SMILE WORKCARDS

Number and Algebra Mixed Pack Two

Contents

Sum, Product and Difference

Sum	+	add	and	plus

Product	X	times	multiply by	lots of

● What is the **sum** of **2** and **3**?

$$2 + 3 = 5$$

The sum of 2 and 3 is 5

● What is the **product** of **2** and **3**?

$$2 \times 3 = 6$$

The product of 2 and 3 is 6

1. What is the sum of:

    a) 2 and 4
    b) 3 and 5
    c) 10 and 2
    d) 9 and 5
    e) 7 and 8

Do not use a calculator.

2. What is the product of:

    a) 2 and 4
    b) 3 and 5
    c) 10 and 2
    d) 9 and 5
    e) 7 and 8

Do not use a calculator.

1 2

	take away	minus
–	less	subtract

Do not use a calculator.

• What is the **difference** between **2** and **3**?

$$3 - 2 = 1$$

Arrange to subtract the smaller number from the larger number.

The *difference* between 2 and 3 is 1

3. What is the difference between: a) 2 and 4
   b) 3 and 5
   c) 10 and 2
   d) 9 and 5
   e) 7 and 8

Do not use a calculator.

4. Copy and complete this table.

		Sum	Product	Difference
a)	2 and 4	2 + 4 =	2 × 4 =	4 – 2 =
b)	6 and 3			
d)	7 and 9			
d)	5 and 1			
e)	3 and 11			

5. Calculate these:

   a) What is the **sum** of **15** and **9**?

   b) What is the **difference** between **18** and **6**?

   c) What is the **product** of **5** and **9**?

   d) What is the **product** of **8** and **6**?

   e) What is the **sum** of **8** and **6**?

3   4

Missing Signs

Somebody has rubbed out the signs.
Copy and write in + or − or x or ÷

1) 60 ÷ 15 = 4

2) 60 + 15 = 75

3) 60 x 15 = 900

4) 60 − 15 = 45

5) 456 + 3 = 459

6) 456 x 3 = 1368

7) 456 − 3 = 453

8) 456 ÷ 3 = 152

9) 35 x 5 = 175

10) 260 x 10 = 2600

11) 12 x 13 = 156

12) 455 x 5 = 2275

13) 1246 + 39 = 1285

14) 1246 − 39 = 1207

15) 12 + 13 = 25

16) 455 ÷ 5 = 91

17) 313 − 156 = 157

18) 333 x 3 = 999

19) 924 ÷ 154 = 6

20) 924 ÷ 6 = 154

Missing Keys

Your calculator has broken down!

Only five of the buttons are working properly:

7   3   ×   −   =
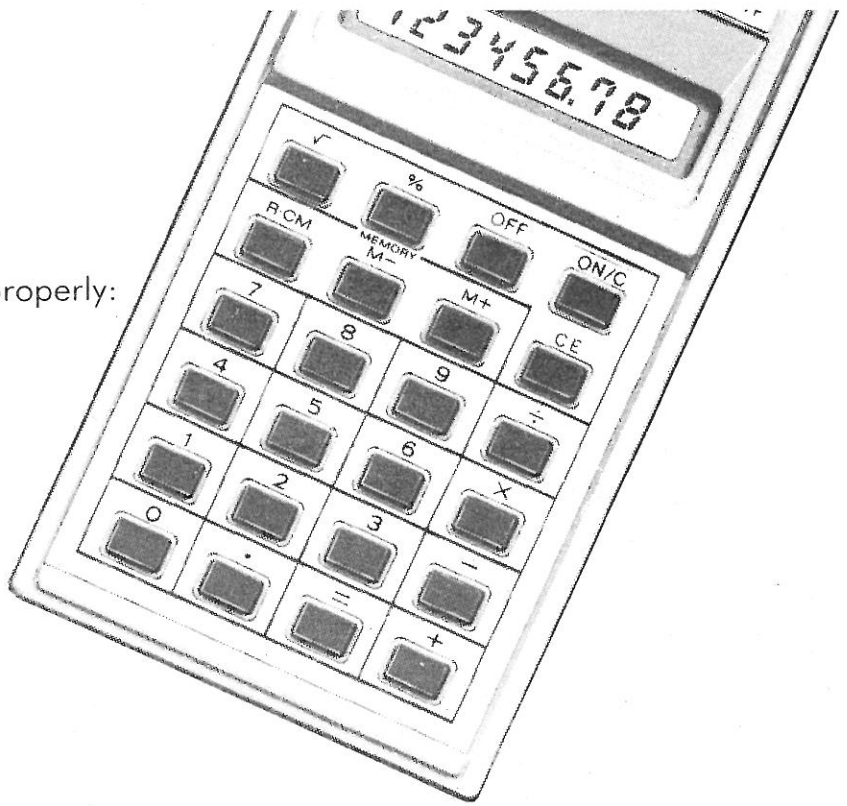
How can you use these 5 buttons to make the calculator show each number from 0 to 9?

0 is easy! Just press   7   −   7   =

Can you do the others?

Along the Line
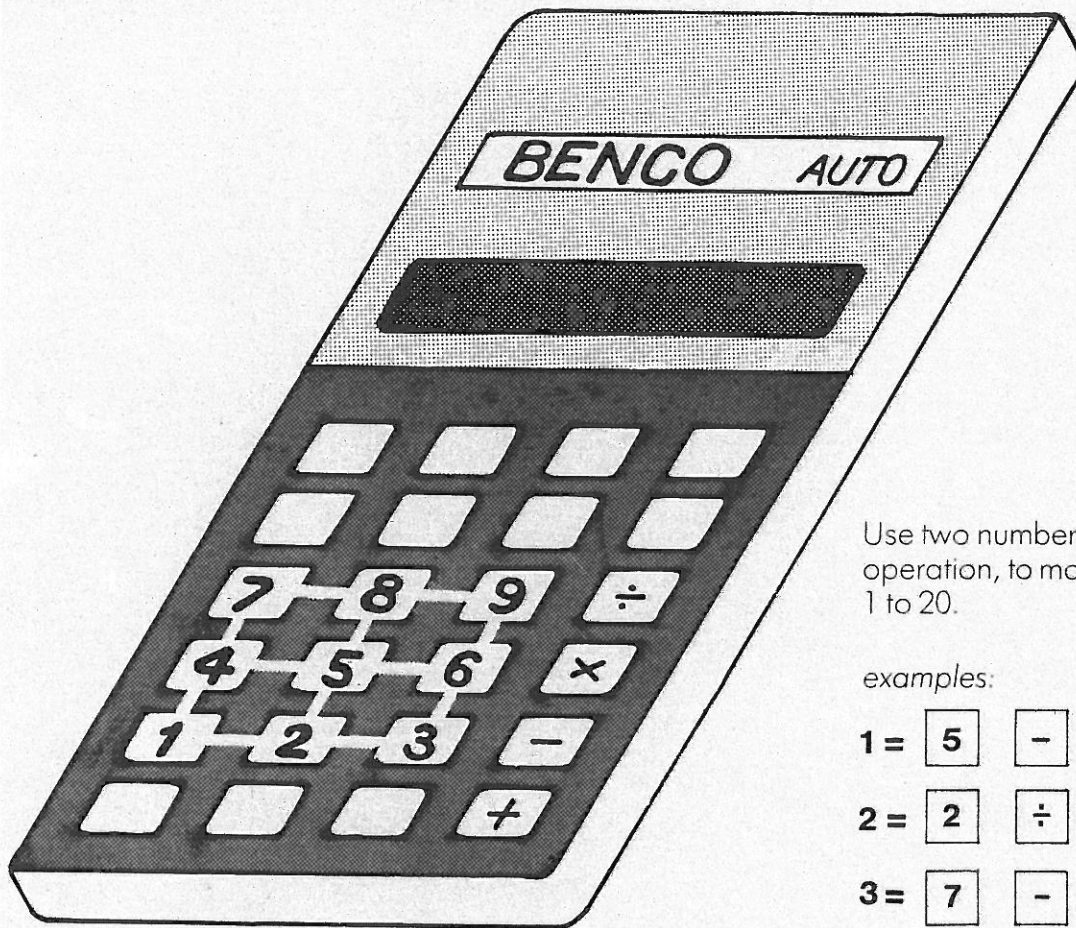
Use two numbers joined by a line, and one operation, to make the whole numbers from 1 to 20.

examples:
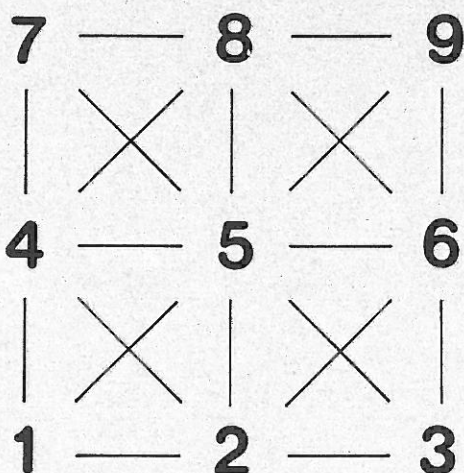
1 = [5] [−] [4]

2 = [2] [÷] [1]

3 = [7] [−] [4]

and so on.

Which five numbers cannot be made?

If you can use the diagonal lines as well, which two numbers still cannot be made?

junior contig

A game for 2 to 5 players
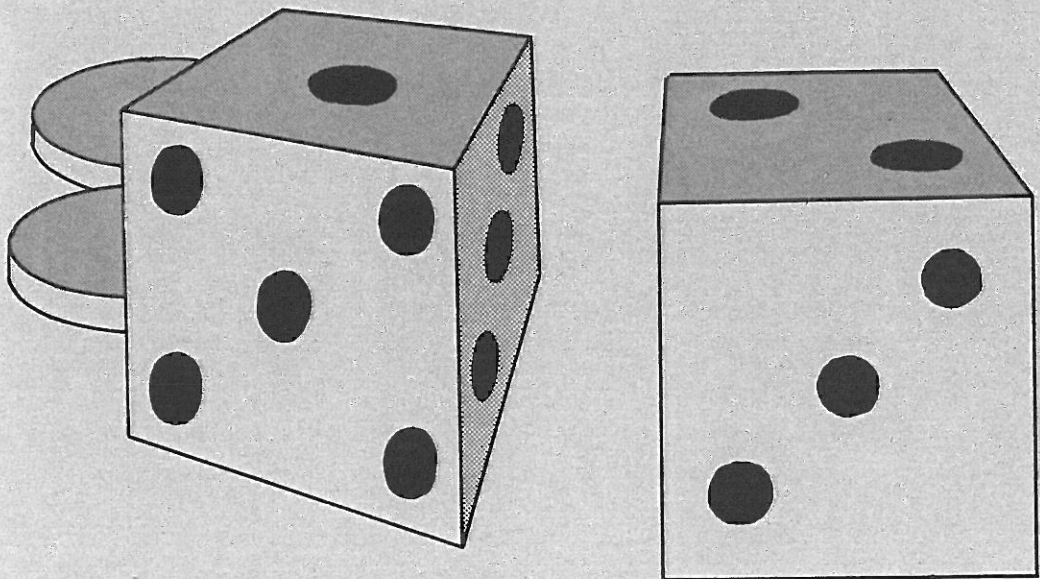
1. Take turns to roll the 2 dice.
2. Add, subtract, multiply **or** divide the numbers.
3. Cover an answer with a counter — if you can.
4. You cannot put 2 counters on the same square.
5. If you put your counter
   . . . beside 1 counter, score 1 point
   . . . beside 2 counters, score 2 points
   . . . beside 3 counters, score 3 points
   . . . and so on.

example

$$3 + 2 = 5$$
$$3 - 2 = 1$$
$$3 \times 2 = 6$$
$$3 \div 2 = 1\tfrac{1}{2}$$
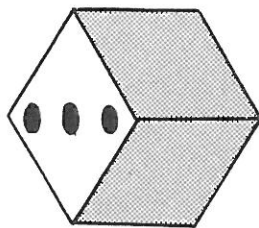
You could choose to put your counter on 1, 5 or 6.

●	2	4
5	●	●
9	10	11

●	2	4
5	●	8
9	10	11	12
15	16	18	20
24	25	30	36

In this game, you can't go on 1 because it's taken.

If you go on 5 you score 1 point.

A better choice would be 6 to score 3 points.

1	2	3	4
5	6	7	8
9	10	11	12
15	16	18	20
24	25	30	36

You will need an underground map.

UNDERGROUND

Sometimes it is useful to know how long an underground journey takes. It is impossible to work out the exact journey time in advance (why?) but you can make a good estimate.
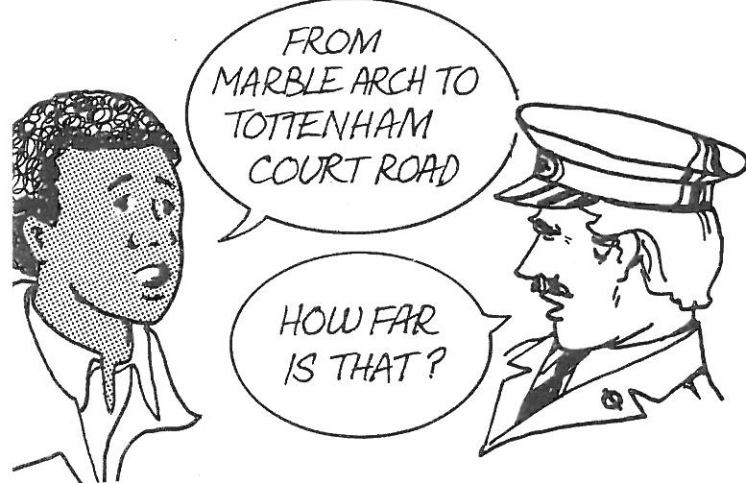
1) Use the underground map to check the journey time from Marble Arch to Piccadilly Circus.
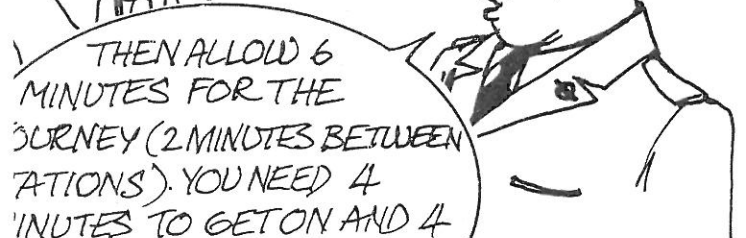
Get on	_____	4 minutes
Get off	_____	4 minutes
Change	_____	4 minutes
Between stations	_____	2 minutes
(including stopping)		

Work out these journey times:

2) Lancaster Gate to Oxford Circus

3) Victoria to Tottenham Court Road

4) Knightsbridge to Tottenham Court Road

5) Lancaster Gate to Leicester Square

6) Describe 2 routes from Notting Hill Gate
   to Charing Cross.
   Work out which is quicker.

7) Describe 2 routes from West Ham to
   Liverpool Street.
   Work out which is quicker.

8) What do you think is the best route
   from Highbury and Islington to
   Stockwell? Why?

9) If you are at Big Ben, where could
   you get to in 20 minutes?
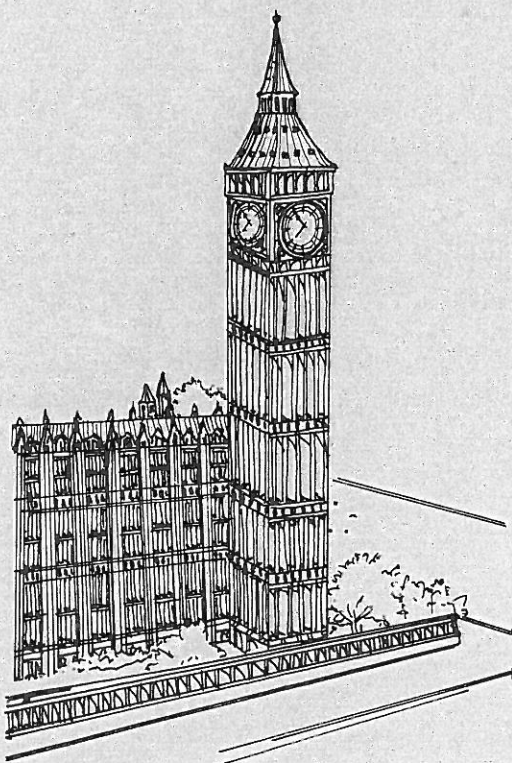
(Do It First)

> Brackets mean "do the operation in brackets first".
>
> The two expressions $(5 + 3) \div 2$ and $5 + (3 \div 2)$ have the same numbers and operations, the only thing that differs is the position of the brackets.
>
> $$
> \begin{array}{ll}
> (5 + 3) \div 2 & 5 + (3 \div 2) \\
> = \quad 8 \quad \div 2 & = 5 + \quad 1.5 \\
> = 4 & = 6.5
> \end{array}
> $$
>
> The answers are *different*, so the position of the brackets is important.

1 In each of these pairs of expressions, the numbers and operations are the same, but the position of the brackets is different.
Work out the value of each expression:

a) $(5 \times 4) + 7$
   $5 \times (4 + 7)$

b) $(6 \times 11) - 3$
   $6 \times (11 - 3)$

c) $(18 + 2) + 4$
   $18 + (2 + 4)$

d) $(24 + 6) - 3$
   $24 + (6 - 3)$

e) $(7 + 3) \times 5$
   $7 + (3 \times 5)$

f) $(8 - 2) \times 3$
   $8 - (2 \times 3)$

g) $(4 + 8) \div 2$
   $4 + (8 \div 2)$

h) $(12 - 9) \div 3$
   $12 - (9 \div 3)$

i) $(5 \times 6) \div 3$
   $5 \times (6 \div 3)$

j) $(12 \div 3) \times 2$
   $12 \div (3 \times 2)$

For which pairs of expressions are your answers the same?

2 Make up other pairs of expressions with the same numbers and operations, but with brackets in different positions.
Work out the value of each expression.
Continue until you find *at least* two pairs of expressions which give the same answer.

3 Copy the following expressions. Put in brackets to make the expressions correct.

a) $3 \times 5 + 7 = 36$

b) $3 \times 5 + 7 = 22$

c) $1 + 4 \times 8 = 40$

d) $1 + 4 \times 8 = 33$

e) $6 - 2 \times 2 = 2$

f) $6 - 2 \times 2 = 8$

g) $11 + 9 \times 3 = 38$

h) $11 + 9 \times 3 = 60$

i) $15 - 2 \times 7 = 1$

j) $16 + 4 + 4 = 2$

k) $18 - 6 \div 3 = 4$

l) $17 - 7 + 1 = 9$

m) $5 - 3 - 2 = 0$

n) $20 \div 2 \times 5 = 50$
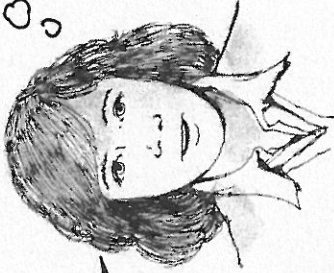
o) $14 + 8 + 2 = 11$

p) $16 - 2 \times 6 = 4$

Smile 0398

4 + 3 × 2

What is 4 + 3 × 2?

4 and 3 is 7, times 2 is 14

14 !

3 two's are 6 4 and 6 is 10

10 !

You're both right really. It depends what you do first.

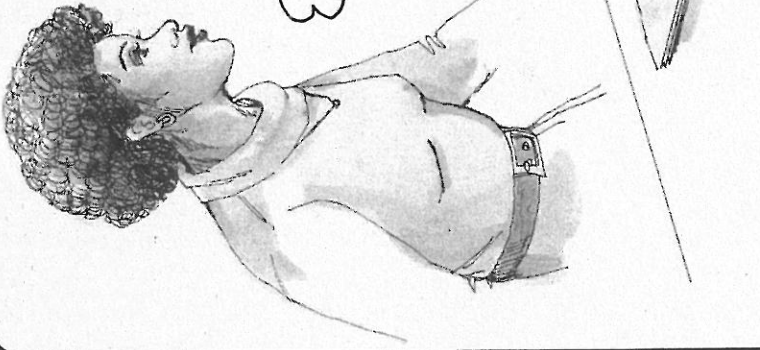Find as many answers as you can for these and show your working for each answer:

(1) $2 + 3 \times 4$ (3) $4 \times 5 + 6 - 5$

(2) $10 - 2 + 3$ (4) $16 - 8 - 4 - 2 - 1$

Brackets *are the answer.*
They tell you what to do first.

$(4 + 3) \times 2 = 14$

$4 + (3 \times 2) = 10$

Try these. Do the part in the brackets first.

(5) $5 \times (3 + 4)$ (10) $(5 \times 3) + (10 - 7)$

(6) $3 \times (8 - 5)$ (11) $(100 - 96) - (100 - 97)$

(7) $(10 - 7) \times 8$ (12) $[(3 + 5) \times 2] + 7$

(8) $8 \div (20 \div 5)$ (13) $20 - [12 - (4 \times 2)]$

(9) $10 \times (10 \div 10)$ (14) $16 \div [16 \div (16 \div 8)]$

Write these with brackets in the correct place:

(15) $5 \times 4 - 1 = 19$ (17) $24 \div 6 + 2 = 3$

(16) $2 + 3 \times 10 = 32$ (18) $10 - 5 \times 2 + 7 = 45$

Use brackets to show how you worked out each answer in questions (1) to (4).

THREE NUMBERS

8	6	5	2	3	6
1	4	6	8	7	2
7	1	3	5	5	5
9	4	8	9	3	7
6	4	2	7	2	1
2	2	7	5	1	8

Choose any 3 numbers next to each other to make sentences with different answers.

```
8   6  [5   2   3]  6
1   4   6   8   7   2          9 = (5 - 2) x 3
7   1   3   5   5   5
9   4   8   9   3   7
6   4   2   7   2   1          45 = 5 x (2 + 7)
2   2   7   5   1   8
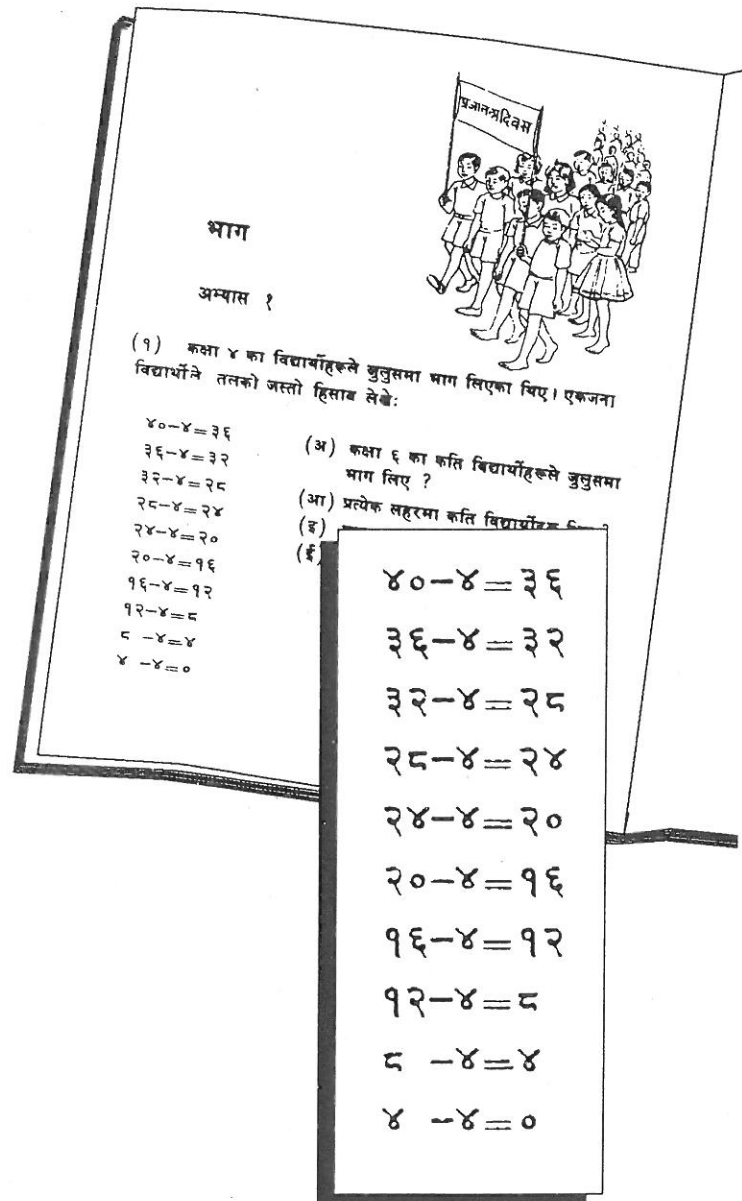```

(1) Make sentences for these answers:

    22        16        26        21        3

(2) Challenge a friend!  Take turns to set an answer and
    see who can find it first.

# NEPALI NUMBERS

The page illustrated here is from a school mathematics book in Nepal.



भाग

अभ्यास १

(१) कक्षा ४ का विद्यार्थीहरूले जुलुसमा भाग लिएका थिए। एकजना विद्यार्थीले तलको जस्तो हिसाब लेखे:

४०−४=३६
३६−४=३२
३२−४=२८
२८−४=२४
२४−४=२०
२०−४=१६
१६−४=१२
१२−४=८
८ −४=४
४ −४=०

(अ) कक्षा ६ का कति विद्यार्थीहरूले जुलुसमा भाग लिए ?

(आ) प्रत्येक लहरमा कति विद्यार्थी

(इ)

(ई)

४०−४=३६

३६−४=३२

३२−४=२८

२८−४=२४
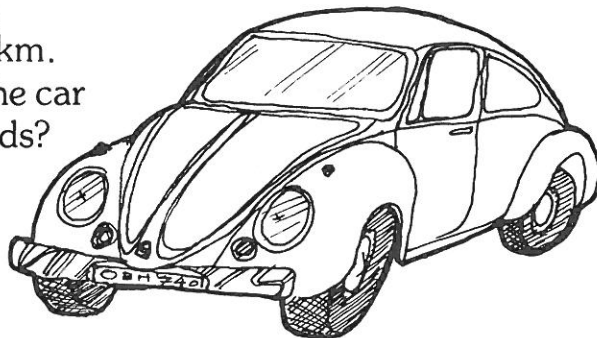
२४−४=२०

२०−४=१६

१६−४=१२

१२−४=८

८ −४=४

४ −४=०

- What do you think this mathematics lesson is about?

- Can you translate the table of numbers?

- Now make a similar table for the number 2.

# Harder Calculator Problems

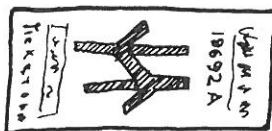(1) You spend £2.31 on food, £1.39 at the Post Office and £2.94 on petrol. How much have you spent?
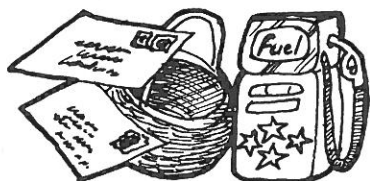
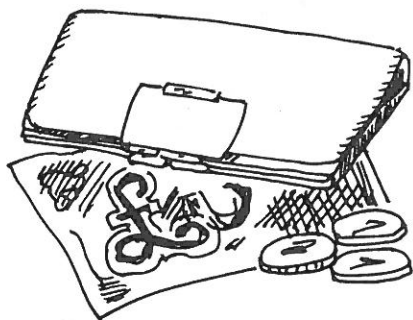(2) A car goes forward 3.69 km, then reverses 0.12 km. How far has the car moved forwards?

(3) You spend £1.27 on groceries and £2.96 on meat. How much change do you have from £5?

(4) You have £3 but you need to keep £1.52 for your train fare. How much can you afford to spend?

(5) In a week you earn £68.70, but you pay £15.69 tax, £24.73 on food, and £15.50 rent. How much could you save in 3 weeks?
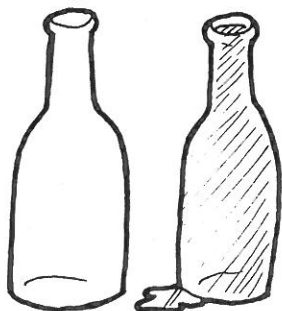
(6) Leila has £55.80. She owes Kate half of it and Jenny a third of what's left. How much money does Leila have after she's paid her debts?
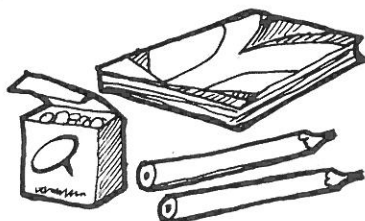
(7) A wire is 38.7 cm long but a piece of length 198 mm is cut off. Find the length left.
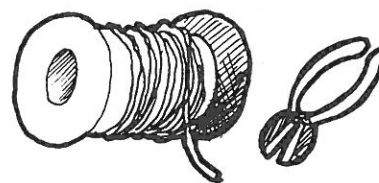
(8) An empty bottle weighs 83.9g but full of water it weighs 1.217 kg. Find the weight of the water.

(9) You buy 9 books at £1.63 each, 13 pencils at $4\frac{1}{2}$p each and 850 drawing pins at 3p for 50. How much change do you get from £16?

(10) Add these lengths. 6.2 km, 3m, 4.29m, 98cm, 981 mm, 0.487 km, 216.4 cm.

10mm = 1 cm
100cm = 1 m
1000m = 1 km
1000g = 1 kg

# GET TO ONE

An activity for a small group.



Each person will need a calculator.

Enter 28 on the display.

Using only [ + ] [ − ] [ × ] [ ÷ ] [ = ] and the key number [ 3 ] how quickly can you get to one?

This way uses 6 operations:

| | | |
|---|---|---|
| | | 28 |
| + 3 | ⟶ | 31 |
| × 3 | ⟶ | 93 |
| + 3 | ⟶ | 96 |
| + 3 | ⟶ | 99 |
| ÷ 33 | ⟶ | 3 |
| ÷ 3 | ⟶ | 1 |

Can you do better?

*Turn over*

# THREE MORE PROBLEMS

How many operations do you need to get to one?

Remember: only use  $+$   $-$   $\times$   $\div$   $=$   and the key number.

**PROBLEM 1**

Starting number **55**
Key number **6**

Number of operations    8: good    7: very good
3: excellent

**PROBLEM 2**

Starting number **40**
Key number **5**

Number of operations    8: good    6: very good
4: excellent

**PROBLEM 3**

Starting number **24**
Key number **9**

Number of operations    9: good    8: very good
5: excellent

# A Million

## A million is a thousand thousands
# 1 000 000

## 1. A million days

Have you lived a million days?

Do you know anyone who has?

Write about your answer.

NEFERTITI WAS QUEEN OF EGYPT CIRCA 1370 BC

THIS DICTIONARY HAS 1652 PAGES WITH ABOUT 60 ENTRIES PER PAGE.

## 2. Biggest book

Find the biggest book in the library. Are there a million words in it? How many pages would a million words need?

## 3. A million cubes

If you piled up a million centicubes evenly on your desk, how high would the pile be?