SATs Survival: Year 2

Parents' Reasoning Practice and Revision Activity Booklet

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Information and Guidance for Parents

A guide to some different question types

This pack is intended to help you understand the KS1 Reasoning Test and to practise key reasoning questions similar to those that may come up in the tests.

The KS1 Reasoning Test

Children are asked to answer about 30 questions in about 35 minutes, although the test is not strictly timed. The questions cover areas of the mathematics national curriculum (2014) that would be regarded as reasoning. The curriculum can be found at:

www.gov.uk/government/publications/national-curriculum-in-england-mathematics-programmes-of-study

The national curriculum is expected to be taught over the two years of Key Stage 1, therefore the questions in the test are based on most of the objectives from the KS1 national curriculum (not just year 2 objectives).

The questions are written in a variety of styles.

How to Use This Pack

This reasoning pack includes 3 practice tests and guidance on some of the question types. Children do not have to do the whole test in one go and some children will benefit from support while working through the questions.

Together, mark the tests, using the answer sheet and identify any questions your child struggled with. This may be an area they need further support with, to learn that reasoning method or concept. If there are any reasoning questions that your child struggles with, you could use the Twinkl website to find resources to support your child with that method or concept.

Aural Questions

The first 5 questions are read to the children by the teacher.

Many of the questions can be repeated with different numbers:

- finding 1 or 10 more or less than a number

- recognising the place value of a number

- practical word problems answered by adding or subtracting

- finding simple fractions, for example, $\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{3}$ $\frac{3}{4}$ of a set of objects drawn on a page (whole number answer)

Making up your own questions, like the ones in the practice tests can be fun and can be done practically as well as on paper (like finding half of a number of objects).

Number and Place Value

Counting: Practise counting forwards and backwards in 2s, 3s and 5s from 0 and back again. Ask children to write down the next few from a given number, e.g. write the next 3 numbers after 9, when counting in 3s. Repeat this counting in 10s from any number (Test 1: Q12).

Read and write numbers in words and numerals up to 100: Practise writing numbers in words and numerals from written and aural questions.

Compare and order: Practise ordering and comparing numbers up to 100, e.g. giving children 4 numbers to write in order from the smallest to the largest.
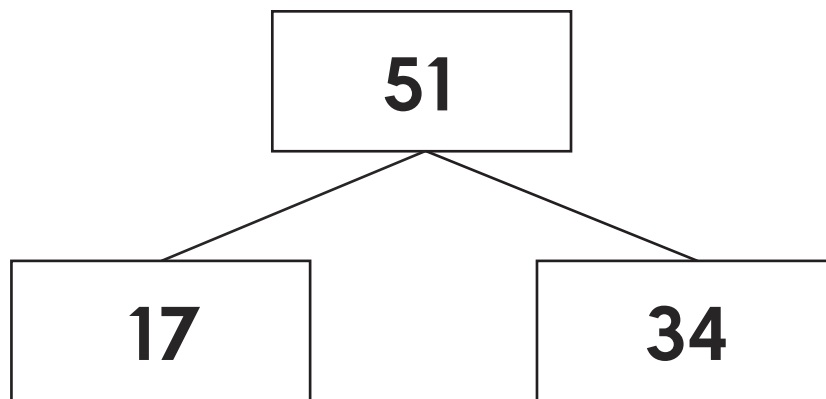
Number line: Use blank number lines of different lengths and ask children to predict what a number might be on the line (Test 1: Q11; Test 2: Q9).

You could use this Reasoning Number and Place Value Practice.

Addition, Subtraction, Multiplication and Division

Missing number questions: Rather than having a calculation like 34 + 12 = 46, questions will have missing numbers, e.g. 3_ + _2 = 46. There are a number of different ways to answer these questions. In this case there are 3 tens in the first part of the calculation and 2 ones in the second half of the calculation. To complete the calculation, you would need to add 1 more ten and 4 more ones to make the answer of 4 tens and 6 ones. The 4 ones can be added to the 3 tens to make 34 and the ten can be added to the 2 ones to make 12. You can make your own calculations with addition and subtraction. You could make them easier by having only one number missing.

Inverse (Test 1: Q7): Children need to know that 34 + 17 = 51 means 51 − 17 = 34 and 51 − 34 = 17. This can also be written as:

```
         ┌──────────┐
         │    51    │
         └──────────┘
          ╱        ╲
   ┌──────────┐  ┌──────────┐
   │    17    │  │    34    │
   └──────────┘  └──────────┘
```

Practice making number triangles. You could leave out one of the numbers and ask your child to find the missing number. Start with easy numbers; including single-digit numbers. Give your children an addition or subtraction and get them to calculate the answer and write the inverse as well.

2-step addition and subtraction word questions (Test 1: Q21; Test 3: Q17): To help children with these, sometimes a simple drawing can help.

e.g. Ravi counts the colouring pencils in 2 trays in his classroom. There are 37 in one tray and 22 in the other. 15 of the pencils are broken. How many colouring pencils are not broken?

39 pencils	**22 pencils**	**15 broken**

The simplest way to calculate the answer is to subtract the 15 broken ones from the drawer of 22, leaving 7 pencils. Then calculate 39 + 7 = 46.

Use times tables: Children need to use the times tables to calculate answers (Test 1: Q17; Test 2: Q21; Test 3: Q12).

Jade collects 70 pencils from the school office. The pencils are in packs of 10. How many packs does Jade collect?

Again, a drawing can help, so for the last of these examples:

10	**10**	**10**	**10**	**10**	**10**	**10**

The aim is use their knowledge that 10 × 7 = 70.

2-step multiplication/division and addition/subtraction word questions (Test 1: Q26; Test 2: Q30; Test 3: Q26): As with the earlier 2-step problems, children may find it easier to draw the problems to help them understand what they need to calculate.

Test 2: Q30 involves 9 five pence coins; from which 32p is spent. How much is left over? Draw the 9 coins or simply write 5p nine times. Add the coins up, crossing them out as you go, until you reach 32p. This would be 6 coins and then 3p left from the seventh. There is 13p left.

<p align="center">~~5p 5p 5p 5p 5p 5p 5p~~ 5p 5p
3p</p>

Order of calculations (Test 1: Q23; Test 2: Q24; Test 3: Q19): Addition and multiplication can be done in any order, but subtraction and division cannot. The question from test 1 checks this understanding. If your child is unsure, use small numbers to check each calculation.

Practise addition and subtraction with this resource: http://www.twinkl.co.uk/resource/t-pa-951-reasoning-practice-addition-and-subtraction;

or multiplication and division with this resource: http://www.twinkl.co.uk/resource/t-pa-956-reasoning-practice-multiplication-division-and-fractions.

Fractions

Fractions of lengths, shapes, set of objects or quantities (Test 1: Q10; Test 2: Q17; Test 3: Q13): Children need to find $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{4}$, $\frac{1}{4}$ of lengths, shapes, a set of objects or quantities. Make sure children can find 1/2 and move on to $\frac{1}{3}$ and $\frac{1}{4}$ before $\frac{3}{4}$. Remember $\frac{2}{4}$ is the same as $\frac{1}{2}$.

Start with shapes divided equally into 2, 3 or 4 parts. Work practically with a number of objects that can be divided equally, e.g. 12 objects. Draw simple objects on a page to divide. When finding $\frac{3}{4}$, share into quarters and show 3 of the quarters. Finish with numbers and lengths and model how to make it practical, if necessary.

Practice questions are available with this resource: http://www.twinkl.co.uk/resource/t-pa-956-reasoning-practice-multiplication-division-and-fractions.

Measurement

Comparing, ordering and measuring (Test 1: Q19; Test 2: Q15; Test 3: Q15): Children need to be able to calculate or read scale measures and then compare. When reading scales, children need to work out much each space is worth on the scale. Sometimes, it won't be necessary to read the scale; but simply recognise which is more or less.
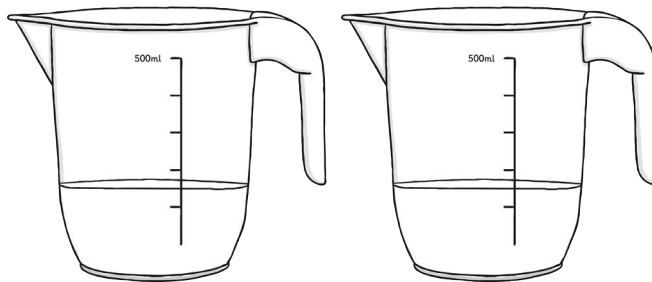
In the above picture (from Test 3), children won't need to read the scales to answer the question; although other questions might require them to. How much is each amount worth? Can children calculate that one jug holds 200ml and the other holds 150ml?

The nature of measures means the children might be using numbers larger than 100; but usually only in steps of 100s or 50s.

Money – coins (Test 1: Q27; Test 2: Q16; Test 3: Q29): Practise similar questions to the ones in the tests using real coins. Children need to be able to work out the value of some coins and how to make up certain amounts of money from a set of coins.

Money – change (Test 1: Q30; Test 3: Q31): Similarly to above, practise calculating change practically. One way is to use the method of counting on with the coins to the nearest ten and then counting on to the final amount. For example, when spening 37p and paying with 50p, the change can be calculated like this:

Start with 37p

Add 1p = 38p

Add 2p = 40p

Add 10p = 50p

1p + 2p + 10p = 13p

The change is 13p

Time (Test 1: Q16; Test 2: Q11; Test 3: Q20): Children need to tell the time to 5 minute intervals, compare intervals of time and know there are 60 minutes in an hour and 24 hours in a day. Practise telling the time on an analogue clock, but also working out and measuring time intervals.

Here are some practice questions: http://www.twinkl.co.uk/resource/t-n-4922-reasoning-practice-test-measures.

Shape
Name shapes (Test 1: Q8; Test 2: Q6; Test 3: Q8): Children are expected to know the names of simple common 2D and 3D shapes. Use these sets of shapes: http://www.twinkl.co.uk/resource/t-n-105-2d-shape-word-mat or http://www.twinkl.co.uk/resource/t-n-106-3d-shape-word-mat

Sorting shapes (Test 1: Q18; Test 2: Q13; Test 3: Q14): Children are expected to sort shapes into 2 groups, based around simple criteria. Use the above sets of shapes; choose some and sort into 2 groups using criteria such as the number of sides, numbers of vertices (corners) or number of faces.

Position and Direction
Patterns and sequences (Test 2: Q27): Children are expected to complete patterns. Sometimes these will be linear but as in the example question in Test 2, they can look a little more complicated.
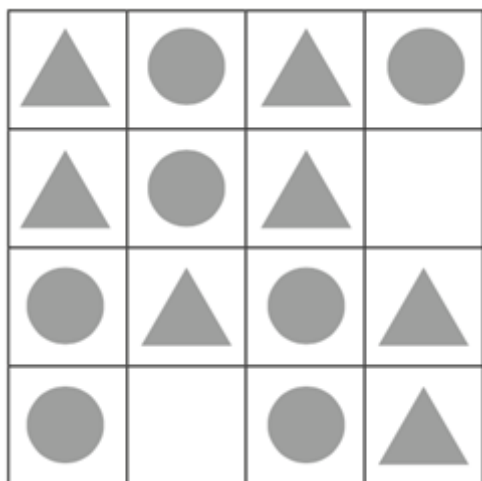
In fact, this can be completed as 2 different linear patterns, as the second line matches the first and the fourth line matches the third.

This resource provides some simple practice of linear sequences: http://www.twinkl.co.uk/resource/t-n-193-repeating-pattern-worksheets-shapes-and-colours.

Half and quarter turns (Test 1: Q28; Test 3: Q21): Children are expected to be able to rotate or recognise the rotation of shapes by half, quarter and three-quarter turns; clockwise and anti-clockwise. This can be practised by asking children to rotate simple shapes, or an arrow as in Test 1.

Statistics
Pictograms, tally charts and block diagrams (Test 1: Q31; Test 2: Q20; Test 3: Q23): Children are expected to construct pictograms, tally charts or block diagrams from data. Sometimes, this data may be presented in a tally chart. The scale will not always be one block representing one, so children may need to recognise that half a block represents one. Tally charts draw the fifth line through 4 to make it easier to count. 7 would be ⅲ ⅱ.

Children will also be expected to answer simple questions about the data in the charts. This resource will help children make their own: http://www.twinkl.co.uk/resource/t2-m-222-tally-and-graph-worksheet-template. Real or imaginary data could be used.