2018 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

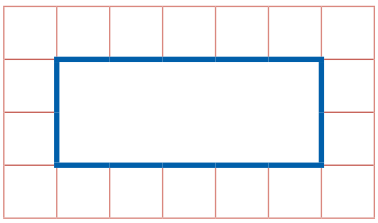
You **must not** use a calculator to answer any questions in this test.

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 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 $39 + 673 =$

$$\begin{array}{r} 39 \\ +673 \\ \hline 712 \\ {\scriptstyle 1\,1} \end{array}$$

712

1 mark

2 $\frac{9}{11} - \frac{4}{11} =$

As the denominators are the same, we can subtract the numerators. 9 - 4 = 5. The denominator stays the same

$\frac{5}{11}$

1 mark

3 $2 \times 45 =$

$$\begin{array}{r} 45 \\ \times\ 2 \\ \hline 90 \\ {\scriptstyle 1} \end{array}$$

90

1 mark

4 $838 \div 1 =$

Anything divided by 1 is itself

838

1 mark

5 $99 \div 11 =$

9 x 11 = 99
so: 99 ÷ 11 = 9

9

1 mark

6 $5 \times 4 \times 10 =$

5 x 4 = 20
20 x 10 = 200

Add a 0 to multiply a whole number by 10

200

1 mark

7 7,064 − 502 =

```
  6 10 6 4
-   5 0 2
  -------
  6 5 6 2
```

6562

1 mark

8 $6^2 + 10 =$

6 × 6 = 36 ← 6^2 means 6 multiplied by itself

36 + 10 = 46

46

1 mark

9 56.38 + 24.7 =

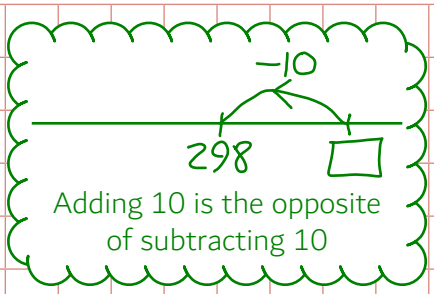
```
  5 6.3 8
+ 2 4.7
  -------
  8 1.0 8
  1
```

81.08

1 mark

10 308 − 10 = 298

```
 298
+ 10
 308
```



1 mark

11 270 ÷ 3 =

```
  90
3|270
```

90

1 mark

12 5,400 ÷ 9 =

```
  600
9|5400
```

600

1 mark

13 $60 \div 15 =$

$$\begin{array}{r} 4 \\ 15\overline{)60} \\ 15,30,45,60 \end{array}$$

Count up in 15s until we reach 60.
15 x 4 = 60 so 60 ÷ 15 = 4

4

1 mark

14 4921 $= 5{,}776 - 855$

$$\begin{array}{r} {}^{4}\cancel{5}{}^{1}776 \\ -\ \ 855 \\ \hline 4921 \end{array}$$

1 mark

15 $3{,}050{,}020 = 3{,}000{,}000 +$ 50000 $+ 20$

$$\begin{array}{r} 3000000 \\ +\ \ \ \ \ \ 20 \\ \hline 3000020 \end{array} \qquad \begin{array}{r} 3050020 \\ -3000020 \\ \hline 0050000 \end{array}$$

Addition can be done in any order

The difference is what needs to be added

1 mark

16 $10 - 5.4 =$

$$\begin{array}{r} {}^{9}\not{1}\not{0}^{1}.{}^{1}0 \\ -\quad 5.4 \\ \hline 4.6 \end{array}$$

4.6

1 mark

17 $\frac{5}{7} + \frac{3}{21} \overset{\div 3}{=}$

$\frac{5}{7} + \frac{1}{7}$

3/21 can be simplified to 1/7 by dividing both the numerator and denominator by 3. Now they have the same denominator so the numerators can be added

$\frac{6}{7}$

1 mark

18 $0.1 \div 100 =$

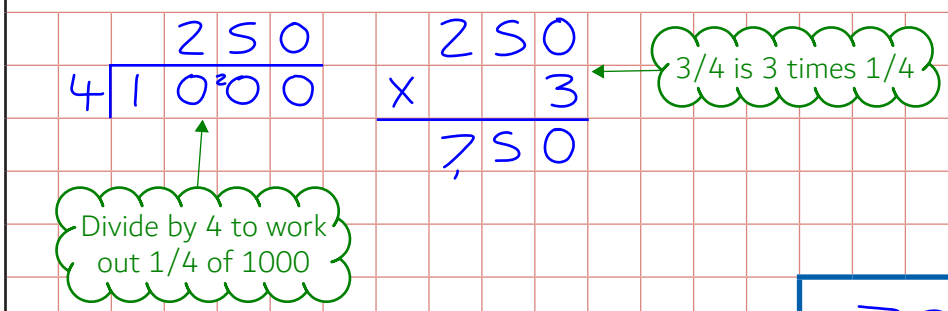
0.1

To divide by 100, move the decimal place twice to the left

0.001

1 mark

19 $\frac{3}{4}$ of 1,000 =

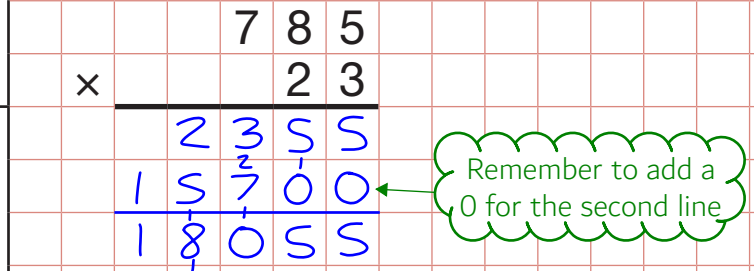


750

1 mark

20

Show your method



18055

2 marks

21 20% of 1,200 =

10% is 120

$$\begin{array}{r} 120 \\ \times \quad 2 \\ \hline 240 \end{array}$$

20% = 2 x 10%

10% as a fraction is 1/10. To find this, divide by 10.
1200 ÷ 10 = 120 (remove a 0)

240

1 mark

22

$$43 \overline{)\,645}$$

$$\begin{array}{r} 15 \\ 43 \overline{)\,645} \end{array}$$

43, 86, 129, 172, 215

Show your method

15

2 marks

23 $0.5 \times 28 =$

$$\begin{array}{r} 0.5 \\ \times\ 28 \\ \hline 4.0 \\ 10.0 \\ \hline 14.0 \end{array}$$

14

1 mark

24 $\frac{1}{2} + \frac{1}{5} =$

$\frac{1 \times 5}{2 \times 5} + \frac{1 \times 2}{5 \times 2}$

$\frac{5}{10} + \frac{2}{10}$

First make the denominators the same by finding a common multiple of 2 and 5. 10 is the lowest common multiple. Multiply the numerator and denominator by the same number to keep the fractions equivalent. Once the denominators are the same, add the numerators

$\frac{7}{10}$

1 mark

25 $1\frac{3}{4} + \frac{3}{4} =$

$\frac{7}{4} + \frac{3}{4}$

Convert the mixed fraction $1^3/_4$ into an improper fraction by multiplying the whole number by the denominator then adding the result to the numerator. 1 x 4 = 4. 3 + 4 = 7. So it becomes 7/4. Then add the numerators of both fractions as they have the same denominator

There is no need to simplify the fraction or convert it into a mixed fraction

$\frac{10}{4}$

1 mark

26 $6 - 5.738 =$

$$\begin{array}{r} 5\,\not{6}^{\,9}.{}^{\,9}\not{0}{}^{\,9}\not{0}\,10 \\ -\;5.738 \\ \hline 0.262 \end{array}$$

Add 0s after the decimal place so that 6 becomes 6.000 (this doesn't change the value of the number), then subtract normally

0.262

1 mark

27 $3.9 \times 30 =$

$$\begin{array}{r} 3.9 \\ \times\;30 \\ \hline 0.0 \\ 1\,1\,7.0 \\ \hline 1\,1\,7.0 \end{array}$$

117

1 mark

28

$1\frac{1}{15} - \frac{2 \times 3}{5 \times 3}$

$\frac{16}{15} - \frac{6}{15}$

Convert the mixed number $1^{1}/_{15}$ to the improper fraction 16/15 by multiplying the whole number by the denominator then adding the result to the numerator. 1 x 15 = 15. 1 + 15 = 16. Convert 2/5 to 6/15 by multiplying the numerator and denominator by 3. Add the numerators as the denominators are now the same

$\frac{10}{15}$

1 mark

29

$$\begin{array}{r} 5413 \\ \times \quad 86 \\ \hline 32478 \\ 43304 \\ \hline 465518 \end{array}$$

Show your method

465518

2 marks

30 99% of 200 =

100% is 200
1% is 2

200 − 2 = 198

100% - 1% = 99%

100% is the full number. To find 1%, divide 200 by 100. This can be done by removing both 0s off the end of 200 to leave 2

198

1 mark

31 $\frac{1}{4} \div 2 =$

Multiplying the denominator by 2 effectively divides by 2.
4 x 2 = 8

$\frac{1}{8}$

1 mark

32 $9^2 - 36 \div 9 =$

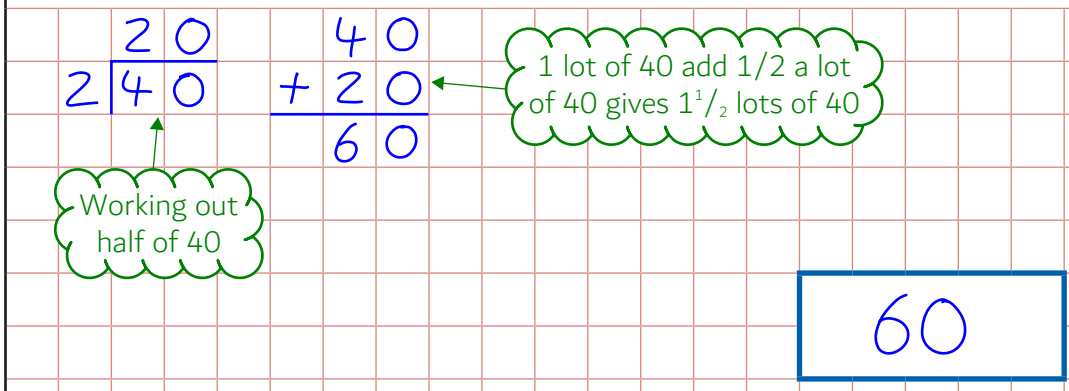
81 − 4

BIDMAS is the order of operations. Indices need to be done first. $9^2 = 9 \times 9 = 81$. Division is next. $36 \div 9 = 4$

77

1 mark

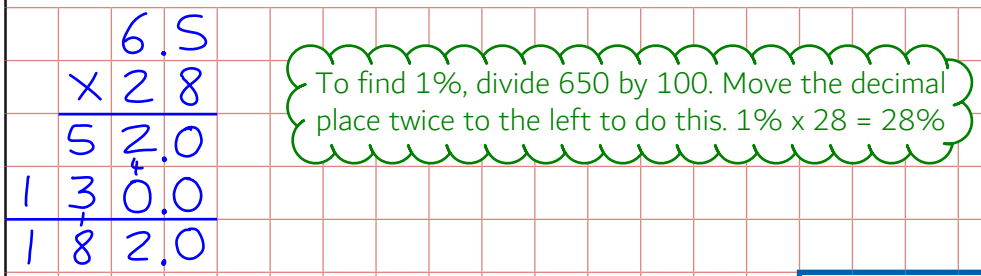
33 $1\frac{1}{2} \times 40 =$



60

1 mark

34 28% of 650 =



182

1 mark

35 $4\frac{2}{3} - 1\frac{6}{7} =$

$\frac{14 \times 7}{3 \times 7} - \frac{13 \times 3}{7 \times 3} = \frac{98}{21} - \frac{39}{21}$

$14 \times 7 = 98$

$13 \times 3 = 39$

Convert the mixed numbers to improper fractions by multiplying the whole number by the denominator then adding the result to the numerator. Then convert the fractions so they have the same denominators. Once this is done, we can subtract the numerators

$\frac{59}{21}$

1 mark

36

$97 \overline{)8827}$ = 91

97, 194, 291, 388, 485, 582, 679, 776, 873, 970

Show your method

91

2 marks

[END OF TEST]

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