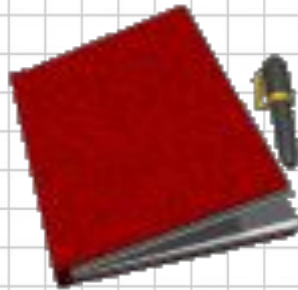


# Математик

а

# ОБЪЁМЫ. ОБЪЁМ ПАРАЛЛЕЛЕПИПЕД

## 5 класс



Работу выполнила:

Васильева В.М., учитель математики,  
МАОУСОШ №1, г.Старая Русса Новгородской  
области

2011

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

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

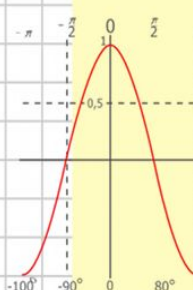
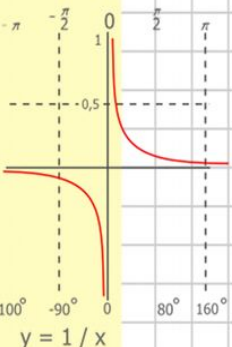
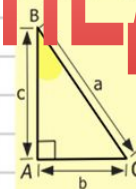
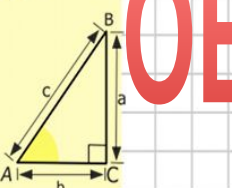
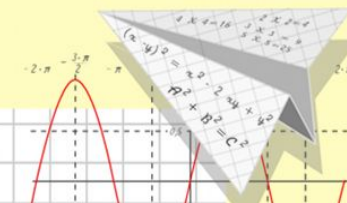
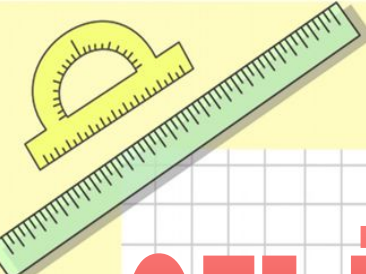
$$\sin 90^\circ = 1$$

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

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

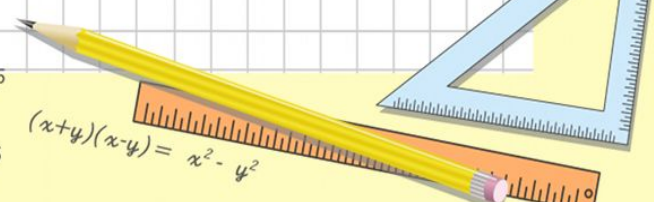
$$x = 70$$

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

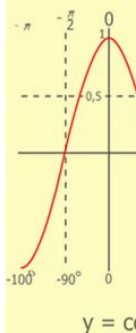
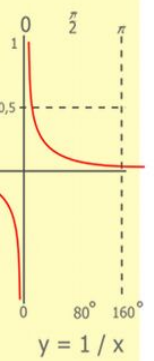
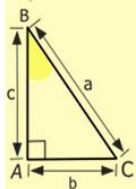
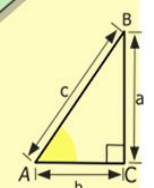
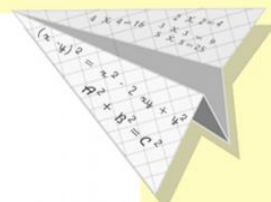


$$\begin{array}{r} \frac{1}{2} 500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 105000 \end{array}$$

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



Ну-ка проверь дружок  
 Ты готов начать урок?  
 Всё ль на месте, всё ль в  
 порядке,  
 Ручка, книжка и тетрадка?  
 Все ли правильно сидят?  
 Все ль внимательно глядят?  
 Каждый хочет получать  
 Только лишь оценку «5».  
 Тут затеи и задачи,  
 Игры, шутки, всё для вас!  
 Пожелаем же удачи –  
 За работу, в добрый час!



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

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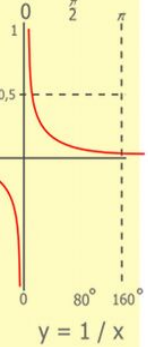
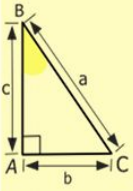
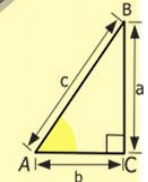
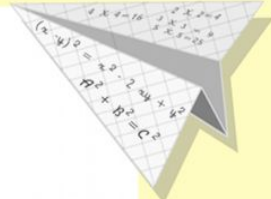
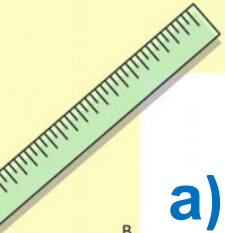
$$(x+y)(x-y) = x^2 - y^2$$



# РАЗМИНКА

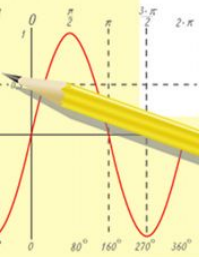
a)  $4 \times 16$       **64**  
 $+ 11$             **75**  
 $: 15$               **5**  
 $\times 12$              **60**  
 $: 20$                **3**

Б)  $60 + 9 = 69 : 3 = 23 \times 15 = 8 \times 12 = 96$



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

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

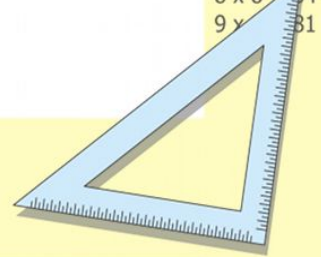


$$\begin{cases} y = \sin 90 \\ x = 25y + 45 \end{cases}$$

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

$$x = 70$$

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



# тест

1) Любой прямоугольный параллелепипед состоит из  
граней. Их у него:

а)12

б)8

в)6

г)10

2) У каждого параллелепипеда есть рёбра. Это:

а)Прямоугольники

б)Прямые

в)Треугольник

г)Отрезки

3) У куба все рёбра:

а)Попарно равны

б)Разные

в)Равны

г)Другой ответ

4) У параллелепипеда противоположные грани:

а)Равны

б)Квадраты

в)Разные

г)Другой ответ

5) Площадь поверхности параллелепипеда можно  
вычислить по формуле:

а) $S=4 \times (a+b+c)$

б) $S=2 \times (a \times b + b \times c + a \times c)$

в) $S=abc$

г) $S=6abc$

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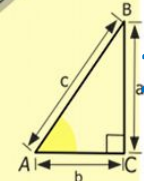
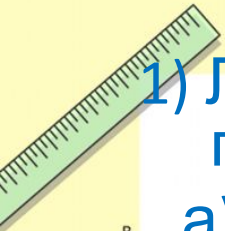
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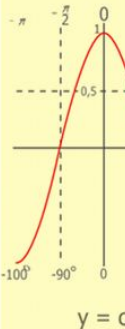
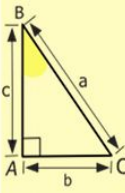
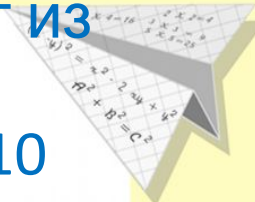
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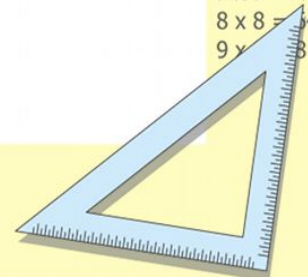
$$(x+y)(x-y) = x^2 - y^2$$



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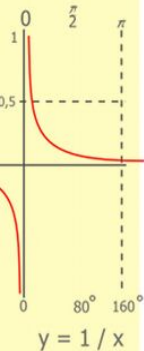
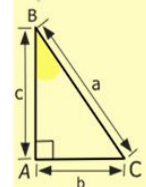
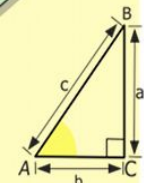
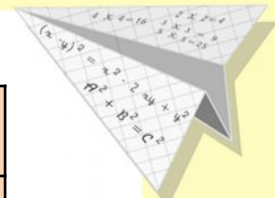
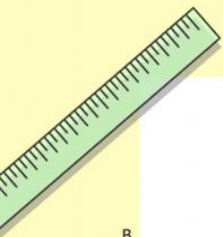


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# КЛЮЧ К ТЕСТУ

1	2	3	4	5
В	Г	В	а	б



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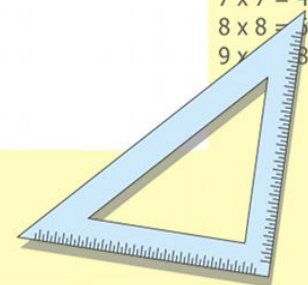
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$$(x+y)(x-y) = x^2 - y^2$$



# Математик УСТНАЯ РАБОТА

Вычислите и расположите трёхзначные ответы в порядке возрастания. Прочитайте, что мы будем учиться вычислять сегодня.

17 × 10    Ъ

16 × 4    у

936 : 3    ё

171 : 9    ж

10<sup>2</sup>    о

218 × 2    м

555 : 5    б

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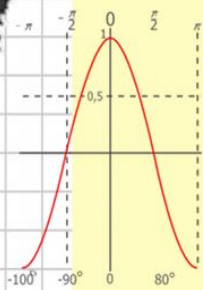
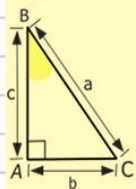
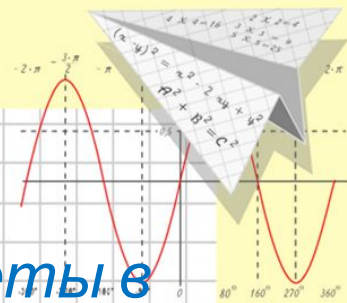
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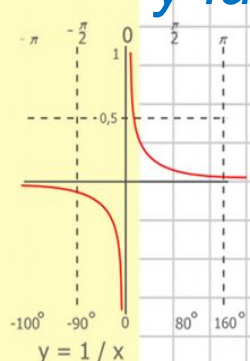
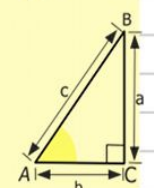
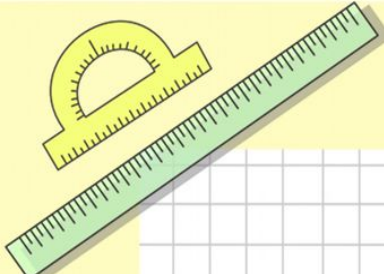
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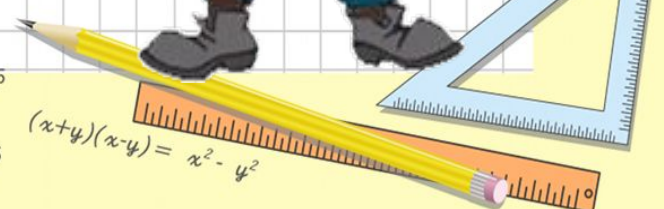


$$y = \cos x$$

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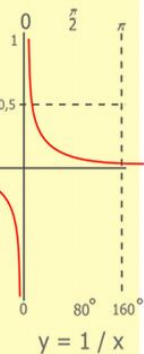
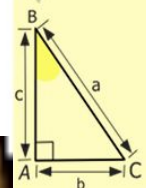
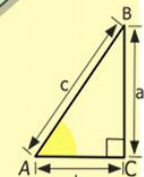
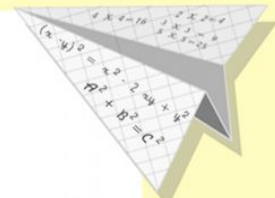
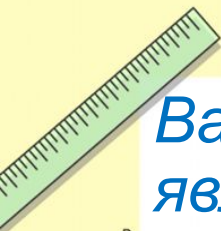
$$\begin{array}{r} 1 \\ 2500 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$



Важным свойством тела является его **вместимость**.

**Вместимость** фигуры характеризуют объемом.

За единицу измерения объема принимают объем единичного куба.



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

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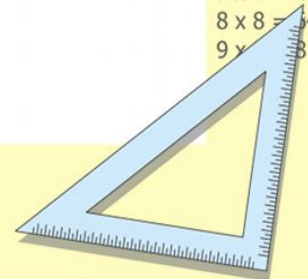


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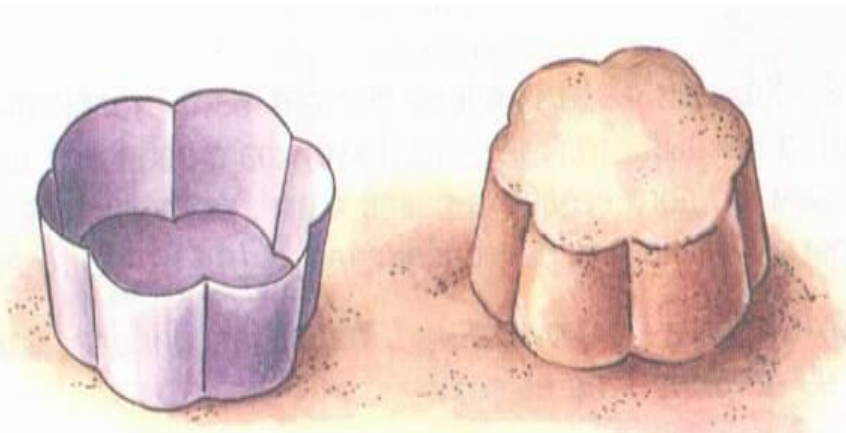
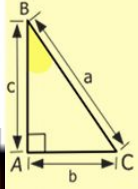
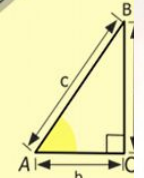
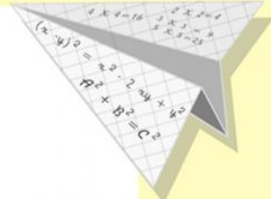
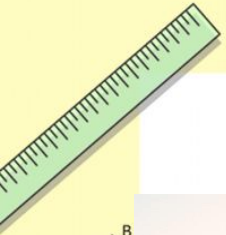
$$\begin{cases} y = 1 \\ x = 25 + 45 \end{cases}$$

$$x = 70$$

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



# Сравнение объемов



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

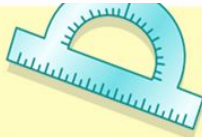
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$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

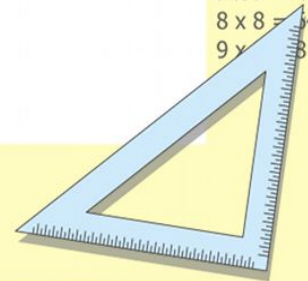
$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$

$\sin 90^\circ = 1$



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

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





# ЕДИНИЦЫ ОБЪЁМА

кубический миллиметр (1 мм<sup>3</sup>)

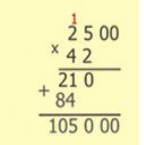
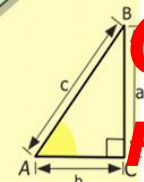
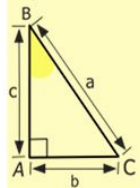
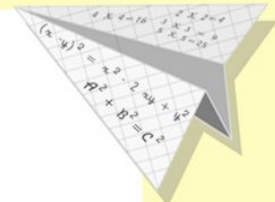
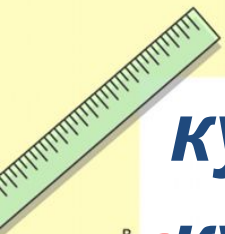
кубический сантиметр (1 см<sup>3</sup>)

кубический дециметр (1 дм<sup>3</sup>)

кубический метр (1 м<sup>3</sup>)

кубический километр (1 км<sup>3</sup>)

Объемы единичных кубов получают названия в зависимости от выбранной единицы длины ребра:  
1 дм<sup>3</sup> = 1 л (литр)



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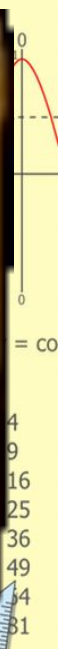
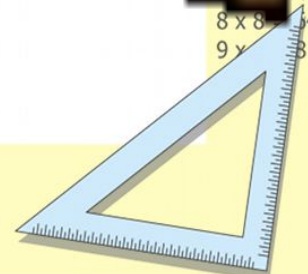
$\sin 90^\circ = 1$



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

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

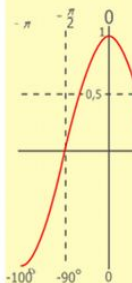
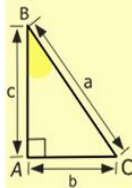
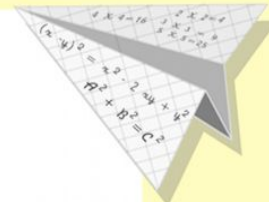
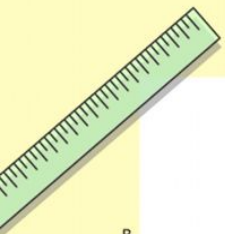
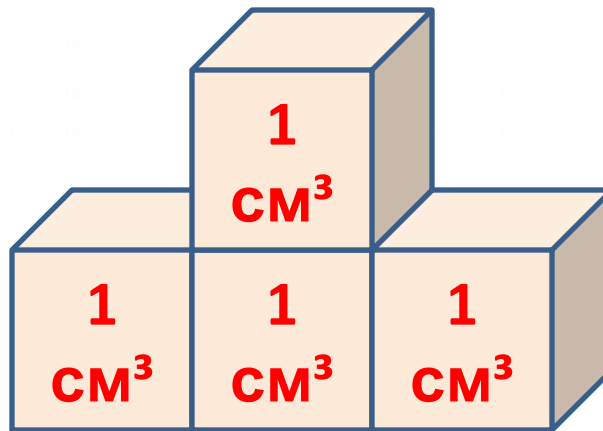
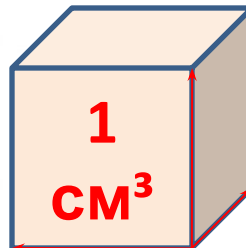
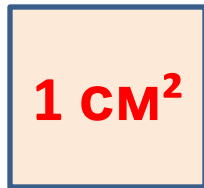
$(x+y) - y = x^2$



# ЕДИНИЦЫ ИЗМЕРЕНИЯ

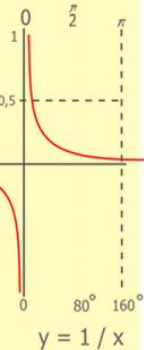
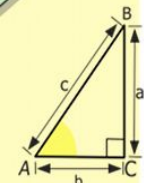
## ОБЪЁМА

1 см



y = co

- 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



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



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

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

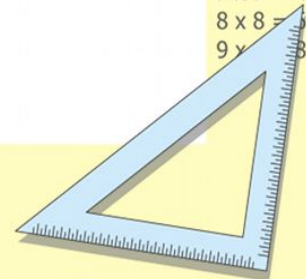
$$\sin 90^\circ = 1$$



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

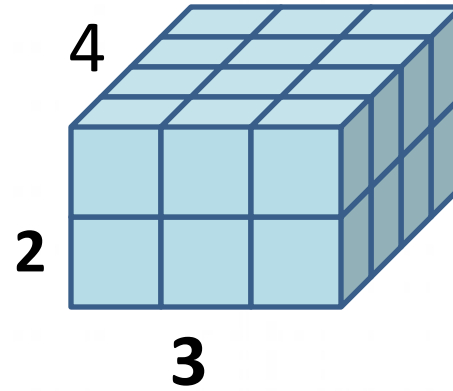
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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

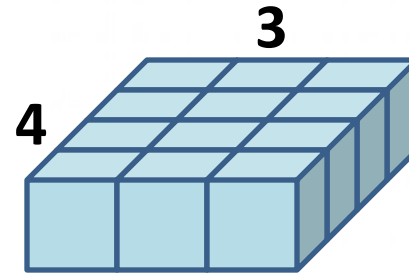
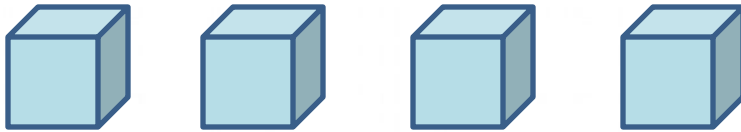


# ЗАДАЧА

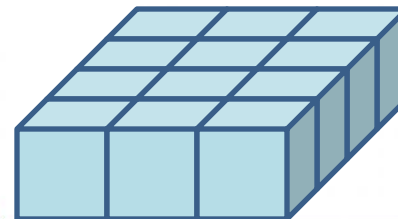
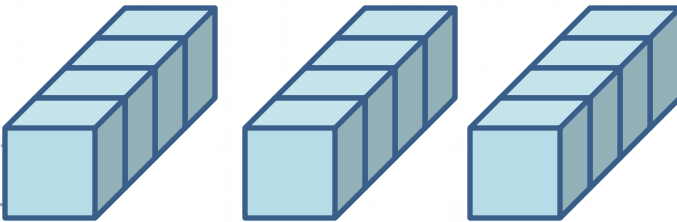
$$(4 \times 3) \times 2 = 24 \text{ cm}^3$$



1 cm<sup>3</sup>



$$4 \times 3 = 12 \text{ cm}^3$$



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

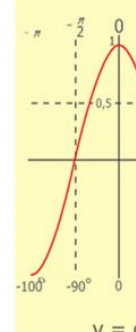
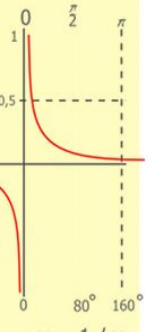
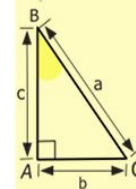
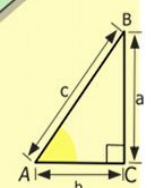
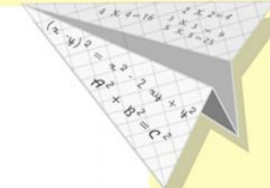
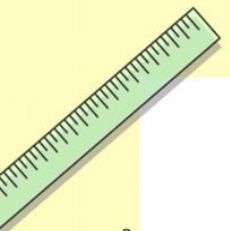
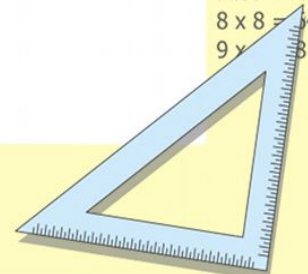
$$\frac{a}{c} + \frac{b}{c} = \frac{a+b}{c}$$

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



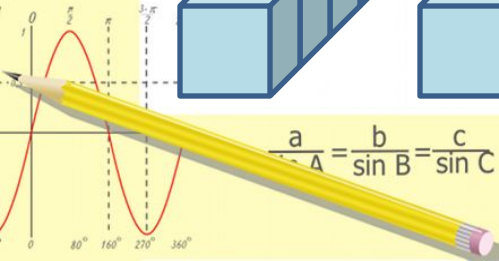
$$\begin{cases} x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ x = 70 \end{cases}$$

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

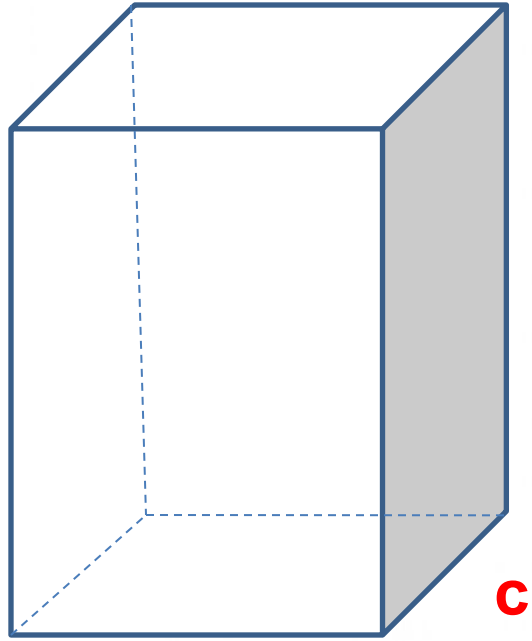


$$\begin{array}{r} 1 \\ \times 42 \\ \hline 210 \\ + 84 \\ \hline 10500 \end{array}$$

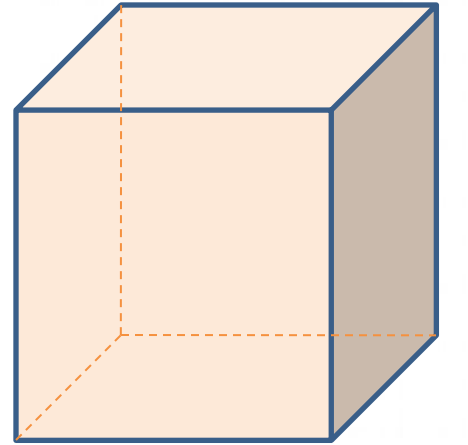
- 2 x 2 = 4
- 3 x 3 = 9
- 4 x 4 = 16
- 5 x 5 = 25
- 6 x 6 = 36
- 7 x 7 = 49
- 8 x 8 = 64
- 9 x 9 = 81



# ФОРМУЛЫ ОБЪЁМОВ ПАРАЛЛЕЛЕПИПЕДА И КУБА

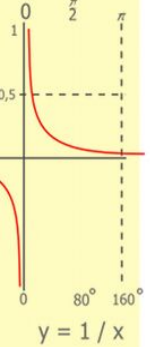
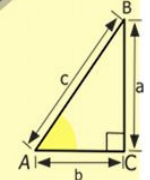
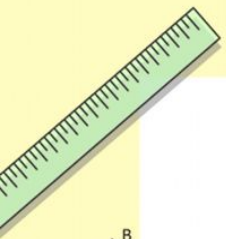


$$V=abc$$



$$V=a^3$$

**Внимание!** При вычислениях все измерения должны быть выражены в одинаковых единицах.



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



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

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

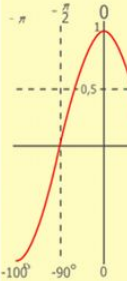
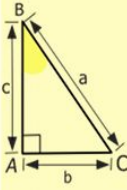
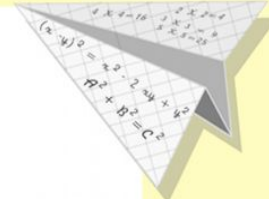
$$\sin 90^\circ = 1$$



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

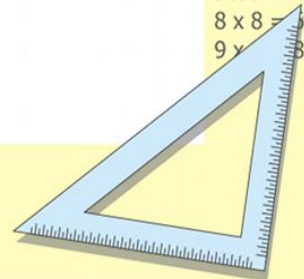
$$\begin{cases} y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



$$y = \cos$$

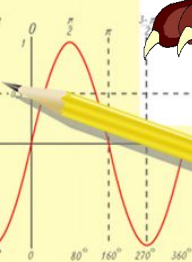
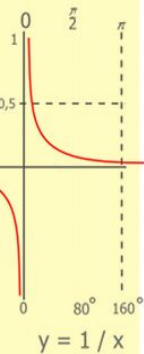
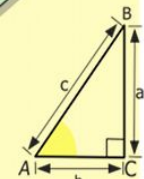
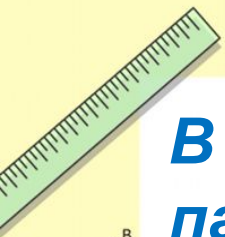
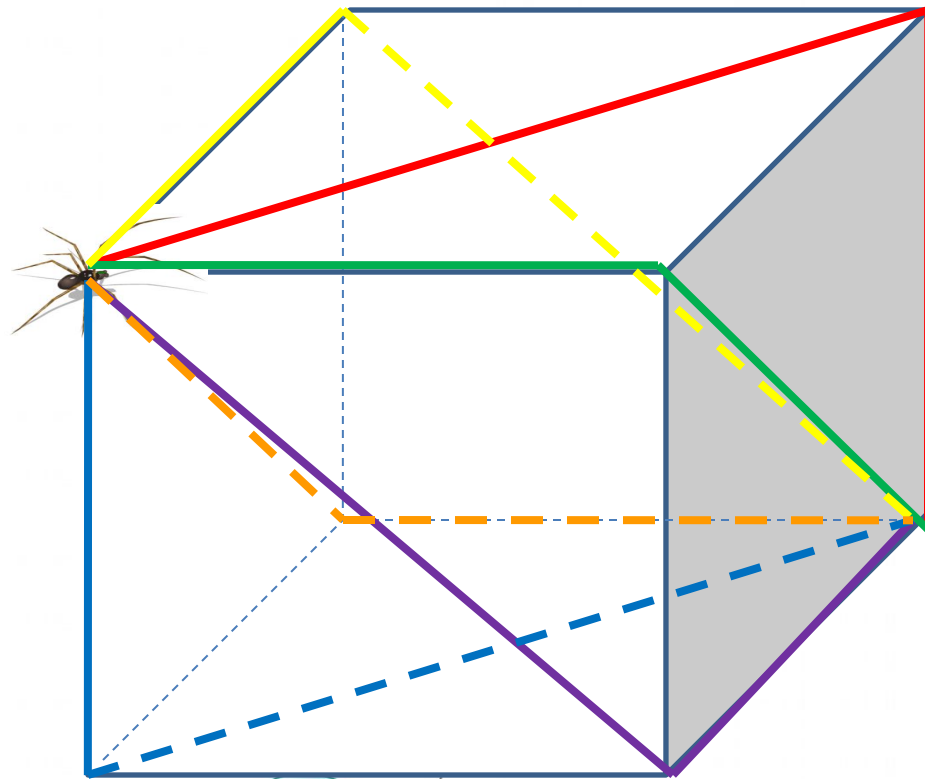
- $2 \times 2 = 4$
- $3 \times 3 = 9$
- $4 \times 4 = 16$
- $5 \times 5 = 25$
- $6 \times 6 = 36$
- $7 \times 7 = 49$
- $8 \times 8 = 64$
- $9 \times 9 = 81$



# Занимательная задача

В противоположных вершинах куба сидят паук и муха. Каким кратчайшим путём паук сможет доползти до мухи?

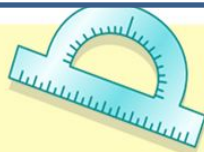
Сколько таких путей? **6**



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

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

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

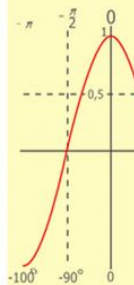
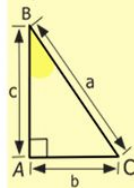
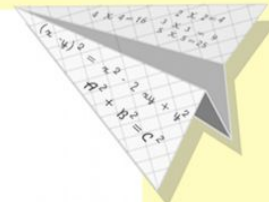


$$x = 25y + 45$$

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

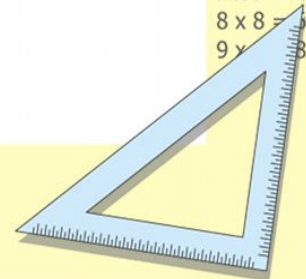
$$x = 70$$

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



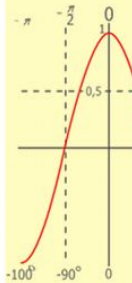
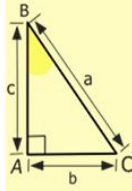
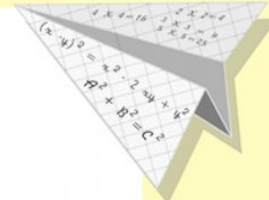
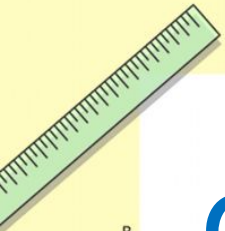
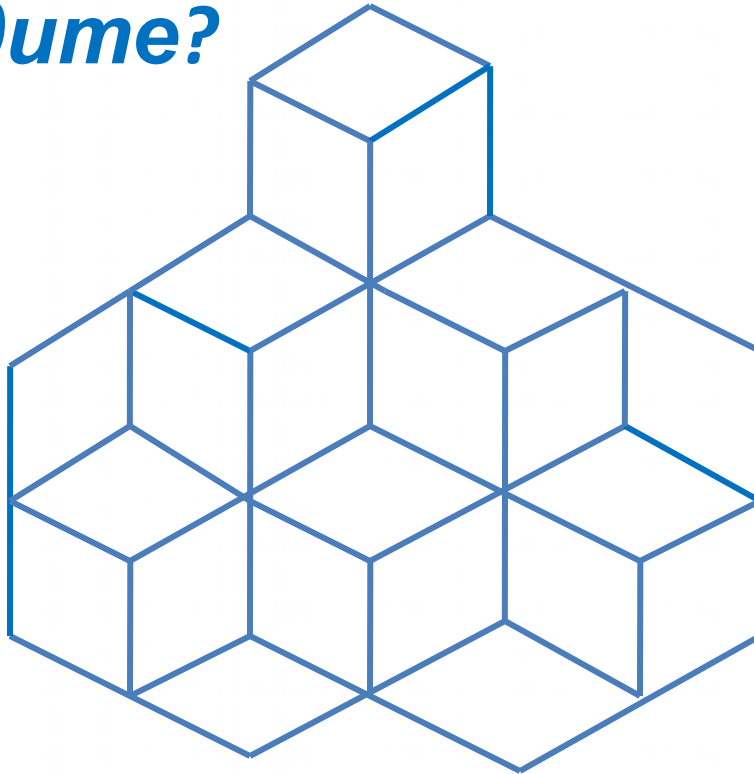
$$y = \cos$$

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- 4 x 4 = 16
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- 8 x 8 = 64
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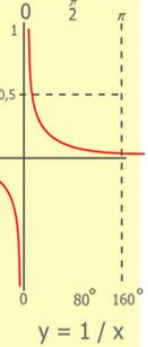
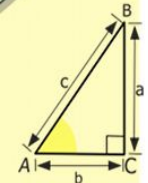
# Занимательная задача

Сколько кубиков вы видите?

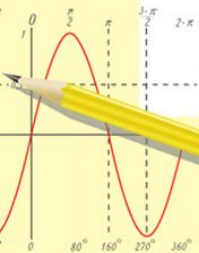


$$y = \cos$$

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



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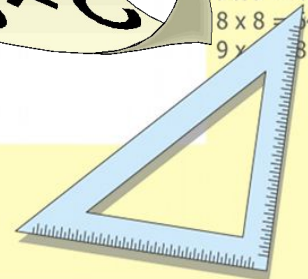
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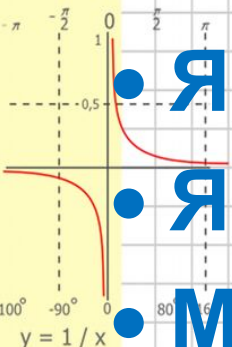
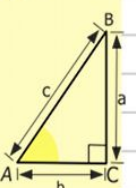
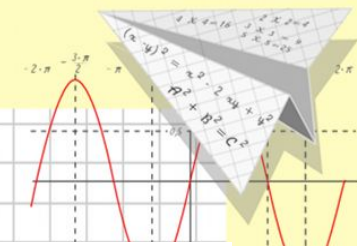
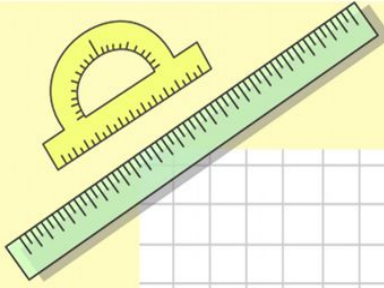


# Математик

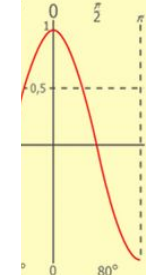
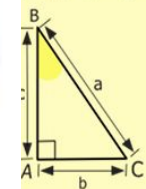
## РЕФЛЕКСИЯ

### НА УРОКЕ

- Я узнал...
- Я научился...
- Мне понравилось...
- Я затруднялся...
- Моё настроение...



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



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



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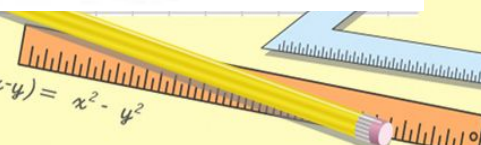


$$\sin 90^\circ = 1$$



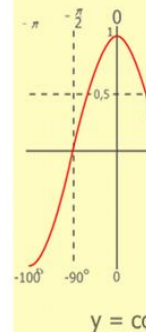
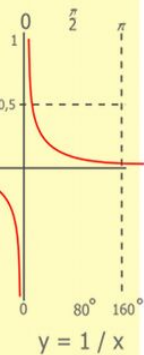
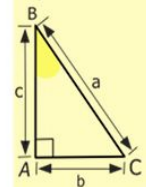
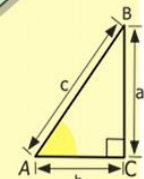
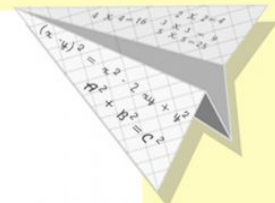
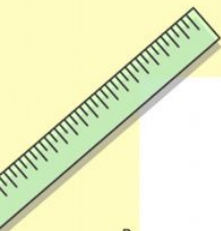
$$\begin{cases} x = 25y + 45 \\ y = 1 \\ x = 25 + 45 \\ \hline x = 70 \end{cases}$$

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



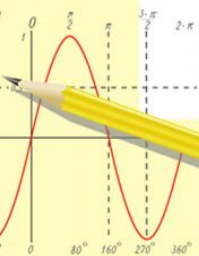
# ДОМАШНЕЕ ЗАДАНИЕ

- 1) Стр.129, №840, 841, 842;
- 2) Стр125-126, п. 21 (учить формулы);
- 3) Карточки на повторение (по желанию).



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

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



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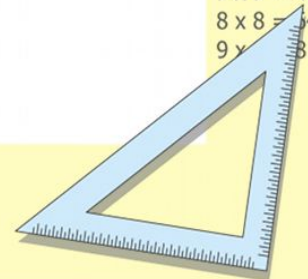
$$\sin 90^\circ = 1$$



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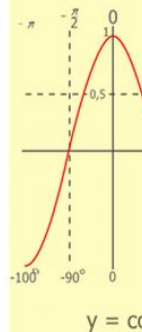
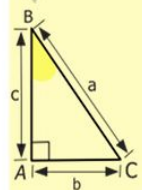
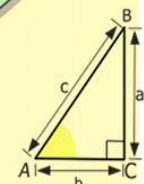
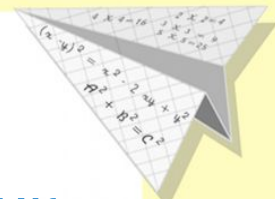
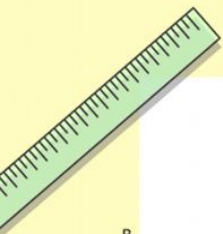
$$(x+y)(x-y) = x^2 - y^2$$





# РЕСУРСЫ

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

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



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

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

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



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

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

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

