100 Reasoning and Problem Solving Questions for SATs

Answers and Mark Scheme

THIRD SPACE LEARNING

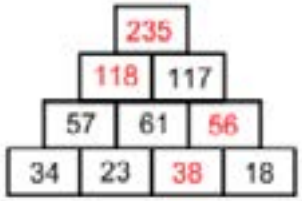
This pack contains the answers and mark scheme to the 100 Reasoning and Problem Solving Questions for SATs. Once your child has completed all of the questions, or even as they finish each section, you can use this simple mark scheme.

How to share the results with your child

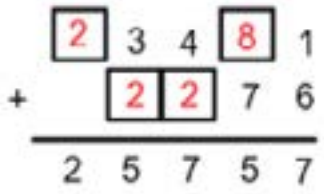
Once they have completed the questions it is really important to congratulate your child for sitting down and trying their best, whatever their results are.

It is up to you to share as much as you think you should with your child. For some children, you may just want to pick out one or two examples of where they did well or less well. For others, a full breakdown of their results might be seen as a welcome challenge!

It's important to reassure your child of your continued support especially if they need some additional help with SATs style questions.

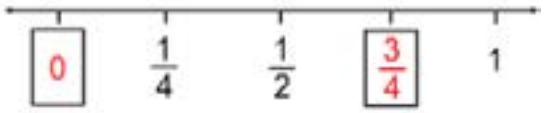
Q	Required answer	Mark	Acceptable answer or additional guidance
1	Circle 19 and 53	1m	**Do Not Accept** more than two numbers circled
2	9	1m	
3	7 531	1m	
4	65 211	1m	
5	24	1m	
6a	2 586 people on board	1m	
6b	1 928 adults	1m	
7	Award two marks for all four correct answers 	Up to 2m	Award **One** mark for any two or three correct answers
8	7 999 990	1m	**Do Not Accept** more than two numbers circled
9	Circled 580 and 810	1m	
10	443.32	1m	
11	£44 578	1m	
12	£57 579	1m	
13	5.66	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
14	Award two marks for the correct answer of 47p If answer is incorrect, award one mark for evidence of an appropriate method with no more than one arithmetic error e.g. 87 + 136 = 224 (error) 175 + 95 = 270 270 - 224 = 46p	Up to 2m	**Accept** £0.47 **Do Not Accept** £0.47p Answer need not be obtained for the award of **one** mark.
15	4 888 cards	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
16	Award two marks for the correct answer of 72 623 more visitors If answer is incorrect, award one mark for evidence of an appropriate method with no more than one arithmetic error e.g. 98044 − 77108 = 175102 (*error*) 42371 + 60158 = 102529 175102 - 102529 = 72573	Up to 2m 1m	Answer need not be obtained for the award of **one** mark.
17	84.76	1m	
18	2 281 608	1m	
19		1m	
20	192 807 people	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
21	Award two marks for the correct answer of 22.35kg left If answer is incorrect, award one mark for evidence of an appropriate method with no more than one arithmetic error e.g. (5.75 + 1.95 + 2.425) x 2 = 20.5 (error) 42.6 - 20.5 = 22.1kg	Up to 2m	**Accept** 2235g Answer need not be obtained for the award of **one** mark.
22a	2 190 000	1m	
22b	2 191 459 letters	1m	
23	37°C	1m	**Do Not Accept** -37°C
24	220.8 miles	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
25	Award **two** marks for the correct answer of £18.42 If answer is incorrect, award one mark for evidence of an appropriate method with no more than one arithmetic error e.g. £10 + £5 + £2 + 50p + 20p + 5p = £17.75 200 - 17.75 - 126.58 - 37.25 = £18.45 (error)	Up to 2m	Answer need not be obtained for the award of **one** mark.

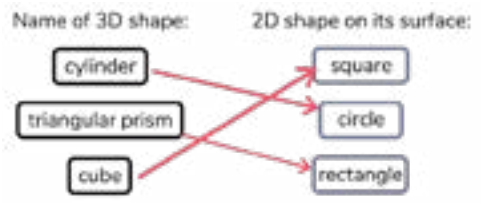
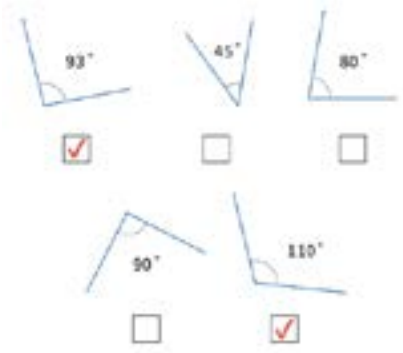
Q	Required answer	Mark	Acceptable answer or additional guidance
26	$\frac{1}{4}$	1m	**Accept** 4/16 or equivalent
27	Any 8 hexagons shaded in 	1m	
28	**Both** answers are needed to obtain **one** mark 	1m	**Accept** equivalent of 3/4
29	$\frac{3}{4}$	1m	**Do Not Accept** 6/8
30	4	1m	
31	$\frac{25}{30}$	1m	
32	$1\frac{3}{4}$ $1\frac{2}{3}$ $1\frac{3}{6}$ $1\frac{1}{12}$	1m	

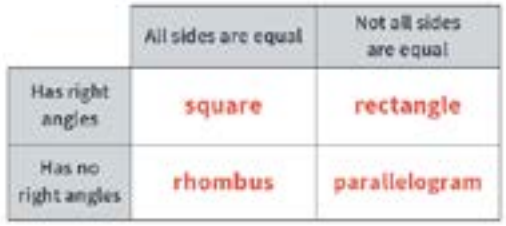
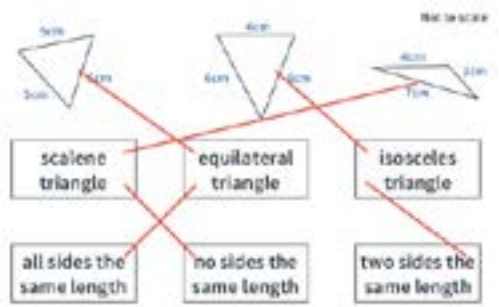
Q	Required answer	Mark	Acceptable answer or additional guidance
33	$\frac{13}{15}$	1m	**Accept** equivalence
34	108ml	1m	
35	3 3/4	1m	**Accept 15/4**
36	$\frac{2}{8}$	1m	**Accept** equivalence
37	$\frac{16}{100}$	1m	**Accept** 4/25 or 8/50
38	$\frac{10}{9}$	1m	**Accept** 1 1/9
39	61.04	1m	
40	Circled in any order 10% $\frac{7}{10}$ 0.2	1m	**Do Not Accept** if more than three numbers are circled
41	273kg	1m	**Accept** 1 1/2
42	$\frac{33}{12}$	1m	**Accept 2 9/12 or 2 3/4**
43a	40%	1m	**Do Not Accept** percentage or decimal equivalents
43b	$\frac{3}{10}$ or $\frac{30}{100}$	1m	**Do Not Accept** fraction or percentage equivalents
43c	0.1	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
44	$1\frac{11}{12}$	1m	**Accept** 23/12
45	Not possible as 40% of 31 is 12.4 and you cannot not have 12.4 children who are boys.	1m	**Accept** similar explanations
46	$\frac{3}{35}$	1m	
47	880 chocolate bars	1m	
48	£165	1m	**Do Not Accept** £165p
49	326.08	1m	
50	Award **two** marks for the correct answer of £54 If answer is incorrect, award **one** mark for evidence of an appropriate method with no more than one arithmetic error e.g. $\frac{2}{6}$ = £18 18 x 3 = £52 (error)	Up to 2m	Answer need not be obtained for the award of **one** mark.

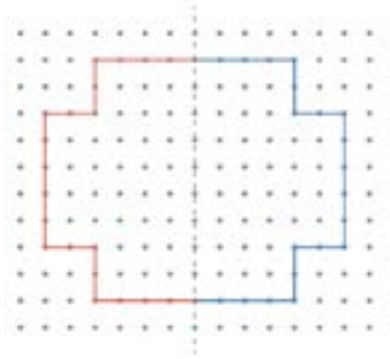
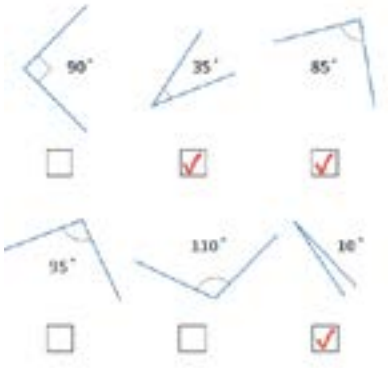
Q	Required answer	Mark	Acceptable answer or additional guidance
51	3,025,017	1m	
52	70,000	1m	**Accept** 7 ten thousands or 70 thousands
53	Eight million, one thousand and five hundred	1m	
54	2,415	1m	
55	200,000 and 300	1m	**Accept** numbers written in either order
56	1,160,107	1m	
57	7,700,000	1m	
58	40,300	1m	
59	0.003 or 3 thousandths	1m	
60	2 + 0.5 + 0.05	1m	**Accept** the three numbers written in any order
61	8,150,361	1m	
62	100 times bigger	1m	**Accept** 10 x 10 bigger
63	100,999 101,111 110,001 1,011,101	1m	
64	<	1m	**Accept** 'Less than'
65	21,036	1m	
66	5,830,000	1m	
67	1000 times smaller	1m	**Accept** 10 x 10 x 10 smaller
68	Circled 0.4 and 0.05	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
69	4.6 4.16 4.101 4.01	1m	
70	0.905	1m	
71	9,999,997	1m	
72	18.75	1m	
73	0.06	1m	
74	35.7	1m	
75	423.101	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
76	Length A > Length B Length B < Length C **ONE** mark for each correct answer	2m	**Symbols should be correctly orientated**
77	Shape C	1m	Shape C is a pentagon. Although only shape B is a familiar regular hexagon, children should still recognise that shapes A and D both have six sides and are hexagonal.
78	A, C and D	1m	Letters may be given in any order.
79		1m	All three should be correctly matched.
80		1m	Both angles need to be ticked for the award of the mark.
81	16cm	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
82	Award TWO marks for all three boxes completed correctly. 2 right angles are half a turn. 4 right angles are in a full turn. 1 right angle is in a quarter turn.	2m	Award ONE mark for two boxes completed correctly.
83		2m	Award TWO marks for all shapes correctly placed. Award ONE mark for three shapes correctly placed.
84		1m	All shapes and properties matched correctly to achieve the mark.
85	38cm	1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
86	Explanation should describe a methodical approach to finding the answer. For example: - Fran could use a table to record all the different lengths and widths that give a perimeter of 20m. - Fran could start with a width of 1m and a length of 9m and then increase the width by 1m each time to find all the possibilities	1m	This is an open-ended question and has been designed to encourage children to use reasoning to describe how to make sure that they find all possibilities when investigating perimeter.
87		2m	Award ONE mark for two or three correct areas. Both marks for all correct.
88	A and D should be ticked.	1m	Only award the mark for both answers.
89	B D A C	1m	
90	Sometimes, always, never, never	2m	Award ONE mark for 2 or 3 correct answers and BOTH marks for all correct answers.

Q	Required answer	Mark	Acceptable answer or additional guidance
91		1m	Accept slight deviance from marked points. It is worth noting that in SATs papers, any points more than 2mm out may lead to the mark not being awarded.
92	128 degrees.	1m	
93	The arrow has moved six squares up and six squares to the left	1m	BOTH must be correct for the award of ONE mark.
94	24cm	2m	
95		1m	

Q	Required answer	Mark	Acceptable answer or additional guidance
96	Award TWO marks for the correct answer of 72cm^2. Award ONE mark for either: an answer of 72 or 72cm OR a complete method, with no more than one arithmetic error and the correct units, for example: 6 x 2 = 12 12 x 6 = wrong answer	2m	Correct units must be given for the award of TWO marks.
97	195	1m	
98	37m	2m	
99	11	1m	
100	Award TWO marks for the correct answer of 54cm. Award ONE mark for either: 54 or 54m or 54cm^2. OR a full, feasible method with no more than one arithmetic error.	2m	Correct units must be given for the award of TWO marks. For the award of ONE mark, the correct side lengths must be used, Do NOT accept: 15 x 5 = 75 75 x 2 = 150 150 x 3 x 3 = 156

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