2022 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

.CG Maths.

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Instructions

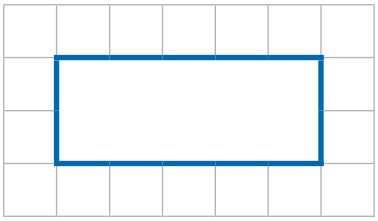
You **must not** use a calculator to answer any questions in this test.

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 answer as a common fraction, a mixed number or a whole number as appropriate.

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 6,155 + 501 + 649 =

```
  6155
+  501
+  649
  7305
  1 1
```

All three numbers can be added at the same time. Ensuring that the units place of each number is in the same column

7305

1 mark

2 0 × 989 =

Anything multiplied by 0 is 0

0

1 mark

3 10 + 292 = 302

```
  ²3¹02
−   10
  292
```

Working out the difference between 302 and 10 works out what needs to be added to 10 to get 302

1 mark

4 2,400 ÷ 2 =

```
  1200
2|2400
```

1200

1 mark

5 415 + 70 = 485

```
  485
-  70
  415
```

1 mark

6 6.48 + 8.6 =

```
  6.48
+ 8.6
  15.28
```

Ensuring that the decimal point is in the same column for both numbers when adding. Where there is nothing in the hundredths place for the 8.6, this can be considered as a 0

15.28

1 mark

7 30 = 240 ÷ 8

```
  030
8 |240
```

1 mark

8 840 ÷ 5 =

```
  168
5 |840
```

168

1 mark

9 7,306 – 1,847 =

```
  6 12 9
  7 3 10 6
– 1 8 4 7
  5 4 5 9
```

5459

1 mark

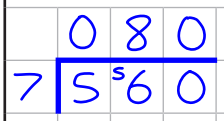
10 1,010 × 10 =

Multiplying a whole number by 10 adds one 0 on the end as this moves all the digits up a decimal place, making them worth 10 times more

10100

1 mark

11 560 ÷ 7 =



80

1 mark

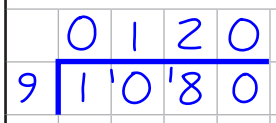
12 6 × 10 × 11 =

Multiplication can be done in any order.
6 x 11 = 66
66 x 10 = 660

660

1 mark

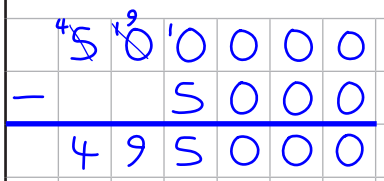
13 1,080 ÷ 9 =



120

1 mark

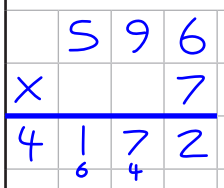
14 500,000 – 5,000 =



495000

1 mark

15 4172 = 596 × 7



1 mark

16 $2.12 \div 10 =$

Moving the decimal point once to the left divides by 10

0.212

1 mark

17 Show your method

$$\begin{array}{r} 0\,3\,2 \\ 21\overline{)\,6^{6}7^{4}2} \end{array}$$

4 2

6 3

8 4

32

2 marks

18 $\frac{4}{9} + \frac{2}{3} =$

$\frac{4}{9} + \frac{6}{9}$

The denominators need to be the same so that the fractions can be added. Multiplying the numerator and denominator of 2/3 by 3 converts it into 6/9. Then the numerators can be added and the denominator stays the same

$\frac{10}{9}$

1 mark

19 Show your method

$$\begin{array}{r} 607 \\ \times \quad 83 \\ \hline 1821 \\ 48560 \\ \hline 50381 \end{array}$$

Remember to add a 0 on the second row to multiply it all by 10 as 80 is 10 times greater than 8

50381

2 marks

20 $13.05 \times 1{,}000 =$

Multiplying by 1000 is multiplying by 10 3 times.
Moving the decimal point 3 times to the right does this

13050

1 mark

21 $\frac{2}{3} + 2\frac{1}{3} =$

2/3 + 1/3 = 3/3 = 1. Then adding this 1 to the 2 gives 3

3

1 mark

22 $\frac{7}{10}$ of 30 =

First working out 1/10 of 30 by dividing 30 by 10. 30/10 = 3.
Then finding 7/10 by multiplying the result by 7. 3 x 7 = 21

21

1 mark

23 $8 - 5.123 =$

$$\begin{array}{r} 7\ 8.{}^{9}0{}^{9}0\ {}^{1}0 \\ -\ 5.1\ 2\ 3 \\ \hline 2.8\ 7\ 7 \end{array}$$

8.000 is the same as 8. Adding 0s after the 8 makes the subtraction easier

2.877

1 mark

24 $\frac{1}{8} \div 2 =$

Multiplying the denominator by 2 has the effect of dividing by 2

$\frac{1}{16}$

1 mark

25 $\frac{1}{2} + \frac{1}{3} =$

$\frac{3}{6} + \frac{2}{6}$

The denominators need to be the same so that the fractions can be added. Multiplying the numerator and denominator of 1/2 by 3 converts it into 3/6 and multiplying the numerator and denominator of 1/3 by 2 converts it into 2/6. Then the numerators can be added and the denominator stays the same

$\frac{5}{6}$

1 mark

26 26 – 2.012 =

$$\begin{array}{r} 2\,{}^{5}6.{}^{9}0\,{}^{9}0\,{}^{1}0 \\ -\quad 2.0\,1\,2 \\ \hline 2\,3.9\,8\,8 \end{array}$$

26.000 is the same as 26. Adding 0s after the 26 makes the subtraction easier

23.988

1 mark

27 15% of 3,200 =

$$\begin{array}{r} 1\,6\,0 \\ 2\overline{)\,3\,{}^{1}2\,0} \\ 4\,8\,0 \end{array}$$

10% + 5% = 15%. 10% can be found by dividing 3200 by 10, which is 320. 5% is half of 10% so dividing 320 by 2 works out 5%. Adding 160 to 320 works out 15% of 3200

480

1 mark

28 2% of 3,000 =

$$\begin{array}{r} 30 \\ \times\ \ 2 \\ \hline 60 \end{array}$$

1% x 2 = 2%. 1% can be found by dividing 3000 by 100, which is 30. Multiplying 30 by 2 works out 2% of 3000

60

1 mark

29 Show your method

$$\begin{array}{r} 0042 \\ 73 \overline{)\,3^{3}0^{30}6^{14}6} \\ 146 \\ 219 \\ 292 \\ 365 \end{array}$$

Listing out the 73 times table and using short division

2 marks

30 80% of 115 =

$$\begin{array}{r} 1\ 1.5 \\ \times\quad\ 8 \\ \hline 9\ 2.0 \end{array}$$

10% x 8 = 80%. 10% can be found by dividing 115 by 10, which is 11.5. Multiplying this by 8 finds 80% of 115

92

1 mark

31 $\frac{2}{7} - \frac{1}{9} =$

$\frac{18}{63} - \frac{7}{63}$

The denominators need to be the same so that the fractions can be subtracted. Multiplying 7 by 9 gives 63, which is a common multiple of 7 and 9, so this can be used as the common denominator. Multiplying the numerator and denominator of 2/7 by 9 gives 18/63 and multiplying the numerator and denominator of 1/9 by 7 gives 7/63. The numerators can then be subtracted and the denominator stays the same

$\frac{11}{63}$

1 mark

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

$\frac{5}{2}$

$\frac{15}{6} - \frac{4}{6}$

$2^1/_2$ is basically 2/1 + 1/2 = 4/2 + 1/2 = 5/2. The denominators need to be the same so that the fractions can be subtracted. Multiplying 2 by 3 gives 6, which is a common multiple of 2 and 3, so this can be used as the common denominator. Multiplying the numerator and denominator of 5/2 by 3 gives 15/6 and multiplying the numerator and denominator of 2/3 by 2 gives 4/6. The numerators can then be subtracted and the denominator stays the same

$\frac{11}{6}$

1 mark

33

Show your method

$$\begin{array}{r} 4078 \\ \times\ \ 67 \\ \hline 28546 \\ 244680 \\ \hline 273226 \end{array}$$

Remember to add a 0 on the second row to multiply it all by 10 as 60 is 10 times greater than 6

273226

2 marks

34 $10 - 2\frac{1}{4} =$

$\frac{40}{4} - \frac{9}{4}$

10 = 10/1 = 40/4. 2/1 + 1/4 = 8/4 + 1/4 = 9/4

$\frac{31}{4}$

1 mark

35 $6 + 4 \div 2 =$

BIDMAS, the order of operations needs to be followed. Division comes first so this is done before the addition. 4/2 = 2. 6 + 2 = 8

8

1 mark

36 $\frac{4}{5} \times 400 =$

$$5 \overline{)\,4^{4}0\;0}\;\;0\;8\;0$$

Divide by the denominator then multiply by the numerator. 8 x 4 = 32 so 80 x 4 = 320

320

1 mark

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Standards & Testing Agency

2022 key stage 2 mathematics
Paper 1: arithmetic
Print version product code: STA/22/8417/p ISBN: 978-1-78957-265-0
Electronic PDF version product code: STA/22/8417/e ISBN: 978-1-78957-286-5

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