



THIRD SPACE
LEARNING

Key Stage 2 SATs

Mathematics Practice Test and Mark Scheme

Paper 3: Reasoning

Pack 1: 2016 (new curriculum)



1 465 + = 605

1 mark

- 2 An evening temperature in Stockholm is -9°C . If it **falls by 7 degrees**, what will the new temperature be?

 $^{\circ}\text{C}$

1 mark

This table shows the average temperatures of five cities in January:

City	Average temperature
Barcelona	8.9°C
Innsbruck	-2°C
London	4.3°C
Moscow	-8°C
Prague	-1°C

What is the **difference** between the lowest and highest temperatures?

 $^{\circ}\text{C}$

1 mark

- 3 Samir has a watch that shows analogue time. This is how his watch shows 20 minutes to 9 in the evening:



Anna has a digital watch that shows the time using the **24-hour clock**. What does her watch show at 20 minutes to 9 in the evening?

:	
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1 mark

- 4 Find the values of a and b ,
if $7a - 4b = 2$ and $2a + 5b = 19$

$a =$	
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1 mark

$b =$	
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1 mark

5 Write these numbers in order from smallest to largest:

21.54

21.398

21.045

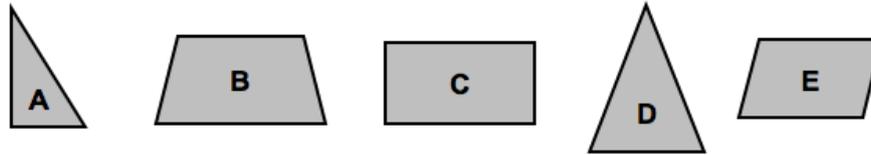
21.504

smallest

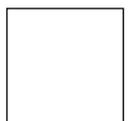
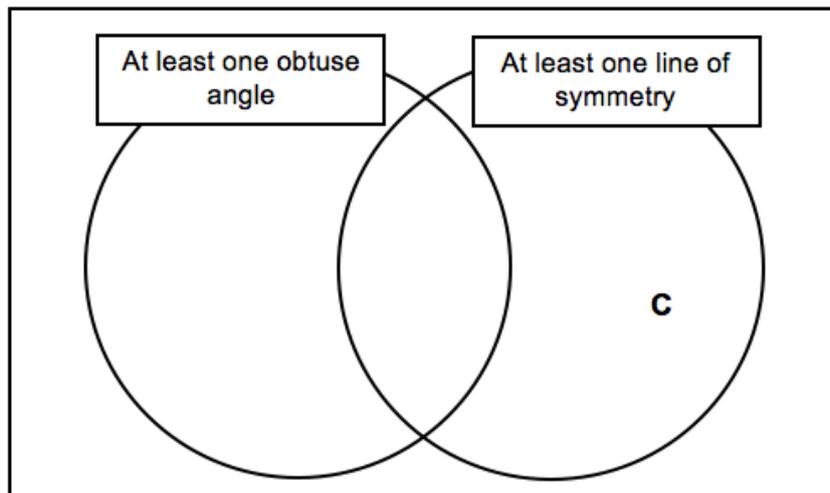
largest

1 mark

7 Here are 5 shapes, labelled A-E:



Write the letter for each shape in the correct place on the Venn diagram. One has been done for you.



2 marks

8

Calculate the value of  and 

$$\heartsuit + \heartsuit + \heartsuit = 10.5$$

$$\heartsuit + \text{lightning bolt} + \text{lightning bolt} = 7.7$$

$$\text{lightning bolt} + (3 \times \text{star}) = 7.2$$

 =	<input type="text"/>
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1 mark

 =	<input type="text"/>
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1 mark

9 Here is part of a train timetable:

Runford	09:17	10:10	11:12	12:00
Telham	09:24	10:19	11:22	12:11
Serbridge	09:46		11:47	12:35
Colshore	09:57	10:54	11:56	12:49
Polmouth	10:05	11:01	12:02	12:58

How long does it take the **09:17 train** to travel from **Serbridge to Polmouth**?

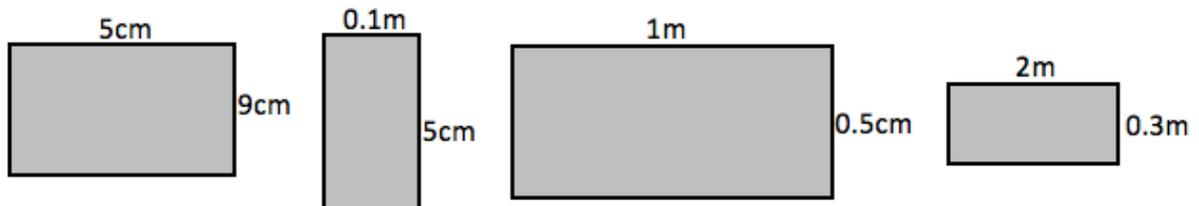
minutes

1 mark

The 10:10 train from Runford takes **24 minutes** to travel from **Telham to Serbridge**. Fill in the missing time on the timetable.

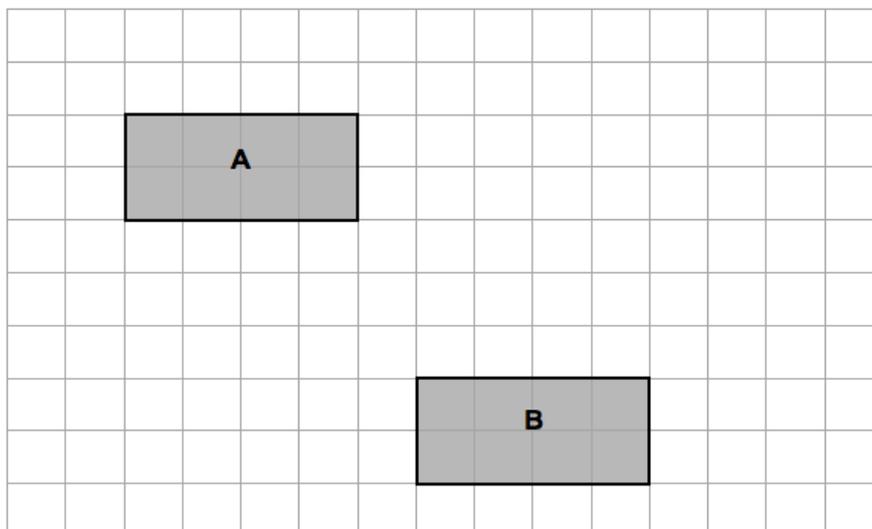
1 mark

- 10 Tick (✓) the **two** rectangles that have the same **area**
Diagrams have not been drawn to scale.



1 mark

- 12 The rectangle has been translated from position A to position B.



Tick the correct statement:

a) The rectangle has moved 1 square to the right and 3 squares down.

b) The rectangle has moved 1 square to the right and 5 squares down.

c) The rectangle has moved 5 squares to the right and 3 squares down.

d) The rectangle has moved 5 squares to the right and 5 squares down.

1 mark

13 Write $\frac{9}{4}$ as a mixed number

1 mark

$$\frac{6}{10} = \frac{\square}{5}$$

1 mark

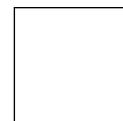
14 Complete each statement:

There are centimetres in 1.8m

There are metres in 0.056km

centimetres make 34mm

There are metres in 8.9km



2 marks

- 15 Round each number in the table to the **nearest 100** and to the **nearest 10,000**.

One has been done for you.

Number	Rounded to nearest 100	Rounded to nearest 10,000
45,198	45,200	
172,057		



2 marks

16 This is a recipe for making **24** biscuits:

200g butter 200g sugar 2 eggs 550g flour

Sunil uses **5 eggs** to make his biscuit dough. How many biscuits does he make?

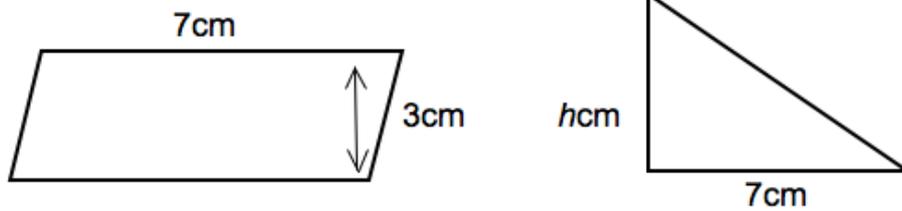
1 mark

How much **flour** would he need to use to make **18** biscuits?

 g

1 mark

- 17 The areas of the parallelogram and triangle are the same. The diagrams have not been drawn to scale.



Calculate the **height** (h) of the triangle.

$h =$	cm	
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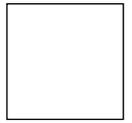
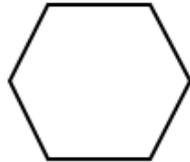
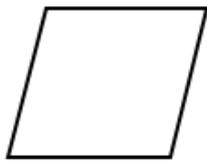
1 mark

18 Tick **all** the shapes that have all of these properties:

Are quadrilaterals

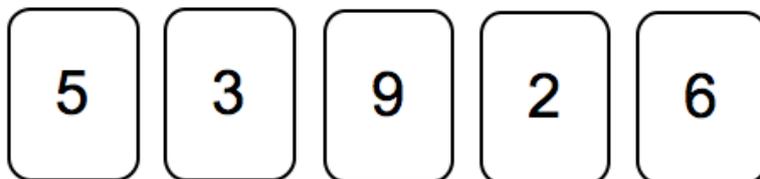
Have diagonals that are of equal length

Have opposite sides that are of equal length



2 marks

19 Here are 5 digit cards:



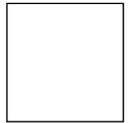
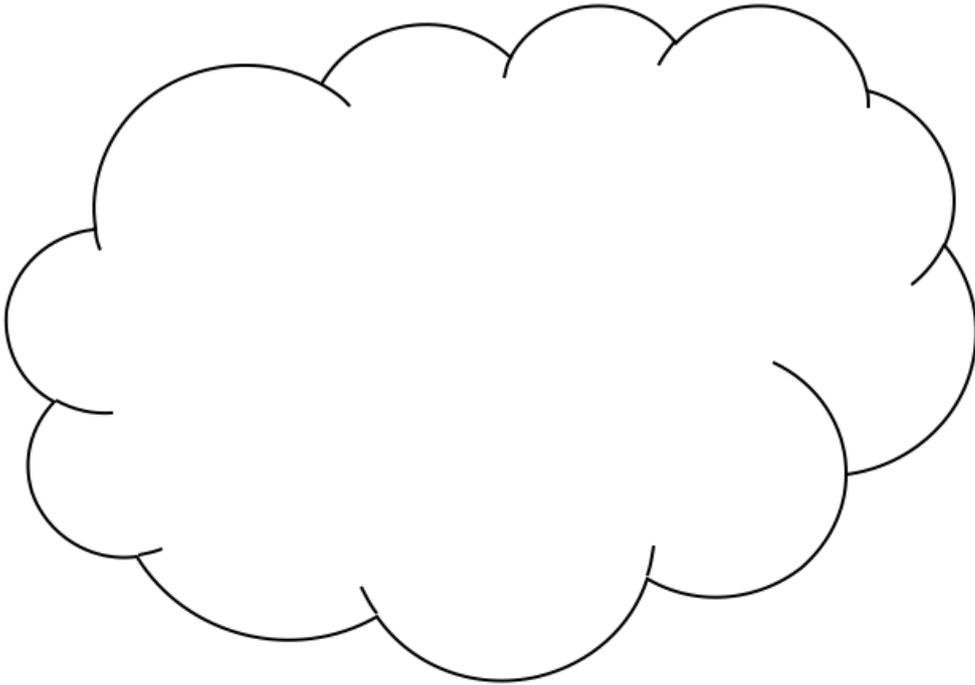
Use all five cards to make a number that would round to 20,000 when rounded to the nearest 10,000

1 mark

Use any of the cards to make the smallest 3-digit number that would round to 260 when rounded to the nearest 10

1 mark

- 21 If $4,410 \div 18 = 245$, **explain** how you know what 246×18 is.



1 mark

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

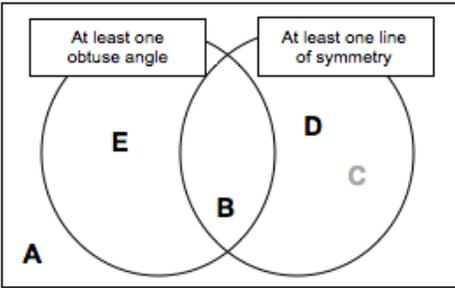
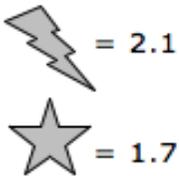
T = Working towards expected standard

E = Working at expected standard

G = Working at greater depth within expected standard

Key Stage 2 SATs
 Mathematics Practice Test Mark Scheme
 Paper 3: Reasoning

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
1	140	1m		3C1	Calculation	T
2	a) -16°C b) 16.9°C	1m 1m		6N5 6N5	Number	E E
3	20:40	1m	Do not accept 8:40pm	4M4b	Measures	T
4	a) $a = 2$ b) $b = 3$	1m 1m		6A4 6A4	Algebra	G G
5	21.045 21.398 21.504 21.54	1m		5F8	Fractions	E
6	Award TWO marks for the correct answer of 189.08km If the answer is incorrect, award ONE mark for evidence of an appropriate method, e.g. $530.4 - 205.72 = 324.68$ $324.68 - 135.6$ OR $205.72 + 135.6 = 341.32$	Up to 2m		4F10b	Fractions	E E

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
7	<p>Award TWO marks for all 4 letters correctly placed:</p>  <p>If the answer is incorrect award ONE mark for 3 letters correctly placed</p>	Up to 2m	<p>Accept 'A' drawn anywhere outside the circles.</p> <p>Accept alternative unambiguous indications.</p> <p>Do not accept letters written in more than one region.</p>	4G2b 4G4	Geometry	E E
8		1m 1m		6C8	Geometry	E E
9	<p>a. 19 minutes</p> <p>b. 10:43</p>	1m 1m	<p>Accept any unambiguous correct answer, e.g. 43 minutes past 10, 17 minutes to 11, 10-43, 10;43, 10 43</p>	5S1 5S1	Statistics	E E
10		1m	Accept any unambiguous indication.	5M7b	Measures	E

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
11	<p>Award TWO marks for the correct answer of 2,880</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>$12 + 8 = 20$ $20 \times 6 = 120$ 120×24</p>	Up to 2m	<p>Accept for TWO marks a clear indication of the correct amount, e.g. 0kg 325g, 0.325kg</p> <p>Accept for ONE mark an answer of 325kg as evidence of an appropriate method</p>	6C7a	Calculation	G G
12	d	1m	Accept any clear indication of the correct answer	4P2	Geometry	T
13	<p>a) $2\frac{1}{4}$</p> <p>b) $\frac{3}{5}$</p>	1m 1m		5F2a 5F2b	Fractions	E E

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand									
14	<p>Award TWO marks for the correct answer of:</p> <p>There are <input type="text" value="180"/> centimetres in 1.8m</p> <p>There are <input type="text" value="56"/> metres in 0.056km</p> <p><input type="text" value="3.4"/> centimetres make 34mm</p> <p>There are <input type="text" value="8900"/> metres in 8.9km</p> <p>If the answer is incorrect, award ONE mark for three lines correct answers.</p>	Up to 2m		6M5 6M5	Measures	E E									
15	<p>Award TWO marks for all three boxes completed correctly:</p> <table border="1" data-bbox="219 1018 757 1139"> <thead> <tr> <th>Number</th> <th>Rounded to nearest 100</th> <th>Rounded to nearest 10,000</th> </tr> </thead> <tbody> <tr> <td>45,198</td> <td>45,200</td> <td>50,000</td> </tr> <tr> <td>172,057</td> <td>172,100</td> <td>170,000</td> </tr> </tbody> </table> <p>If the answer is incorrect, award ONE mark for any two correct boxes</p>	Number	Rounded to nearest 100	Rounded to nearest 10,000	45,198	45,200	50,000	172,057	172,100	170,000	Up to 2m		5N4	Number	E E
Number	Rounded to nearest 100	Rounded to nearest 10,000													
45,198	45,200	50,000													
172,057	172,100	170,000													
16	<p>a) 60</p> <p>b) 412.5g</p>	1m 1m	Accept 413g	6R4	Ratio	E G									

Key Stage 2 SATs
 Mathematics Practice Test Mark Scheme
 Paper 3: Reasoning

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
17	6cm	1m		6M7b	Measures	G
18	Square ticked	1m	Accept other clear indications of the correct shapes	6G2a	Geometry	E
	Rectangle ticked	1m				E
19	a) 23, _ _ _ (it does not matter what order the last 3 digits go in)	1m	Accept:	6N6	Number	E
	b) 256		23,569 23,659 23,956 23,596 23,695 23,965			E
20	Award TWO marks for the correct answer of £8,405 If the answer is incorrect, award ONE mark for evidence of an appropriate method, e.g. 2.5% of £8,000 = £200 £8,000 + £200 = £8,200 2.5% of £8,200 = £205 £8,200 + £205 =	Up to 2m		5F10	Fractions	E G

Q	Required answer	Mark	Acceptable answer or additional guidance	Content Domain Ref	NC strand	Level of demand
21	<p>Award ONE mark for an explanation that shows that 4,428 can be made by adding 18 to 4,410 e.g.</p> <ul style="list-style-type: none"> • $4,410 + 18 = 246 \times 18$ • 246×18 is 18 more than 245×18 • You add 18 to 4,410 • You can add 18 to the answer of 245×18 • $4,410 + 18$ 	1m	<p>Do not accept an explanation that just calculates $246 \times 18 = 4,428$</p> <p>Do not accept vague, incomplete or incorrect explanations e.g.</p> <ul style="list-style-type: none"> • You add 18 • $4,428 - 18 = 4,410$ 	6C8	Calculation	E

Balance of difficulty of questions in the paper

3 marks at working towards
 25 marks at the expected standard
 7 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 13 of the 25 'expected' marks are obtained, together with all 3 of the working towards marks, but none of the 7 marks graded 'greater depth'. This mark is 16 out of 35.

Working at greater depth: all of the 3 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.



THIRD SPACE
LEARNING

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"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