⚡ Vedic Maths Magic Tricks ⚡

Chapter 5: Instant Calculation & Magic With 11

Calculation at a Glance: "Add the Neighbors"

Just as multiplication by 5 and 9 is simplified through Vedic rules, multiplication by **11** can be answered instantly! For simple two-digit numbers, keep the outer digits on the borders and place their sum in the middle.

✨ Formula: Sandwich the Sum of Digits Between the Borders!

📌 Examples: Basic 2-Digit Multiplication (No Carry Over)

35 × 11 = ? ➔ Borders: **3** [3 + 5] **5** = 3 [**8**] 5 ➔ **385**

71 × 11 = ? ➔ Borders: **7** [7 + 1] **1** = 7 [**8**] 1 ➔ **781**

📌 Example 3: Multi-Digit Number without Carry (54321 × 11)

Keep border digits **5** and **1** at the ends, and add consecutive pairs from left to right:

- Left Border = **5** | Right Border = **1**
- Neighbor sums: (5+4)=**9**, (4+3)=**7**, (3+2)=**5**, (2+1)=**3**
- Combine: **5 | 9 | 7 | 5 | 3 | 1** ➔ **597,531**

The "Dot Sandwich" & Multiples of 11 (22, 33, 44...)

💡 The "Dot Sandwich" Method (Only The Last Two) • N •

When additions involve carry-overs, place a **Dot (• = 0)** at both ends of the number (e.g. • 2 5 4 •). Add digits in pairs of two moving right to left!

📌 Example 4: 254 × 11 using Dot Sandwich (• 2 5 4 •)

1️⃣ 0 + 4 = **4**
2️⃣ 5 + 4 = **9**
3️⃣ 2 + 5 = **7**
4️⃣ 0 + 2 = **2**
➔ Final Result: **2,794**

📌 Example 5: Multiplication by Multiples of 11 (5462 × 33)

Split 33 into **(3 × 11)**. First multiply by 3, then apply the 11 Magic!

- **Step 1:** Multiply 5462 × 3 = **16,386**
- **Step 2:** Apply Dot Sandwich • 1 6 3 8 6 • × 11
  0+6=**6** | 6+8=1**4** (carry 1) | 8+3+1=1**2** (carry 1) | 3+6+1=1**0** (carry 1) | 6+1+1=**8** | 0+1=**1**

➔ Final Result: **180,246**

✏️ Chapter 5 Exercises & Solutions

Solve the following using Vedic Techniques:

#	Problem	Method & Working	Answer
1	**342 × 11**	Borders (3 & 2) | Pairs: (3+4)=7, (4+2)=6	**3,762**
2	**845 × 44**	1) 845 × 4 = 3,380 2) • 3 3 8 0 • × 11	**37,180**
3	**2367 × 11**	• 2 3 6 7 • × 11 Pair sums with carries: 2 | (2+3) | (3+6+1) | (6+7) | 7	**26,037**
4	**547 × 66**	1) 547 × 6 = 3,282 2) • 3 2 8 2 • × 11	**36,102**

🌟 Chapter Summary Checklist

✅ **2-Digit × 11:** Sum in the middle (e.g. $35 \times 11 = 3 [8] 5$).

✅ **Dot Sandwich Method:** Place dots (`• N •`) at both ends to handle multi-digit additions and carry-overs seamlessly.

✅ **Multiples of 11 (22, 33, 44, 66...):** Factorize first ($N \times 44 = (N \times 4) \times 11$).