



THIRD SPACE  
LEARNING

# Key Stage 2 SATs

## Mathematics Practice Test and Mark Scheme

### Paper 2: Reasoning

**Pack 2: 2017 (new curriculum)**





- 1 Small boxes of chocolates contain 9 chocolates. How many boxes can be made from 630 chocolates?

1 mark

2 Circle the calculation that gives the best approximation for **3.4 x 12.7**

$$34 \times 127$$

$$3 \times 12$$

$$3 \times 13$$

$$3.5 \times 12.5$$

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1 mark

3 Circle the **largest** amount in each pair

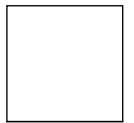
80cm – 1m

7.5kg – 7005g

13mm – 0.13cm

450g – 4.05kg

2m – 200mm



2 marks

4 Write **T** or **F** in each box to indicate whether the statements given are true or false.

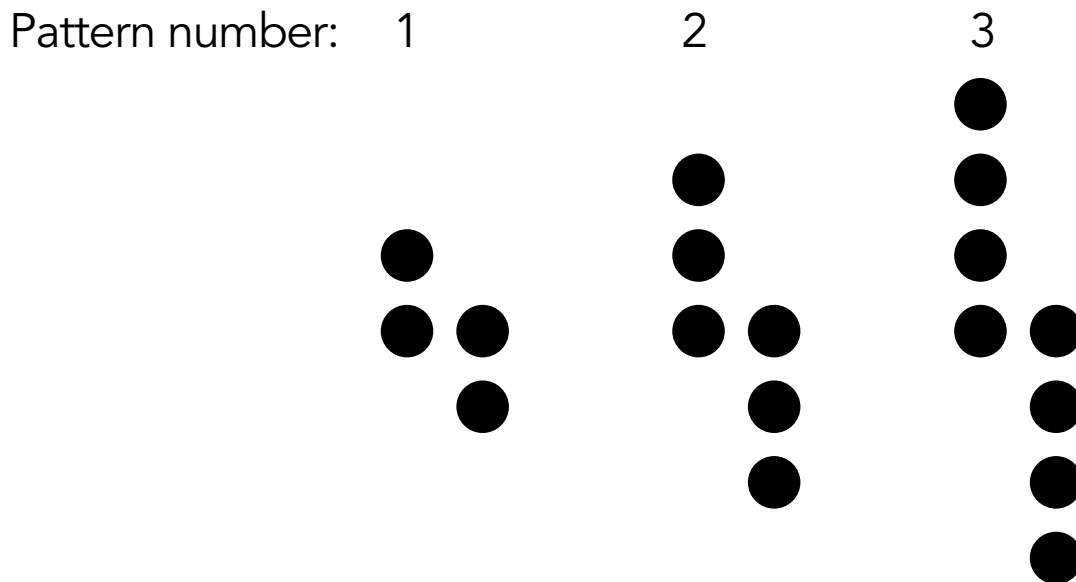
$$\frac{1}{2} = 50\%$$

$$0.4 = \frac{2}{5}$$

$$\frac{10}{80} = 25\%$$

1 mark

5 A sequence is made using counters:



How many counters are needed to make the 6th pattern in the sequence?

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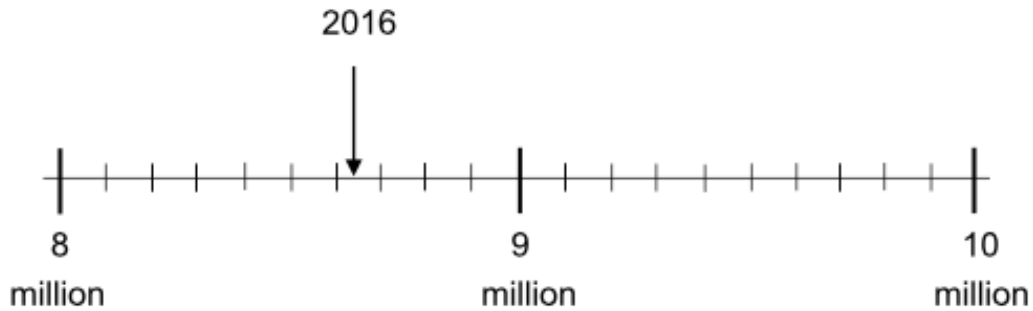
1 mark

Write a formula for the number of counters ( $c$ ) needed to make the  $n$ th pattern in the sequence.

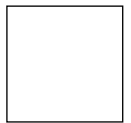
$c =$	
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1 mark

- 6 The population of London in 2016 was 8.63 million.  
This is marked on the scale:



By 2025 the population of London is predicted to be 9.81 million. Draw an arrow to show the 2025 population on the scale above.



1 mark



7 Name these 3D shapes:



1 mark

1 mark

8

$$\frac{1}{4} \times \frac{1}{2} =$$

1 mark

$$\frac{1}{6} \div 2 =$$

1 mark

- 9 This table shows the vehicles seen by Class 6R when they did a traffic survey:

	Monday	Tuesday	Wednesday	Thursday	Friday
Cars	32	27	38	44	41
Buses	2	1	3	3	4
Vans	5	2	4	4	4
Motorbikes	2	5	3	2	3

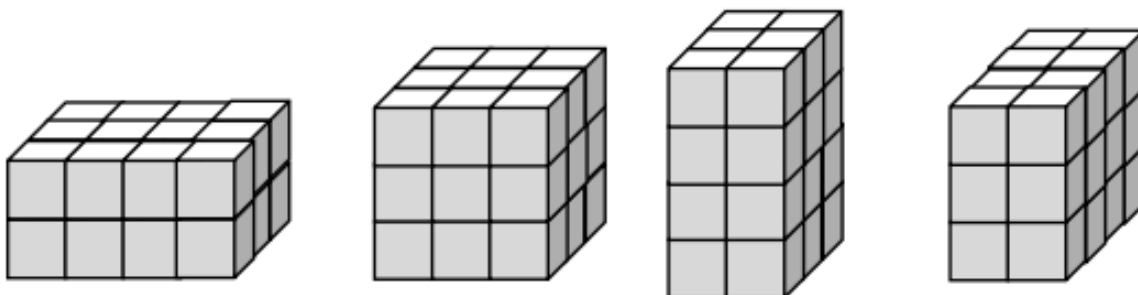
On which day were the **most** vehicles counted?

1 mark

Calculate the **mean** number of motorbikes seen.

1 mark

10  $1\text{cm}^3$  blocks have been used to make these shapes:



(not to scale)



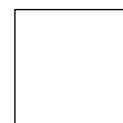
Tick (✓) the shape that has the largest volume.



1 mark

What is the length of one edge of a cube that has a volume of  $64\text{cm}^3$ ?

cm



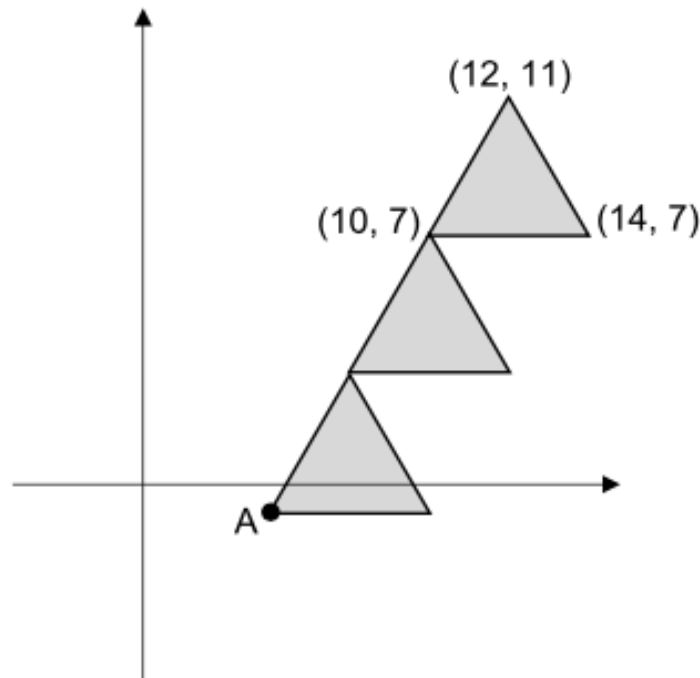
1 mark

11 Use 4 **different** digits to complete this multiplication calculation:

$$\square \times \square \times \square \times \square = 168$$

1 mark

- 12 Three **identical** triangles have been drawn on a co-ordinate grid:



The co-ordinates of the vertices of one triangle have been given.

What are the co-ordinates of vertex A?

1 mark

If these three triangles were drawn on 1cm squared paper what would the area of one triangle be?

1 mark

13 Round the numbers to nearest 100. Circle the **two** numbers that round to 1800

1089

1894

1846

1732

1765

1 mark

14

$$\boxed{\phantom{00000}} - 9.8 = 46.3$$

1 mark

$$50 \div \boxed{\phantom{00000}} = 1.25 \times 2$$

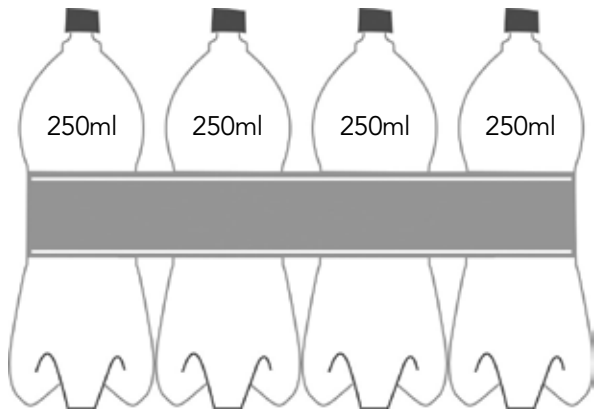
1 mark





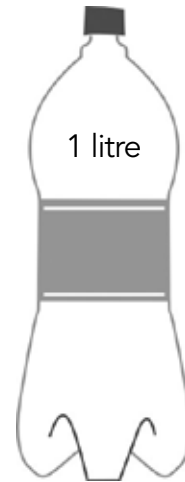


17



(not to scale)

4 x 250ml  
£1.05

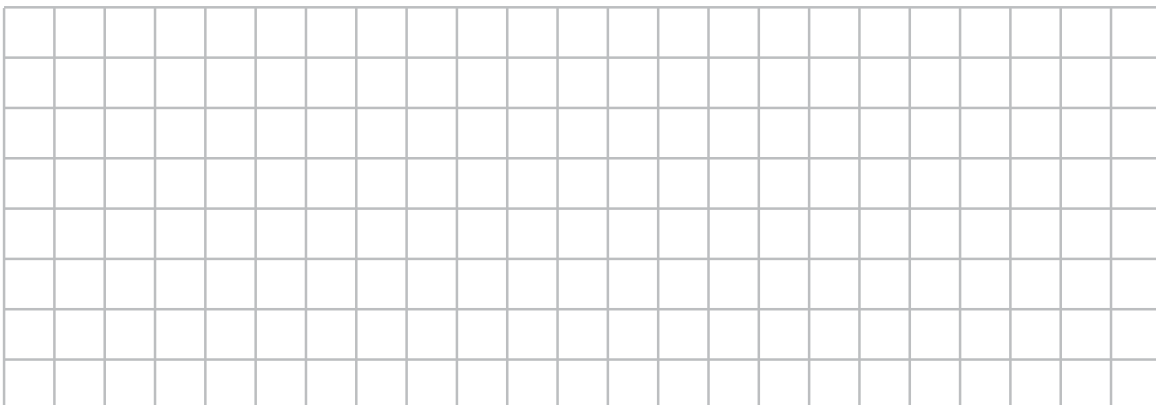


1 x 1 litre  
65p

Mr Raman needs **5 litres** of lemonade.

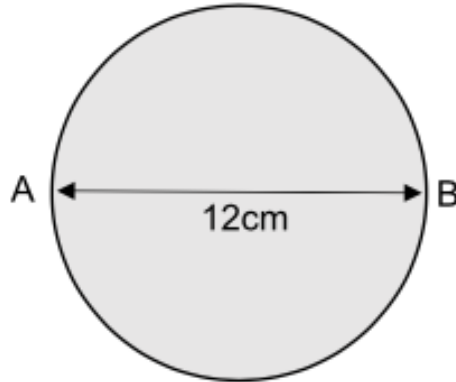
How much money does he save by buying five 1 litre bottles instead of packs of 250ml bottles?

Show your method.



2 marks

18 This circle has a diameter of 12cm:



Complete these sentences:

The circle has a **radius** of

cm

1 mark

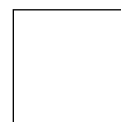
The distance around the circle from A to B is 18.85cm.  
What length is the **circumference**?

cm

1 mark

- 19 One square on this multiplication grid has been shaded. Shade any other squares that contain the same answer as this one.

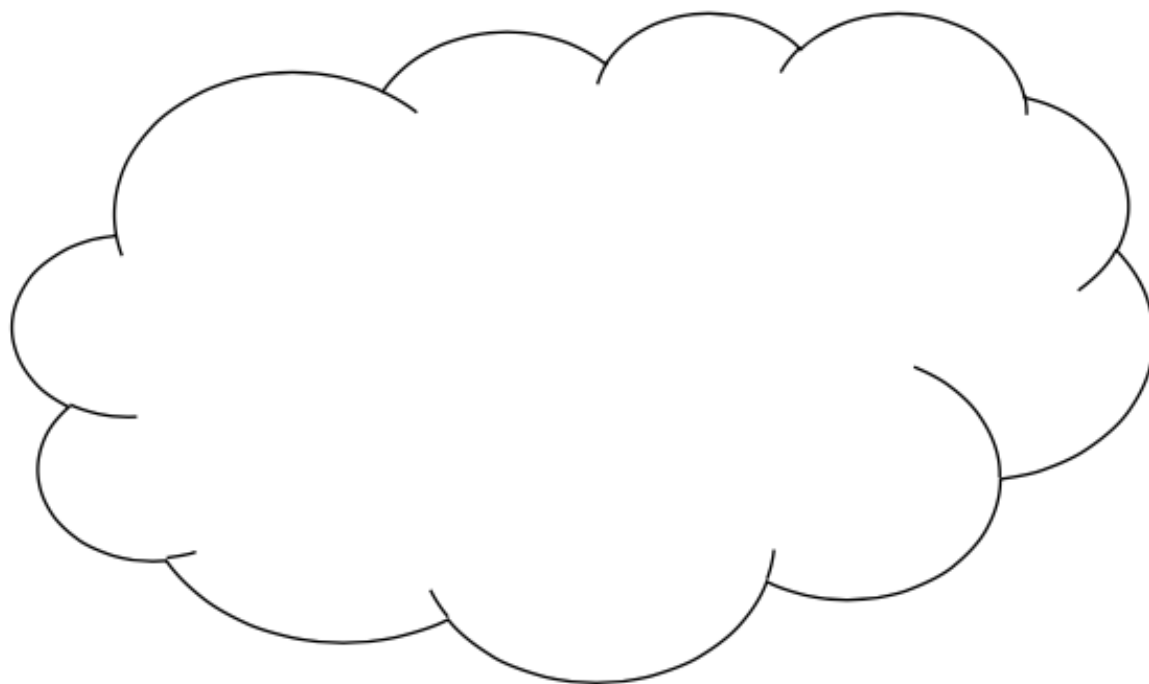
x	2	4	8	3
3				
2				
12				
7				
6				



1 mark

- 20 Sara says, 'There are 86,400 seconds in 1 day.'  
Rani says, 'There are 24,000 seconds in 1 day.'

**Explain** how you know Sara is correct.



1 mark

21 Harry, John and James jumped a total of 33m in a long jump competition.

Harry jumped 2.5 metres further than John.  
James jumped 1 metre further than Harry.  
How far did James jump?  
Show your method.



3 marks

The instructions and principles of this mark scheme closely follow the guidance in the 2016 national curriculum tests. We have deliberately not set a limited time for the test paper as a teacher may want to vary it according to the standard individual children are working at.

The national curriculum test allows 40 minutes to complete this test.

### Demand Descriptors

T = Working towards expected standard

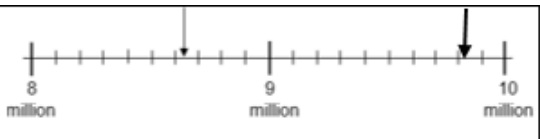
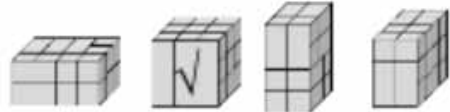
E = Working at expected standard

G = Working at greater depth within expected standard



Key Stage 2 SATs  
 Mathematics Practice Test Mark Scheme  
 Paper 2: Reasoning

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
1	70	1m		4N1	Number	T
2	3 x 13 circled	1m		6C3	Calculation	E
3	<p>Award TWO marks for all 5 correct:</p> <p style="text-align: center;">             80cm <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">1m</span>  <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">7.5kg</span> 7005g  <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">13mm</span> 0.13cm              450g <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">4.05kg</span>  <span style="border: 1px solid red; border-radius: 50%; padding: 2px;">2m</span> 200mm           </p> <p>Award ONE mark for 3 or 4 correct answers.</p>	Up to 2m	Accept any clear indication of the correct answers.	3M1a 3M1b	Measures	E E
4	T T F	1m	Accept any clear indication of true/false.	5F12	Fractions	E
5	14 $c = 2n + 2$	1m	Accept $4n - 2(n-1)$	6A3 6A3	Algebra	E E

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
6		1m	Allow for slight inaccuracies	4C6a	6N3	E
7	Cuboid Cylinder	1m		5G3b 5G3b	Geometry	T T
8	$\frac{1}{8}$ $\frac{1}{12}$	1m 1m		6F5a 6F5b	Fractions	E E
9	Thursday 3	1m 1m		5S1 6S3	Statistics	T E
10	 4cm	1m 1m	Accept any clear indication of the correct answer.	6M8a 6M8a	Measures	E G

Key Stage 2 SATs  
 Mathematics Practice Test Mark Scheme  
 Paper 2: Reasoning

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
11	$2 \times 3 \times 4 \times 7$ OR $1 \times 3 \times 7 \times 8$ OR $1 \times 4 \times 6 \times 7$	1m	Digits can be in any order.	6C5a	Calculation	G
12	$(6,-1)$ $8\text{cm}^2$	1m 1m		6P3 6M7b	Geometry	G G
13	1846 AND 1765	1m	Both answers required.	4N4b	Number	E
14	56.1 20	1m 1m		5F10 5F10	Fractions	E G
15	Award TWO marks for the correct answer of 0.8km  If the answer is incorrect, award ONE mark for evidence of an appropriate method with no more than one arithmetic error, e.g.  Kenny: $12,000 \div 3 = 4000\text{m} = 4\text{km}$ Kate: $2 \times 1.6 = 3.2\text{km}$ $4\text{km} - 3.2\text{km} =$	Up to 2m	Award 1m for either 4000m/4km or 3.2km as evidence of correct conversion	6M6	Measures	E G

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
16	<p>Award TWO marks for the correct answer of 187.5g</p> <p>If the answer is incorrect, award ONE mark for evidence of an appropriate method with no more than one arithmetic error, e.g.</p> <p><math>225\text{g} \div 6 = 37.5\text{g}</math>  <math>37.5\text{g} \times 5 =</math></p> <p>OR</p> <p><math>225 \div 30 = 7.5\text{g}</math>  <math>7.5\text{g} \times 25 =</math></p>	Up to 2m	Also accept 0.1875kg	6R1	Ratio and Proportion	E E
17	<p>If the answer is incorrect, award ONE mark for evidence of an appropriate method with no more than one arithmetic error, e.g.</p> <p><math>\pounds 1.05 \times 5 = \pounds 5.25</math>  <math>\pounds 0.65 \times 5 = \pounds 3.25</math>            Amount saved = <math>\pounds 2.00</math></p>	Up to 2m	<p>Accept for TWO marks a clear indication of the correct amount, e.g. 95p, <math>\pounds 0.95\text{p}</math></p> <p>Accept for ONE mark an answer of <math>\pounds 95</math>, <math>\pounds 9.50</math> or <math>\pounds 95\text{p}</math> as evidence of an appropriate method</p>	5M9a	Measures	E E

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand																														
18	6cm 37.7cm	1m 1m		6G5 6G55	Geometry	E E																														
19	<table border="1" style="border-collapse: collapse; text-align: center; width: 100px; height: 100px;"> <tr> <td>x</td> <td>2</td> <td>4</td> <td>8</td> <td>3</td> </tr> <tr> <td>3</td> <td></td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> </tr> <tr> <td>2</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>12</td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> <td></td> </tr> <tr> <td>7</td> <td></td> <td></td> <td></td> <td></td> </tr> <tr> <td>6</td> <td></td> <td style="background-color: #cccccc;"></td> <td></td> <td></td> </tr> </table>	x	2	4	8	3	3					2					12					7					6					1m  1m	Both answers required for the award of ONE mark.  Do not award the mark if other squares are shaded.	4C6a	Calculation	T
x	2	4	8	3																																
3																																				
2																																				
12																																				
7																																				
6																																				
20	Award ONE mark for an explanation that shows that: There are $60 \times 60 = 3600$ seconds in 1 hour. There are 24 hours in 1 day. $24 \times 3600 = 86,400$ seconds		Do not accept vague, incomplete or incorrect explanations.	5M4	Measures	E																														

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
21	<p>Award THREE marks for the correct answer of 12.5m. If the answer is incorrect award TWO mark for evidence of an appropriate method e.g.</p> <p>John = xm            Harry = x + 2.5m            James = x + 2.5m + 1m            33m = x + (x+2.5) + (x+2.5+1)            33m = 3x + 6            33m - 6 = 3x            27 = 3x            9 = x = John's jump            So James = 9 + 3.5 = 12.5m</p>	Up to 2m	<p>Accept for ONE mark evidence of correct use of algebra, e.g:</p> <p>John = xm            Harry = x + 2.5m            James = x + 2.5m + 1m            OR            Accept for one mark a sensible trial and improvement method giving an incorrect answer.</p>	5F10	Fractions	E G G

### Balance of difficulty of questions in the paper

5 marks at working towards  
 22 marks at the expected standard  
 8 marks at working at greater depth

### Thresholds

Working towards the expected standard: Criteria for 'working at the expected standard' have not been met.

Working at the expected standard: at least 11 of the 22 'expected' marks are obtained, together with all 5 of the working towards marks, but none of the 8 marks graded 'greater depth'. This mark is 16 out of 35.

Working at greater depth: all of the 5 working toward marks are obtained, plus at least 90% of the 'expected' marks and at least 50% of the 'greater depth' marks. This mark is 29 out of 35.



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## Third Space Learning Year 6 Maths SATs Foundation

Prepare early for SATs with 1-to-1 tuition starting in September. Our 1-to-1 Maths specialists will work with your target pupils to plug gaps, secure key concepts and develop problem solving skills.

Find out more here: <http://bit.ly/Y6Maths>

"Third Space has done wonders for pupils' attitudes towards maths - they look forward to their sessions. Also the fact I can pick and choose quality sessions is a huge asset."

Lisa Graham, Deputy Head, St Hughes C-of-E Primary

"My tutor understands when I don't get things right. She helps me through at a steady pace and always believes I can do it :)"

Millie, Year 5, Worcester