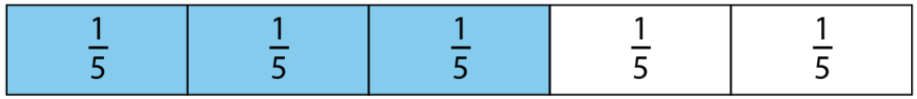
Fractions

Year 3

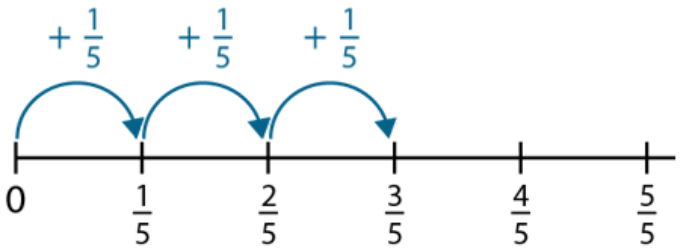
Add and Subtract Fractions within 1

Vocabulary:

Fraction Notation Divided Equal Numerator Denominator Whole Parts Fraction Bar (Vinculum) Half Third Quarter Fifth Sixth Seventh Eighth Ninth Tenth One-_____ Add Subtract Number line Bar model Equation Expression



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



We can add multiples of the unit fraction and record this as an addition equation.

The unit fraction is one-fifth. There are three one-fifths in three-fifths.

Three-fifths is made up of one-fifth, add another one-fifth, and another one-fifth.

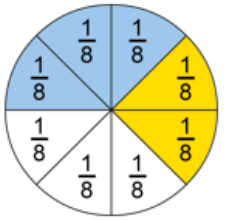
We can use our knowledge of addition and subtraction structures to add/subtract non-unit fractions, recording these as equations.

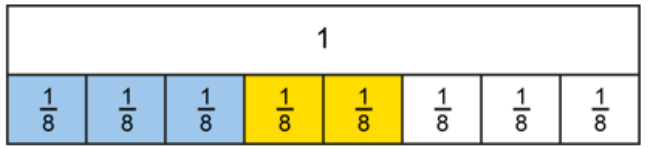
3 one-eighths plus 2 one-eighths is equal to 5 one-eighths.

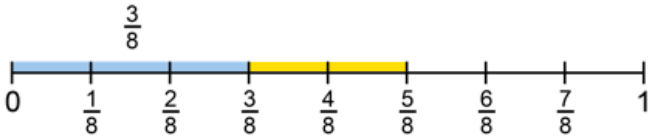
Three-eighths, plus two-eighths is equal to five-eighths.

5 one eighths minus 2 one-eighths is equal to 3 one-eighths.

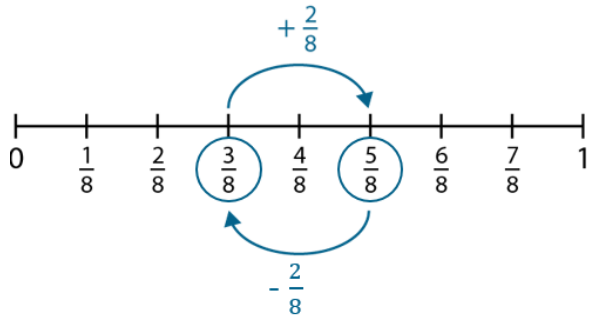
Five-eighths, minus two-eighths is equal to three-eighths.







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



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

Fractions

Year 3

Add and Subtract Fractions within 1

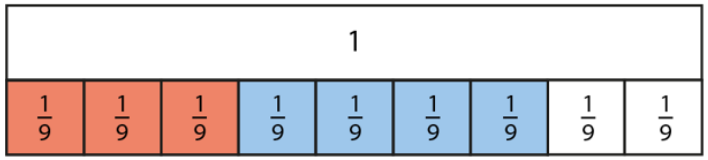
Vocabulary:

Fraction Notation Divided Equal Numerator Denominator Whole Parts Fraction Bar (Vinculum) Half Third Quarter Fifth Sixth Seventh Eighth Ninth Tenth One-_____ Add Subtract (Minus) Number line Bar model Equation Expression

We can use one of three methods to represent our understanding of adding and subtracting fractions with the same denominator.

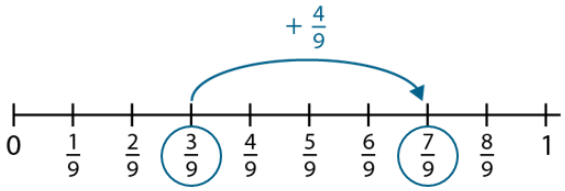
1 – Use a Diagram

***Note – this may best represent an aggregation (adding with) addition structure.**



2 – Use a Number Line

***Note – this may best represent an augmentation (adding to) addition structure.**



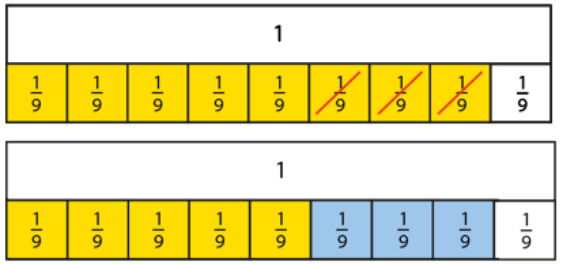
3 – Verbal reasoning

$\frac{3}{9}$ is 3 lots of $\frac{1}{9}$

$\frac{4}{9}$ is 4 lots of $\frac{1}{9}$

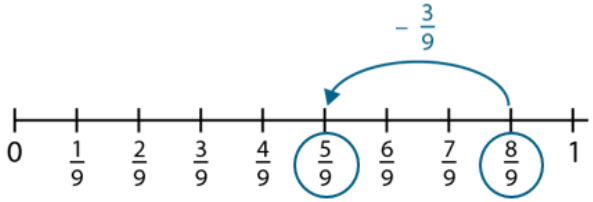
I know that $3 + 4 = 7$

So I know that $\frac{3}{9} + \frac{4}{9} = \frac{7}{9}$



***Note – this may best represent a reductive (take away) subtraction structure.**

***Note – this may best represent a partitioning (separation) subtraction structure.**



***Note – this may best represent a partitioning (separation) subtraction structure.**

$\frac{8}{9}$ is 8 lots of $\frac{1}{9}$

$\frac{3}{9}$ is 3 lots of $\frac{1}{9}$

$8 - 3 = 5$

So $\frac{8}{9} - \frac{3}{9}$ is $\frac{5}{9}$

Generalisation:

When adding/subtracting fractions with the same denominator, just add/subtract the numerators.

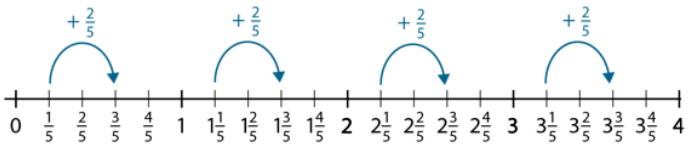
Fractions

Year 4

Add and Subtract Improper Fractions and Mixed Fractions (Same Denominator) (1)

Vocabulary:

Fraction Notation Divided Equal Numerator Denominator Whole Parts Fraction Bar (Vinculum) Half Third Quarter Fifth Sixth Seventh Eighth Ninth Tenth One-_____ Number line Part-Part-Whole Model Units Previous Next Estimate Intervals Convert Improper Fractions Mixed Numbers Add Subtract (Minus)

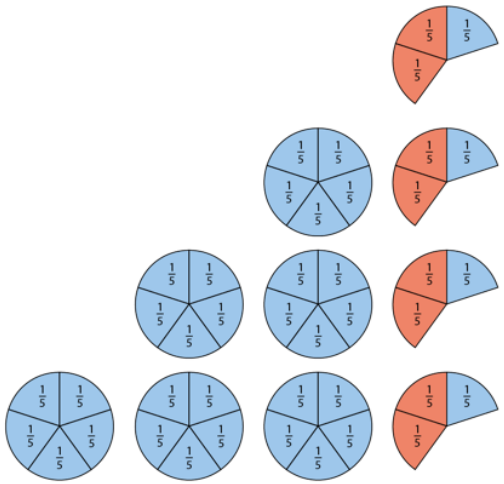


$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

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

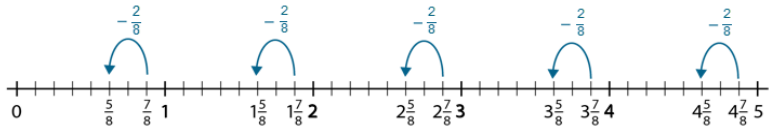
$2\frac{1}{5} + \frac{2}{5} = 2\frac{3}{5}$

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



We can apply our understanding of adding fractions within one with the same denominator to adding a mixed number and fractions within one with the same denominators.

The parts are __ and __. The total, or <u>whole</u>, is __.



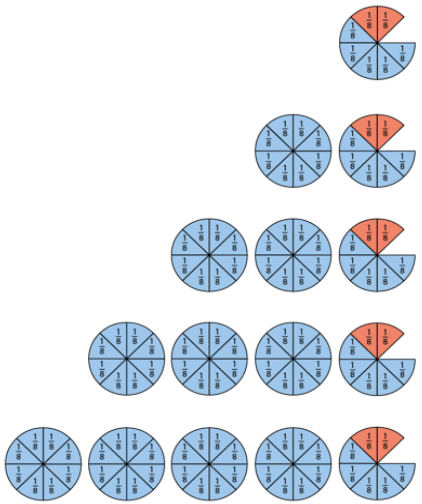
$\frac{7}{8} - \frac{2}{8} = \frac{5}{8}$

$1\frac{7}{8} - \frac{2}{8} = 1\frac{5}{8}$

$2\frac{7}{8} - \frac{2}{8} = 2\frac{5}{8}$

$3\frac{7}{8} - \frac{2}{8} = 3\frac{5}{8}$

$4\frac{7}{8} - \frac{2}{8} = \boxed{4\frac{5}{8}}$



We can apply our understanding of subtracting fractions within one with the same denominator to subtract a fraction within one from a mixed number with the same denominators.

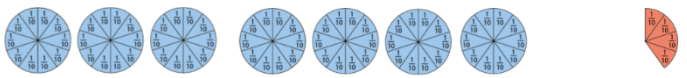
The total, or <u>whole</u>, is __. One part is __. The missing part is ___.

$\frac{1}{10} + 3\frac{2}{10} + 4 + \frac{1}{10}$

When adding combined mixed numbers and fractions within one, we combine the parts and then combine the wholes.

The parts are __ and __. The total, or <u>whole</u>, is __.

$\frac{1}{10} + 3\frac{2}{10} + 4 + \frac{1}{10}$



Fractions

Year 4

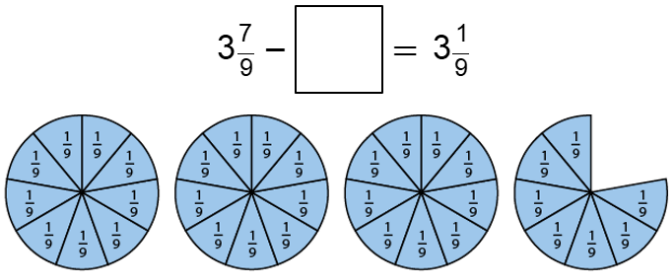
Add and Subtract Improper Fractions and Mixed Fractions (Same Denominator) (2)

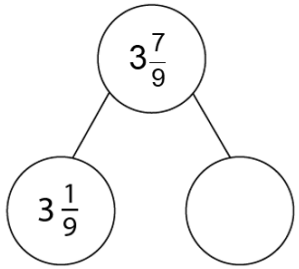
Vocabulary:

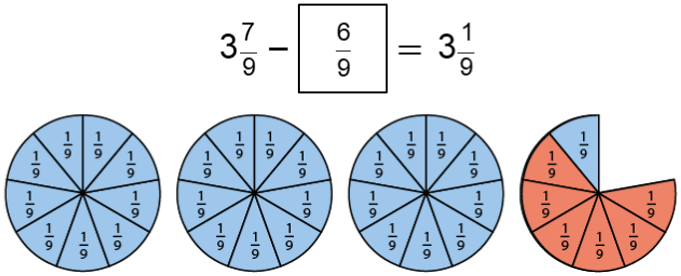
Fraction Notation Divided Equal Numerator Denominator Whole Parts Fraction Bar (Vinculum) Half Third Quarter Fifth Sixth Seventh Eighth Ninth Tenth One-_____ Number line Part-Part-Whole Model Units Previous Next Estimate Intervals Convert Improper Fractions Mixed Numbers Add Subtract (Minus)

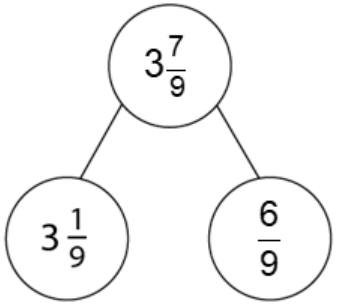
When subtracting fractions within one from a mixed number, we subtract the fraction to reveal the missing part. We can use a part-whole model to help represent this.

The total, or <u>whole</u>, is __. One part is __. The missing part is ___.



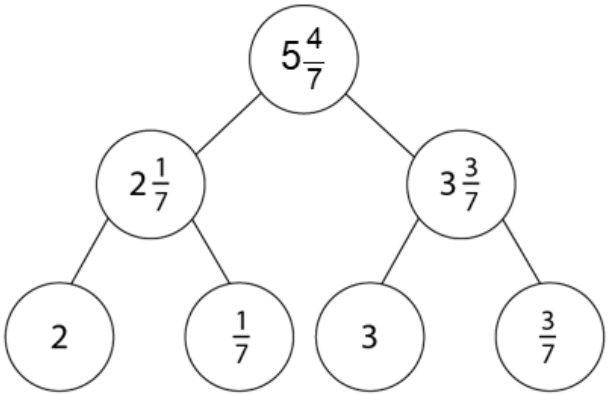






Representing addition and subtraction of mixed numbers and fractions within one, using a part-whole model can be helpful when problem solving.

The parts are __ and __. The total, or <u>whole</u>, is __.



Generalisations:

When adding fractions with the same denominator, just add the numerators.

When subtracting fractions with the same denominator, just subtract the numerators.

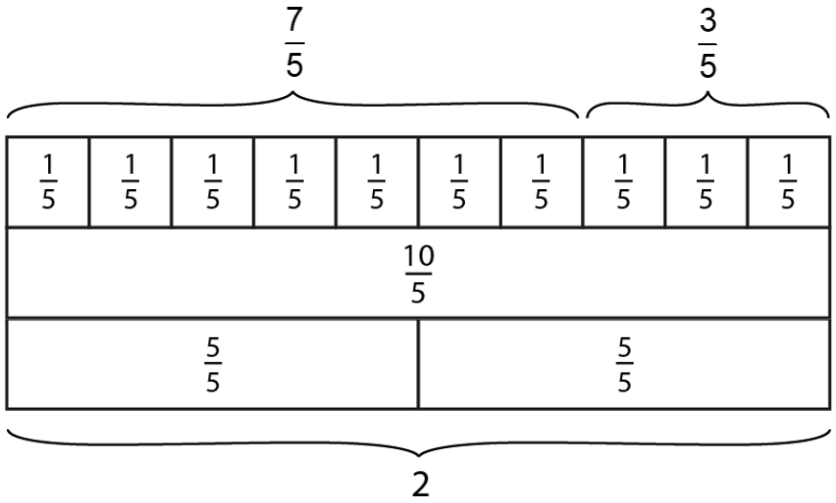
Fractions

Year 4

Add and Subtract Improper Fractions and Mixed Fractions (Same Denominator) (3)

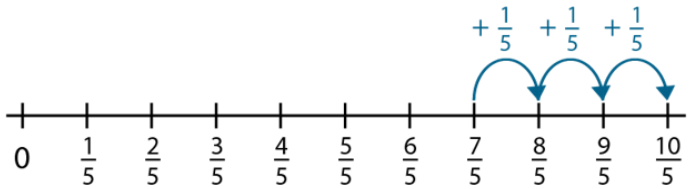
Vocabulary:

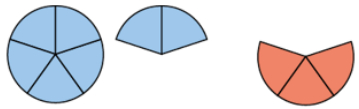
Fraction Notation Divided Equal Numerator Denominator Whole Parts Fraction Bar (Vinculum) Half Third Quarter Fifth Sixth Seventh Eighth Ninth Tenth One-_____ Number line Part-Part-Whole Model Units Previous Next Estimate Intervals Convert Improper Fractions Mixed Numbers Add Subtract (Minus)



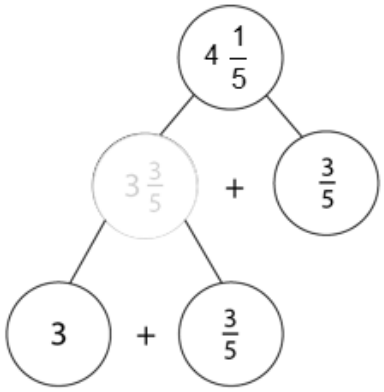
We can apply our understanding of unitising and converting between improper fractions and mixed numbers when adding improper fractions.

7 one-fifths and 3 one-fifths is equal to 10 one-fifths.



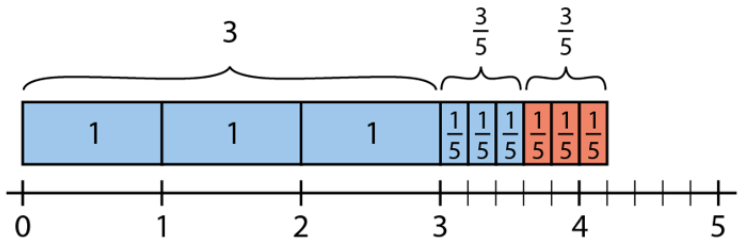


$\frac{7}{5} + \frac{3}{5} = \frac{10}{5} = 2$



Partitioning a mixed number and then adding the fractional parts is helpful when adding mixed numbers with fractions within one that result in bridging over a whole.

3 one-fifths and 3 one-fifths is equal to 6 one-fifths. This is equal to one whole and 1 one-fifth.



Fractions

Year 4

Add and Subtract Improper Fractions and Mixed Fractions (Same Denominator) (4)

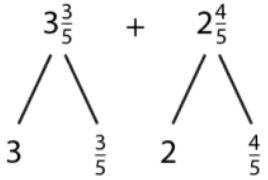
Vocabulary:

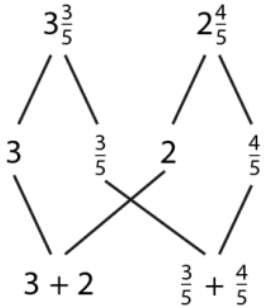
Fraction Notation Divided Equal Numerator Denominator Whole Parts Fraction Bar (Vinculum) Half Third Quarter Fifth Sixth Seventh Eighth Ninth Tenth One-_____ Number line Part-Part-Whole Model Units Previous Next Estimate Intervals Convert Improper Fractions Mixed Numbers Add Subtract (Minus) Aggregation Augmentation Reduction Partitioning Difference

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

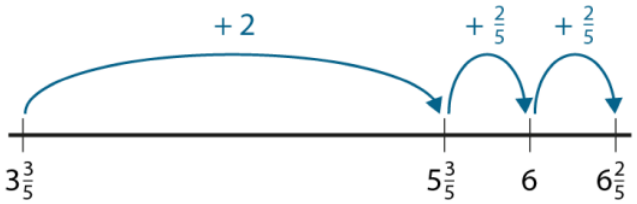
When adding two mixed numbers which bridge a whole, we can apply either a counting on (augmentation) or counting all (aggregation) strategy.

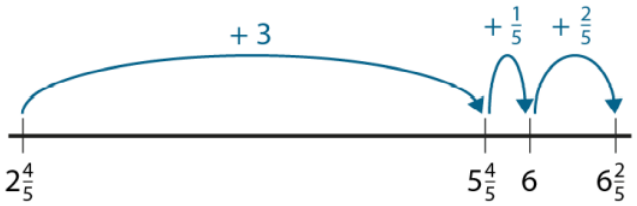
Counting all (aggregation) strategy.



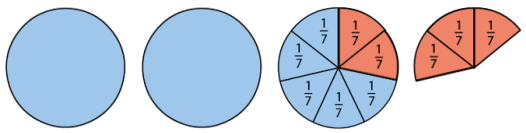


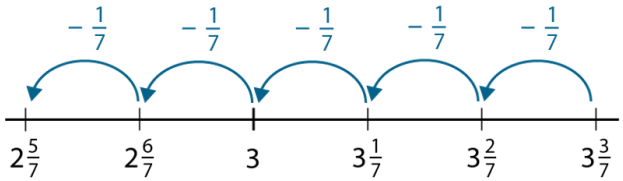
Counting on (augmentation) strategy.





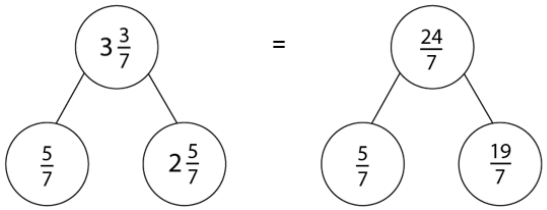
$3\frac{3}{7}-\frac{5}{7}$



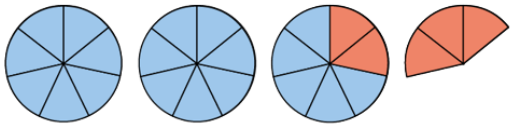


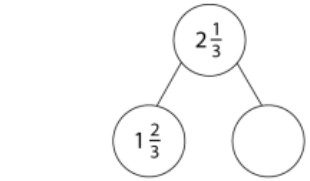
$5\frac{7}{5}$

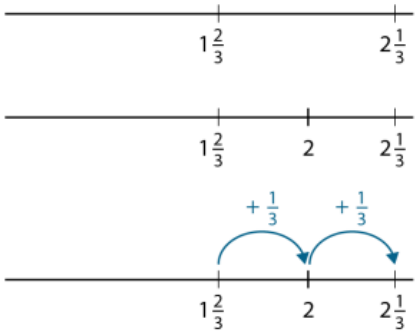
We can subtract a fraction from a mixed number with the same denominator using our awareness of converting between mixed numbers and improper fractions.



$3\frac{3}{7}-\frac{5}{7}=2\frac{5}{7}$







We can also subtract a fraction from a mixed number with the same denominator using our understanding of subtraction as finding the difference.