

## Year 5 Mathematics Knowledge Organiser Spring Term

### Multiplication tables

	1	2	3	4	5	6	7	8	9	10	11	12
1	1	2	3	4	5	6	7	8	9	10	11	12
2	2	4	6	8	10	12	14	16	18	20	22	24
3	3	6	9	12	15	18	21	24	27	30	33	36
4	4	8	12	16	20	24	28	32	36	40	44	48
5	5	10	15	20	25	30	35	40	45	50	55	60
6	6	12	18	24	30	36	42	48	54	60	66	72
7	7	14	21	28	35	42	49	56	63	70	77	84
8	8	16	24	32	40	48	56	64	72	80	88	96
9	9	18	27	36	45	54	63	72	81	90	99	108
10	10	20	30	40	50	60	70	80	90	100	110	120
11	11	22	33	44	55	66	77	88	99	110	121	132
12	12	24	36	48	60	72	84	96	108	120	132	144

### Short multiplication

$$2543 \times 7 = 17801$$

	2	5	4	3	
×				7	
1	7	8	0	1	

1 3 3 2

Remember to move any regrouped digits into the next column. After the next multiplication, add the regrouped number to the answer.

### Long multiplication

$$2543 \times 67 = 170381$$

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

1 1

Before multiplying by the number in the tens column, remember to use zero as a placeholder because the 6 in 67 is 6 tens (60).

### Division

$$136 \div 4 = 34$$

		3	4	
4	1	3	6	
-	1	2	0	→ 30 × 4
		1	6	
	-	1	6	→ 4 × 4
			0	

### Short division

		3	8	
4	1	5	2	

$$15 \div 4 = 3 \text{ remainder } 3$$

Remember to regroup any remainders and move them into the next column.

		4	5	5	r	3
5	2	2	7	8		

$$28 \div 5 = 5 \text{ remainder } 3$$

If your calculation has a remainder, remember to record it in the answer using the letter **r**.

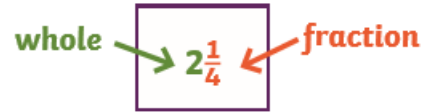
## Year 5 Mathematics Knowledge Organiser Spring Term

### Fractions – key vocabulary

Numerator  
Denominator  
Unit fraction  
Non-unit fraction  
Whole  
Equivalent  
Mixed number  
Improper fraction  
Simplest form  
Multiple  
Common denominator  
Common numerator

### Mixed numbers

Mixed numbers contain a whole number and a fraction.

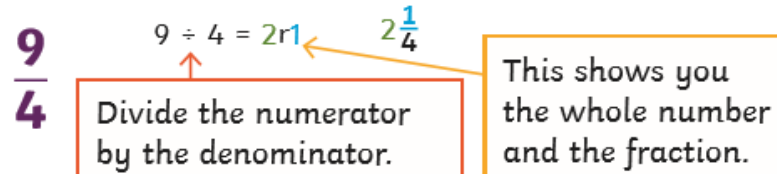


### Improper fractions

An improper fraction has a numerator which is greater than or equal to the denominator.

$\frac{5}{3}$

### Convert an improper fraction to a mixed number



### Convert a mixed number to an improper fraction

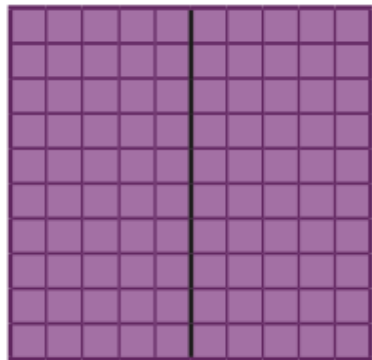
Multiply the whole by the denominator to make an improper fraction.

$$2\frac{5}{6} = \frac{12}{6} + \frac{5}{6} = \frac{17}{6}$$

Add the fractions together.

### Equivalent fractions

To find equivalent fractions, we multiply or divide the numerator and denominator by the same number.

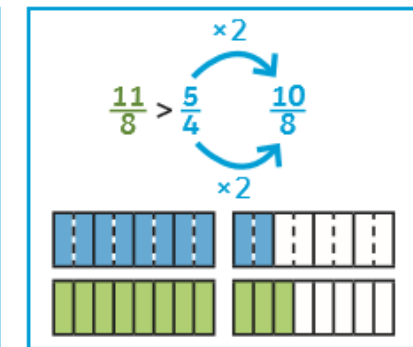
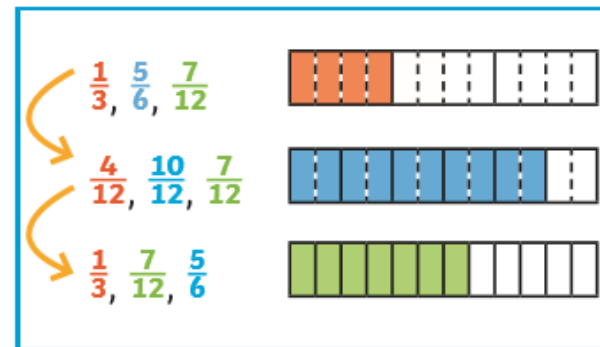


$$\frac{1}{2} = \frac{5}{10} = \frac{50}{100}$$

$\times 5$     $\times 10$   
 $\times 5$     $\times 10$

### Compare and order fractions

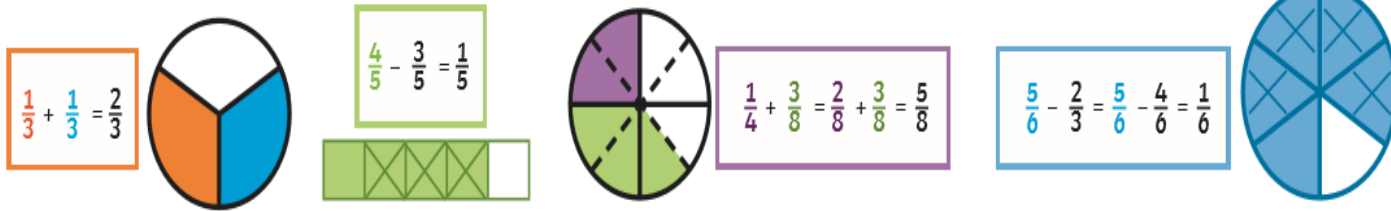
We can compare and order fractions by using common denominators.



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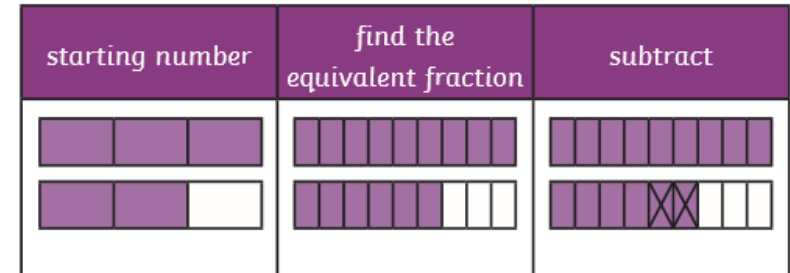
### Adding and subtracting fractions

To add or subtract fractions with denominators that are multiples of the same number, we must change one fraction to have the same denominator.



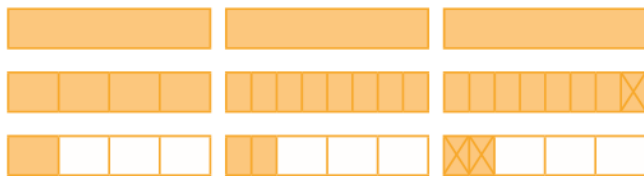
### Subtract from a mixed number

$$1\frac{2}{3} - \frac{2}{9} = 1\frac{6}{9} - \frac{2}{9} = 1\frac{4}{9}$$



### Subtract from a mixed number – breaking the whole

$$2\frac{1}{4} - \frac{3}{8} = 2\frac{2}{8} - \frac{3}{8} = 1\frac{10}{8} - \frac{3}{8} = 1\frac{7}{8}$$



### Subtract two mixed number

$$2\frac{3}{4} - 1\frac{5}{8} = 1\frac{1}{8}$$

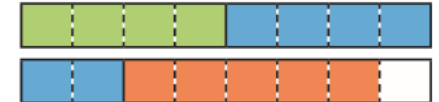


$$2 - 1 = 1$$

$$\frac{3}{4} - \frac{5}{8} = \frac{1}{8}$$

### Add fractions where the total is greater than 1

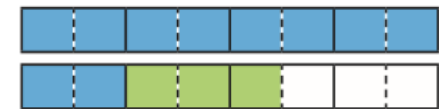
$$\frac{1}{2} + \frac{3}{4} + \frac{5}{8} = \frac{4}{8} + \frac{6}{8} + \frac{5}{8} = \frac{15}{8} = 1\frac{7}{8}$$



### Add mixed numbers

$$1\frac{1}{4} + \frac{3}{8} = 1\frac{2}{8} + \frac{3}{8} = 1 + \frac{5}{8} = 1\frac{5}{8}$$

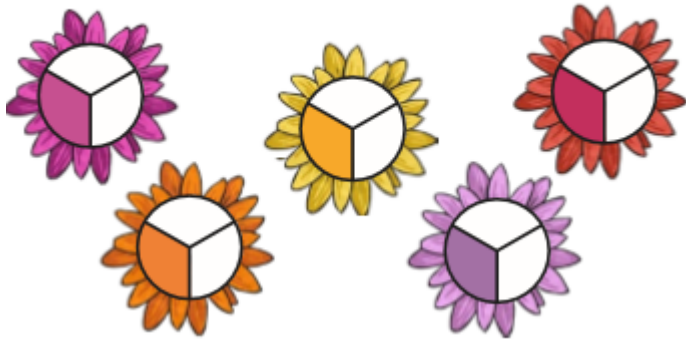
$$1\frac{1}{4} + \frac{3}{8} = \frac{5}{4} + \frac{3}{8} = \frac{10}{8} + \frac{3}{8} = \frac{13}{8} = 1\frac{5}{8}$$



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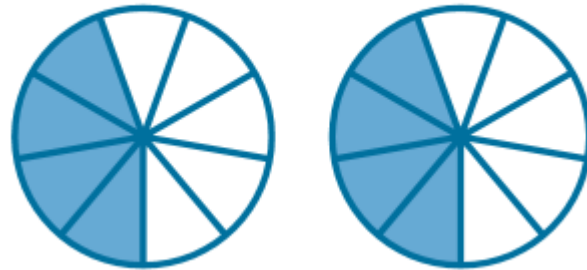
**Multiply unit fractions by an integer**

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



**Multiply non-unit fractions by an integer**

$$2 \times \frac{4}{9} = \frac{8}{9}$$



**Finding fractions of amounts**

To find the fraction of an amount you need to divide your number by the denominator, then multiply your answer by the numerator.

$$\frac{2}{6} \text{ of } 72 \div$$

72 divided by 6 = 12

Next, I need to multiply my answer by the numerator.

$$12 \times 2 = 24$$

2 of 72 is therefore 24!

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**Multiply mixed numbers by integers**

Convert to an improper fraction and multiply the numerator by the integer.

$$2\frac{1}{4} \times 2 = \frac{9}{4} \times 2 = \frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$$



Use repeated addition.

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

# Year 5 Mathematics Knowledge Organiser Spring Term

**Decimals – key vocabulary**

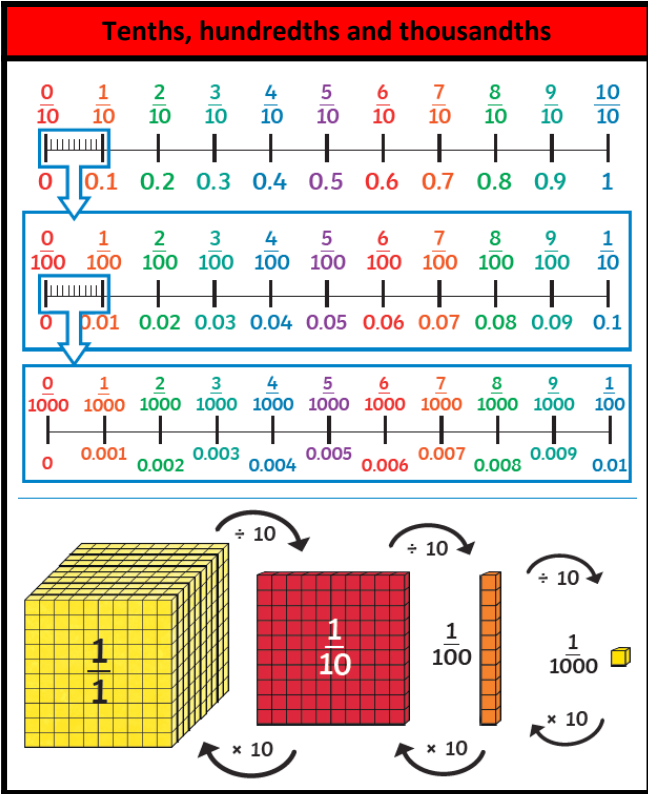
Tenths  
Hundredths  
Decimal tenths  
Decimal hundredths  
Decimal equivalents  
Part-whole model  
Rounding  
Decimal point  
Place value

**Order and compare numbers with three decimal places**

Ones	Tenths	Hundredths	Thousandths
0	2	1	3

Ones	Tenths	Hundredths	Thousandths
1	0	2	2

Ones	Tenths	Hundredths	Thousandths
2	1	0	3



**Decimal numbers as fractions**

$$0.71 = \frac{71}{100} = \frac{7}{10} + \frac{1}{100}$$

$$0.37 = \frac{37}{100} = \frac{3}{10} + \frac{7}{100}$$
