

WA5MNACN2

Calculating with number

Core + Challenge

NAPLAN-style

Adding and Subtracting Fractions — Marking Key

I can add and subtract fractions with the same denominator, using diagrams and number lines.

For tutors and parents. Award method marks for correct working even if the final answer is wrong.

Marks summary

A Warm up: 16 B Practise: 21 C Think it through: 10 D Challenge: 9 **Total: 56**

Gold shading in this key shows what the child should have shaded or drawn. Accept any correct arrangement unless the question fixes it.

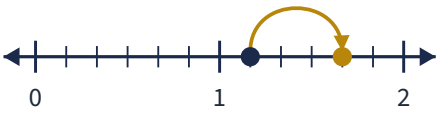
A

Warm up *answers*

/ 16 marks

Q	Answer	Model answer / notes	Marks
1	$\frac{5}{8}$	 3 + 2 = 5 parts of 8.	1
2	$\frac{4}{5}$	 1 + 3 = 4 parts of 5.	1
3	$\frac{5}{6}$	 2 + 3 = 5 parts of 6.	1
4	$\frac{9}{10}$	 4 + 5 = 9 parts of 10.	1
5	$\frac{4}{8}$	 7 - 3 = 4 parts of 8 are left. Accept $\frac{1}{2}$.	1
6	$\frac{1}{6}$	 5 - 4 = 1 part of 6 is left.	1
7	$\frac{3}{10}$	 9 - 6 = 3 parts of 10 are left.	1
8	$\frac{2}{5}$	 4 - 2 = 2 parts of 5 are left.	1

Adding and Subtracting Fractions · WA5MNACN2

Q	Answer	Model answer / notes	Marks
9	$\frac{5}{4} = 1\frac{1}{4}$	 Start at $\frac{3}{4}$ and jump forward 2 spaces. Accept $\frac{5}{4}$ or $1\frac{1}{4}$.	1
10	$\frac{2}{3}$	Start at $\frac{4}{3}$ and jump back 2 spaces.	1
11	$\frac{10}{6} = 1\frac{4}{6}$	 Start at $\frac{7}{6}$ and jump forward 3 spaces. Accept $\frac{10}{6}$ or $1\frac{4}{6}$ (or $1\frac{2}{3}$).	1
12	$\frac{5}{5} = 1$	Start at $\frac{9}{5}$ and jump back 4 spaces. Accept $\frac{5}{5}$ or 1.	1
13	$\frac{8}{9}$	$5 + 3 = 8$ ninths.	1
14	$\frac{7}{12}$	$11 - 4 = 7$ twelfths.	1
15	$\frac{6}{7}$	$2 + 2 + 2 = 6$ sevenths.	1
16	$\frac{5}{8}$	$1 = \frac{8}{8}$, and $8 - 3 = 5$ eighths.	1

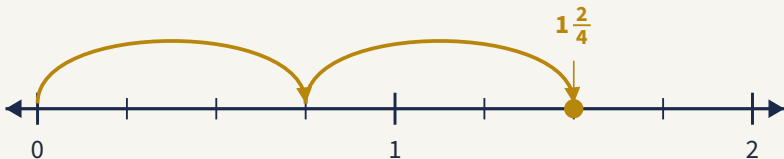
B

Practise *answers and working*

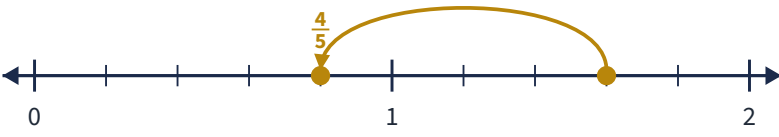
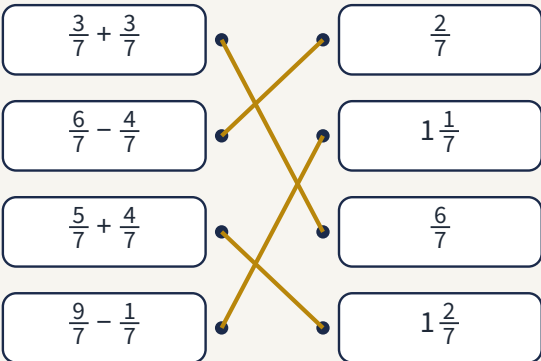
/ 21 marks

Q	Answer	Working / sample response	Marks
1	a) $\frac{5}{8}$ b) $\frac{3}{8}$	 a) $\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$. b) The whole pizza is $\frac{8}{8}$. $\frac{8}{8} - \frac{5}{8} = \frac{3}{8}$. <i>1 mark: 5 slices shaded.</i> <i>1 mark: $\frac{5}{8}$.</i> <i>1 mark: $\frac{3}{8}$.</i>	3

Adding and Subtracting Fractions · WA5MNACN2

Q	Answer	Working / sample response	Marks												
2	$\frac{9}{6} = 1\frac{3}{6}$	5 sixths + 4 sixths = 9 sixths = $\frac{9}{6}$. 6 sixths fill the first bar and 3 sixths are left: $1\frac{3}{6}$. 1 mark: $\frac{9}{6}$. 1 mark: $1\frac{3}{6}$ (accept $1\frac{1}{2}$).	2												
3	$\frac{6}{4} = 1\frac{2}{4}$ km	 $\frac{3}{4} + \frac{3}{4} = \frac{6}{4}$ km. $\frac{4}{4} = 1$, so $\frac{6}{4} = 1\frac{2}{4}$ km (or $1\frac{1}{2}$ km). 1 mark: two jumps of 3 quarters drawn. 1 mark: $1\frac{2}{4}$ km or $1\frac{1}{2}$ km.	2												
4	a) 3 b) 3 c) 2	a) $7 - 4 = 3$, so $\frac{3}{9} + \frac{4}{9} = \frac{7}{9}$. b) $8 - 5 = 3$, so $\frac{8}{10} - \frac{3}{10} = \frac{5}{10}$. c) $1 = \frac{5}{5}$, and $5 - 3 = 2$. 1 mark each.	3												
5	$\frac{5}{4}$ h, $\frac{8}{4} = 2$ h	<table><tr><th>Day</th><th>Time</th><th>Total so far</th></tr><tr><td>Monday</td><td>$\frac{3}{4}$</td><td>$\frac{3}{4}$</td></tr><tr><td>Tuesday</td><td>$\frac{2}{4}$</td><td>$\frac{5}{4}$</td></tr><tr><td>Wednesday</td><td>$\frac{3}{4}$</td><td>$\frac{8}{4} = 2$</td></tr></table> Tuesday: $\frac{3}{4} + \frac{2}{4} = \frac{5}{4}$ h ($1\frac{1}{4}$ h). Wednesday: $\frac{5}{4} + \frac{3}{4} = \frac{8}{4} = 2$ h. 1 mark each total. Accept mixed numerals.	Day	Time	Total so far	Monday	$\frac{3}{4}$	$\frac{3}{4}$	Tuesday	$\frac{2}{4}$	$\frac{5}{4}$	Wednesday	$\frac{3}{4}$	$\frac{8}{4} = 2$	2
Day	Time	Total so far													
Monday	$\frac{3}{4}$	$\frac{3}{4}$													
Tuesday	$\frac{2}{4}$	$\frac{5}{4}$													
Wednesday	$\frac{3}{4}$	$\frac{8}{4} = 2$													

Adding and Subtracting Fractions · WA5MNACN2

Q	Answer	Working / sample response	Marks
6	$\frac{4}{5}$ m	 $1\frac{3}{5} = \frac{8}{5}$. $\frac{8}{5} - \frac{4}{5} = \frac{4}{5}$ m. On the line: start at $1\frac{3}{5}$ and jump back 4 fifths. 1 mark: a correct method ($\frac{8}{5}$ or a jump back of 4 fifths). 1 mark: $\frac{4}{5}$ m.	2
7	a) $\frac{5}{8}$ b) $\frac{4}{3}$	a) ☐ $\frac{4}{8}$ ☒ $\frac{5}{8}$ ☐ $\frac{9}{8}$ ☐ $\frac{5}{16}$ b) ☐ $\frac{4}{6}$ ☒ $\frac{4}{3}$ ☐ $\frac{2}{3}$ ☐ $\frac{4}{9}$ a) $7 - 2 = 5$ eighths. b) $2 + 2 = 4$ thirds. The denominator stays 3 (not 6). 1 mark each.	2
8	$\frac{8}{10}$ L; $\frac{2}{10}$ L more	 $\frac{3}{10} + \frac{5}{10} = \frac{8}{10}$ L. $1 \text{ L} = \frac{10}{10} \text{ L}$, and $\frac{10}{10} - \frac{8}{10} = \frac{2}{10} \text{ L}$. 1 mark: bar shaded (3 J and 5 L). 1 mark: $\frac{8}{10}$ L. 1 mark: $\frac{2}{10}$ L.	3
9	See lines	 $\frac{3}{7} + \frac{3}{7} = \frac{6}{7}$; $\frac{6}{7} - \frac{4}{7} = \frac{2}{7}$; $\frac{5}{7} + \frac{4}{7} = \frac{9}{7} = 1\frac{2}{7}$; $\frac{9}{7} - \frac{1}{7} = \frac{8}{7} = 1\frac{1}{7}$. 2 marks: all four. 1 mark: two or three.	2

C

Think it through *sample answers and criteria*

/ 10 marks

Q	Answer	Working / sample response	Marks
1	No, $\frac{3}{5}$	The parts are all fifths, so the answer is still in fifths: 2 fifths + 1 fifth = 3 fifths = $\frac{3}{5}$. Sam added the denominators. $\frac{3}{10}$ is less than $\frac{2}{5}$, so it cannot be right. <i>1 mark: No / $\frac{3}{5}$.</i> <i>1 mark: explains the denominator stays the same (the size of the parts does not change).</i>	2
2	False	$\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$. It takes $\frac{8}{8}$ to make 1 whole, so $\frac{7}{8}$ is less than 1. <i>1 mark: False.</i> <i>1 mark: $\frac{7}{8}$ with the reason that $1 = \frac{8}{8}$.</i>	2
3	Sometimes	Always Sometimes Never $\frac{1}{6} + \frac{2}{6} = \frac{3}{6}$, which is less than 1. $\frac{5}{6} + \frac{2}{6} = \frac{7}{6}$, which is more than 1. So it is only sometimes true. <i>1 mark: Sometimes.</i> <i>1 mark: one example each way.</i>	2
4	$\frac{3}{9} + \frac{3}{9}$	$\frac{2}{9} + \frac{5}{9} = \frac{7}{9}$, $\frac{8}{9} - \frac{1}{9} = \frac{7}{9}$ and $\frac{10}{9} - \frac{3}{9} = \frac{7}{9}$. $\frac{3}{9} + \frac{3}{9} = \frac{6}{9}$, so it is the odd one out. <i>1 mark: $\frac{3}{9} + \frac{3}{9}$.</i> <i>1 mark: shows the other three all equal $\frac{7}{9}$.</i>	2
5	$\frac{6}{7}$ needs only $\frac{1}{7}$ to make 1	$\frac{6}{7}$ is only $\frac{1}{7}$ away from 1 whole ($\frac{7}{7}$). $\frac{5}{7}$ is more than $\frac{1}{7}$, so the total must go past 1. <i>1 mark: links $\frac{6}{7}$ to 1 (needs one more seventh).</i> <i>1 mark: explains $\frac{5}{7} > \frac{1}{7}$, so the sum is more than 1.</i>	2

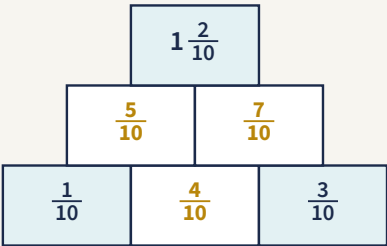
D

Challenge *solutions and criteria*

/ 9 marks

Q	Answer	Working / sample response	Marks
1	$\frac{1}{8} + \frac{6}{8}, \frac{2}{8} + \frac{5}{8}, \frac{3}{8} + \frac{4}{8}$	The numerators must add to 7: 1 + 6, 2 + 5, 3 + 4. Going up from 1 in order, the next one (4 + 3) repeats a pair, so there are only 3 pairs. <i>2 marks: all three pairs (1 mark for two).</i> <i>1 mark: a systematic reason.</i>	3

Adding and Subtracting Fractions · WA5MNACN2

Q	Answer	Working / sample response	Marks
2	$\frac{2}{4}$ L (or $\frac{1}{2}$ L)	$2 \text{ L} = \frac{8}{4} \text{ L}$. Morning and lunch: $\frac{3}{4} + \frac{2}{4} = \frac{5}{4} \text{ L}$. $\frac{8}{4} - \frac{5}{4} = \frac{3}{4} \text{ L}$ was left after lunch. $\frac{3}{4} - \frac{1}{4} = \frac{2}{4} \text{ L}$ drunk in the afternoon. 1 mark: $2 \text{ L} = \frac{8}{4} \text{ L}$. 1 mark: $\frac{5}{4} \text{ L}$ drunk by lunch or $\frac{3}{4} \text{ L}$ left after lunch. 1 mark: $\frac{2}{4} \text{ L}$ (accept $\frac{1}{2} \text{ L}$).	3
3	Bottom middle $\frac{4}{10}$; middle row $\frac{5}{10}, \frac{7}{10}$	 The top is $1 \frac{2}{10} = \frac{12}{10}$. Call the bottom middle block ?. The middle blocks are $\frac{1}{10} + ?$ and $? + \frac{3}{10}$. Together they make $\frac{12}{10}$: $\frac{1}{10} + \frac{3}{10} + ? + ? = \frac{12}{10}$, so $? + ? = \frac{8}{10}$ and $? = \frac{4}{10}$. Middle row: $\frac{1}{10} + \frac{4}{10} = \frac{5}{10}$ and $\frac{4}{10} + \frac{3}{10} = \frac{7}{10}$. Check: $\frac{5}{10} + \frac{7}{10} = \frac{12}{10}$. 1 mark each correct block (bottom middle, then both middle blocks). Accept trial and improvement.	3