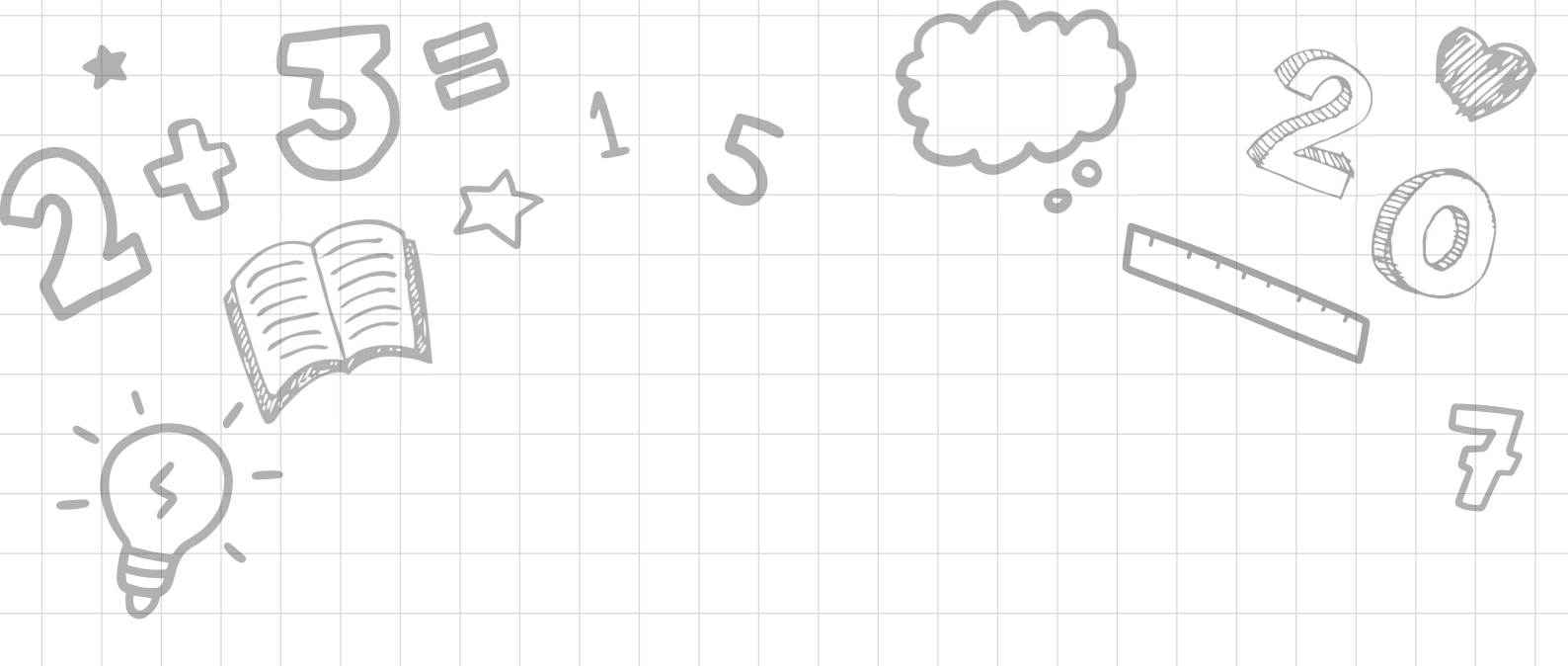


MATHEMATICS

Calculation Policy

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ADDITION



Step 1

Step 2

Adding a two-digit and one-digit number - no exchange

Step 1 Set it out

	T	O
	1	7
+		2

1 7 + 2 =

Step 2 Add the ones

	T	O
	1	7
+		2
		9

Step 3 Add the tens

	T	O
	1	7
+		2
	1	9

Adding a two-digit and one-digit number - bridging 10

Step 1 Set it out

T	O
1	7
+	6

1 7 + 6 =

Step 2 Add the ones

T	O
1	7
+	6
	3
1	

Step 3 Add the tens

T	O
1	7
+	6
2	3
1	

Add two two-digit numbers - no exchange

Step 1 Set it out

	T	O
	2	5
+	3	1
	3	1

2	5	+	3	1	=
---	---	---	---	---	---

Step 2 Add the ones

	T	O
	2	5
+	3	1
	3	6

Step 3 Add the tens

	T	O
	2	5
+	3	1
	5	6

Add two two-digit numbers
- with exchange

Step 1

Set it out

	T	O	
	2	5	
+	3	6	
<hr/>			
2	5	+	3 6 =

Step 2

Add the ones

	T	O
	2	5
+	3	6
<hr/>		
		1
1		

Exchange the ones.
11 ones = 1 ten 1 one.

Step 3

Add the tens

	T	O
	2	5
+	3	6
<hr/>		
	6	1
	1	

Remember to add
the exchanged ten.

Adding a three-digit number and ones
- no exchange

Step 1 Set it out

	H	T	O
	3	5	1
+			6
<hr/>			
3	5	1	+ 6 =

Step 2 Add the ones

	H	T	O
	3	5	1
+			6
			7

Step 3 Add the tens

	H	T	O
	3	5	1
+			6
		5	7

Step 4 Add the hundreds

	H	T	O
	3	5	1
+			6
	3	5	7

Adding a three-digit number and ones - exchange

Step 1

Set it out

H	T	O
3	5	1
+		9

3 5 1 + 9 =

Step 2

Add the ones

H	T	O
3	5	1
+		9
		0
1		

Exchange to the tens column.

Step 3

Add the tens

H	T	O
3	5	1
+		9
6		0
5		

Remember to add the exchanged ten.

Step 4

Add the hundreds

H	T	O
3	5	1
+		6
3	6	0
5		

Adding a two and three-digit number together - no exchange

Step 1 Set it out

H	T	O
5	2	7
+	4	2

5 2 7 + 4 2 =

Step 2 Add the ones

H	T	O
5	2	7
+	4	2
		9

Step 3 Add the tens

H	T	O
5	2	7
+	4	2
6		9

Step 4 Add the hundreds

H	T	O
5	2	7
+	4	2
5	6	9

Adding a two and three-digit number together

Exchange - one exchange then multiple exchanges

Step 1

Set it out

	H	T	O
	5	7	6
+		4	8
<hr/>			
5	7	6	+ 4 8 =

Step 2

Add the ones

	H	T	O
	5	7	6
+		4	8
<hr/>			
			4
	1		

Exchange the ones.

Step 3

Add the tens

	H	T	O
	5	7	6
+		4	8
<hr/>			
		2	4
	1	7	

Don't forget to add the exchanged ten
Exchange to hundreds if necessary.

Step 4

Add the hundreds

	H	T	O
	5	7	6
+		4	8
<hr/>			
	6	2	4
	5	7	

Remember to add the exchanged hundred.

Adding two three-digit numbers
- no exchange

Step 1

Set it out

$$4 \quad 3 \quad 2 \quad + \quad 2 \quad 5 \quad 5 \quad =$$

	H	T	O
	4	3	2
+	2	5	5

Step 2

Add the ones

	H	T	O
	4	3	2
+	2	5	5
			7

Step 3

Add the tens

	H	T	O
	4	3	2
+	2	5	5
		8	7

Step 4

Add the hundreds

	H	T	O
	4	3	2
+	2	5	5
	6	8	7

Adding two three-digit numbers - one exchange

Step 1

Set it out

	H	T	O
	4	3	2
+	4	3	9

4 3 2 + 4 3 9 =

Step 2

Add the ones

	H	T	O
	4	3	2
+	4	3	9
			1
		1	

Exchange the ones.
11 ones = 1 ten 1 one.

Step 3

Add the tens

	H	T	O
	4	3	2
+	4	3	9
		7	1
		1	

Remember to add
the exchanged ten.

Step 4

Add the hundreds

	H	T	O
	4	3	2
+	4	3	9
	8	7	1
		1	

Adding two three-digit numbers - multiple exchanges

Step 1

Set it out

	H	T	O
	3	5	8
+	2	6	3

3 5 8 + 2 6 3 =

Step 2

Add the ones

	H	T	O
	3	5	8
+	2	6	3
			11
		1	

Exchange the ones.
11 ones = 1 ten 1 one.

Step 3

Add the tens

	H	T	O
	3	5	8
+	2	6	3
		2	1
	1	2	

Add the exchanged ten.
Exchange the tens for hundreds.
12 tens = 1 hundred 2 tens.

Step 4

Add the hundreds

	H	T	O
	3	5	8
+	2	6	3
	6	2	1
	1	2	

Add the exchanged hundred.

Adding two four-digit numbers - no exchanges

Step 1

Set it out

TH	H	T	O
7	2	3	2
+	2	1	4

7 2 3 2 + 2 1 4 4 =

Step 2

Add the ones, tens, hundreds and thousands

T	H	T	O
7	2	3	2
+	2	1	4
9	3	7	6

Remember to start with the ones!

Adding two four-digit numbers - exchange

Step 1

Set it out

TH	H	T	O
6	4	8	7
+	2	5	3

6 4 8 7 + 2 5 3 6 =

Step 2

Add the ones, tens, hundreds and thousands

TH	H	T	O
6	4	8	7
+	2	5	3
9	0	2	3

Remember to start with ones!

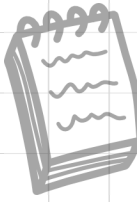
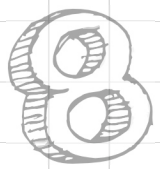
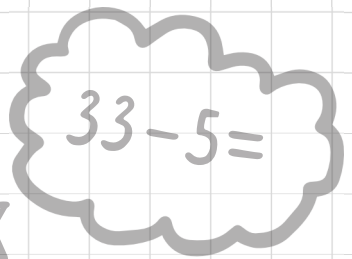
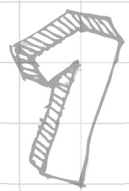
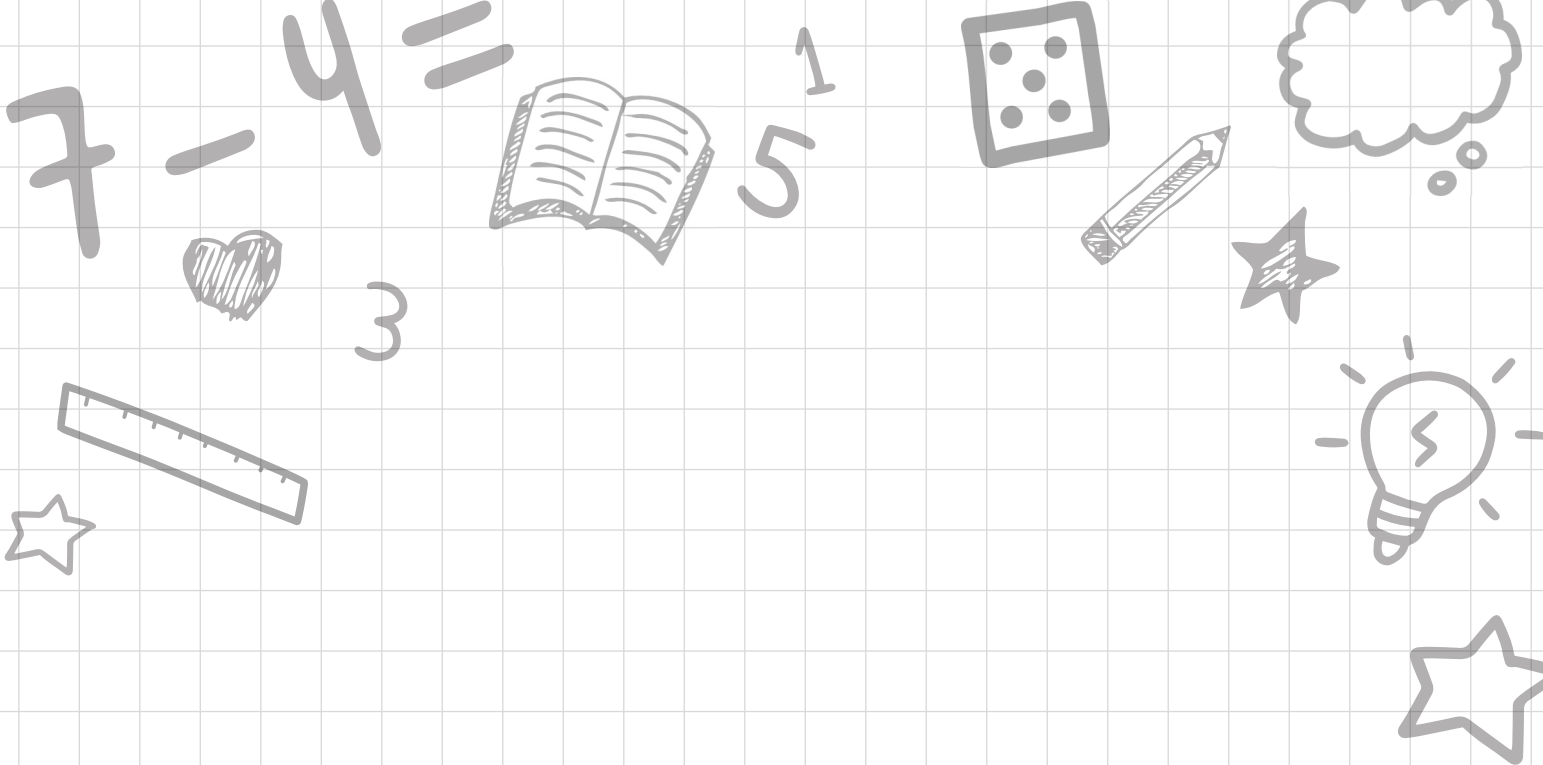
Don't forget to add the exchanged digits.

Repeat Steps for Y4

using numbers with more than four-digits.

+ use rounding to estimate final answer.

SUBTRACTION



Step 1

Step 2

Subtracting a one-digit number from a two-digit number - no exchange

Step 1 Set it out

	T	O
	4	8
-		6

4	8	-	6	=
---	---	---	---	---

Step 2 Subtract the ones

	T	O
	4	8
-		6
		2

Step 3 Subtract the tens

	T	O
	4	8
-		6
	4	2

Subtracting a one-digit number from a two-digit number - exchanges

Step 1	Set it out	<table border="1"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td></td><td>4</td><td>4</td></tr> <tr><td></td><td>-</td><td>8</td></tr> <tr><td>4</td><td>4</td><td>- 8 =</td></tr> </table>		T	O		4	4		-	8	4	4	- 8 =
	T	O												
	4	4												
	-	8												
4	4	- 8 =												
Step 2	Exchange the tens	<table border="1"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td>3</td><td>4</td><td>¹4</td></tr> <tr><td></td><td>-</td><td>8</td></tr> </table>		T	O	3	4	¹ 4		-	8			
	T	O												
3	4	¹ 4												
	-	8												
Step 3	Subtract the ones	<table border="1"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td>3</td><td>4</td><td>¹4</td></tr> <tr><td></td><td>-</td><td>8</td></tr> <tr><td></td><td></td><td>6</td></tr> </table>		T	O	3	4	¹ 4		-	8			6
	T	O												
3	4	¹ 4												
	-	8												
		6												
Step 4	Subtract the tens	<table border="1"> <tr><td></td><td>T</td><td>O</td></tr> <tr><td>3</td><td>4</td><td>¹4</td></tr> <tr><td></td><td>-</td><td>8</td></tr> <tr><td>3</td><td></td><td>6</td></tr> </table>		T	O	3	4	¹ 4		-	8	3		6
	T	O												
3	4	¹ 4												
	-	8												
3		6												

Subtracting a two-digit number from a two-digit number - no exchange

Step 1 Set it out

T	O
4	5
-	2 1

 $45 - 21 =$

Step 2 Subtract the ones

T	O
4	5
-	2 1
	4

Step 3 Subtract the tens

T	O
4	5
-	2 1
2	4

Subtracting a two-digit number from a two-digit number - exchanges

Step 1 Set it out

T	O	
6	3	
-	2	5

6 3 - 2 5 =

Step 2 Exchange a ten

T	O	
5	1	
6	3	
-	2	5

Step 3 Subtract the ones

T	O	
5	1	
6	3	
-	2	5
	8	

Step 4 Subtract the tens

T	O	
5	1	
6	3	
-	2	5
3	8	

Column subtraction - three-digit by three-digit - no exchange

Step 1 Set it out

H	T	O
3	2	5
-	1	1 2

3	2	5	-	1	1	2	=
---	---	---	---	---	---	---	---

Step 2 Subtract the ones

H	T	O
3	2	5
-	1	1 2
		3

Step 3 Subtract the tens

H	T	O
3	2	5
-	1	1 2
		1 3

Step 4 Subtract the hundreds

H	T	O
3	2	5
-	1	1 2
2	1	3

Column subtraction - three-digit by three-digit - exchange from a ten or exchange from a hundred

Step 1

Set it out

$$742 - 216 =$$

H	T	O
7	4	2
-	2	1
		6

$$818 - 234 =$$

H	T	O
8	1	8
-	2	3
		4

Exchange the ten

H	T	O
7	4 ³	¹ 2
-	2	1
		6

Step 2

Subtract the ones

H	T	O
8	1	8
-	2	3
		4
		4

Subtract the ones

H	T	O
7	4 ³	¹ 2
-	2	1
		6
		6

Step 3

Exchange the hundreds

H	T	O
7 ⁷	1 ¹	8
-	2	3
		4
		4

Step 4

Complete the calculation

H	T	O
7	4 ³	¹ 2
-	2	1
		6
5	2	6

H	T	O
7 ⁷	1 ¹	8
-	2	3
		4
5	8	4

Column subtraction - three-digit by three-digit - multiple exchanges

Step 1 Set it out

H	T	O
6	2	2
-	1	5

6 2 2 - 1 5 4 =

Step 2

Exchange the tens

H	T	O
6	2 ¹	2 ¹
-	1	5

Step 3

Subtract the ones

H	T	O
6	2 ¹	2 ¹
-	1	5
		8

Step 4

Exchange the hundreds

H	T	O
6 ⁵	2 ¹¹	2 ¹
-	1	5
		8

Step 5

Subtract the tens

H	T	O
6 ⁵	2 ¹¹	2 ¹
-	1	5
	6	8

Step 6

Subtract the hundreds

H	T	O
6 ⁵	2 ¹¹	2 ¹
-	1	5
4	6	8

Column subtraction - three-digit by three-digit - multiple exchanges with zero

Step 1

Set it out

H	T	O
3	0	0
-	1	2
3	0	0
-	1	2
7	=	

Step 2

Exchange from the hundred,
then from the ten

H	T	O
² 3	⁹ 0	¹ 0
-	1	2
1	7	3

Step 3

Subtract ones, then tens,
then hundreds

H	T	O
² 3	⁹ 0	¹ 0
-	1	2
1	7	3

Column subtraction - four-digit by four-digit
- no exchange**Step 1** Set it out

	TH	H	T	O					
	2	5	7	5					
-	1	3	6	2					
<hr/>									
2	5	7	5	-	1	3	6	2	=

Step 2 Subtract the ones, tens, hundreds and thousands

	TH	H	T	O
	2	5	7	5
-	1	3	6	2
<hr/>				
	1	2	1	3

Start at the right

Column subtraction - four-digit by four-digit - one exchange

Step 1

Set it out

TH	H	T	O
2	3	2	3
-	1	1	7
<hr/>			

$$2323 - 1171 =$$

Step 2

Subtract the ones

TH	H	T	O
2	3	2	3
-	1	1	7
<hr/>			
			2

Step 3

Exchange from the hundreds

TH	H	T	O
2	3 ²	2 ¹	3
-	1	1	7
<hr/>			
			2

Step 4

Subtract the tens

TH	H	T	O
2	3 ²	2 ¹	3
-	1	1	7
<hr/>			
		5	2

Step 5

Subtract the hundreds and thousands

TH	H	T	O
2	3 ²	2 ¹	3
-	1	1	7
<hr/>			
1	1	5	2

Practise with exchanges required in different columns

Column subtraction - four-digit by four-digit - multiple exchanges

Step 1

Set it out

TH	H	T	O
4	3	6	2
-			
1	7	3	5

$$4\ 3\ 6\ 2 - 1\ 7\ 3\ 5 =$$

Step 2

Exchange the tens

TH	H	T	O
4	3	⁵ 6	¹ 2
-			
1	7	3	5

Step 3

Subtract the ones and tens

TH	H	T	O
4	3	⁵ 6	¹ 2
-			
1	7	3	5
			2
			7

Step 4

Exchange the thousands

TH	H	T	O
³ 4	¹ 3	⁵ 6	¹ 2
-			
1	7	3	5
			2
			7

Step 5

Subtract the hundreds and thousands

TH	H	T	O
³ 4	¹ 3	⁵ 6	¹ 2
-			
1	7	3	5
2	6	2	7

Column subtraction - four-digit by four-digit - multiple exchanges from zero

Step 1

Set it out

TH	H	T	O
4	0	0	0
-	3	2	8

$$4\ 0\ 0\ 0 - 3\ 2\ 8\ 4 =$$

Step 2

Exchange from the thousands to hundreds to tens to ones

TH	H	T	O
³ 4	⁹ 0	⁹ 0	¹ 0
-	3	2	8

Step 3

Subtract the ones, then tens, then hundreds, then thousands

TH	H	T	O
³ 4	⁹ 0	⁹ 0	¹ 0
-	3	2	8
0	7	1	6

Column subtraction - more than four-digits
- no exchanges

Step 1

Set it out

	TTH	TH	H	T	O
	7	9	8	7	6
-	1	3	4	2	5

$$79876 - 13425 =$$

Step 2

Subtract ones, tens, hundreds, thousands then ten thousands

	TTH	TH	H	T	O
	7	9	8	7	6
-	1	3	4	2	5
	6	6	4	5	1

Use teacher judgement to decide whether to break into further steps

Spot the exchange!



Column subtraction - more than four-digits - one exchanges

Step 1

Set it out

TTH	TH	H	T	O
6	5	2	4	1
-	3	2	7	1

$$6 \ 5 \ 2 \ 4 \ 1 \ - \ 3 \ 2 \ 7 \ 1 \ 1 \ =$$

Step 2

Subtract ones and tens

TTH	TH	H	T	O
6	5	2	4	1
-	3	2	7	1
			3	0

Step 3

Exchange from thousands

TTH	TH	H	T	O
6	⁴ 5	¹ 2	4	1
-	3	2	7	1
			3	0

Step 4

Subtract hundreds, thousands, and ten thousands

TTH	TH	H	T	O
6	⁴ 5	¹ 2	4	1
-	3	2	7	1
	3	2	5	3

Use teacher judgement to decide whether to break into further steps

Practise with exchanges required in different columns

Column subtraction - more than four-digits
- multiple exchanges

Step 1

Set it out

	TTH	TH	H	T	O
	7	2	3	4	6
-	1	8	4	5	2

7 2 3 4 6 - 1 8 4 5 2 =

Step 2

Subtract from right to left starting with ones. Exchanging where necessary.

	TTH	TH	H	T	O
	⁶ 7	¹¹ 2	¹² 3	¹ 4	6
-	1	8	4	5	2
	5	3	8	9	4

Use teacher judgement to decide whether to break into further steps

Column subtraction - more than four-digits
- multiple exchanges with zeros

Step 1

Set it out

	TTH	TH	H	T	O
	7	0	0	0	0
-	2	5	6	3	2

7 0 0 0 0 - 2 5 6 3 2 =

Step 2

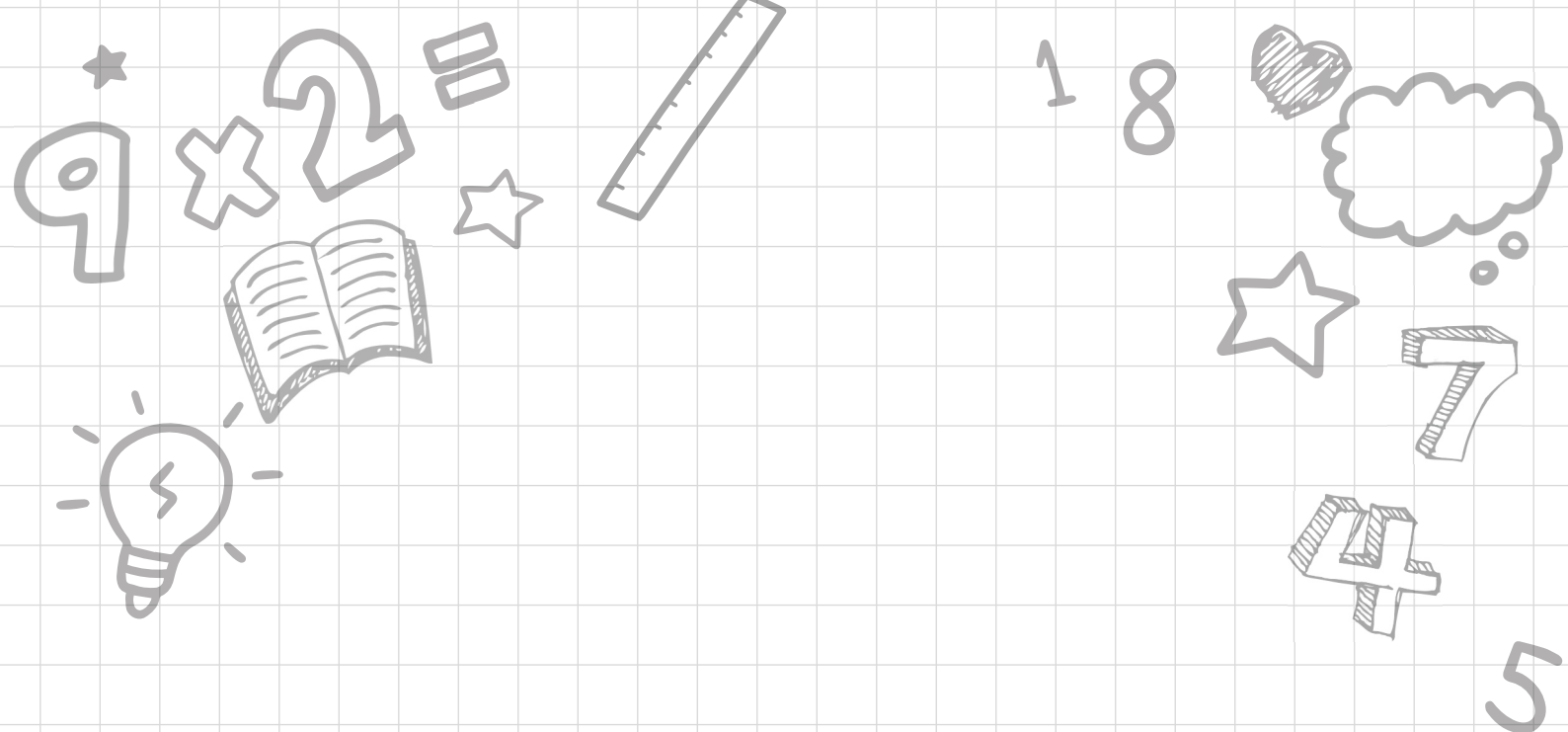
Exchange from ten thousands to thousands to hundreds to tens to ones

	TTH	TH	H	T	O
	⁶ 7	⁹ 0	⁹ 0	⁹ 0	¹ 0
-	2	5	6	3	2

Step 3

Subtract ones then tens then hundreds then thousands then ten thousands

	TTH	TH	H	T	O
	⁶ 7	⁹ 0	⁹ 0	⁹ 0	¹ 0
-	2	5	6	3	2
	4	4	3	6	8



MULTIPLICATION



Step 1

Step 2

Step 1

Step 2

Step 1

Step 2

Step 1

Step 2

Two-digit by one-digit
- exchanging

Step 1 Set it out

	T	O	
	2	3	
x		5	
		5	

2	3	x	5	=
---	---	---	---	---

Step 2 Multiply the ones

	T	O	
	2	3	
x		5	
		5	
		5	1

Exchange the ones for a ten.
15 ones = 1 ten + 5 ones.

Step 3 Multiply the tens by the ones and add the exchanged ten

	T	O	
	2	3	
x		5	
1	1	5	
		5	1

$2 \times 5 = 10 + 1 = 11$

Three-digit by one-digit - no exchange

Step 1

Set it out

H	T	O
2	4	3
		x
		2

2	4	3	x	2	=
---	---	---	---	---	---

Step 2

Multiply the ones

H	T	O
2	4	3
		x
		2
		6

Step 3

Multiply the tens by the ones

H	T	O
2	4	3
		x
		2
8		6

Step 4

Multiply the hundreds by the ones

H	T	O
2	4	3
		x
		2
4	8	6

Three-digit by one-digit
- exchanging

Step 1

Set it out

	H	T	O	
	2	4	3	
x			5	
<hr/>				
2	4	3	x	5 =

Step 2

Multiply the ones

	H	T	O	
	2	4	3	
x			5	
<hr/>				
			5	1

Exchange the ten to the side

Step 3

Multiply the tens and add on any exchanged tens

	H	T	O	
	2	4	3	
x			5	
<hr/>				
		1	5	2

Cross off the digit when added

Step 4

Multiply the hundreds and add on any exchanged hundreds

	H	T	O	
	2	4	3	
x			5	
<hr/>				
1	2	1	5	2

Cross off the digit when added

Children will have practised three-digit by one-digit with a range of exchanges

Four-digit by one-digit - exchanging

Step 1 Set it out.

$$4\ 2\ 4\ 7 \times 4 =$$

	TH	H	T	O
	4	2	4	7
x				4

Step 2 Multiply the ones.
Exchange if answer is >9.

	TH	H	T	O
	4	2	4	7
x				4
				28

Exchange to the side

Step 3 Multiply the tens.
Add any tens that have been exchanged.
Exchange to hundreds where necessary.

	TH	H	T	O
	4	2	4	7
x				4
			8	8

Exchange to the side and cross off when added

Step 4 Multiply the hundreds.
Add any hundreds that have been exchanged.
Exchange to thousands where necessary.

	TH	H	T	O
	4	2	4	7
x				4
		9	8	8

Step 5 Multiply the thousands.
Add any thousands that have been exchanged.

	TH	H	T	O
	4	2	4	7
x				4
	1	6	9	8

Long multiplication - two-digit by two-digit - no exchange

Step 1

Set it out

	T	O
	3	4
x	1	2
<hr/>		

3 4 x 1 2 =

Step 2

Multiply the ones by the ones

	T	O
	3	4
x	1	2
<hr/>		
		8

Step 3

Multiply the tens by the ones

	T	O
	3	4
x	1	2
<hr/>		
	6	8

Step 4

Insert place holder

	T	O
	3	4
x	1	2
<hr/>		
	6	8
		0

Place Holder

Step 5

Multiply the tens by the ones

	T	O
	3	4
x	1	2
<hr/>		
	6	8
	4	0

Step 6

Multiply the tens by the tens

	T	O
	3	4
x	1	2
<hr/>		
	6	8
	3	4
		0

Step 7

Add the totals

	T	O
	3	4
x	1	2
<hr/>		
	6	8
		0
	3	4
		0
x	3	4
<hr/>		
	4	0
	8	
	1	

Long multiplication - two-digit by two-digit - exchange

Step 1 Set it out

	T	O
	7	5
x	3	2

7 5 x 3 2 =

Step 2

Multiply ones by ones

	T	O
	7	5
x	3	2
		0

1

Exchange to the side

Ensure you exchange correctly

Step 3

Multiply ones by tens

	T	O
	7	5
x	3	2
	1	5
		0

1

Cross off when added

Add the exchanged tens

Step 4

Insert place holder

	T	O
	7	5
x	3	2
	1	5
		0
		0

1

Place Holder

Step 5

Multiply tens by ones

	T	O
	7	5
x	3	2
	1	5
	5	0
		0

1

Exchange to the side

Ensure you exchange correctly

Step 6

Multiply tens by tens

	T	O
	7	5
x	3	2
	1	5
	5	0
	2	2
		5
		0

1

Cross off when added

Add the exchanged ten

Step 7

Add totals together

	T	O
	7	5
x	3	2
	1	5
	5	0
	2	2
	2	5
		0
	2	4
		0
		0

1

Long multiplication - three-digit by two-digit - exchange

Step 1

Set it out

	H	T	O
	7	5	2
x		2	5

$$752 \times 25 =$$

**Teacher's choice whether to step 2-4 or complete as one*

Step 2

Multiply ones by ones

Step 3

Multiply the ones by tens.
Add the exchanged digits and exchange

Step 4

Multiply the ones by hundreds.
Add the exchanged digits

	H	T	O
	7	5	2
x		2	5
		0	1

Exchange

	H	T	O
	7	5	2
x		2	5
		6	0
			2

Cross off when added

	H	T	O
	7	5	2
x		2	5
	3	7	6
		0	2

Step 5

Insert place holder

Step 6

Multiply tens by ones,
then tens, then hundreds

Step 7

Add totals together

	H	T	O
	7	5	2
x		2	5
	3	7	6
		0	2
			0

Place Holder

	H	T	O
	7	5	2
x		2	5
	3	7	6
		0	2
	1	5	0
		4	0

	H	T	O
	7	5	2
x		2	5
	3	7	6
		0	2
	1	5	0
		4	0
	1	8	8
		0	0
		1	

Long multiplication - four-digit by two-digit

Step 1

Set it out

$$3871 \times 45 =$$

	TH	H	T	O
	3	8	7	1
x			4	5

Step 2

Multiply all digits by the ones.
Exchange to the side.

	TH	H	T	O
	3	8	7	1
x			4	5
	1	9	3	5
			5	5

Step 3

Insert a place holder.

	TH	H	T	O
	3	8	7	1
x			4	5
	1	9	3	5
			5	5
				0

Step 4

Multiply all digits by the tens.
Exchange to the side.

	TH	H	T	O
	3	8	7	1
x			4	5
	1	9	3	5
			5	5
	1	5	4	8
			4	0

Step 5

Add all totals

	TH	H	T	O
	3	8	7	1
x			4	5
	1	9	3	5
			5	5
	1	5	4	8
			4	0
	1	7	4	1
		1		

Multiplying decimals (up to 2 decimal points) by one-digit numbers

↳ exchanges

Step 1 Set it out

$$2.53 \times 3 =$$

	O	.	th	hth
	2	.	5	3
x				3
<hr/>				
	.			

Include decimal place on answer line.

Step 2 Multiply the hundredths by the ones.
Exchange where needed.

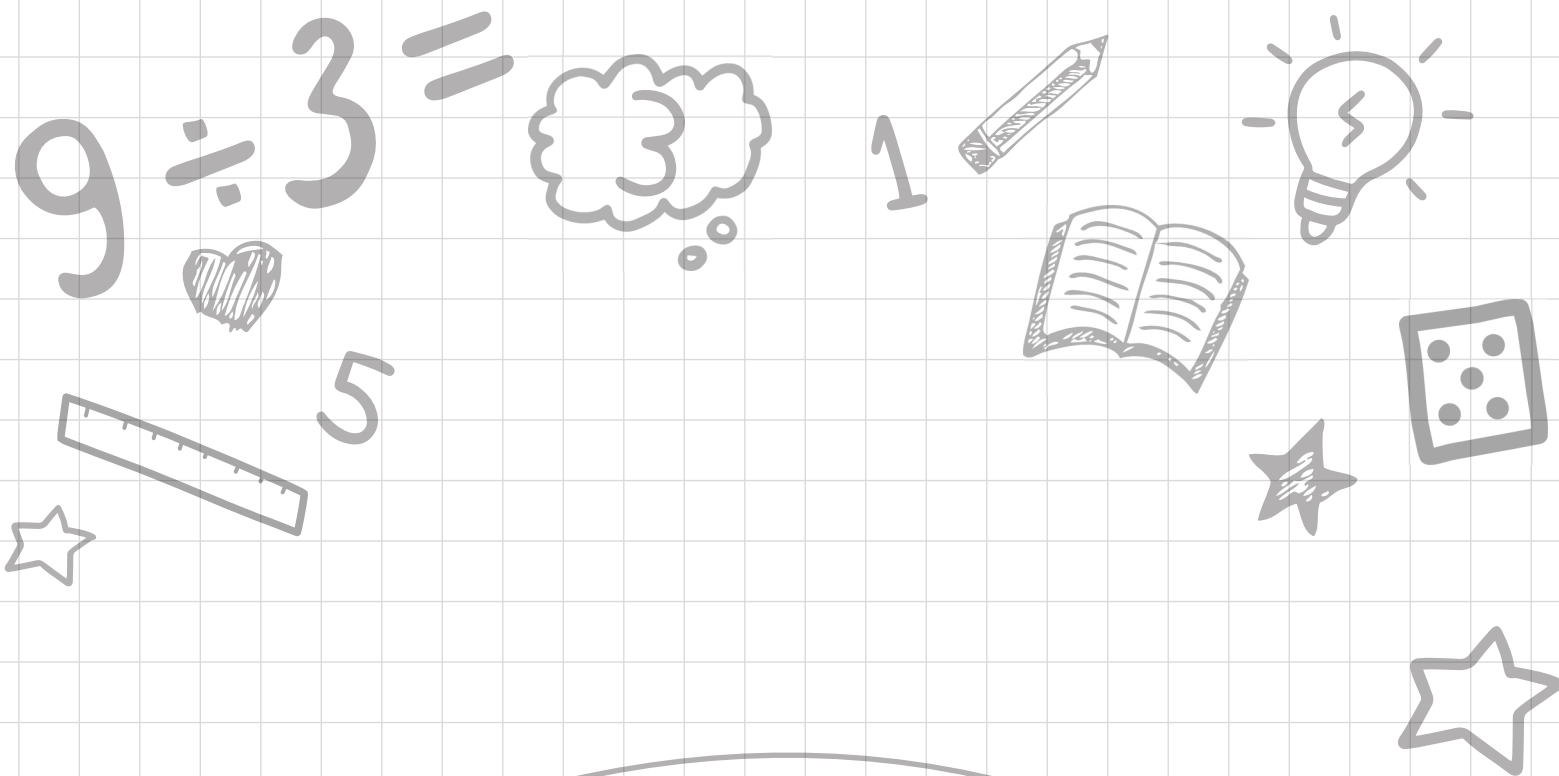
	O	.	th	hth
	2	.	5	3
x				3
<hr/>				
	.			9

Step 3 Multiply the tenths by the ones.
Exchange where needed.

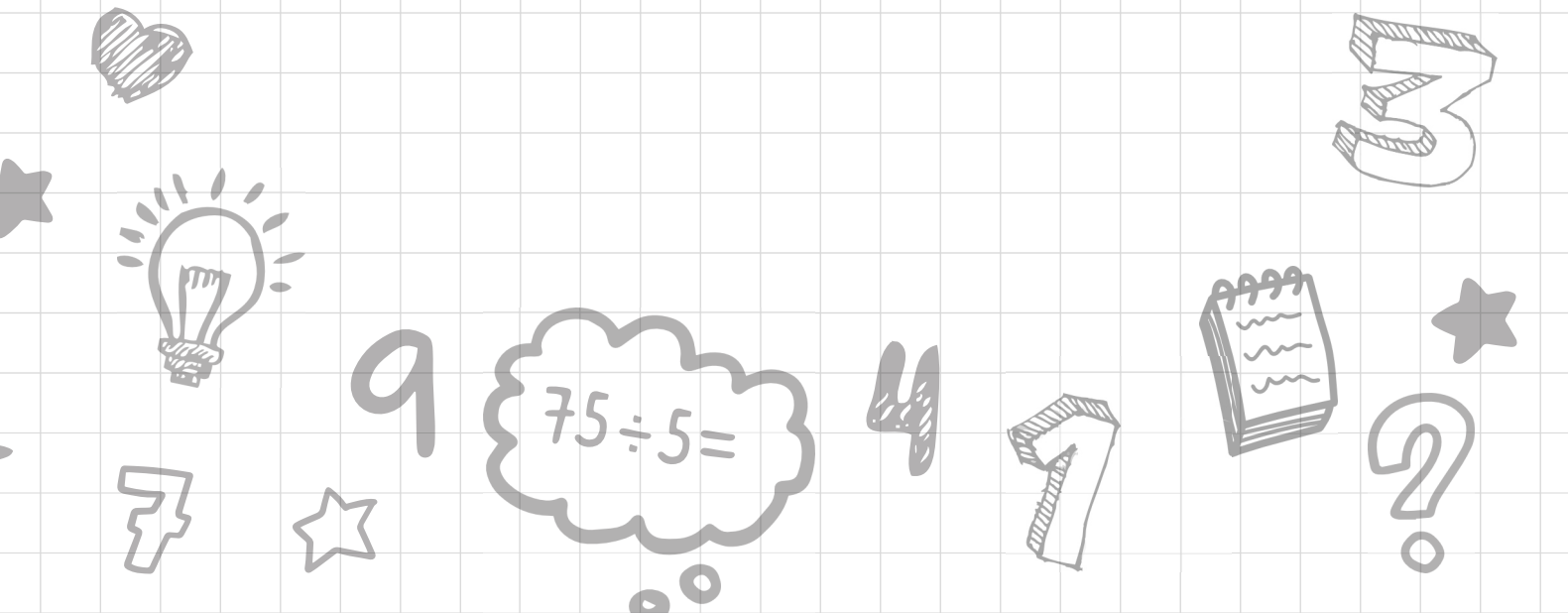
	O	.	th	hth
	2	.	5	3
x				3
<hr/>				
	.	5		9
				1

Step 4 Multiply the ones by the ones.
Add exchanged digits.

	O	.	th	hth
	2	.	5	3
x				3
<hr/>				
	7	.	5	9



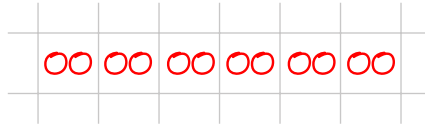
DIVISION



To be able to solve one-step division problems using CPA with support of the teacher

Step 1

Count the total



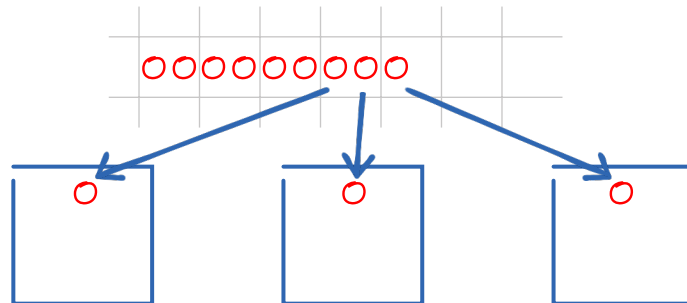
Step 2

Create the group



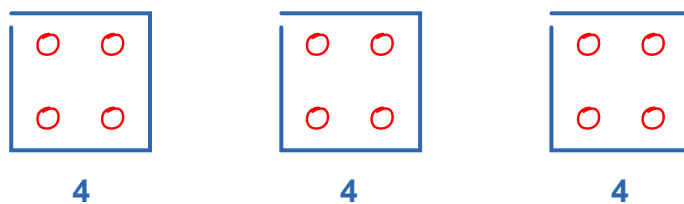
Step 3

Share the total equally - one at a time for each group



Step 4

Count the number in each group



To be able to solve division problems (including the use of \div and $=$ symbols) using CPA (where known times tables can't be used).

Step 1

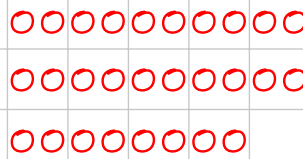
Write the calculation

$$28 \div 4 =$$

Step 2

Identify the dividend and count it out

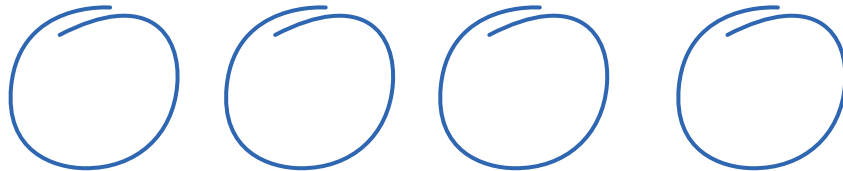
$$28 \div 4 =$$



Step 3

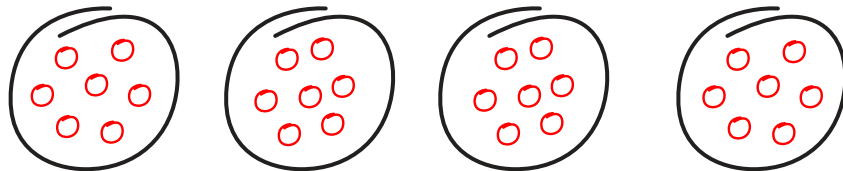
Identify the divisor and create groups

$$28 \div 4 =$$



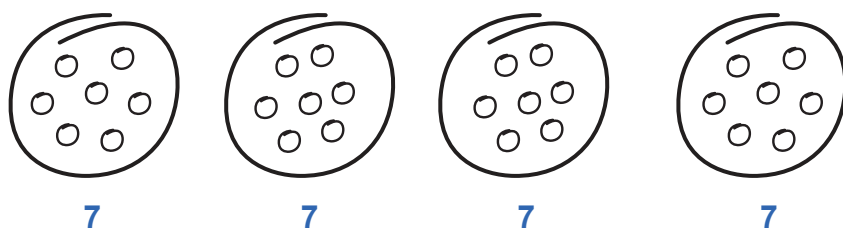
Step 4

Share the divided equally



Step 5

Check the number in each group to find the answer



Dividing with place value counters progressing to a format written method - no remainders

Step 1

Set it out

$$72 \div 6 =$$

Draw the same number of rows as the divisor.

T	O

Step 2

Use place value counters to represent the dividend

$$72 \div 6 =$$



Step 3

Share the tens equally into rows (divisor)

T	O
10	
10	
10	
10	
10	
10	

↓

	1 1
	1 1
	1 1
	1 1
	1 1
	1 1

Don't forget the original ones.

Step 4

Exchange the remainder for ones (if required)

Step 5

Share the ones equally

T	O	
10	00	12
10	00	12
10	00	12
10	00	12
10	00	12
10	00	12
10	00	12
10	00	12

Step 6

Count the number in each row

Formal written method, two-digit by one digit, exact answers with appropriate times tables ($\div 2, 3, 4, 5, 8$)

Step 1

Set it out

$$85 \div 5 =$$

$$5 \overline{) 85}$$

Step 2

Divide the first digit of the dividend by the divisor

$$5 \overline{) 85}$$

1

Step 3

Exchange the remainder

$$5 \overline{) 835}$$

1

Step 4

Divide the next digit by the dividend

$$5 \overline{) 835}$$

17

Short division, two or three-digit by one-digit, some answers with remainder (left as r_)

Step 1

Set it out

$$9 \ 2 \ 6 \div 7 =$$

$$7 \overline{) 9 \ 2 \ 6}$$

Step 2

Divide the first digit of the dividend by the divisor

$$\begin{array}{r} 1 \\ 7 \overline{) 9 \ 2 \ 6} \end{array}$$

Step 3

Regroup the remainder

$$\begin{array}{r} 1 \\ 7 \overline{) 9 \ 2 \ 6} \\ 2 \end{array}$$

Step 4

Divide the next digit(s) by the divisor

$$\begin{array}{r} 1 \ 3 \\ 7 \overline{) 9 \ 2 \ 6} \\ 2 \end{array}$$

Step 5

Regroup the remainder

$$\begin{array}{r} 1 \ 3 \\ 7 \overline{) 9 \ 2 \ 6} \\ 2 \ 1 \end{array}$$

Step 6

Divide the next digit(s) by the divisor and identify any remainders in your quotient

$$\begin{array}{r} 1 \ 3 \ 2 \ r \ 2 \\ 7 \overline{) 9 \ 2 \ 6} \\ 2 \ 1 \end{array}$$

Short division up to four-digit by one-digit interpreting remainders appropriately

Step 1

Set it out

$$4 \ 3 \ 2 \ 1 \div 5 =$$

$$5 \overline{) 4 \ 3 \ 2 \ 1}$$

Step 2

Divide the first digit of the dividend by the divisor

$$0 \overline{) 4 \ 3 \ 2 \ 1}$$

Step 3

Regroup the remainder

$$0 \overline{) 4 \ 3 \ 2 \ 1}$$

4

Step 4

Continue to divide and regroup and dividend

$$0 \ 8 \ 6 \ 4 \ r \ 1 \overline{) 4 \ 3 \ 2 \ 1}$$

4 3 2 1

Teacher to decide whether this needs to be broken into further steps

Step 5

Identify the remainder

$$8 \ 6 \ 4 \ r \ 1$$

Step 6

If necessary write the remainder as a fraction (or decimal) using the divisor as a denominator.

$$8 \ 6 \ 4 \ \frac{1}{5}$$

Long division up to four-digit by two-digit interpreting remainders appropriately

Step 1

Set it out

$$430 \div 15 =$$

$$15 \overline{) 430}$$

Step 2

Divide the first digit by the divisor $\rightarrow 0$

$$15 \overline{) 430} \begin{array}{r} 0 \\ \hline \end{array}$$

Step 3

Estimate the groups of the divisor that divide into the next two digits

$\begin{array}{r} 15 \\ \times 2 \\ \hline 30 \end{array}$	$\begin{array}{r} 15 \\ \times 3 \\ \hline 45 \\ \hline 1 \end{array}$
$\begin{array}{r} 02 \\ 15 \overline{) 430} \\ - 30 \\ \hline 13 \end{array}$	<h3>Step 4</h3> <p>Subtract and write the quantity</p>

Step 5

Bring the next digit down

$$\begin{array}{r} 02 \\ 15 \overline{) 430} \\ - 30 \quad \downarrow \\ \hline 130 \end{array}$$

Step 6

Estimate

$\begin{array}{r} 15 \\ \times 9 \\ \hline 135 \\ \hline 4 \end{array}$	$\begin{array}{r} 15 \\ \times 8 \\ \hline 120 \\ \hline 4 \end{array}$
---	---



Step 7

Subtract

			0	2	8
1	5		4	3	0
		-	3	0	↓
			1	3	0
			1	2	0
			0	1	0

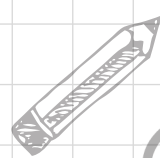
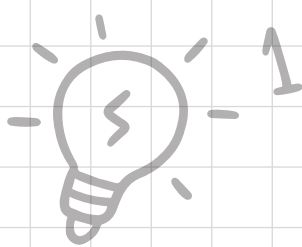
Step 8

Identify any remainders and change to a fraction where appropriate.

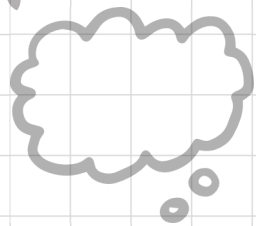
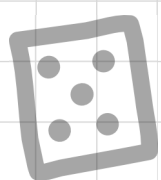
2	8	r	10	→	2	8	$\frac{10}{15}$	=	2	8	$\frac{2}{3}$
---	---	---	----	---	---	---	-----------------	---	---	---	---------------

Children to start with examples with no remainders then build up to four-digits by two-digits.

$$\frac{1}{2} + \frac{1}{2} = \frac{2}{2}$$



5



FRACTIONS



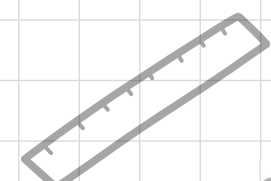
3

7

7



8



1

9

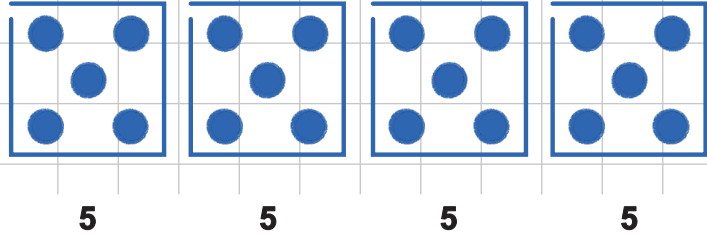


Finding fractions of amounts ($\frac{1}{2}$ then $\frac{1}{4}$ then $\frac{1}{3}$ then $\frac{2}{4}$ then $\frac{3}{4}$)
with use of the bar model

Step 1

Divide by the denominator.
Count into bar model.

$$\frac{1}{4} \text{ of } 20 =$$



Step 2

Multiply by the numerator.

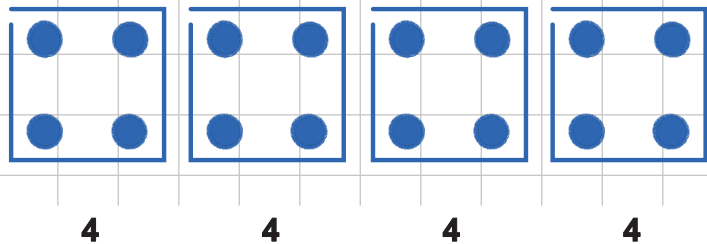
→ Select the number of groups.

$$5 \times 1 = 5$$

Step 1

Divide by the denominator.
Count into the bar model.

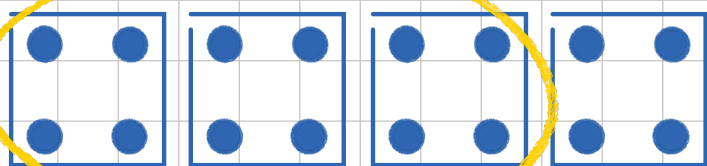
$$\frac{3}{4} \text{ of } 16 =$$



Step 2

Multiply by the numerator.

$$4 \times 3 = 12$$



Adding fractions with the same denominator

Step 1

Set it out

$$\frac{1}{3} + \frac{1}{3}$$

Step 2

Add the numerators

$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$

Step 3

Denominator stays the same

$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$



$$\frac{1}{3} + \frac{1}{3} = \frac{2}{3}$$

Year 3 adding only within a whole

Subtracting fractions with the same denominator.

Step 1

Set it out

$$\frac{3}{5} - \frac{1}{5} =$$

Step 2

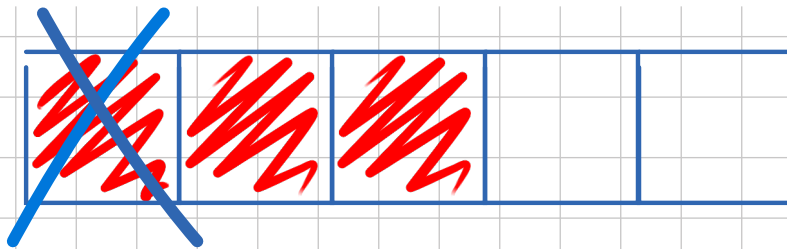
Subtract the numerators

$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

Step 3

Denominator stays the same

$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$



$$\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$$

Year 3 subtracting within a whole

*Adding fractions with the same denominator
(more than a whole)*

Step 1

Add the numerator

$$\frac{4}{9} + \frac{8}{9} = \frac{12}{9}$$

Step 2

Denominator stays the same

$$\frac{4}{9} + \frac{8}{9} = \frac{12}{9}$$

Step 3

Convert the improper fraction to a mixed number

$$\frac{12}{9} = 1 \frac{3}{9}$$

**See separate step
link to converting**

*Subtracting fractions with the same denominator
(more than a whole)*

Step 1

Subtract the numerator

$$\frac{12}{5} - \frac{9}{5} = \frac{3}{5}$$

Step 2Denominator stays
the same

$$\frac{12}{5} - \frac{9}{5} = \frac{3}{5}$$

Step 3

Convert to a mixed number if necessary

*Adding a mixed number to another fraction***Step 1**

Set it out

$$2 \frac{2}{5} + \frac{4}{5} =$$

Step 2

Convert to an improper fraction

$$2 \frac{2}{5} = \frac{12}{5}$$

Step 3

Add fraction

$$\frac{12}{5} + \frac{4}{5} = \frac{16}{5}$$

Step 4

Convert answer to a mixed number

$$\frac{16}{5} = 3 \frac{1}{5}$$

*Subtracting from a mixed number***Step 1**

Set it out

$$2 \frac{1}{5} - \frac{4}{5} =$$

Step 2

Convert to an improper fraction

$$2 \frac{1}{5} = \frac{11}{5}$$

Step 3

Subtract

$$\frac{11}{5} - \frac{4}{5} = \frac{7}{5}$$

Step 4Convert to a mixed number
if necessary

$$\frac{7}{5} = 1 \frac{2}{5}$$

Remember to recap common factors, multiples and equivalent fractions before this

Additions of fractions with different denominators within one (multiples of the same family)

Step 1

Set it out

$$\frac{1}{2} + \frac{1}{8} =$$

Step 2

Find the lowest common denominator

$$\frac{1}{2} \quad \frac{1}{8}$$

$$\frac{\quad}{8} \quad \frac{\quad}{8}$$

Step 3

Find the numerator of the equivalent fraction

$$\frac{1}{2} \quad \frac{1}{8}$$

x4

$$\frac{4}{8} \quad \frac{1}{8}$$

Step 4

Solve the calculation

$$\frac{4}{8} + \frac{1}{8} = \frac{5}{8}$$

Subtraction of fractions with different denominators within one (multiples of the same family)

Step 1

Set it out

$$\frac{4}{10} - \frac{1}{5} =$$

Step 2

Find the lowest common denominator

$$\frac{4}{10} \quad \frac{1}{5}$$

$$\frac{\quad}{10} \quad \frac{\quad}{10}$$

Step 3

Find the numerator of the equivalent fraction

$$\frac{4}{10} \quad \frac{1}{5}$$

$$\frac{4}{10} \quad \frac{2}{10}$$

x2

Step 4

Solve the calculation

$$\frac{4}{10} - \frac{2}{10} = \frac{2}{10}$$

Adding fractions with a total greater than one with different denominators (multiples of the same family)

Step 1

Set it out

$$\frac{2}{3} + \frac{5}{6} =$$

Step 2

Find the lowest common denominator

$$\frac{2}{3} \quad \frac{5}{6}$$

$$\frac{\quad}{6} \quad \frac{\quad}{6}$$

Step 3

Find the numerator of the equivalent fraction



$$\frac{2}{3} \quad \frac{5}{6}$$

$$\frac{4}{6} \quad \frac{5}{6}$$

Step 4

Solve the calculation

$$\frac{4}{6} + \frac{5}{6} = \frac{9}{6}$$

Step 5

Convert the answer to a mixed number

$$\frac{9}{6} = 1 \frac{3}{6}$$

Simplify if necessary

$$= 1 \frac{1}{2}$$

Subtracting fractions with a total greater than one with different denominators (multiples of the same family)

Step 1

Set it out

$$\frac{12}{5} - \frac{4}{10} =$$

Step 2

Find the lowest common denominator

$$\frac{12}{5} - \frac{4}{10}$$

$$\frac{\quad}{10} \quad \frac{\quad}{10}$$

Step 3

Find the numerator of the equivalent fraction

$$\frac{12}{5} \quad \frac{4}{10}$$

x2

$$\frac{24}{10} - \frac{4}{10}$$

Step 4

Solve the calculation

$$\frac{24}{10} - \frac{4}{10} = \frac{20}{10}$$

Step 5

Convert the answer to a mixed number

$$\frac{20}{10} = 2$$

*Adding to a mixed number with different denominators
(multiples of the same family)*

Step 1

Set it out

$$3 \frac{2}{5} + \frac{3}{10} =$$

Step 2

Convert to an improper fraction

$$\frac{17}{5} + \frac{3}{10} =$$

Step 3

Find the lowest common denominator

$$\frac{\quad}{10} \quad \frac{\quad}{10}$$

Step 4

Find the numerator of the equivalent fraction

$$\begin{array}{cc} \frac{17}{5} & \frac{3}{10} \\ \curvearrowright \text{x2} & \\ \frac{34}{10} & \frac{3}{10} \end{array}$$

Step 5

Solve the calculation

$$\frac{34}{10} + \frac{3}{10} = \frac{37}{10}$$

Step 6

Convert the answer to a mixed number

$$\frac{37}{10} = 3 \frac{7}{10}$$

*Subtracting from a mixed number with different denominators
(multiples of the same family)*

Step 1

Set it out

$$2 \frac{1}{2} - \frac{3}{10} =$$

Step 2

Convert to an improper fraction

$$\frac{5}{2} - \frac{3}{10} =$$

Step 3

Find the lowest common denominator

$$\frac{5}{2} - \frac{3}{10}$$

$$\frac{\quad}{10} - \frac{\quad}{10}$$

Step 4

Find the numerator of the equivalent fraction

$$\frac{5}{2} - \frac{3}{10}$$

x5

$$\frac{25}{10} - \frac{3}{10}$$

Step 5

Solve the calculation

$$\frac{25}{10} - \frac{3}{10} = \frac{22}{10}$$

Step 6

Convert the answer to a mixed number

$$\frac{22}{10} = 2 \frac{2}{10}$$

*Multiply a unit fraction by an integer***Step 1**

Set it out

$$5 \times \frac{1}{4}$$

Step 2

Convert the integer to a fraction over 1

$$\frac{5}{1} \times \frac{1}{4}$$

Step 3

Multiply the numerators

$$\frac{5}{1} \times \frac{1}{4} = \frac{5}{4}$$

Step 4

Multiply the denominators

$$\frac{5}{1} \times \frac{1}{4} = \frac{5}{4}$$

Step 5

Convert to a mixed number where necessary

$$\frac{5}{4} = 1 \frac{1}{4}$$

*Multiply a non-unit fraction by an integer***Step 1**

Set it out

$$\frac{3}{10} \times 3$$

Step 2

Convert the integer to a fraction over 1

$$\frac{3}{10} \times \frac{3}{1}$$

Step 3

Multiply the numerators

$$\frac{3}{10} \times \frac{3}{1} = \frac{9}{10}$$

Step 4

Multiply the denominators

$$\frac{3}{10} \times \frac{3}{1} = \frac{9}{10}$$

Step 5

Convert to a mixed number where necessary

Multiply a mixed number by an integer

Step 1

Set it out

$$6 \times 2 \frac{3}{5}$$

Step 2

Convert to an improper fraction

$$6 \times \frac{13}{5}$$

Step 3

Convert the integer to a fraction over 1

$$\frac{6}{1} \times \frac{13}{5}$$

Step 4

Multiply the numerators

$$\frac{6}{1} \times \frac{13}{5} = \frac{78}{5}$$

Step 5

Multiply the denominators

$$\frac{6}{1} \times \frac{13}{5} = \frac{78}{5}$$

Step 6

Convert answer to mixed number

$$\frac{78}{5} = 15 \frac{3}{5}$$

$$\begin{array}{r} 15 \text{ r } 3 \\ 5 \overline{) 78} \\ \underline{50} \\ 28 \\ \underline{25} \\ 3 \end{array}$$

Add and subtract any two fractions

Step 1

Set it out

$$\frac{5}{6} + \frac{5}{7}$$

Step 2

Find the lowest common denominator

$$\frac{5}{6} \qquad \frac{5}{7}$$

$$\underline{\qquad} \qquad \underline{\qquad}$$

$$42 \qquad 42$$

Step 3

Find the equivalent fractions

$$\frac{5}{6} \qquad \frac{5}{7}$$

$$\frac{35}{42} \qquad \frac{30}{42}$$

(Diagram showing multiplication factors: 5/6 is multiplied by 7 to get 35/42, and 5/7 is multiplied by 6 to get 30/42)

Step 4

Solve the calculation

$$\frac{35}{42} + \frac{30}{42} = \frac{75}{42}$$

Step 5

Convert the answer to a mixed number

$$\frac{75}{42} = 1 \frac{33}{42}$$

Multiply fractions by fractions

Step 1

Set it out

$$\frac{2}{8} \times \frac{1}{4} =$$

Step 2

Multiply the numerator

$$\frac{2}{8} \times \frac{1}{4} = \frac{2}{}$$

Step 3

Multiply the denominators

$$\frac{2}{8} \times \frac{1}{4} = \frac{2}{32}$$

Step 4

Simplify where necessary

$$\frac{2}{32} = \frac{1}{16}$$

Diagram illustrating simplification: A blue circle with $\div 2$ is positioned above the fraction $\frac{2}{32}$, and another blue circle with $\div 2$ is positioned below it. Two blue curved arrows connect the top circle to the numerator '2' and the bottom circle to the denominator '32', showing the division process.

Divide any fraction by an integer

Step 1

Set it out

$$\frac{2}{3} \div 3 =$$

Step 2

Convert the integer to a fraction over 1

$$\frac{2}{3} \div \frac{3}{1} =$$

Step 3

K F C
Keep, flip, change

Keep Flip

↓ ↙

$$\frac{2}{3} \times \frac{1}{3} =$$

↑

Change

Step 4

Solve the calculation

$$\frac{2}{3} \times \frac{1}{3} = \frac{2}{9}$$