2019 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						

.CG Maths.
Worked Solutions

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

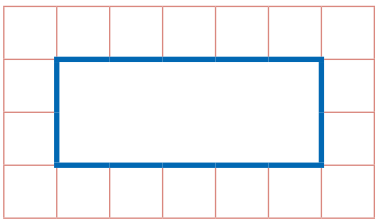
You **must not** use a calculator to answer any questions in this test.

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 number of marks available for each question.

In this test, long division and long multiplication questions are worth **2 marks each**. You will be awarded **2** marks for a correct answer.
You may get **1** mark for showing a formal method.

All other questions are worth **1 mark each**.

1 $\boxed{6090}$ = 6,000 + 90

$$\begin{array}{r} 6000 \\ +\quad 90 \\ \hline 6090 \end{array}$$

1 mark

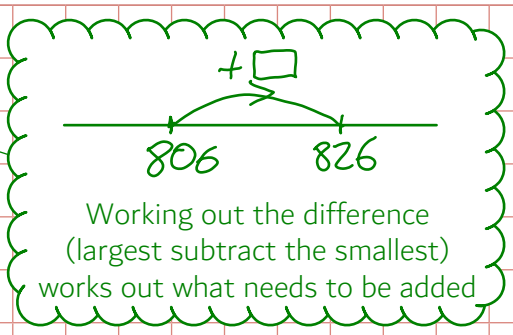
2 $\boxed{8357}$ = 8,275 + 82

$$\begin{array}{r} 8275 \\ +\quad 82 \\ \hline 8357 \end{array}$$

1 mark

3 826 = 800 + $\boxed{20}$ + 6

$$\begin{array}{r} 800 \\ +\quad 6 \\ \hline 806 \end{array} \qquad \begin{array}{r} 826 \\ -\ 806 \\ \hline 20 \end{array}$$

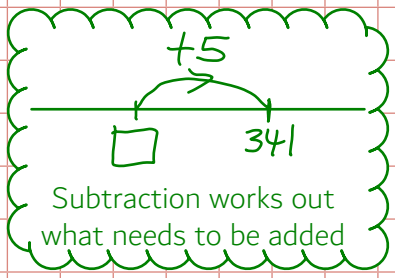


Addition can be done in any order

1 mark

4 $\boxed{336} + 5 = 341$

$$\begin{array}{r} 3\,{}^{3}\cancel{4}\,{}^{1}1 \\ -\quad\;\; 5 \\ \hline 336 \end{array}$$



1 mark

5 $9 \times 41 =$

$$\begin{array}{r} 41 \\ \times\quad 9 \\ \hline 369 \end{array}$$

$\boxed{369}$

1 mark

6 $5.87 + 3.123 =$

$$\begin{array}{r} 5.87 \\ +\,3.123 \\ \hline 8.993 \end{array}$$

$\boxed{8.993}$

1 mark

7 180 ÷ 3 =

```
    60
3 | 180
```

60

1 mark

8 120 ÷ 12 =

```
     10
12 | 120
```

10

1 mark

9 213 × 0 =

Anything multiplied by 0 is 0

0

1 mark

10 91 ÷ 7 =

$$\begin{array}{r} 13 \\ 7\overline{)91} \end{array}$$

13

1 mark

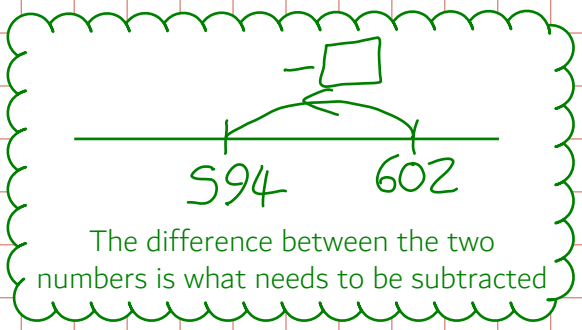
11 22 = 87 − 65

$$\begin{array}{r} 87 \\ -\ 65 \\ \hline 22 \end{array}$$

1 mark

12 602 − 8 = 594

$$\begin{array}{r} \cancel{6}^{5}\,\cancel{0}^{1}{}^{1}2 \\ -\ 594 \\ \hline 008 \end{array}$$



1 mark

13 1,210 ÷ 11 =

```
      1 1 0
1 1 | 1 2 1 0
```

$\boxed{110}$

1 mark

14 25.34 × 10 =

2534

Move the decimal place once to the right to multiply by 10

$\boxed{253.4}$

1 mark

15 60 ÷ (30 − 24) =

```
  ²3¹0        1 0
− 2 4      6 | 6 0
    6
```

BIDMAS - Brackets need to be resolved first

$\boxed{10}$

1 mark

16 $3^3 =$

3 x 3 x 3
3 x 3 = 9
9 x 3 = 27

27

1 mark

17 101 × 1,000 =

Multiplying by 1000 is multiplying by 10 three times. Add three zeros as 101 is a whole number

101000

1 mark

18 20% of 3,000 =

10% is 300

10% is equivalent to the fraction 1/10. To find this, we divide 3000 by 10. To divide by 10, we can remove one of the zeros.

$$\begin{array}{r} 300 \\ \times \quad 2 \\ \hline 600 \end{array}$$

600

1 mark

19 7 − 2.25 =

$$\begin{array}{r} 7.00 \\ -\ 2.25 \\ \hline 4.75 \end{array}$$

7.00 is the same as 7. Adding the zeros makes the same number of decimal places as the 2.25

4.75

1 mark

20 0.9 ÷ 100 =

0.009

Dividing by 100 is dividing by 10 twice. Move the decimal place two times to the left

0.009

1 mark

21 9 − 1.9 =

$$\begin{array}{r} 9.0 \\ -\ 1.9 \\ \hline 7.1 \end{array}$$

9.0 is the same as 9. Adding the zero makes the same number of decimal places as the 1.9

7.1

1 mark

22

$1\frac{3}{7} - \frac{4}{7} =$

$\frac{10}{7} - \frac{4}{7}$

There are 7 sevenths in 1.
7/7 + 3/7 = 10/7
Or: multiply the 1 by the denominator then add the result to the numerator to get 10/7

Subtract the numerators as the denominators are the same.
10 - 4 = 6
The denominator stays as 7

$\boxed{\frac{6}{7}}$

1 mark

23

Show your method

$$\begin{array}{r} 836 \\ \times\ 27 \\ \hline 5852 \\ 16720 \\ \hline 22572 \end{array}$$

Remember to add a zero for the second line

$\boxed{22572}$

2 marks

24

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

$\frac{4}{20} + \frac{15}{20}$

Make the denominators the same. The lowest common multiple of 5 and 4 is 20 so 20 is a common denominator. As you multiply the 5 in 1/5 by 4 to get 20, you have to multiply the numerator (1) by 4 as well and get 4. As you multiply the 4 in 3/4 by 5 to get 20, you have to multiply the numerator (3) by 5 as well and get 15. Then once the numerators are the same, simply add the numerators (4 + 15 = 19) and keep the denominator as 20

$\boxed{\frac{19}{20}}$

1 mark

25

$$\begin{array}{r} 24 \\ 37\overline{)88^{14}8} \end{array}$$

37 doesn't go into 8 so carry the 8 to the next 8 to make 88. 37 goes into 88 2 times with a remainder of 14 (as 2 x 37 = 74 and 88 is 14 bigger than 74). Carry the 14 onto the next 8 to make 148. 37 goes into 148 4 times with no remainder

Show your method

37
74
111
148

List out the 37 times table until you reach a number bigger than the one you are trying to go into. This allows us to see how many 37s go into the number

$\boxed{24}$

2 marks

26 $1\frac{1}{5} + 2\frac{1}{10} =$

$\frac{6}{5} + \frac{21}{10}$

Convert the mixed numbers into improper fractions by multiplying the whole number by the denominator then adding the result to the numerator

$\frac{12}{10} + \frac{21}{10}$

Make the denominators the same by finding a common denominator. As we multiply the 5 in 6/5 by 2, we need to multiply the numerator by 2 as well.
6 x 2 = 12

$\boxed{\frac{33}{10}}$

1 mark

27 35% of 320 =

10% is 32
30% is 96
5% is 16

10% is 1/10 and to find this we divide 320 by 10. Remove the zero to divide by 10. 30% is 3 times 10% so 32 x 3 = 96. 5% is half of 10% so half of 32 is 16. Adding 30% and 5% gives 35%

$$\begin{array}{r} 96 \\ +\ 16 \\ \hline 112 \end{array}$$

$\boxed{112}$

1 mark

28 $\frac{8}{9} - \frac{1}{4} =$

$\frac{8 \times 4}{9 \times 4} = \frac{32}{36}$

$\frac{1 \times 9}{4 \times 9} = \frac{9}{36}$

Make the denominators the same by multiplying both to get 36. Whatever the denominator is multiplied by, the numerator has to be multiplied by the same to keep it equivalent.

$\frac{32}{36} - \frac{9}{36}$

Keep the denominator the same and subtract the numerators.
32 - 9 = 23

$\boxed{\frac{23}{36}}$

1 mark

29 51% of 900 =

50% is 450
1% is 9

50% as a fraction is 1/2. Half of 900 is 450. 1% is 1/100. To find this, divide 900 by 100 (remove 2 zeros). 51% is 50% + 1% so 450 + 9 = 459

459

1 mark

30

$$\begin{array}{r} 3468 \\ \times\ 62 \\ \hline 6936 \\ 208080 \\ \hline 215016 \end{array}$$

Show your method

215016

2 marks

31 $\frac{2}{3} \div 3 =$

Multiply the denominator by 3 as this makes it 3 times smaller, basically dividing by 3. 3 x 3 = 9

$\boxed{\frac{2}{9}}$

1 mark

32 $2\frac{1}{2} - \frac{3}{4} =$

$\frac{5}{2} - \frac{3}{4}$

Convert the mixed fraction to an improper fraction by multiplying the whole number by the denominator then adding the result to the numerator

$\frac{10}{4} - \frac{3}{4}$

Once the denominators are the same, the numerators can be subtracted. 4 is a common denominator so multiply the numerator and denominator by 2 in 5/2 to get 10/4

$\boxed{\frac{7}{4}}$

1 mark

33 36% of 450 =

1 % is 4.5

1% as a fraction is 1/100. To find this fraction of 450, divide 450 by 100. To divide by 100, move the decimal place twice to the left.

$$\begin{array}{r} 4.5 \\ \times\ 36 \\ \hline 27.0 \\ 135.0 \\ \hline 162.0 \end{array}$$

36% is 36 x 1%

162

1 mark

34 $1\frac{3}{4} \times 10 =$

$\frac{7}{4} \times 10$

Convert the mixed fraction into a improper fraction by multiplying the whole number by the denominator then adding the result to the numerator. Then multiply the numerator by 10.
7 x 10 = 70

No need to simplify the answer as it does not ask to do this. However equivalent fractions such as 35/2 are accepted

$\frac{70}{4}$

1 mark

35

$\frac{5}{6} \times 540 =$

$$\begin{array}{r} 90 \\ 6\overline{)540} \end{array}$$

Find 1/6 x 540 by dividing by 6

$$\begin{array}{r} 90 \\ \times \quad 5 \\ \hline 450 \end{array}$$

5/6 is 1/6 x 5

$\boxed{450}$

1 mark

36

$$\begin{array}{r} 97 \\ 83\overline{)805^{58}1} \end{array}$$

83, 166, 249, 332, 415, 498, 581, 664, 747, 830

Show your method

83 doesn't go into 8 so carry the 8 onto the 0 to get 80. 83 doesn't go into 80 so carry the 80 onto the 5 to make 805. 83 goes into 805 9 times with a remainder of 58 (as 805 - 747 = 58). Carry the 58 onto the 1 to make 581. 83 goes into 581 7 times with no remainder

$\boxed{97}$

2 marks

[END OF TEST]

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