MATHEMATICS
Calculation Policy

THE CREATIVE LEARNING PARTNERSHIP TRUST

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ADDITION

ADDITION

Y1

Step 1

Step 2

Y2

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

Y2

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

Step 1 Set it out

1 7 + 6 =

	T	O
	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

2 5 + 3 1 =

Step 2 Add the ones

	T	O
	2	5
+	3	1
		6

Step 3 Add the tens

	T	O
	2	5
+	3	1
	5	6

Y2

Add two two-digit numbers - with exchange

Step 1 Set it out

	T	O
	2	5
+	3	6

2 5 + 3 6 =

Step 2 Add the ones

	T	O
	2	5
+	3	6
		1
	1	

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

Step 3 Add the tens

	T	O
	2	5
+	3	6
	6	1
	~~1~~	

Remember to add the exchanged ten.

Adding a three-digit number and ones - no exchange

Step 1 Set it out

3 5 1 + 6 =

	H	T	O
	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

3 5 1 + 9 =

	H	T	O
	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
		~~1~~	

Remember to add the exchanged ten.

Step 4 Add the hundreds

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

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

Step 1 Set it out

5 2 7 + 4 2 =

	H	T	O
	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

ADDITION

Y3

Adding a two and three-digit number together

Exchange - one exchange then multiple exchanges

Step 1 Set it out

5 7 6 + 4 8 =

	H	T	O
	5	7	6
+		4	8

Step 2 Add the ones

	H	T	O
	5	7	6
+		4	8
			4
		1	

Exchange the ones.

Step 3 Add the tens

	H	T	O
	5	7	6
+		4	8
		2	4
	1	~~1~~	

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
	6	2	4
	~~1~~	~~1~~	

Remember to add the exchanged hundred.

Adding two three-digit numbers - no exchange

Step 1 Set it out

4 3 2 + 2 5 5 =

	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

4 3 2 + 4 3 9 =

	H	T	O
	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

3 5 8 + 2 6 3 =

	H	T	O
	3	5	8
+	2	6	3

Step 2 Add the ones

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

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~~	~~1~~	

Add the exchanged hundred.

Adding two four-digit numbers - no exchanges

Step 1 Set it out

7 2 3 2 + 2 1 4 4 =

	TH	H	T	O
	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	4
	9	3	7	6

Remember to start with the ones!

Adding two four-digit numbers - exchange

Step 1 Set it out

6 4 8 7 + 2 5 3 6 =

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

Step 2 Add the ones, tens, hundreds and thousands

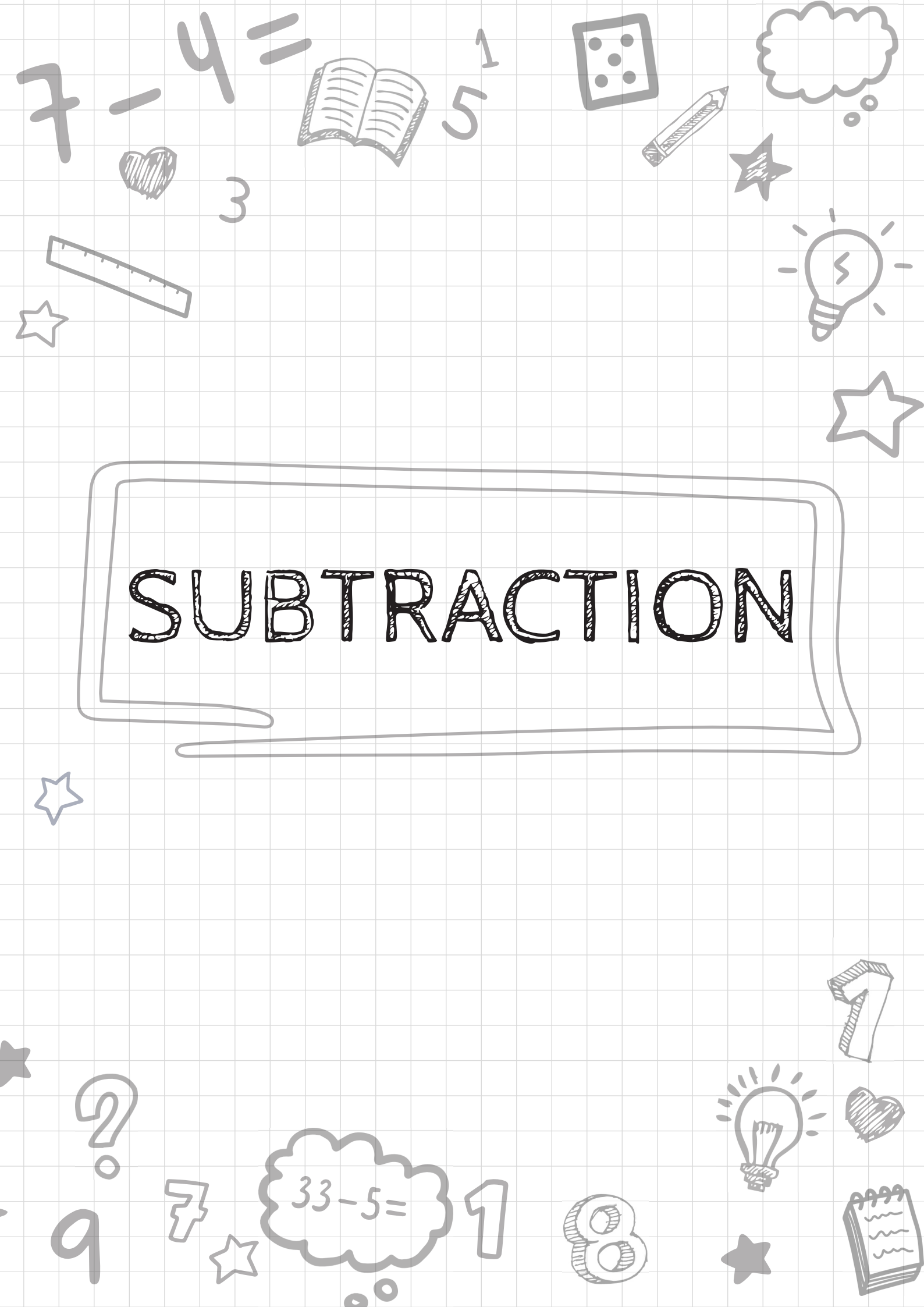
	TH	H	T	O
	6	4	8	7
+	2	5	3	6
	9	0	2	3
	1	1	1	

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
33-5=

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

4 4 - 8 =

	T	O
	4	4
-		8

Step 2 Exchange the tens

	T	O
	3 ~~4~~	1 4
-		8

Step 3 Subtract the ones

	T	O
	3 ~~4~~	1 4
-		8
		6

Step 4 Subtract the tens

	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

4 5 - 2 1 =

	T	O
	4	5
-	2	1

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

6 3 - 2 5 =

	T	O
	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

3 2 5 - 1 1 2 =

	H	T	O
	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

7	4	2	-	2	1	6	=

	H	T	O
	7	4	2
-	2	1	6

8	1	8	-	2	3	4	=

	H	T	O
	8	1	8
-	2	3	4

Step 2

Exchange the ten

	H	T	O
	7	3 ~~4~~	1 2
-	2	1	6

Subtract the ones

	H	T	O
	8	1	8
-	2	3	4
			4

Step 3

Subtract the ones

	H	T	O
	7	3 ~~4~~	1 2
-	2	1	6
			6

Exchange the hundreds

	H	T	O
	7 ~~8~~	1 1	8
-	2	3	4
			4

Step 4

Complete the calculation

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

	H	T	O
	7 ~~8~~	1 1	8
-	2	3	4
	5	8	4

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

Step 1 Set it out

6 2 2 - 1 5 4 =

	H	T	O
	6	2	2
-	1	5	4

Step 2

Exchange the tens

	H	T	O
	6	1 ~~2~~	1 2
-	1	5	4

Step 3

Subtract the ones

	H	T	O
	6	1 ~~2~~	1 2
-	1	5	4
			8

Step 4

Exchange the hundreds

	H	T	O
	5 ~~6~~	11 ~~2~~	1 2
-	1	5	4
			8

Step 5

Subtract the tens

	H	T	O
	5 ~~6~~	11 ~~2~~	1 2
-	1	5	4
		6	8

Step 6

Subtract the hundreds

	H	T	O
	5 ~~6~~	11 ~~2~~	1 2
-	1	5	4
	4	6	8

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

Step 1 Set it out

3 0 0 - 1 2 7 =

	H	T	O
	3	0	0
-	1	2	7

Step 2 Exchange from the hundred, then from the ten

	H	T	O
	2	9	1
	~~3~~	~~0~~	0
-	1	2	7

Step 3 Subtract ones, then tens, then hundreds

	H	T	O
	2	9	1
	~~3~~	~~0~~	0
-	1	2	7
	1	7	3

Column subtraction - four-digit by four-digit - no exchange

Step 1 Set it out

2 5 7 5 - 1 3 6 2 =

	TH	H	T	O
	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
	1	2	1	3

Start at the right

Spot the exchange!

Y4

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

Step 1 Set it out

2 3 2 3 - 1 1 7 1 =

	TH	H	T	O
	2	3	2	3
-	1	1	7	1

Step 2 Subtract the ones

	TH	H	T	O
	2	3	2	3
-	1	1	7	1
				2

Step 3 Exchange from the hundreds

	TH	H	T	O
	2	~~3~~ 2	1 2	3
-	1	1	7	1
				2

Step 4 Subtract the tens

	TH	H	T	O
	2	~~3~~ 2	1 2	3
-	1	1	7	1
			5	2

Step 5 Subtract the hundreds and thousands

	TH	H	T	O
	2	~~3~~ 2	1 2	3
-	1	1	7	1
	1	1	5	2

Practise with exchanges required in different columns

Spot the exchange!

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

Step 1 Set it out

4 3 6 2 - 1 7 3 5 =

	TH	H	T	O
	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

4 0 0 0 - 3 2 8 4 =

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

Step 3 Subtract the ones, then tens, then hundreds, then thousands

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

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

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!

Y5 Y6

Column subtraction - more than four-digits - one exchanges

Step 1 Set it out

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

	TTH	TH	H	T	O
	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	1
				3	0

Step 3 Exchange from thousands

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

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

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

TTH	TH	H	T	O
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~~	10 ~~0~~ 9	10 ~~0~~ 9	10 ~~0~~ 9	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~~	10 ~~0~~ 9	10 ~~0~~ 9	10 ~~0~~ 9	1 0
- 2	5	6	3	2
4	4	3	6	8

MULTIPLICATION

Y1

Step 1

Step 2

Y1

Step 1

Step 2

Y2

Step 1

Step 2

Y2

Step 1

Step 2

Two-digit by one-digit - no exchanging

Step 1 Set it out

2 3 x 3 =

	T	O
	2	3
x		3

Step 2 Multiplying the ones

	T	O
	2	3
x		3
		9

Step 3 Multiply the tens by the ones

	T	O
	2	3
x		3
	6	9

Two-digit by one-digit - exchanging

Step 1 Set it out

2 3 x 5 =

	T	O
	2	3
x		5

Step 2 Multiply the ones

	T	O	
	2	3	
x		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	1

2 x 5 = 10 + 1 = 11

Children will have practised two-digit by one-digit

Three-digit by one-digit - no exchange

Step 1 Set it out

2 4 3 x 2 =

	H	T	O
	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

2 4 3 x 5 =

	H	T	O
	2	4	3
x			5

Step 2 Multiply the ones

	H	T	O
	2	4	3
x			5
			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
		1	5

1 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
1	2	1	5

1 2

Cross off the digit when added

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

Y5

Four-digit by one-digit - exchanging

Step 1 Set it out.

4 2 4 7 x 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	2
				8	

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	~~2~~ 1
			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	~~2~~ 1
		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	~~2~~ 1
1	6	9	8	8	

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

Step 1 Set it out

3 4 x 1 2 =

	T	O
	3	4
x	1	2

Step 2

Multiply the ones by the ones

	T	O
	3	4
x	1	2
		8

Step 3

Multiply the tens by the ones

	T	O
	3	4
x	1	2
	6	8

Step 4

Insert place holder

	T	O
	3	4
x	1	2
	6	8
		0

Place Holder

Step 5

Multiply the tens by the ones

	T	O
	3	4
x	1	2
	6	8
	4	0

Step 6

Multiply the tens by the tens

	T	O
	3	4
x	1	2
	6	8
3	4	0

Step 7

Add the totals

	T	O
	3	4
x	1	2
	6	8
x	3	4	0
	4	0	8
	1		

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

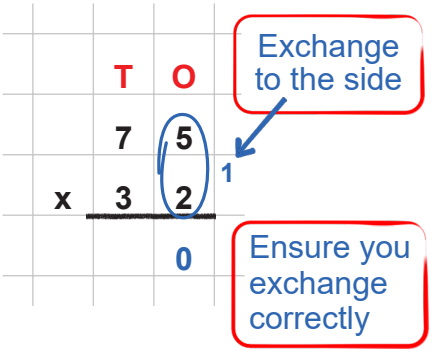
Step 1 Set it out

7 5 x 3 2 =

	T	O
	7	5
x	3	2

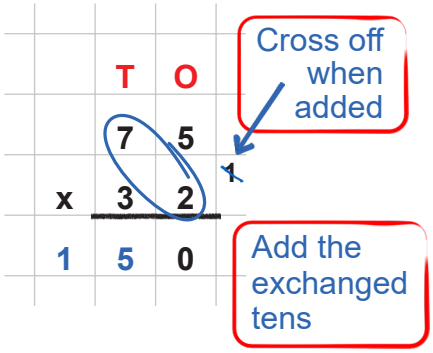
Step 2

Multiply ones by ones



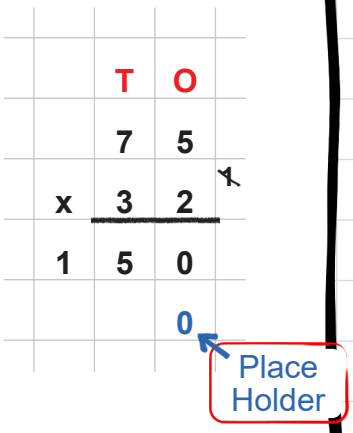
Step 3

Multiply ones by tens



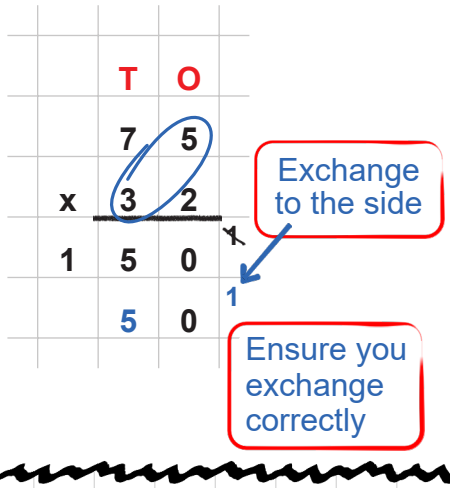
Step 4

Insert place holder



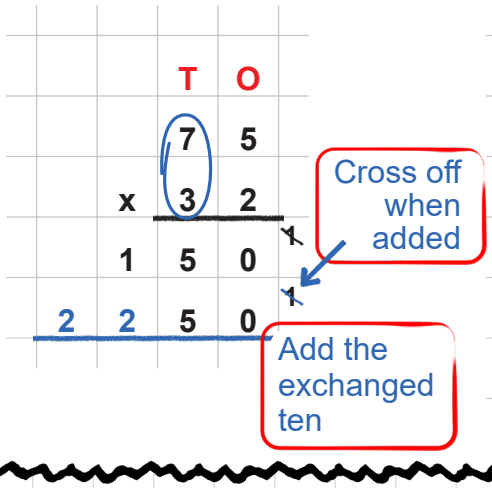
Step 5

Multiply tens by ones



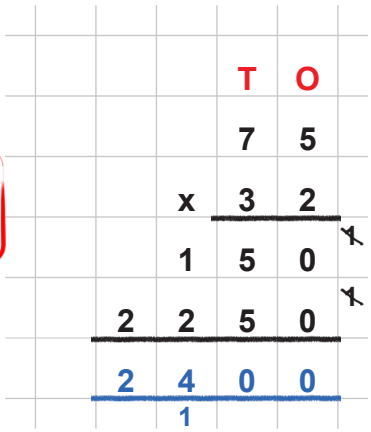
Step 6

Multiply tens by tens



Step 7

Add totals together



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

Step 1 Set it out

7 5 2 x 2 5 =

	H	T	O
	7	5	2
x		2	5

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

Step 2

Multiply ones by ones

	H	T	O
	7	5	2
x		2	5
			0

Exchange

Step 3

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

	H	T	O
	7	5	2
x		2	5
		6	0

Cross off when added

Step 4

Multiply the ones by hundreds. Add the exchanged digits

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

Step 5

Insert place holder

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

Place Holder

Step 6

Multiply tens by ones, then tens, then hundreds

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

Step 7

Add totals together

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

Long multiplication - four-digit by two-digit

Step 1 Set it out

3 8 7 1 x 4 5 =

	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

Step 3

Insert a place holder.

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

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

↳ exchanges

Step 1 Set it out

2 . 5 3 x 3 =

	O	.	th	hth
	2	.	5	3
x				3
		.		

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
		.		9

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

	O	.	th	hth	
	2	.	5	3	
x				3	
		.	5	9	1

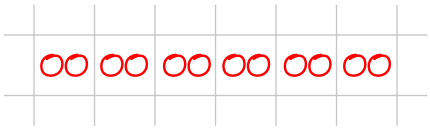
Step 4 Multiply the ones by the ones.
Add exchanged digits.

	O	.	th	hth	
	2	.	5	3	
x				3	
	7	.	5	9	1

DIVISION

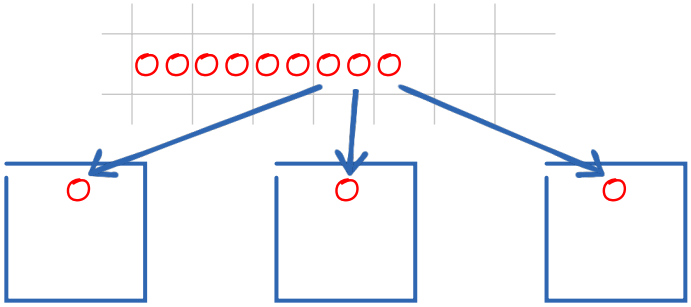
To be able to solve one-step division problems using CPA with support of the teacher

Step 1 Count the total

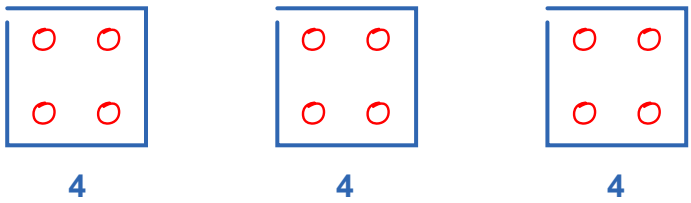


Step 2 Create the group

Step 3 Share the total equally - one at a time for each group



Step 4 Count the number in each group



DIVISION

Y2

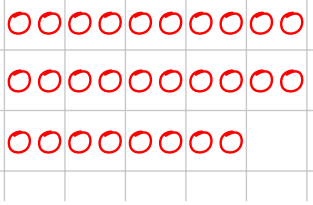
To be able to solve division problems (including the use of ÷ and = symbols) using CPA (where known times tables cant be used).

Step 1 Write the calculation

2 8 ÷ 4 =

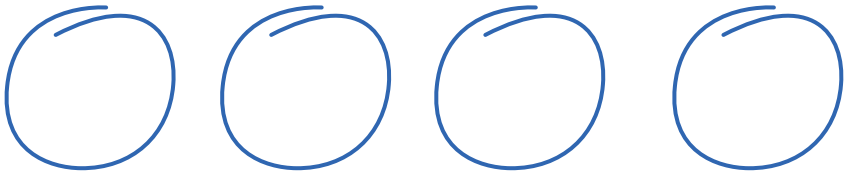
Step 2 Identify the dividend and count it out

2 8 ÷ 4 =

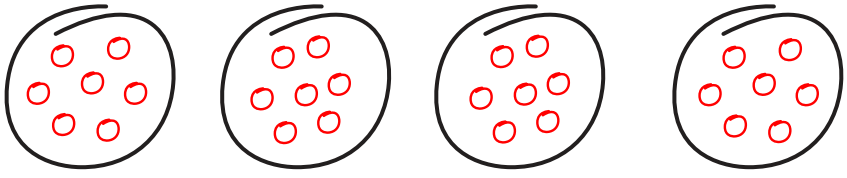


Step 3 Identify the divisor and create groups

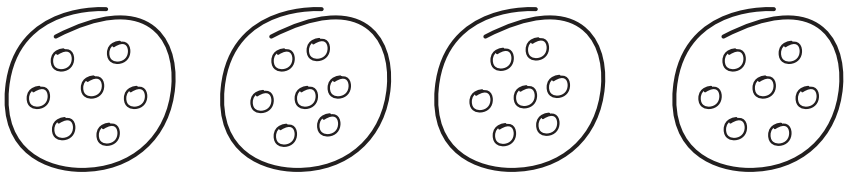
2 8 ÷ 4 =



Step 4 Share the divided equally



Step 5 Check the number in each group to find the answer



7 7 7 7

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

Step 1 Set it out

7 2 ÷ 6 =

Draw the same number of rows as the divisor.

T	O

Step 2 Use place value counters to represent the dividend

7 2 ÷ 6 =

10 10 10 10 10 10 10 1 1

Step 3

Share the tens equally into rows (divisor)

T	O	
10		10
10		
10		1 1
10		1 1
10		1 1
10		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	OO	12
10	OO	12
10	OO	12
10	OO	12
10	OO	12
10	OO	12

Step 6

Count the number in each row

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

Step 1 Set it out

8 5 ÷ 5 =

$$5\overline{)85}$$

Step 2 Divide the first digit of the dividend by the divisor

$$5\overline{)85}\quad 1$$

Step 3 Exchange the remainder

$$5\overline{)85}\quad \begin{matrix}1\\ \\ 3\end{matrix}$$

Step 4 Divide the next digit by the dividend

$$5\overline{)85}\quad \begin{matrix}1 & 7\\ & \\ & 3\end{matrix}$$

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

Step 1 Set it out

9 2 6 ÷ 7 =

$$7\overline{)926}$$

Step 2 Divide the first digit of the dividend by the divisor

$$\begin{array}{r} 1 \\ 7\overline{)926} \end{array}$$

Step 3 Regroup the remainder

$$\begin{array}{r} 1 \\ 7\overline{)9\,^{2}26} \end{array}$$

Step 4 Divide the next digit(s) by the divisor

$$\begin{array}{r} 13 \\ 7\overline{)9\,^{2}26} \end{array}$$

Step 5 Regroup the remainder

$$\begin{array}{r} 13 \\ 7\overline{)9\,^{2}2\,^{1}6} \end{array}$$

Step 6 Divide the next digit(s) by the divisor and identify any remainders in your quotient

$$\begin{array}{r} 132\ \text{r}\ 2 \\ 7\overline{)9\,^{2}2\,^{1}6} \end{array}$$

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

Step 1 Set it out

4 3 2 1 ÷ 5 =

$$5\overline{)4321}$$

Step 2 Divide the first digit of the dividend by the divisor

$$\begin{array}{r} 0 \\ 5\overline{)4321} \end{array}$$

Step 3 Regroup the remainder

$$\begin{array}{r} 0 \\ 5\overline{)4^{4}321} \end{array}$$

Step 4 Continue to divide and regroup and dividend

$$\begin{array}{r} 0\ 8\ 6\ 4\ \text{r}\ 1 \\ 5\overline{)4^{4}3^{3}2^{2}1} \end{array}$$

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

4 3 0 ÷ 1 5 =

$$15\overline{)4\,3\,0}$$

Step 2 Divide the first digit by the divisor ⟶ 0

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

Step 3 Estimate the groups of the divisor that divide into the next two digits

$$\begin{array}{r} 15 \\ \times\ 2 \\ \hline 30 \end{array} \qquad \begin{array}{r} 15 \\ \times\ 3 \\ \hline 45 \\ 1 \end{array}$$

$$\begin{array}{r} 02 \\ 15\overline{)430} \\ -\ 30 \\ \hline 13 \end{array}$$

Step 4 Subtract and write the quantity

Step 5 Bring the next digit down

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

Step 6 Estimate

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

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.

$28\ r\ 10 \longrightarrow 28\ \frac{10}{15} = 28\ \frac{2}{3}$

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

FRACTIONS

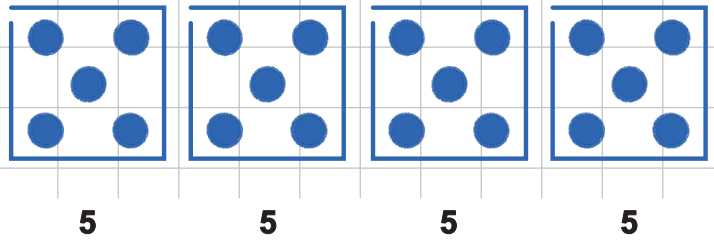
FRACTIONS

Y2

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

Step 1 Divide by the denominator.
Count into bar model.

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



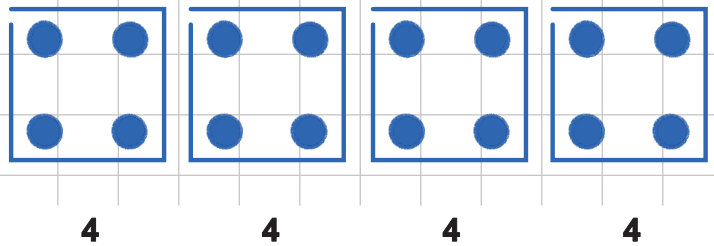
Step 2 Multiply by the numerator.

→ Select the number of groups.

5 x 1 = 5

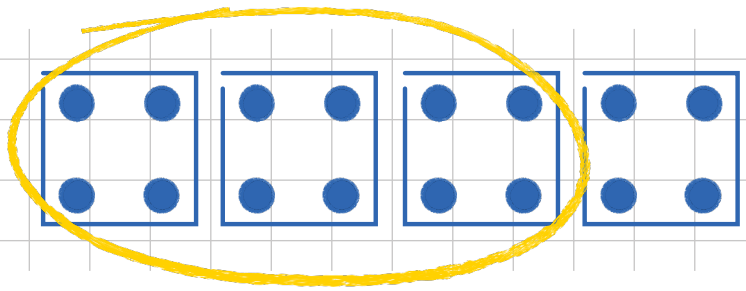
Step 1 Divide by the denominator.
Count into the bar model.

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



Step 2 Multiply by the numerator.

4 x 3 = 12



Adding fractions with the same denominator

Step 1 Set it out

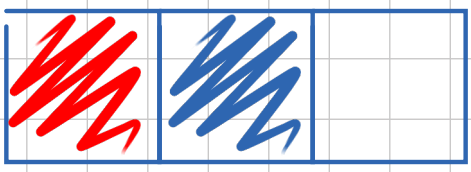
$$\frac{1}{3} + \frac{1}{3}$$

Step 2 Add the numerators

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

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

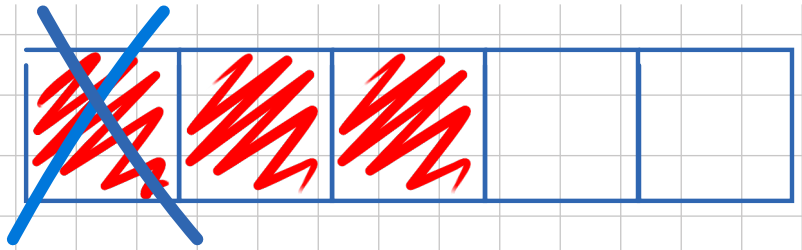
$$\frac{3}{5} - \frac{1}{5} =$$

Step 2 Subtract the numerators

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

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

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

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

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

Step 2 Denominator 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 4 Convert 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

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

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

Step 3 Find the numerator of the equivalent fraction

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

x4

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

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

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

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

Step 3 Find the numerator of the equivalent fraction

$\frac{4}{10} \quad \frac{1}{5}$ x2

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

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

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

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

Step 3 Find the numerator of the equivalent fraction

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

x2

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

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

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

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

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

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

Step 4 Find the numerator of the equivalent fraction

$$\frac{17}{5} \quad \frac{3}{10}$$

x2

$$\frac{34}{10} \quad \frac{3}{10}$$

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

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

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

Step 4 Find the numerator of the equivalent fraction

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

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

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

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

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

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

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

Step 5 Multiply the denominators

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

Step 6 Convert answer to mixed number

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

$$5 \overline{)\,7\,{}^{2}8\;} \quad 1\,5 \text{ r } 3$$

Add and subtract any two fractions

Step 1 Set it out

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

Step 2 Find the lowest common denominator

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

$$\frac{}{42} \quad \frac{}{42}$$

Step 3 Find the equivalent fractions

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

x7 x6

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

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

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

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

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