



Numbers Above One Million



Two hundred and thirty-seven million six hundred and forty-nine thousand one hundred and five.



	Hundred millions	Ten millions	Millions	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Units
2	3	7	6	4	9	1	0	5	

Leave a space after the millions and after the thousands.



237 649 105

1 Use numerals to write:

a forty-nine million seven hundred and sixty thousand six hundred and twenty-one

b eighty-three million one hundred and thirty-two thousand five hundred and forty-nine

2 Write the value for each coloured digit.

a 37**4**68901

b **2**3674768

c 431**6**9235

d **9**6347607

e **6**7911213

f 16**5**273406

3 Arrange each group of numbers in ascending order.

a 26349721 62419637 43296714

b 65375670 63497624 56811769

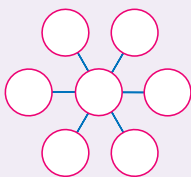
c 32693475 41623912 17634658

4 Is each number below closer to 30 000 000 or 40 000 000?

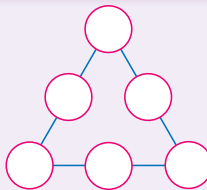
a 32645762

b 34177624

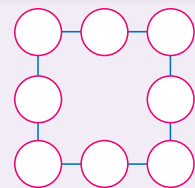
c 36396408



5 a Use the digits 1, 2, 3, 4, 5, 6, 7. Write one digit in each space so that all the lines add up to the same sum.



b Use the digits 1, 2, 3, 4, 5, 6. Write one digit in each space so that the sum of the numbers along each side is the same.

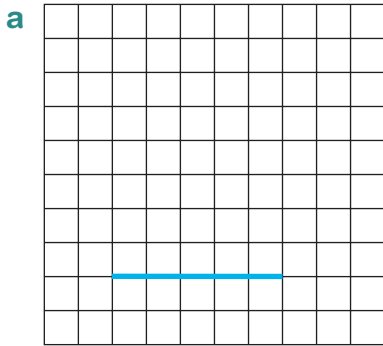


c Use the digits 1, 2, 3, 4, 6, 7, 8, 9. Write one digit in each space so that the sum of the numbers along each side is the same.

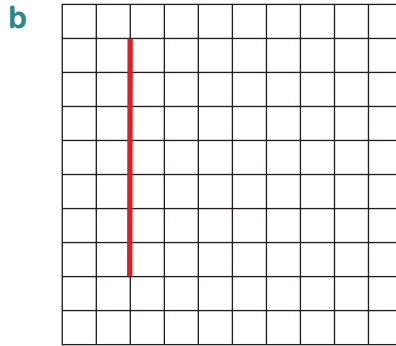




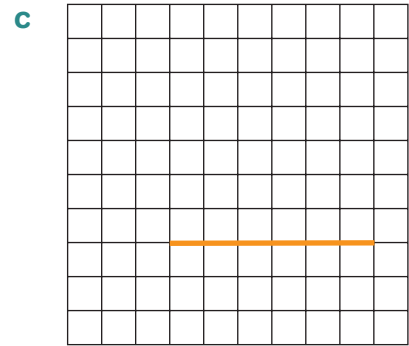
1 Draw a square on each coloured side.



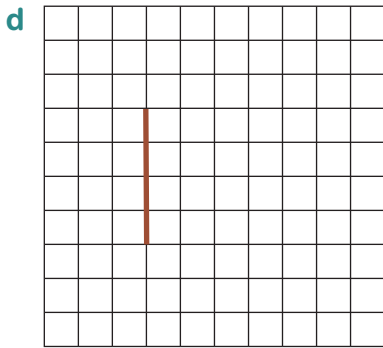
Area of blue square
= small squares



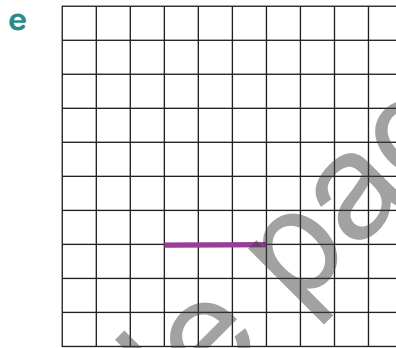
Area of red square
= small squares



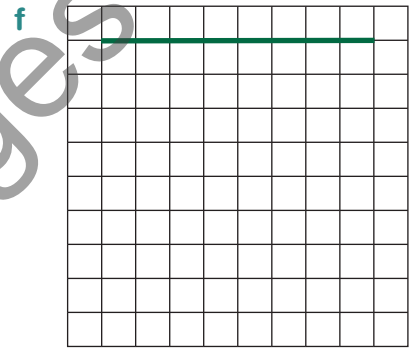
Area of orange square
= small squares



Area of brown square
= small squares

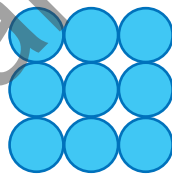


Area of purple square
= small squares



Area of green square
= small squares

The result of multiplying a counting number by itself is called a **square number**.



2 a Here we have 3 rows of 3 counters.

$3 \times 3 =$

b What shape does this array look like?

c Make square arrays using 4, 9, 16 and 25 counters.

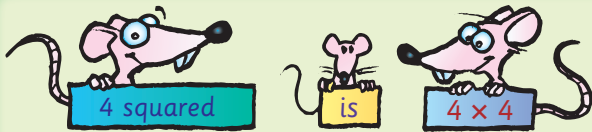
3 List all of the square numbers up to 100.

4 Use a calculator to find at least seven more square numbers.

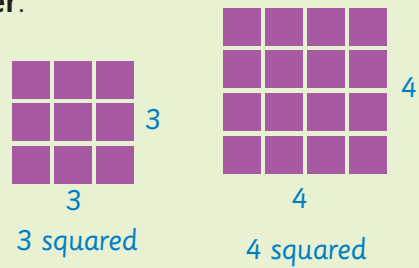
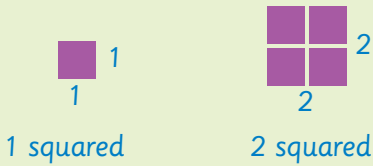


5 Explain why the numbers 1, 4, 9, 16, ... are called square numbers.

1:03 Square Numbers



A whole number times itself gives a square number.



1, 4, 9 and 16 are square numbers.

The number of blocks in a square pattern is a square number.
3 squared is 3×3 .



$$1 = 1 \times 1$$

$$4 = 2 \times 2$$

$$9 = 3 \times 3$$

$$16 = 4 \times 4$$

$$\square = 5 \times 5$$

$$\square = 6 \times 6$$

1 Use place-value blocks to find these square numbers.

- a 5 squared =
- b 6 squared =
- c 7 squared =
- d 8 squared =
- e 9 squared =
- f 10 squared =
- g $2 \times 2 =$
- h $4 \times 4 =$
- i $7 \times 7 =$
- j $3 \times 3 =$
- k $6 \times 6 =$
- l $10 \times 10 =$
- m $1 \times 1 =$
- n $8 \times 8 =$

2 Look carefully at the first ten square numbers below.



- a Complete the pattern shown here.
- b Write down the next two square numbers after 100. ,
- c Write down the square numbers from those above that are also even.
, , , ,

Each factor is written only once.

3 Complete:

- a $9 =$ squared
- b $25 =$ squared
- c $16 =$ squared
- d $36 =$ squared



4 Use blocks to find all factors of:

- a 25: , and
- b 9: , and
- c 49: , and
- d 4: , and
- e 16: , , , and

Division Review



In 10 litres of sea water we found 216 g of salt. How much salt would have been in one litre of this sea water?

$$21 \frac{6}{10} \text{ or } 21.6$$

$$10 \overline{) 216}$$

In one litre of sea water there was $21 \frac{6}{10}$ g of salt.



Test your knowledge of last year's work.

1 a

$$5 \overline{) 44}$$

b

$$4 \overline{) 27}$$

c

$$7 \overline{) 40}$$

d

$$6 \overline{) 37}$$

2 a

$$3 \overline{) 36}$$

b

$$6 \overline{) 66}$$

c

$$2 \overline{) 84}$$

d

$$3 \overline{) 63}$$

3 a

$$3 \overline{) 57}$$

b

$$4 \overline{) 56}$$

c

$$5 \overline{) 85}$$

d

$$8 \overline{) 96}$$

4 a

$$3 \overline{) 642}$$

b

$$6 \overline{) 528}$$

c

$$5 \overline{) 825}$$

d

$$8 \overline{) 440}$$

5 a

$$7 \overline{) 849}$$

b

$$9 \overline{) 574}$$

c

$$4 \overline{) 717}$$

d

$$3 \overline{) 280}$$

6 a

$$10 \overline{) 370}$$

b

$$10 \overline{) 583}$$

c

$$10 \overline{) 800}$$

d

$$10 \overline{) 614}$$

7 a

$$3 \overline{) 612}$$

b

$$5 \overline{) 535}$$

c

$$4 \overline{) 828}$$

d

$$6 \overline{) 642}$$

8 Write the remainders for these as fractions or decimals.

a

$$4 \overline{) 601}$$

b

$$8 \overline{) 844}$$

c

$$4 \overline{) 903}$$

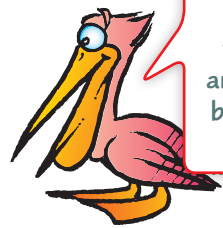
d

$$10 \overline{) 842}$$

9 a Paul found three shells of lengths 38 mm, 57 mm and 19 mm.

What was the average length of the shells?

b Mia raised \$315 for charity, Josh raised \$186, Zach \$115 and Naomi \$220. What was the average raised?



To find the average, add the amounts and then divide by the number of people.



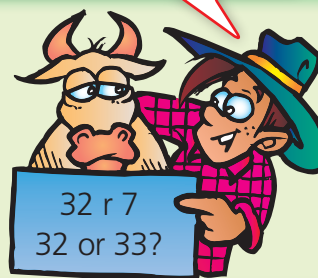
Sometimes we must round up.

Eight people can be seated at each table.
How many tables are needed for 263 people?

$$\begin{array}{r} 32 \text{ r } 7 \\ 8 \overline{) 263} \end{array}$$



33 tables will be needed.
A table will be needed
to seat the remaining 7.



1 a $7 \overline{) 40}$ b $5 \overline{) 35}$ c $9 \overline{) 77}$ d $4 \overline{) 34}$ e $10 \overline{) 93}$

f $5 \overline{) 75}$ g $6 \overline{) 84}$ h $5 \overline{) 90}$ i $6 \overline{) 90}$ j $3 \overline{) 87}$

2 a $2 \overline{) 484}$ b $3 \overline{) 360}$ c $5 \overline{) 555}$ d $6 \overline{) 606}$ e $4 \overline{) 844}$

f $4 \overline{) 504}$ g $5 \overline{) 665}$ h $7 \overline{) 938}$ i $3 \overline{) 702}$ j $8 \overline{) 976}$

3 a $6 \overline{) 939}$ b $4 \overline{) 700}$ c $5 \overline{) 752}$ d $7 \overline{) 900}$ e $8 \overline{) 264}$

f $10 \overline{) 600}$ g $10 \overline{) 350}$ h $10 \overline{) 740}$ i $10 \overline{) 300}$ j $10 \overline{) 720}$

k $4 \overline{) 123}$ l $8 \overline{) 856}$ m $3 \overline{) 902}$ n $5 \overline{) 535}$ o $9 \overline{) 273}$

4 a 357 eggs are put into cartons of six. How many cartons are filled?

b 357 cars are taken to town by truck. How many trips are needed if a truck can carry six cars?

c Six spark plugs are needed to service a car. How many cars can be serviced using 155 spark plugs?

d I used 938 mL of milk to fill seven identical containers. How much did I pour into each?

e Callum had \$960. This is ten times as much as Holly. How much does she have?



Extending Multiplication Facts



Can you see the pattern?

Each time we use one more zero.



2×8	16
2×80	160
2×800	1600

20×8	160
20×80	1600
20×800	16000



Complete each pattern.

1

a	3×8 3×80 3×800		b	2×3 2×30 2×300		c	6×4 6×40 6×400	
d	4×7 4×70 4×700		e	8×6 8×60 8×600		f	7×9 7×90 7×900	

2

a	30×8 30×80 30×800		b	20×4 20×40 20×400		c	50×7 50×70 50×700	
d	80×7 80×70 80×700		e	60×3 60×30 60×300		f	90×9 90×90 90×900	

3

a	8×20 80×20 800×20 8000×20		b	70×3 70×30 70×300 70×3000		c	4×80 40×80 400×80 4000×80	
d	3×90 30×90 300×90 3000×90		e	50×6 50×60 50×600 50×6000				

Can you see a rule?

Constant Multipliers on a Calculator

4 Press the keys below, and write the answer on the display for each empty box.

a $40 \times \times 20 = \square$ $200 = \square$ $2000 = \square$ $20000 = \square$

Here 20, 200, 2000 and 20000 have all been multiplied by 40.

b $30 \times \times 30 = \square$ $300 = \square$ $3000 = \square$ $30000 = \square$

Here 30, 300, 3000 and 30000 have all been multiplied by 30.





To multiply by 10, add a zero.

$$10 \times 23 = 230$$



$$20 = 2 \times 10$$

$$20 \times 23 = 2 \times 230$$



$$30 = 3 \times 10$$

$$30 \times 23 = 3 \times 230$$



$$70 = 7 \times 10$$

$$70 \times 23 = 7 \times 230$$

- 1 a 10×35 b 15×10 c 10×78 d 51×10
 e 20×35 f 15×20 g 20×78 h 51×20
 i 30×35 j 15×30 k 30×78 l 51×30

$$20 \times 10 = 200$$

$$20 \times 20 = 400$$

$$20 \times 30 = 600$$

$$20 \times 70 = 1400$$

- 2 a 30×10 b 30×20 c 30×30
 d 10×40 e 20×40 f 30×40
 g 10×80 h 20×80 i 30×80

Can you see the rule?



To multiply numbers ending in zeros, write down the zeros and multiply the numbers that remain, e.g. $600 \times 80 = 48000$.

- 3 a 40×20 b 10×90 c 20×30 d 40×10
 e 30×50 f 40×30 g 70×20 h 60×50
 i 80×30 j 60×60 k 80×70 l 20×90

- 4 a 500×60 b 800×40 c 500×70
 d 80×800 e 40×700 f 70×500
 g 60×400 h 90×800 i 200×60

Check answers.

$$40 \times 50 = 2000$$

$$500 \times 800 = 400000$$

5

\times	60	90	300	800	400	600	500
50							
200							
700							
900							

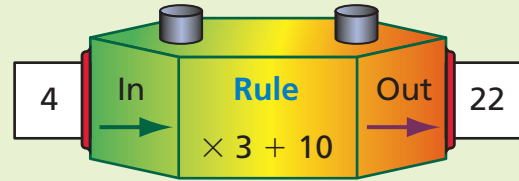
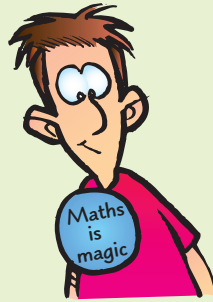




Number Machines

A number goes in on the left.
The **Rule** is used and the answer comes out on the right.

If 4 goes in, $4 \times 3 + 10 = 22$,
so 22 comes out.

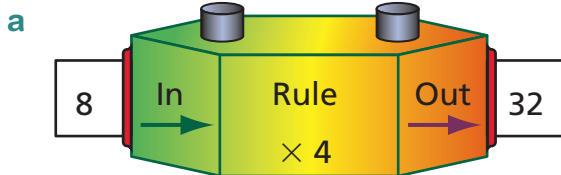


In	4	5	6	7	8	9
Out	22	25	28	31	34	37

We can say that $\text{Out} = \text{In} \times 3 + 10$

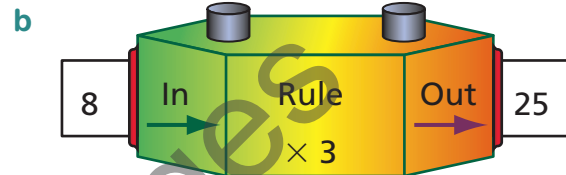


1 Use the rule for each number machine to complete the table. Rewrite the rule underneath.



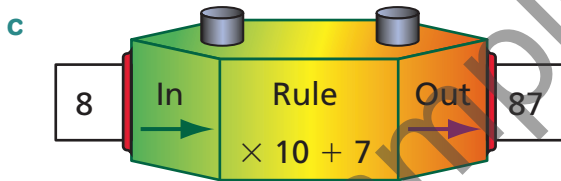
In	1	2	3	4	5	50
Out						

Rule: Out =



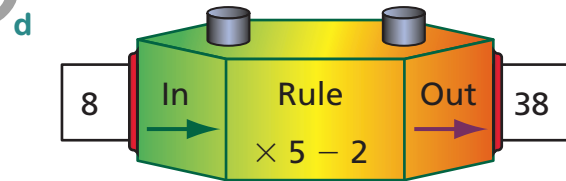
In	1	2	3	4	5	50
Out						

Rule: Out =



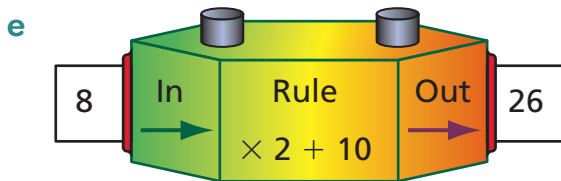
In	1	2	3	4	5	50
Out						

Rule: Out =



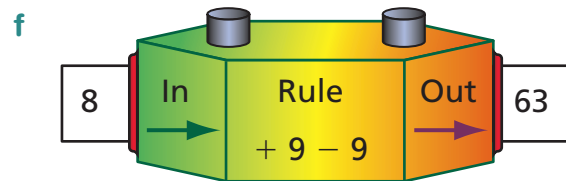
In	1	2	3	4	5	50
Out						

Rule: Out =



In	1	2	3	4	5	50
Out						

Rule: Out =



In	1	2	3	4	5	50
Out						

Rule: Out =

2 Discuss: What happens when you add a number and then subtract the same number?