

# Divide 4-digits by 1-digit

## Reasoning and Problem Solving

R

Jack is calculating  $2,240 \div 7$

He says you can't do it because 7 is larger than all of the digits in the number.

Do you agree with Jack?  
Explain your answer.

Jack is incorrect. You can exchange between columns. You can't make a group of 7 thousands out of 2 thousand, but you can make groups of 7 hundreds out of 22 hundreds.

The answer is 320

## Spot the Mistake

Explain and correct the working.

Thousands	Hundreds	Tens	Ones
1000 1000 1000	100 100 100	10	1 1 1
1000 1000 1000	100		1
1000 1000 1000			

	3	1	0	1
3	9	4	1	4

There is no exchanging between columns within the calculation. The final answer should have been 3,138

## Divide with Remainders

### Reasoning and Problem Solving

R

I am thinking of a 3-digit number.

When it is divided by 9, the remainder is 3

When it is divided by 2, the remainder is 1

When it is divided by 5, the remainder is 4

What is my number?

Possible answers:

129	219
309	399
489	579
669	759
849	939

Encourage children to think about the properties of numbers that work for each individual statement. This will help decide the best starting point.

### Always, Sometimes,

A three-digit number made of consecutive descending digits divided by the next descending digit always has a remainder of 1

$$765 \div 4 = 191 \text{ remainder } 1$$

How many possible examples can you find?

Sometimes

Possible answers:

$$\begin{aligned} 432 \div 1 &= 432 \text{ r } 0 \\ 543 \div 2 &= 271 \text{ r } 1 \\ 654 \div 3 &= 218 \text{ r } 0 \\ 765 \div 4 &= 191 \text{ r } 1 \\ 876 \div 5 &= 175 \text{ r } 1 \\ 987 \div 6 &= 164 \text{ r } 3 \end{aligned}$$

# Short Division

## Reasoning and Problem Solving

Find the missing digits.

$$\begin{array}{r} 041\boxed{4}r3 \\ 4\overline{)1\boxed{6}59} \end{array}$$

$$\begin{array}{r} 041\boxed{4}r3 \\ 4\overline{)1\boxed{6}59} \end{array}$$

Here are two calculations.

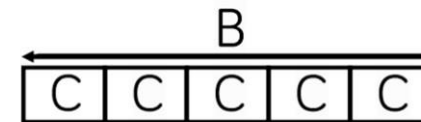
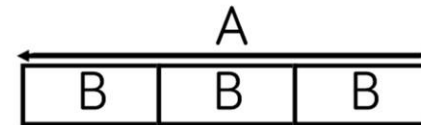
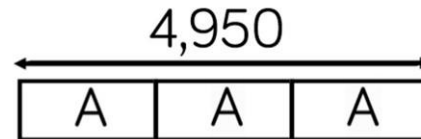
$$A = 396 \div 11$$

$$B = 832 \div 13$$

Find the difference between A and B.

$$\begin{aligned} 396 \div 11 &= 36 \\ 832 \div 13 &= 64 \\ 64 - 36 &= 28 \end{aligned}$$

Work out the value of C.  
(The bar models are not drawn to scale)



$$4,950 \div 3 = 1,650$$

$$1,650 \div 3 = 550$$

$$550 \div 5 = 110$$

## Division using Factors

### Reasoning and Problem Solving

Calculate:

- $1,248 \div 48$
- $1,248 \div 24$
- $1,248 \div 12$

What did you do each time? What was your strategy?

What do you notice? Why?

Tommy says,



To calculate  $4,320 \div 15$  I will first divide 4,320 by 5 then divide the answer by 10

Do you agree?  
Explain why.

26

52

104

Children should recognise that when the dividend is halved, the answer (quotient) is doubled.

Tommy is wrong: he has partitioned 15 when he should have used factor pairs. He could have used factor pairs 5 and 3 and divided by 5 then 3 (or 3 then 5).

Class 6 are calculating  $7,848 \div 24$

The children decide which factor pairs to use. Here are some of their suggestions:

- 2 and 12
- 1 and 24
- 4 and 6
- 10 and 14

Which will not give them the correct answer? Why?

Use the correct factor pairs to calculate the answer.

Is the answer the same each time?

Which factor pair would be the least efficient to use? Why?

10 and 14 is incorrect because they are not factors of 24 (to get 10 and 14, 24 has been partitioned).

The correct answer is 327

Children should get the same answer using all 3 factor pairs methods.

Using the factor pair of 1 and 24 is the least efficient.

# Long Division (1)

## Reasoning and Problem Solving

### Odd One Out

Which is the odd one out?  
Explain your answer.

$$512 \div 16$$

$$672 \div 21$$

$$792 \div 24$$

$792 \div 24 = 33$  so  
this is the odd one  
out as the other  
two give an  
answer of 32

### Spot the Mistake

$$855 \div 15 =$$

		0	5	1	0	
1	5	8	5	5		
	–	7	5		( × 4)	
		1	0	5		
	–	1	0	5	( × 10)	
				0		

The mistake is that  
 $105 \div 15$  is not  
equal to 10

$105 \div 15 = 7$  so  
the answer to the  
calculation is 57