форме педагогической мастерской

«Как вдохновить детей счётом»

Мигурская
Евгения Вячеславовна
Учитель математики
ГБОУ СОШ № 4

г.о. Сызрань



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



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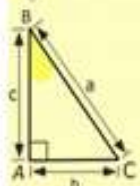
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$$\sin 90^\circ = 1$$

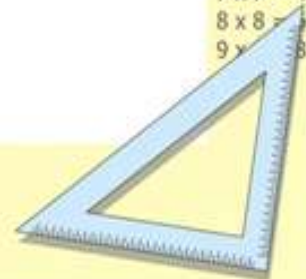


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

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

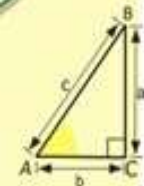
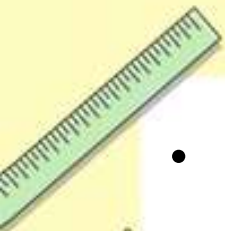


$$\begin{array}{l} 2 \times 2 = 4 \\ 3 \times 3 = 9 \\ 4 \times 4 = 16 \\ 5 \times 5 = 25 \\ 6 \times 6 = 36 \\ 7 \times 7 = 49 \\ 8 \times 8 = 64 \\ 9 \times 9 = 81 \end{array}$$



«Как вдохновить ребенка счетом»

- 1) Дайте ребенку почувствовать число
- 2) Познакомьте его с мерками. Пусть он все мерит.
- 3) Дайте ребенку счеты.
- 4) Устройте ему соревнование с самим собой.
- 5) Покажите приемы быстрого счета



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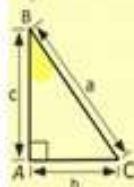
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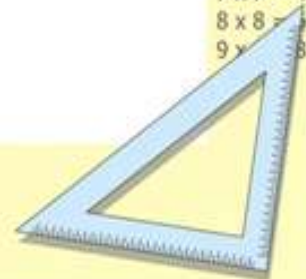


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1.Счет на автомате

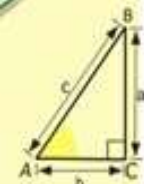
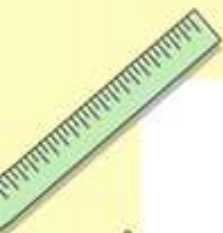
1) Сложение и вычитание 7, 8, 9.

$$7 + 9 = 7 + 10 - 1 = 16$$

$$21 - 8 = 21 - 10 + 2 = 11 + 2 = 13$$

$$145\ 987 + 579 = 145\ 987 + 600 - 21 =$$

$$146\ 587 - 21 = 146\ 566$$



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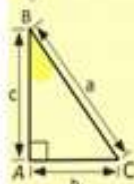
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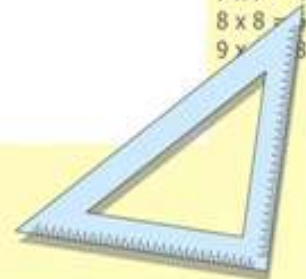


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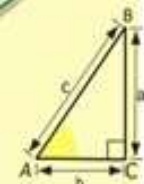
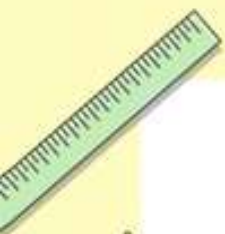
1.Счет на автомате

2) Умножение и деление на 2

$$139 * 2 = 140 * 2 - 1 * 2 = 278$$

$$198 / 2 = (200 - 2) / 2 = 100 - 1 = 99$$

$$145\,982 / 2 = (146\,000 - 18) / 2 = 73\,000 - 9 = 72\,991$$



$$\begin{array}{r} 2\,500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105\,000 \end{array}$$



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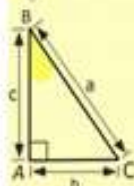
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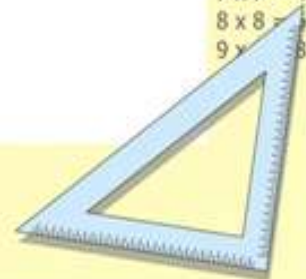


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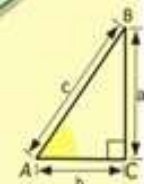
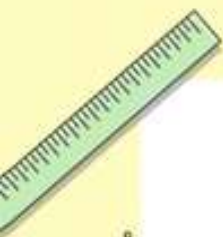
1.Счет на автомате

3) Умножение и деление на 4 и 8

$$146 * 4 = 150 * 4 - 4 * 4 = 600 - 16 = 584$$

$$146 * 4 = (150 - 4) * 2 * 2 = (300 - 8) * 2 = 600 - 16 = 584$$

$$1864 / 8 = 1864 / 2 / 4 = 932 / 2 / 2 = 466 / 2 = 233$$



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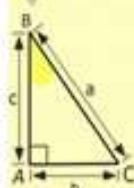
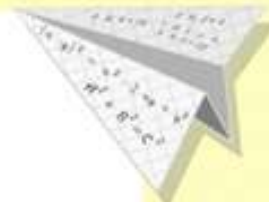
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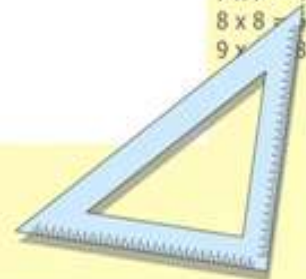


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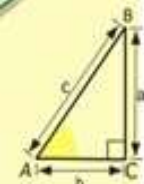
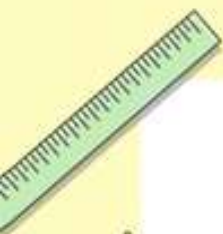


1.Счет на автомате

4) Умножение и деление на 5

$$138 * 5 = 138 * 10 / 2 = 1380 / 2 = (1400 - 20) / 2 = 700 - 10 = 690$$

$$5480 / 5 = 5480 / 10 * 2 = 548 * 2 = 550 * 2 - 2 * 2 = 1100 - 4 = 1096$$



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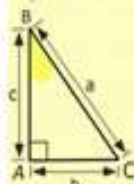
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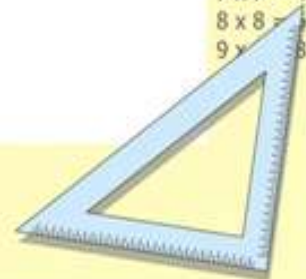


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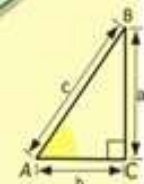
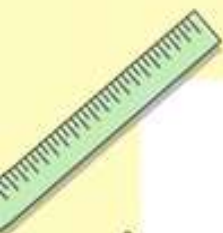


1.Счет на автомате

5) Умножение и деление на 25

$$348 * 25 = 348 * 100 / 4 = 348 / 4 * 100 =$$
$$348 / 2 / 2 * 100 = (300 + 48) / 2 / 2 * 100 =$$
$$8700$$

$$348 / 25 = 348 * 4 / 100 = 348 * 2 * 2 / 100 =$$
$$(350 - 2) * 2 * 2 / 100 = 13,92$$



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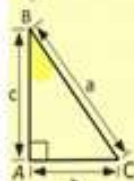
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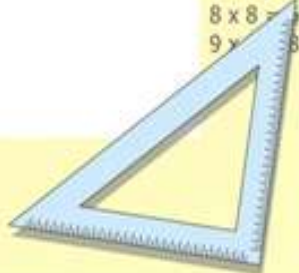


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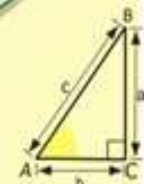
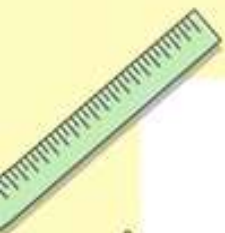


1.Счет на автомате

6) Умножение на 1,5 и 15

$$26 * 1,5 = 26 + (26/2) = 26 + 13 = 39$$

$$\begin{aligned} 1974 * 15 &= 1974 * 10 + (1974 * 10 / 2) = \\ &= 19740 + (20000 - 260) / 2 = \\ &= 19740 + 10000 - 130 = 29610 \end{aligned}$$



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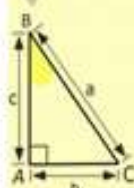
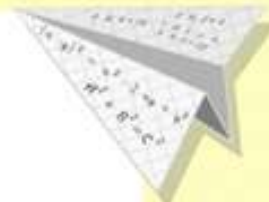
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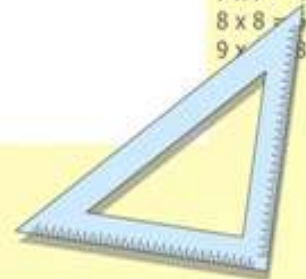


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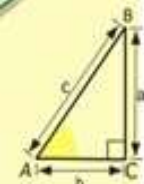
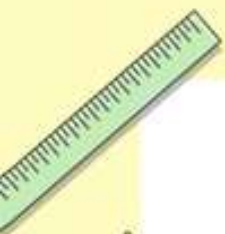


1.Счет на автомате

7) Деление 1000 на 2, 4, 6, 8

$$1000 = 2 \cdot 500 = 4 \cdot 250 = 8 \cdot 125 = 16 \cdot 62,5$$

Увеличиваем (уменьшаем) множители



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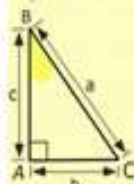
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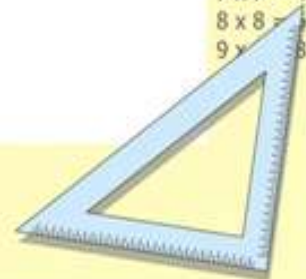


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1.Счет на автомате

8) Умножение числа на 11,111,1111 и т.д

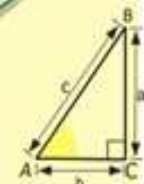
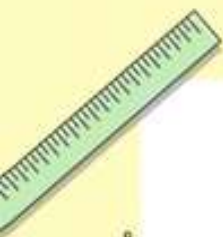
$$81 * 11 = 8 (8+1) 1 = 891$$

$$24 * 111 = 2(2+4)(2+4)4 = 2664 (2 \text{ шага})$$

$$72 * 111111 = 7999992 (5 \text{ шагов})$$

$$67 * 1111 = 6(6+7)(6+7)(6+7)7 = 6(13)(13)(13)7 =$$

$$74437 (3 \text{ шага})$$



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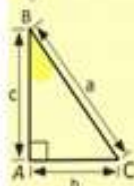
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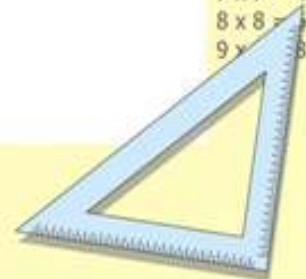


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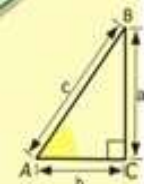
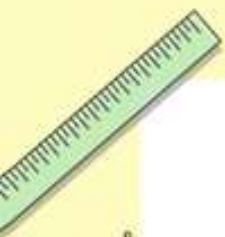
1.Счет на автомате

9) Умножение трехзначного числа на 101

$$348 \cdot 101 = (348 + 3)48 = 351\ 48$$

$$987 \cdot 101 = 996\ 87$$

Увеличиваем 1 множитель на число сотен и приписываем к нему справа 2 его последние цифры



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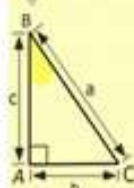
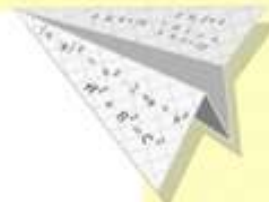
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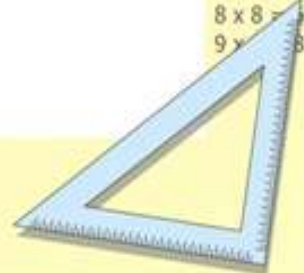


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1.Счет на автомате

10) Умножение двузначных чисел, близких к 100

$$94 * 78$$

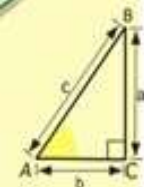
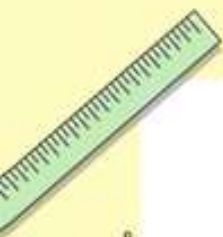
$$100 - 94 = 6$$

$$100 - 78 = 22$$

$$6 * 22 = 132 \text{ (32 последние 2 цифры)}$$

$$94 - 22 = 72 \text{ (72+1 = 73 первые 2 цифры)}$$

$$7332$$



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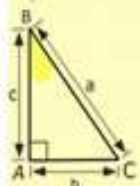
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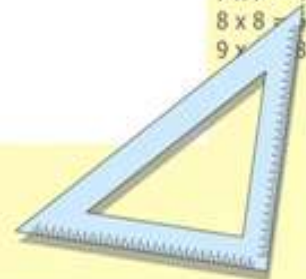


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

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



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



1.Счет на автомате

11) Умножение «со смыслом»

$$12\ 345\ 679 * 9 = 111\ 111\ 111$$

$$12\ 345\ 679 * 18 = 222\ 222\ 222$$

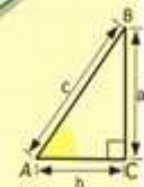
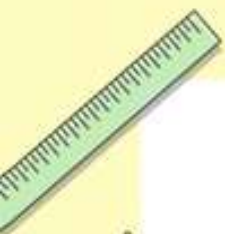
$$12\ 345\ 679 * 27 = 333\ 333\ 333$$

$$12\ 345\ 679 * 36 = 444\ 444\ 444$$

$$12\ 345\ 679 * 45 = 555\ 555\ 555$$

...

Все числа кратны 9



$$\begin{array}{r} 2\ 500 \\ \times 42 \\ \hline 210 \\ + 840 \\ \hline 105\ 000 \end{array}$$



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

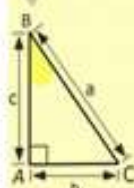
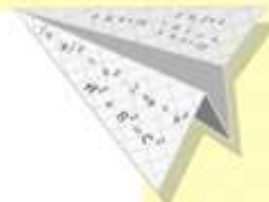
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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

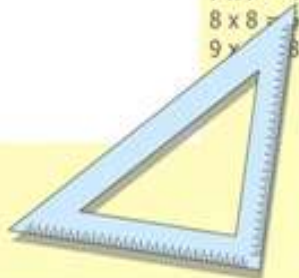


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

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



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



1.Счет на автомате

12) Умножение на 9, 99, 999, 9999, 99999

$$786 * 9 = 786 * (10 - 1) = 7860 - 786 = 7074$$

$$456 * 99 = 45\ 600 - 456 = 45\ 144$$

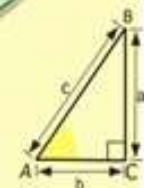
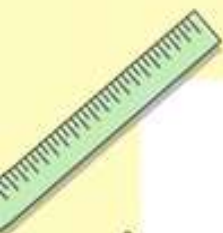
$$598 \cdot 999 = 598000 - 598 = 598000 - 600 + 2 = 597400 + 2 = 597\ 402$$

$$385 * 999 = \underline{384}\ 615$$

$$74586 \cdot 99999 = \underline{7458525414}$$

И это только начало!

*Дерзайте, творите,
получайте удовольствие от процесса!*



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



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

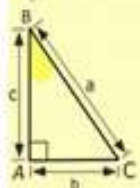
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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



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

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



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

