

Multiply 4-digits by 1-digit

Reasoning and Problem Solving

Alex calculated $1,432 \times 4$

Here is her answer.

	Th	H	T	O
	1	4	3	2
×				4
	4	16	12	8

$$1,432 \times 4 = 416,128$$

Can you explain what Alex has done wrong?

Can you work out the missing numbers using the clues?

$$\begin{array}{r}
 \boxed{} \boxed{} \boxed{} \boxed{} \\
 \times 5 \\
 \hline
 \boxed{} \boxed{} \boxed{} \boxed{} \boxed{}
 \end{array}$$

- The 4 digits being multiplied by 5 are consecutive numbers.
- The first 2 digits of the product are the same.
- The fourth and fifth digits of the answer add to make the third.

Multiply 2-digits (Area Model)

Reasoning and Problem Solving

Eva says,



To multiply 23 by 57 I just need to calculate 20×50 and 3×7 and then add the totals.

What mistake has Eva made?
Explain your answer.

Amir hasn't finished his calculation.
Complete the missing information and record the calculation with an answer.

×	40	2
40		
6		

Farmer Ron has a field that measures 53 m long and 25 m wide.

Farmer Annie has a field that measures 52 m long and 26 m wide.

Dora thinks that they will have the same area because the numbers have only changed by one digit each.

Do you agree? Prove it.

Multiply 2-digits by 2-digits

Reasoning and Problem Solving

Tommy says,



It is not possible to make 999 by multiplying two 2-digit numbers.

Do you agree?
Explain your answer.

Amir has multiplied 47 by 36



		4	7
×		3	6
	2	8	2
	1	4	1
	3	2	3

Alex says,



Amir is wrong because the answer should be 1,692 not 323

Who is correct?
What mistake has been made?

Multiply 3-digits by 2-digits

Reasoning and Problem Solving

$$22 \times 111 = 2442$$

$$23 \times 111 = 2553$$

$$24 \times 111 = 2664$$

What do you think the answer to 25×111 will be?

What do you notice?

Does this always work?

Pencils come in boxes of 64
A school bought 270 boxes.
Rulers come in packs of 46
A school bought 720 packs.
How many more rulers were ordered than pencils?



Here are examples of Dexter's maths work.

			9	8	7
×				7	6
		5	5	4	2
		6	9	0	9
	1	2	8	3	1

			3	2	4
×				7	8
			5	9	2
		2	1	3	
		2	2	6	8
		2	1	2	0
		3	2	7	2

He has made a mistake in each question.

Can you spot it and explain why it's wrong?

Correct each calculation.

Multiply 4-digits by 2-digits

Reasoning and Problem Solving

Spot the Mistakes

Can you spot and correct the errors in the calculation?

		2	5	3	4
×				2	3
		17	5	19	2
		15	0	6	8
	1	2	16	16	0

Teddy has spilt some paint on his calculation.

		2		6	9
x				2	
	2	2	9	5	2
	1	5	7	1	3
	1	0	3	3	2

What are the missing digits?

What do you notice?

Multiply 4-digits by 2-digits

Reasoning and Problem Solving

True or False?

- $5,463 \times 18 = 18 \times 5,463$
- I can find the answer to $1,100 \times 28$ by calculating $1,100 \times 30$ and subtracting 2 lots of 1,100
- $702 \times 9 = 701 \times 10$

2 3 4 5 7 8

Place the digits in the boxes to make the largest product.

×				

Divide 4-digits by 1-digit

Reasoning and Problem Solving

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.

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

Divide with Remainders

Reasoning and Problem Solving

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?

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?

Short Division

Reasoning and Problem Solving

Find the missing digits.

$$\begin{array}{r} 041\overline{)4159} \\ \underline{416} \\ 3 \end{array}$$

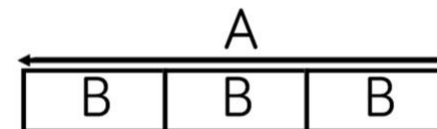
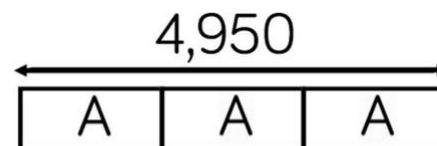
Here are two calculations.

$$A = 396 \div 11$$

$$B = 832 \div 13$$

Find the difference between A and B.

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



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.

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?

Long Division (1)

Reasoning and Problem Solving

Odd One Out

Which is the odd one out?
Explain your answer.

$$512 \div 16$$

$$672 \div 21$$

$$792 \div 24$$

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		

Long Division (2)

Reasoning and Problem Solving

Which calculation is harder?

$$1,950 \div 13$$

$$1,950 \div 15$$

Explain why.

$$6,120 \div 17 = 360$$

Explain how to use this fact to find



$$6,480 \div \text{★} = 360$$



Long Division (3)

Reasoning and Problem Solving

Here are two calculation cards.

$$A = 396 \div 11$$

$$B = 832 \div 11$$

Whitney thinks there won't be a remainder for either calculation because 396 and 832 are both multiples of 11

Rosie disagrees, she has done the written calculations and says **one** of them has a remainder.

Who is correct? Explain your answer.

576 children and 32 adults need transport for a school trip.
A coach holds 55 people.



Dora

We need 10 coaches.



Eva

We need 11 coaches.



Alex

We need 12 coaches.

Who is correct? Explain how you know.

How many spare seats will there be?

Long Division (4)

Reasoning and Problem Solving

Class 6 are calculating three thousand, six hundred and thirty-three divided by twelve.

Rosie says that she knows there will be a remainder without calculating.

Is she correct?
Explain your answer.

What is the remainder?

Which numbers up to 20 can 4,236 be divided by without having a remainder?

What do you notice about all the numbers?

