2017 national curriculum tests

Key stage 2

Mathematics

Paper 1: arithmetic

First name						
Middle name						
Last name						
Date of birth	Day		Month		Year	
School name						
DfE number						

Please note that these worked solutions have neither been provided nor approved by the Standards and Testing Agency and may not necessarily constitute the only possible solutions. Please refer to the original mark schemes for full guidance.

Any writing in blue indicates what must be written in order to answer the questions and get the marks. The worked solutions have been designed to show the smallest amount of work which needs to be done to answer the question.

Anything written in green in a cloud doesn't have to be written in the exam.

Anything written in orange in a rectangle doesn't have to be written in the exam and is there to show what should be put into a calculator or measured using a ruler or protractor.

If you find any mistakes or have any requests or suggestions, please send an email to curtis@cgmaths.co.uk

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Instructions

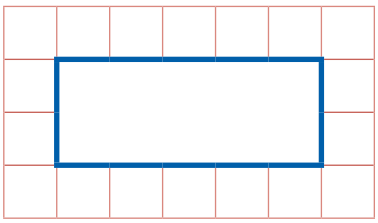
You **must not** use a calculator to answer any questions in this test.

Questions and answers

You have **30 minutes** to complete this test.

Work as quickly and as carefully as you can.

Put your answer in the box for each question.



All answers should be given as a single value.

For questions expressed as common fractions or mixed numbers, you should give your answers as common fractions or mixed numbers.

If you cannot do a question, **go on to the next one**.
You can come back to it later, if you have time.

If you finish before the end, **go back and check your work**.

Marks

The number under each box at the side of the page tells you the maximum number of marks for each question.

In this test, long division and long multiplication questions are worth **TWO marks each**. You will be awarded **TWO** marks for a correct answer. You may get **ONE** mark for showing a formal method.

All other questions are worth **ONE mark each**.

1 40 + 1,000 =

```
  1000
+   40
------
  1040
```

1040

1 mark

2 707 + 1,818 =

```
  707
+1818
-----
 2525
```

2525

1 mark

3 $\frac{4}{6} + \frac{3}{6} =$

As the denominators are the same, we can add the numerators. 4 + 3 = 7. The denominator stays the same

$\frac{7}{6}$

1 mark

4 $505 \div 1 =$

Anything divided by 1 is itself

505

1 mark

5 $345 - 60 =$

$$\begin{array}{r} 345 \\ -\ 60 \\ \hline 285 \end{array}$$

285

1 mark

6 $2.7 + 3.014 =$

$$\begin{array}{r} 2.7 \\ +\ 3.014 \\ \hline 5.714 \end{array}$$

5.714

1 mark

7 5100 = 4,500 + 600

```
  4500
+  600
  5100
```

1 mark

8 8 × 33 =

```
   33
 x  8
 264
```

264

1 mark

9 72 ÷ 9 =

9 x 8 = 74

8

1 mark

10 $167 \times 4 =$

$$\begin{array}{r} 167 \\ \times \quad 4 \\ \hline 668 \\ {\scriptstyle 2}\quad{\scriptstyle 2} \end{array}$$

668

1 mark

11 $4{,}912 - 824 =$

$$\begin{array}{r} 4\,{}^{8}\!\not{9}\,{}^{10}\!\not{1}\,{}^{1}2 \\ -\quad 824 \\ \hline 4088 \end{array}$$

4088

1 mark

12 $\frac{62}{100} - \frac{38}{100} =$

$$\begin{array}{r} {}^{5}\!\not{6}\,{}^{1}2 \\ -\ 38 \\ \hline 24 \end{array}$$

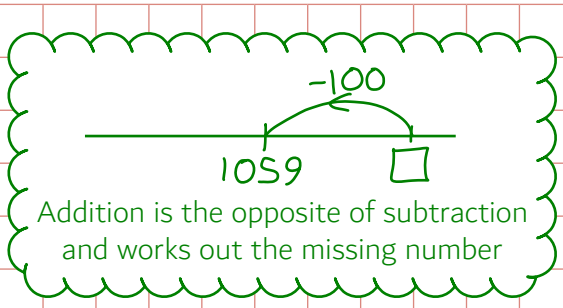
As the denominators are the same, we can subtract the numerators. The denominator stays the same. There is no need to simplify the fraction

$\frac{24}{100}$

1 mark

13 1159 – 100 = 1,059

$$\begin{array}{r} 1059 \\ +\ 100 \\ \hline 1159 \end{array}$$



1 mark

14 $50 + (36 \div 6) =$

BIDMAS so the brackets need to be done first. 36 ÷ 6 = 6. 50 + 6 + 56

56

1 mark

15 $\frac{4}{6} \times \frac{3}{5} =$

Multiply the numerators together and the denominators together. 4 x 3 = 12. 6 x 5 = 30

There is no need to simplify the fraction

$\frac{12}{30}$

1 mark

16 $30 \times 40 =$

$$\begin{array}{r} 30 \\ \times 40 \\ \hline 00 \\ 1200 \\ \hline 1200 \end{array}$$

1200

1 mark

17 $581 \div 7 =$

$$7\overline{)581} = 83$$

83

1 mark

18 $0.04 \div 10 =$

Move the decimal place once to the left

0.004

1 mark

19 $2{,}345 \times 1{,}000 =$

As 2345 is a whole number, we can add 3 0s to multiply by 1000

2345000

1 mark

20 $1\,7 \overline{)\,7\,1\,3^{3}4}$ $\quad 4\,2$

17,34,51,68,85

Show your method

42

2 marks

21 9 – 3.45 =

$$\begin{array}{r} 8\,9\,{}^{9}.\,{}^{1}0\,{}^{1}0 \\ -\ 3.4\,5 \\ \hline 5.5\,5 \end{array}$$

9.00 is the same as 9 but changing to this enables us to do the subtraction

5.55

1 mark

22 4781 × 23

Show your method

$$\begin{array}{r} 4\,7\,8\,1 \\ \times\quad 2\,3 \\ \hline 1\,4\,{}^{3}3\,4\,3 \\ 9\,{}^{2}5\,{}^{2}6\,2\,0 \\ \hline 1\,0\,{}^{1}9\,9\,6\,3 \end{array}$$

109963

2 marks

23

$\frac{3}{4} \times 2 \; \frac{3}{8} =$

$\frac{6}{8} - \frac{3}{8}$

A common multiple of 4 and 8 is 8 so change the denominators to 8 by converting 3/4 to an equivalent fraction of 6/8. As the denominators are the same we can subtract the numerators and keep the denominators the same

$\frac{3}{8}$

1 mark

24

$$\begin{array}{r} 418 \\ \times \quad 46 \\ \hline 2508 \\ 16720 \\ \hline 19228 \end{array}$$

Show your method

19228

2 marks

25 $37.8 - 14.671 =$

$$\begin{array}{r} 3\,7.\,^{7}8\,^{1}0\,^{1}0 \\ -\;1\,4.6\,7\,1 \\ \hline 2\,3.1\,2\,9 \end{array}$$

37.800 has the same value as 37.8 but enables us to do the subtraction

23.129

1 mark

26 $\frac{1}{4} + \frac{1}{5} + \frac{1}{10} =$

$\frac{5}{20} + \frac{4}{20} + \frac{2}{20}$

20 is a common denominator of 4, 5 and 10. Now the denominators are the same, the numerators can be added

$\frac{11}{20}$

1 mark

27 $\frac{4}{5} \div 4 =$

Multiplying the denominator by 4 effectively divides is by 4.
5 x 4 = 20

There is no need to simplify the fraction

$\frac{4}{20}$

1 mark

28 $\frac{5}{8} \div 2 =$

Multiplying the denominator by 2 effectively divides is by 2.
8 x 2 = 16

$\frac{5}{16}$

1 mark

29 45% of 460 =

$$\begin{array}{r} 4.6 \\ \times\ 45 \\ \hline 23.0 \\ 184.0 \\ \hline 207.0 \end{array}$$

Divide 460 by 100 (move the decimal place twice to the left) to find 1%.
Then multiply by 45 to find 45%

207

1 mark

30 $2\frac{1}{3} + \frac{5}{6} =$

$\frac{7}{3} \times 2 + \frac{5}{6}$ $\quad \frac{14}{6} + \frac{5}{6}$

6 is a common denominator of 3 and 6 so convert 7/3 to the equivalent fraction of 14/6

Convert the mixed fraction by multiplying the whole number by the denominator then adding the result to the numerator.
2 x 3 = 6
1 + 6 = 7

$\frac{19}{6}$

1 mark

31 7% of 500 =

Divide 500 by 100 (remove both 0s) to find 1% then multiply by 7 to find 7%. 5 x 7 = 35

35

1 mark

32 $\frac{2}{6} \times \frac{8}{8} - \frac{1}{8} \times \frac{6}{6} =$

$\frac{16}{48} - \frac{6}{48}$

48 is a common denominator of 6 and 8. Once we have the same denominator, the numerators can be subtracted

$\frac{10}{48}$

1 mark

33 $0.9 \times 200 =$

$$\begin{array}{r} 200 \\ \times\ 0.9 \\ \hline 180.0 \\ 000.0 \\ \hline 180.0 \end{array}$$

180

1 mark

34 $15\% \times 1{,}000 =$

Divide 1000 by 100 (remove 2 0s) to find 1% then multiply by 15 to find 15%. 10 x 15 = 150

150

1 mark

35 $1\frac{1}{2} \times 57 =$

$$\begin{array}{r} 28.5 \\ 2\overline{)57'7.'0} \end{array}$$

$$\begin{array}{r} 57 \\ +\ 28.5 \\ \hline 85.5 \end{array}$$

Adding 1/2 a lot of 57 to 1 lot of 57 finds $1^{1}/_{2}$ lots of 57

Dividing by 2 finds 1/2 x 57. The remainder of 1 from 2s into 17 carries onto the next place, where we can add a 0 after the decimal place

85.5

1 mark

36 Show your method

$$\begin{array}{r} 38 \\ 59\overline{)2247^{47}2} \end{array}$$

59, 118, 177, 236, 295, 354, 413, 472

38

2 marks

[END OF TEST]

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