National curriculum tests

Key stage 2

The mental and written methods that I've shown here can be applied to any numbers and questions. The types of questions will be the same on the SATs paper so children just need to learn the different methods.

Mathematics

Paper 1: arithmetic

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

SAMPLE BOOKLET

Published July 2015

This sample test indicates how the national curriculum will be assessed from 2016.
Further information is available on GOV.UK at **www.gov.uk/sta**.

PUPIL ID NUMBER

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Instructions

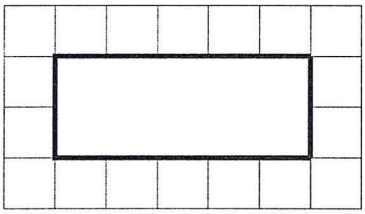
You **may not** use a calculator to answer any questions in this test.

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.



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

All other answers should be given as either whole or decimal numbers.

If you cannot do one of the questions, **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 **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**.

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

1 979 + 100 =

Mental method

9 hundreds plus 1 hundreds = 10 hundreds so 1,079

(9)(7)(9) These digits don't change.

1 mark

2 123 × 2 =

Mental method

100 × 2 = 200
20 × 2 = 40
3 × 2 = 6
246

123 × 2 = 246

1 mark

3 6.1 + 0.3 =

Mental method

$6.(1) + 0.(3)$ $\frac{1}{10} + \frac{3}{10} = \frac{4}{10}$ so $6.(4)$

1 mark

4 $24 \times 3 =$

Mental or written

20 x 3 = 60
4 x 3 = 12
72

or

$$\begin{array}{r} 24 \\ \times \quad 3 \\ \hline 72 \\ {\scriptstyle 1\ 1} \end{array}$$

1 mark

5 $1{,}034 + 586 =$

Written method

$$\begin{array}{r} 1034 \\ + \quad 586 \\ \hline 1620 \\ {\scriptstyle \ \ 1\ \ 1} \end{array}$$

1 mark

6 $48 \div 6 =$

Mental method

Inverse $6 \times 8 = 48$

So $48 \div 6 = 8$

1 mark

7 472 – 9 =

Mental method

472 - 10 = 462 + 1 = 463

1 mark

8 2.5 + 0.05 =

Mental method

2.5 = $\frac{5}{10}$ or $\frac{50}{100}$

0.05 = $\frac{5}{100}$

$\frac{50}{100} + \frac{5}{100} = \frac{55}{100}$

So 2.55

$$\begin{array}{r} 2.50 \\ + \quad 0.05 \\ \hline 2.55 \end{array}$$

1 mark

9 5 × 4 × 7 =

Mental method

5 x 4 = 20 x 7 = 140

1 mark

10 $\frac{4}{5} - \frac{1}{5} =$

Mental method

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

When denominators are the same, just subtract the numerators.

1 mark

11 $630 \div 9 =$

Mental method

Inverse $9 \times 7 = 63$

so $63 \div 9 = 7$

so $630 \div 9 = 70$

1 mark

12 $1.28 \times 100 =$

Mental method

$\times 100$ Move 2 places to the left (100)

1.28

$128.$

$= 128$

1 mark

13 $4^{(2)}$ = x by itself

Mental method

4^2 is $4 \times 4 = 16$

1 mark

14 50,000 – 500 =

Mental method

$1000 - 500 = 500$

So $50,000 - 500 = 49,500$

1 mark

15 100 × 100 =

Mental method

× 100 (2 places to left)

~~100.00~~

10,000.

= 10,000

1 mark

16 1,440 ÷ 12 =

Mental method

Inverse 12 x 12 x 144

So 144 ÷ 12 = 12

So 1440 ÷ 12 = 120

1 mark

17 20% of 1,500 =

Option 1

20% = $\frac{1}{5}$ so ÷5

1,500 ÷ 5 = 300

Option 2

10% = $\frac{1}{10}$ so ÷10

1,500 ÷ 10 = 150

x2 = 300

1 mark

18 1.52 × 6 =

Written method

Ignore decimal but don't forget it at the end.

$$\begin{array}{r} 152 \\ \times \quad 6 \\ \hline 9.12 \end{array}$$

3 x

1 mark

19 $\frac{1}{9} + \frac{4}{9} =$

$\frac{1}{9} + \frac{4}{9} = \frac{5}{9}$

When denominators are the same, just add the numerators.

1 mark

20 5,756 + 8,643 =

Written method

$$\begin{array}{r} 5,756 \\ +\ 8,643 \\ \hline 14,399 \\ {\scriptstyle 1\ 1} \end{array}$$

1 mark

21 7,505 ÷ 5 =

Written method (bus stop)

$$5 \overline{)\ 7^{2}505} \quad 1501$$

1 mark

22 $12 - 6.01 =$

Mental method

12 - 6 = 6

6 - 0.01 = 5.99

1 mark

23 Written method

Show your method

$$\begin{array}{r} 54 \\ \times\ 23 \\ \hline 162 \\ 1080 \\ \hline 1242 \\ \hline \end{array}$$

Don't forget zero on 2nd line

(3 x 54)

(20 x 54)

(Total)

2 marks

24

15.4 – 8.88 =

Written method

$$\begin{array}{r} 15.40 \\ -\ 8.88 \\ \hline 6.52 \end{array}$$

– Balance out with zero

1 mark

25

Written method – bus stop

$$\begin{array}{r} 232 \\ 13\overline{)3016} \end{array}$$

Show your method

2 marks

S00080A1220

26 $\frac{1}{4} \times \frac{1}{8} =$

$\frac{1}{4} \times \frac{1}{8} = \frac{1}{32}$ (multiply numerators) (multiply denominators)

1 mark

27 95% of 240 =

Option 1

$\frac{1}{2}$ of 10%

5% of 240 = 12

$$\begin{array}{r} 2\,\overset{1}{4}\,10 \\ -\quad 12 \\ \hline 228 \end{array} = 95\%$$

Option 2

10% of 240 = 24

90% = 24 x 9 = 216

+5% = 228

1 mark

28 234,897 – 45,996 =

Written method

$$\begin{array}{r} 1\,\overset{2}{\not{2}}\,\overset{1}{\not{3}}\,\overset{1}{\not{4}},897 \\ -\quad 45,996 \\ \hline 188,901 \end{array}$$

1 mark

29 Show your method

Written method

$$\begin{array}{r} 678 \\ \times\ 54 \\ \hline 2712 \\ 33900 \\ \hline 36612 \\ \hline \end{array}$$

2 marks

30 $17 \times 1\frac{1}{2} =$

$17 \times 1 = 17$

$17 \times \frac{1}{2} = 8.5$

$17 + 8.5 = 25.5$

1 mark

31 $20 - 4 \times 2 =$

$20 - (4 \times 2) =$

Multiplication is done first (BODMAS)

$20 - 8 = \underline{12}$

1 mark

32 $\frac{2}{5} \div 2 =$

Numerator stays same

Multiply denominator by divisor

$\frac{2}{5} \div 2 = \frac{2}{10} = \frac{1}{5}$ (You must simplify for mark)

$\div 2$

1 mark

33 $1\frac{1}{5} - \frac{1}{4} =$

When denominators are different they must be converted.

Convert $1\frac{1}{5}$ into an improper fraction first

$1\frac{1}{5} = \frac{6}{5}$

1 whole one is $\frac{5}{5} + \frac{1}{5} = \frac{6}{5}$

$\frac{6}{5} - \frac{1}{4}$

$\times 4 \downarrow \quad \downarrow \times 5$

$\frac{24}{20} - \frac{5}{20} = \frac{19}{20}$

1 mark

34

Written method option 1

			6	3	
3	7	2	3	3	1
	−	1	8	5	0 (x50)
			4	8	1
	−		3	7	0 (x10)
			1	1	1
	−			7	4 (x2)
				3	7
	−			3	7 (x1)
					0

Written method option 2 (Strong mental x/÷ skills are needed for this option)

		0	0	6	3
3	7	2	3	3	1
		0	↓		
		2	3		
			0	↓	
		2	3	3	
		2	2	2	↓
		0	1	1	1
			1	1	1
					0

Show your method

2 marks

35

$\frac{3}{4} + \frac{7}{8} =$

When denominators are different, you need to convert to the same one.

$\frac{3}{4} + \frac{7}{8}$

×2 ↓ ↓ no need to change

$\frac{6}{8} + \frac{7}{8} = \frac{13}{8}$ or $1\frac{5}{8}$

1 mark

S00080A1620

36 $\frac{3}{4} \div 2 =$

Multiply denominator by divisor

Numerator stays same: $\frac{3}{4} \div 2 = \frac{3}{8}$

1 mark

Extra

$\frac{3}{4}$ of 76 Rule: ÷ bottom × top

$76 \div 4 = 19$

$19 \times 3 = 57$

× 10 (1 place to left) $3.2 \times 10 = 32$ (3. → 32.)

× 1000 (3 places to left) $3.2 \times 1000 = 3200$ (3.2 → 3200.)

÷ 10 (1 place to right) $65. \div 10 = 6.5$ (65. → 6.5)

÷ 100 (2 places to right) $32. \div 100 = 0.32$ (32. → 0.32)

÷ 1000 (3 places to right) $650. \div 1000 = 0.65$ (650. → 0.650)