

HARD SUMS CLUB

September 2005 Newsletter

www.hardsumsclub.com

Maths tricks using Vedic Mathematics

Over the summer holidays times tables are not at the front of peoples' mind. Here are some tricks to get you back into the swing.

The Vedas are the original scriptures of Hindu teachings from around 1500BC. They are the oldest book known about in all Indo-European languages. There are 16 sutras written in Sanskrit, from which all maths is based. These are used to help memorise the methods.

"By one more than the number before"- *Ekedhikena Purvena Sutra*

This is great for either square numbers where the last digit is 5 or for multiplication where the first digit is the same AND the last digits add to 10.

$$65 \times 65$$

Because this starts with a 6 add one more to the 6 to get 7.

Now do $6 \times 7 = 42$ and then just bung 25 on the end.

Answer: 4225

So how about 115×115

$11 \times 12 = 132$ bung the 25 on the end

Answer: 13225

With other multiplication, where the first digit is the same AND the last digits add to 10.

$$42 \times 48$$

$$4 \times 5 = 20 \quad 2 \times 8 = 16$$

Answer: 2016

$$\text{And } 81 \times 89 = 7209$$

$$8 \times 9 = 72 \quad 1 \times 9 = 09$$

We put "09" since we need two figures as in the other examples.

Try these ones:

• 38×32	• 57×53
• 45×45	• 35×35
• 92×98	• 103×107

"Vertically and crosswise"

We know $9 \times 8 = 72$

9 is 1 below 10 and 8 is 2 below 10

$$\begin{array}{r} 9 \quad 1 \\ 8 \quad 2 \\ \hline 7 \quad 2 \end{array}$$

To get the 7; subtract "crosswise"

$$\text{i.e. } 9 - 2 = 7 \text{ or } 8 - 1 = 7$$

To get the 2; multiply "vertically"

$$\text{i.e. } 1 \times 2 = 2$$

That is not impressive but how about ...

$$97 \times 79$$

97 is 3 below 100 and 79 is 21 below 100

$$\begin{array}{r} 97 \quad 3 \\ 79 \quad 21 \\ \hline 76 \quad 63 \end{array}$$

To get the 76; subtract "crosswise"

$$\text{i.e. } 93 - 21 = 76 \text{ or } 79 - 3 = 76$$

To get the 2; multiply "vertically"

$$\text{i.e. } 3 \times 21 = 63$$

Answer: 7663

Try some of the following

• 97×88	• 93×96
• 98×64	• 58×95

If you think you need a bit of times table practice, try "[Beat the clock](#)".

September quiz

Send your solutions to bcl@hardsumsclub.com

1. Dave gave Charlotte half of his frogs. Charlotte gave Johnnie half of the frogs she received from Dave. Johnnie kept 8 of those frogs and gave the remaining 10 to Dana. How many frogs did Dave give Charlotte?
2. Dennis the Menace is thinking of two numbers. Their greatest common factor is 6. Their least common multiple is 36. What are the numbers?
3. The weather during Fred's holiday was strange. It rained on 15 different days, but it never rained for a whole day. It either rained in the afternoon or the morning. There were 12 clear mornings and 13 clear afternoons in all. How long was the holiday?

September cross-sum

1	2	3	4
5			
6			

Across

- 1 Palindromic Cube
5 Square
6 Prime

Down

- 1 Square
2 Palindromic Cube
3 Prime
4 Square, Cube, NOT prime

September's strategy game- The ancient game of Nim

A game for 2 players and many counters. Start with 3 piles of counters.

You can remove as many counters as you like from a pile. (Even the whole pile)

The person who takes the last pile wins.

An alternative to this game is called **Last biscuit** and can be found at http://nrich.maths.org/public/viewer.php?obj_id=1186&part=inde

Websites of the month

<http://www.cimt.plymouth.ac.uk/resources/puzzles/default.htm>

This has a whole load of great "thinky" puzzles and games

<http://www.intmath.com/Integrat/millionaire.php>

This is a site for A-level students wanting to practice integration and differentiation by playing "Who wants to be a millionaire?" It also has some good tutorial lessons on calculus.

Another good trick to try

The Fibonacci trick.

Beat the person with the calculator!!

Write down the first 10 numbers in ANY Fibonacci series and then ask your friend to add them using a calculator.

You can add them easily by just multiplying the 7th term by 11. *Remember the trick for the 11 times table. Ask your teacher if you don't know this one – it is well worth learning.*

September's answers

September quiz

1. If Dave gave half his frogs to Charlotte and Charlotte gave half hers to Johnnie then Johnnie got $\frac{1}{4}$ of the frogs. He kept 8 and gave 10 away so $\frac{1}{4}$ of the frogs was 18. Therefore Charlotte, who got half of the frogs, got 36.
2. In order to get the least common multiple of two numbers you need to multiply the numbers together and divide by the highest common factor. Therefore if we have two numbers x and y , then $\frac{xy}{6} = 36$ or $xy = 6 \times 6 \times 6 = 2 \times 2 \times 2 \times 3 \times 3 \times 3$. The lowest common factor is 6 therefore the numbers must either be 6 and 36 or 12 and 18.
3. As it rained on 15 different days there were 15 half and half days, 7 out of 12 of the clear mornings were followed by rain, 8 out of 13 of the clear afternoons were preceded by rain. This leaves 5 totally clear days so

Therefore 20 days of holiday.

September cross-sum

1	2	3	4
1	3	3	1
5	4	4	1
6	4	3	

Note: 343 and 1331 are the first 2 palindromic cubic numbers – might be worth remembering.