

Long Division (4): Zero in the Answer

 NAME: _____ CLASS: _____ DATE: _____ SCORE:

WORKED EXAMPLE • THE MATRIX METHOD™

Complete the long division. $408 \div 2 = ?$

	2	0	4
2	4	0	8
	4		
		0	
		0	
			8
			8
			0

- Divide: $4 \div 2 = 2$. Write 2 above the 4.
- Multiply, subtract: $2 \times 2 = 4$, $4 - 4 = 0$
- Bring down the 0. $0 \div 2 = 0$. Write 0 above the 0.
- Multiply, subtract: $0 \times 2 = 0$, $0 - 0 = 0$
- Bring down the 8. $8 \div 2 = 4$. Write 4 above the 8.
- The 0 must be written. Without it the answer reads 24.

Ans: 204

Every digit you divide needs an answer digit above it. [10 marks]

PART A • The zero falls in the middle of the answer

(a) $618 \div 3 =$ _____

3	6	1	8

(b) $828 \div 4 =$ _____

4	8	2	8

(c) $515 \div 5 =$ _____

5	5	1	5

(d) $214 \div 2 =$ _____

2	2	1	4



Long Division (4): Zero in the Answer

PART B · The zero falls at the end — and two that do not follow the pattern

(e) $720 \div 4 =$ _____

4	7	2	0

(f) $630 \div 3 =$ _____

3	6	3	0

(g) $850 \div 5 =$ _____

5	8	5	0

(h) $260 \div 2 =$ _____

2	2	6	0

(i) $208 \div 4 =$ _____

4	2	0	8

(j) $405 \div 5 =$ _____

5	4	0	5

Answer Key — Long Division (4): Zero in the Answer

MATRIX METHOD™ • THE STEPS

Step 1: Divide every digit in turn, even when the answer for that digit is 0.

Step 2: Write the 0 above the digit before you bring the next one down.

Step 3: Check the length. Every digit you divided has an answer digit above it.

(a) $618 \div 3 = 206$

- $6 \div 3 = 2$. $2 \times 3 = 6$, $6 - 6 = 0$
- Bring down 1. $1 \div 3 = 0$. Write 0. $0 \times 3 = 0$, $1 - 0 = 1$
- Bring down the 8 to make 18. $18 \div 3 = 6$. $6 \times 3 = 18$, $18 - 18 = 0$

(b) $828 \div 4 = 207$

- $8 \div 4 = 2$. $2 \times 4 = 8$, $8 - 8 = 0$
- Bring down 2. $2 \div 4 = 0$. Write 0. $0 \times 4 = 0$, $2 - 0 = 2$
- Bring down the 8 to make 28. $28 \div 4 = 7$. $7 \times 4 = 28$, $28 - 28 = 0$

(c) $515 \div 5 = 103$

- $5 \div 5 = 1$. $1 \times 5 = 5$, $5 - 5 = 0$
- Bring down 1. $1 \div 5 = 0$. Write 0. $0 \times 5 = 0$, $1 - 0 = 1$
- Bring down the 5 to make 15. $15 \div 5 = 3$. $3 \times 5 = 15$, $15 - 15 = 0$

(d) $214 \div 2 = 107$

- $2 \div 2 = 1$. $1 \times 2 = 2$, $2 - 2 = 0$
- Bring down 1. $1 \div 2 = 0$. Write 0. $0 \times 2 = 0$, $1 - 0 = 1$
- Bring down the 4 to make 14. $14 \div 2 = 7$. $7 \times 2 = 14$, $14 - 14 = 0$

(e) $720 \div 4 = 180$

- $7 \div 4 = 1$ remainder 3. $1 \times 4 = 4$, $7 - 4 = 3$
- Bring down the 2 to make 32. $32 \div 4 = 8$. $8 \times 4 = 32$, $32 - 32 = 0$
- Bring down 0. $0 \div 4 = 0$. Write 0 at the end. $0 - 0 = 0$

Answer Key — Long Division (4): Zero in the Answer

(f) $630 \div 3 = 210$

- $6 \div 3 = 2$. $2 \times 3 = 6$, $6 - 6 = 0$
- Bring down 3. $3 \div 3 = 1$. $1 \times 3 = 3$, $3 - 3 = 0$
- Bring down 0. $0 \div 3 = 0$. Write 0 at the end. $0 - 0 = 0$

(g) $850 \div 5 = 170$

- $8 \div 5 = 1$ remainder 3. $1 \times 5 = 5$, $8 - 5 = 3$
- Bring down the 5 to make 35. $35 \div 5 = 7$. $7 \times 5 = 35$, $35 - 35 = 0$
- Bring down 0. $0 \div 5 = 0$. Write 0 at the end. $0 - 0 = 0$

(h) $260 \div 2 = 130$

- $2 \div 2 = 1$. $1 \times 2 = 2$, $2 - 2 = 0$
- Bring down 6. $6 \div 2 = 3$. $3 \times 2 = 6$, $6 - 6 = 0$
- Bring down 0. $0 \div 2 = 0$. Write 0 at the end. $0 - 0 = 0$

(i) $208 \div 4 = 52$

- 2 is smaller than 4, so the 2 joins the 0. Work with 20.
- $20 \div 4 = 5$. Write 5 above the 0. $5 \times 4 = 20$, $20 - 20 = 0$
- Bring down 8. $8 \div 4 = 2$. $2 \times 4 = 8$, $8 - 8 = 0$
- There is a 0 in the question but NO 0 in the answer.

(j) $405 \div 5 = 81$

- 4 is smaller than 5, so the 4 joins the 0. Work with 40.
- $40 \div 5 = 8$. Write 8 above the 0. $8 \times 5 = 40$, $40 - 40 = 0$
- Bring down 5. $5 \div 5 = 1$. $1 \times 5 = 5$, $5 - 5 = 0$
- There is a 0 in the question but NO 0 in the answer.

COMMON ERROR TO WATCH FOR

Pupils skip the 0 and write 24 instead of 204. They divide, get nothing, and move straight on without recording it. Make them count: every digit of the dividend that was divided must have an answer digit sitting directly above it.