

Example Arithmetic Materials – Year 6

(Please note that due to the volume of materials, the published mark schemes and diagnostic commentaries will be in separate guides.)

Mark scheme for Arithmetic booklet

1

PoS
F

Add and subtract fractions with the same denominator

1m

Award **1 mark** for:

► $\frac{6}{7}$

Accept:

► equivalent fractions

Diagnostic commentary

► $\frac{2}{7} + \frac{4}{7} = \frac{6}{7}$

Correct

1 mark – 92%

Overview of performance

This question assesses pupils' ability to add and subtract fractions with the same denominator. Pupils across all achievement groups performed well including the lower achieving (LA) pupils of whom more than three-quarters scored a mark. This shows that pupils are generally confident with adding and subtracting fractions with the same denominator and recognise that the denominator in the answer should stay the same. Higher achieving (HA) and middle achieving (MA) pupils made no common errors.

Lower achieving pupils

1 mark – 80%

$\frac{6}{14}$ (10%)

Pupils who responded $\frac{6}{14}$ added the denominators together as well as the numerators.

This error suggests that these pupils have a lack of understanding of what the denominator represents in a fraction and possibly an overall lack of understanding of the concept of fractions. Thus pupils would benefit from a focus on simple fraction topics, perhaps using concrete materials to represent and add fractions.

II 2

PoS C Divide numbers up to 4 digits by a one-digit number using the formal written method of short division and interpret remainders appropriately for the context

1m Award **1 mark** for:
 ➤ 68

Diagnostic commentary

➤ 544 ÷ 8 = **68**

Correct 1 mark – 60%

Overview of performance This question assesses pupils’ ability to divide a three-digit number by a one-digit number. MA and HA pupils performed well on this question but LA pupils found it difficult. This is supported by the high omission rates of LA pupils of whom nearly a third omitted the question. No common errors were identified for any group of pupils but differences in the way pupils approached the question were apparent.

Short division method
 Short division was the most popular method used across all achievement groups. However, whilst more than 90 per cent of HA pupils and nearly 90 per cent of MA pupils used this method, the proportion of LA pupils using this method was less than 50 per cent. Additionally, for all achievement groups, short division was also found to be the most accurate method to use, with a higher proportion of pupils getting the answer correct with this method than with any other method used. However, despite short division being the most accurate method, two-thirds of LA pupils who used this method got the wrong answer. This suggests that not only do LA pupils need to be encouraged to use short division more, but that they also need to practise this method in order to minimise errors.

Lower achieving pupils 1 mark – 16%

Short division method and correct (14%)
Short division method and incorrect (30%)
Other method and correct (<1%)
Other method and incorrect (9%)
No method and correct (1%)
No method and incorrect (13%)
Omitted (32%)

No method
 More than 10 per cent of LA pupils did not show any working and the success rate for these pupils was low. Pupils should be encouraged to show working as part of good maths practice. It enables clearer mathematical thinking, makes calculations more logical and helps answers to be checked. Setting out working is more likely to lead to a correct answer than having no working at all.
 This was a one-mark question but evidence of appropriate methodology may gain pupils credit when attempting two- or three-mark questions.

Middle achieving pupils 1 mark – 67%

Short division method and correct (63%)
Short division method and incorrect (23%)
Other method and correct (4%)
Other method and incorrect (5%)
No method and correct (<1%)
No method and incorrect (2%)
Omitted 4%

Higher achieving pupils	1 mark – 90%
	Short division method and correct (85%) Short division method and incorrect (8%) Other method and correct (4%) Other method and incorrect (1%) No method and correct (1%) No method and incorrect (<1%) Omitted (<1%)

3	PoS C	<i>Add and subtract whole numbers with more than 4 digits, including using formal written methods (columnar addition and subtraction)</i>

4	PoS F	<i>Multiply one-digit numbers with up to two decimal places by whole numbers</i>