# Key Stage 2 SATs

## Mathematics Practice Test and Mark Scheme

## Paper 3: Reasoning

Pack 1: 2016 (new curriculum)

Third Space Learning

| First name | |
| --- | --- |
| Last name | |
| Class | |
| Score | / 35 |

## Instructions

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

## Questions and answers

- Follow the instructions for each question.
- Work as quickly and as carefully as you can.
- If you need to do working out, you can use the space around the question.
- Do not write over any barcodes.
- **Some questions have a method box like this**:

- For these questions, you may get a mark for showing your method.
- If you cannot do a question, **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 line at the side of the page tells you the maximum number of marks for each question.

**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?

°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?

°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**?

|  : |  |
|---|---|

1 mark

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

$a =$

1 mark

$b =$

1 mark

**5** Write these numbers in order from smallest to largest:

21.54        21.398        21.045        21.504

_____    _____    _____    _____

smallest                                        largest

1 mark

**6** Jake lived in London and was travelling **530.4** kilometres to Scotland for his holiday. He drove 205.72 kilometres, then he stopped for a break.

After another 135.6 kilometres he needed to stop for fuel. **How much further** does he still need to travel to reach his holiday destination?

km

**2 marks**

**7** Here are 5 shapes, labelled A-E:
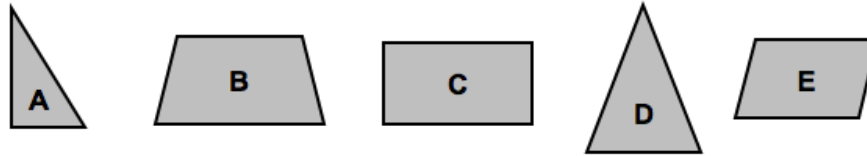


Write the letter for each shape in the correct place on the Venn diagram. One has been done for you.
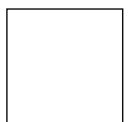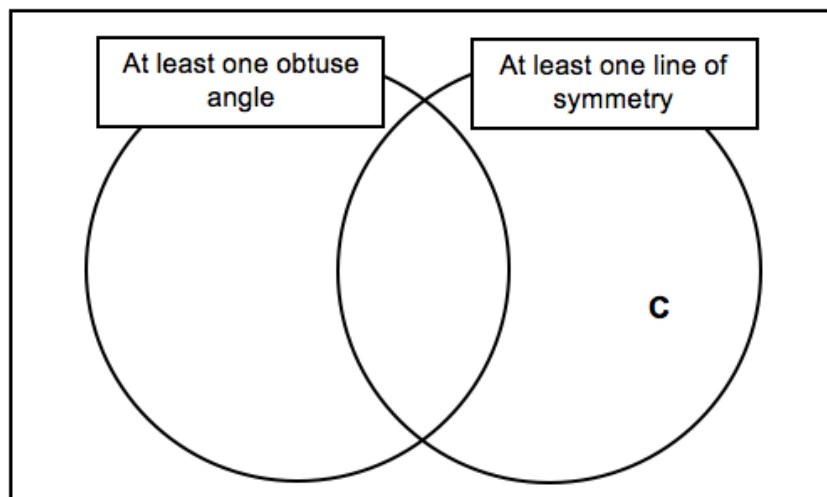


**2 marks**

**8** Calculate the value of ⚡ and ⭐

♡ + ♡ + ♡ = 10.5

♡ + ⚡ + ⚡ = 7.7

⚡ + (3 x ⭐) = 7.2

⚡ =

1 mark

⭐ =

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 |

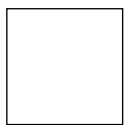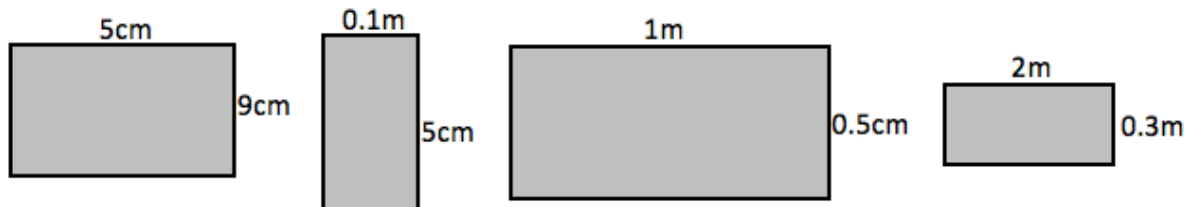How long does it take the **09:17 train** to travel from **Serbridge to Polmouth**?

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.



| 5cm |
|---|
| 9cm |

0.1m
5cm

1m
0.5cm

2m
0.3m

**1 mark**

**11** The storeroom at a supermarket has:

12 cases of salt and vinegar flavour crisps
8 cases of cheese and onion flavour crisps
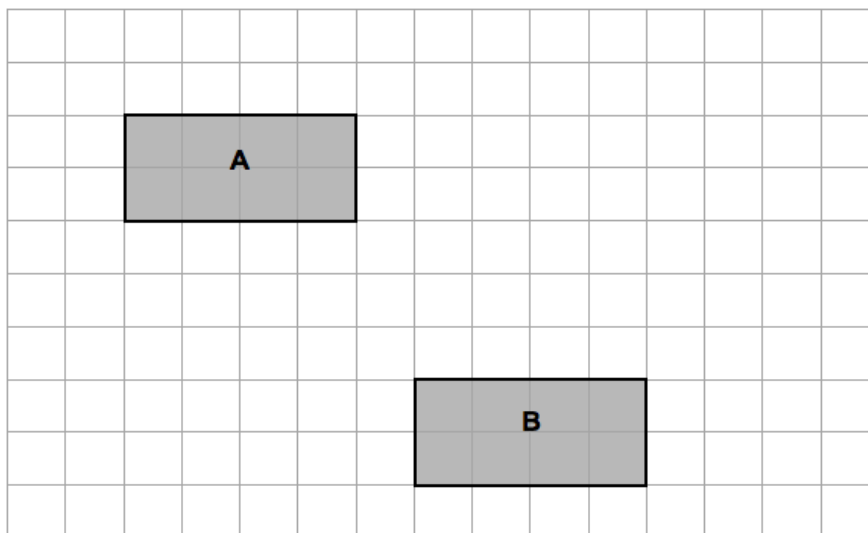Each case contains 6 boxes of crisps.
Each box contains 24 packets of crisps.

How many **packets** of crisps are there in **total**?

**2 marks**

**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 $\dfrac{9}{4}$ as a mixed number
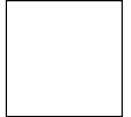
**1 mark**

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

**1 mark**

**14** Complete each statement:

There are [        ] centimetres in 1.8m

There are [        ] metres in 0.056km

[        ] centimetres make 34mm
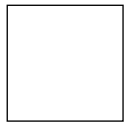
There are [        ] metres in 8.9km

**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

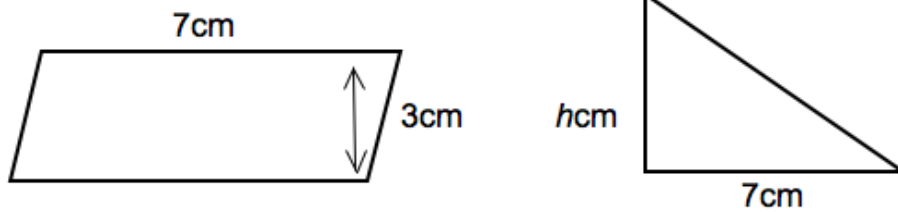Sunil uses **5 eggs** to make his biscuit dough. How many biscuits does he make?

|  |
|--|

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.

7cm

3cm

hcm

7cm

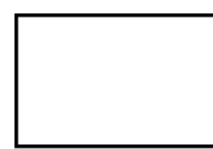Calculate the **height** (h) of the triangle.

$h =$ _____ cm

**1 mark**

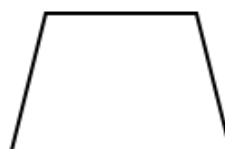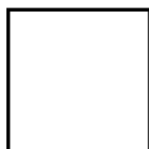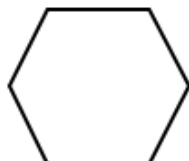**18**   Tick **all** the shapes that have all of these properties:

Are quadrilaterals
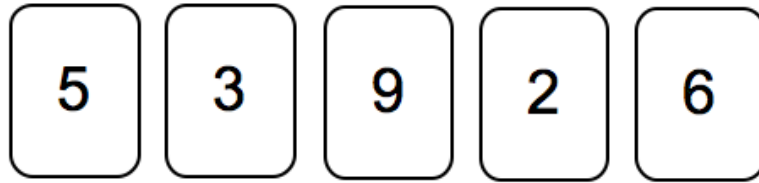Have diagonals that are of equal length
Have opposite sides that are of equal length
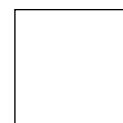
**2 marks**

**19** Here are 5 digit cards:

| 5 | 3 | 9 | 2 | 6 |

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

**20** Cara had £8,000 in her savings account. Each year the value of the savings increases by 2.5%. How much money will Cara have in her savings account after 2 years?

£ 

**2 marks**

**21** If 4,410 ÷ 18 = 245, **explain** how you know what 246 x 18 is.
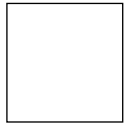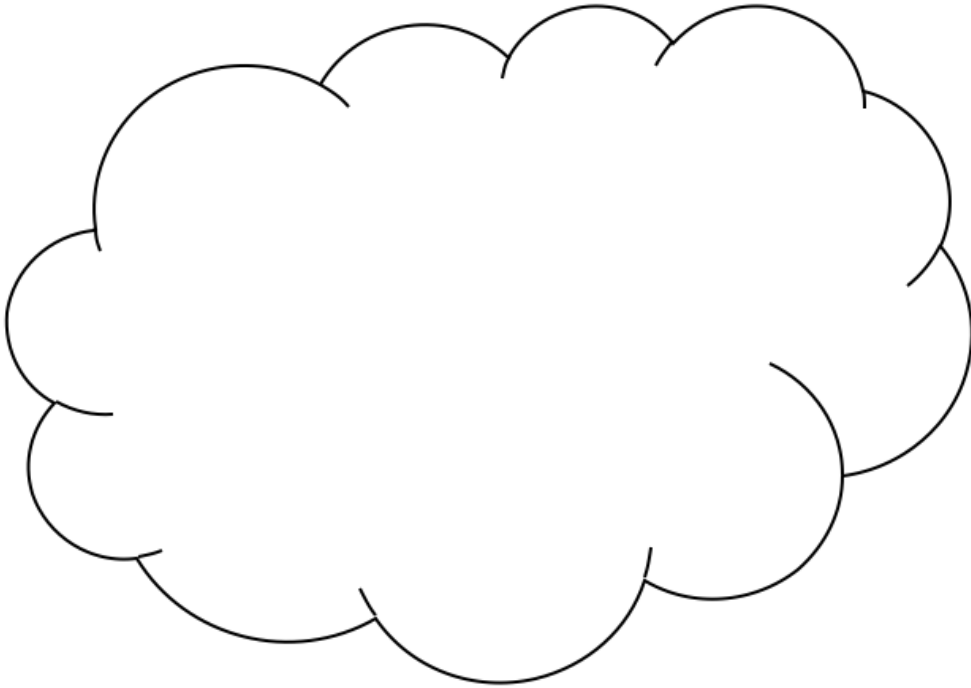
1 mark

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 very it according to the standard individual children are working at.

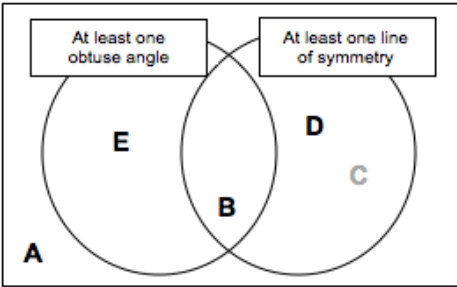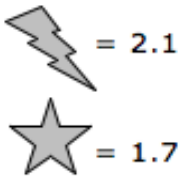The national curriculum test allows 40 minutes to complete this test.

### Demand Descriptors

T  = Working towards expected standard
E  = Working at expected standard
G = Working at greater depth within expected standard

| 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 | 1m | | 6N5 | Number | E |
| | b) 16.9°C | 1m | | 6N5 | | E |
| 3 | 20:40 | 1m | Do not accept 8:40pm | 4M4b | Measures | T |
| 4 | a) a = 2 | 1m | | 6A4 | Algebra | G |
| | b) b = 3 | 1m | | 6A4 | | 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<br><br>If the answer is incorrect, award ONE mark for evidence of an appropriate method, e.g.<br>530.4-205.72=324.68<br>324.68-135.6<br>OR<br>205.72+135.6=341.32 | Up to 2m | | 4F10b | Fractions | E<br><br>E |

| Q | Required answer | Mark | Acceptable answer or additional guidance | Content Domain Ref | NC strand | Level of demand |
|---|---|---|---|---|---|---|
| 7 | Award TWO marks for all 4 letters correctly placed:<br><br><br><br>If the answer is incorrect award ONE mark for 3 letters correctly placed | Up to 2m | Accept 'A' drawn anywhere outside the circles.<br><br>Accept alternative unambiguous indications.<br><br>Do not accept letters written in more than one region. | 4G2b<br>4G4 | Geometry | E<br>E |
| 8 |  = 2.1<br><br> = 1.7 | 1m<br><br><br><br>1m | | 6C8 | Geometry | E<br><br><br><br>E |
| 9 | a. 19 minutes<br><br>b. 10:43 | 1m<br>1m | Accept any unambiguous correct answer, e.g. 43 minutes past 10, 17 minutes to 11, 10-43, 10;43, 10 43 | 5S1<br><br>5S1 | Statistics | E<br><br>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 | Award TWO marks for the correct answer of 2,880<br><br>If the answer is incorrect, award ONE mark for evidence of an appropriate method with no more than one arithmetic error, e.g.<br>12 + 8 = 20<br>20 x 6 = 120<br>120 x 24 | Up to 2m | Accept for TWO marks a clear indication of the correct amount, e.g. 0kg 325g, 0.325kg<br><br>Accept for ONE mark an answer of 325kg as evidence of an appropriate method | 6C7a | Calculation | G<br>G |
| 12 | d | 1m | Accept any clear indication of the correct answer | 4P2 | Geometry | T |
| 13 | a) $2\frac{1}{4}$<br><br>b) $\frac{3}{5}$ | 1m<br>1m | | 5F2a<br>5F2b | Fractions | E<br>E |

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

| 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: 23,569  23,659  23,956 | 6N6 | Number | E |
| | b) 256 | | 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 | Award ONE mark for an explanation that shows that 4,428 can be made by adding 18 to 4,410 e.g.<br><br>• 4,410 + 18 = 246 x 18<br>• 246 x 18 is 18 more than 245 x 18<br>• You add 18 to 4,410<br>• You can add 18 to the answer of 245 x 18<br>• 4,410 + 18 | 1m | Do not accept an explanation that just calculates 246 x 18 = 4,428<br><br>Do not accept vague, incomplete or incorrect explanations e.g.<br><br>• You add 18<br>• 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.

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Millie, Year 5, Worcester