



The expected
standard



Mathematics

**SATs
Question
Workbook**

Steph King
& Sarah-Anne Fernandes

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The answers can be found in a pull-out section in the middle of this book.

Welcome to Achieve Mathematics: The Expected Standard – Question Workbook

In this book you will find lots of practice and information to help you achieve the expected score in the Key Stage 2 Mathematics tests.

About the Key Stage 2 Mathematics National Tests

The tests will take place in the summer term in Year 6. They will be done in your school and will be marked by examiners – not by your teacher.

There are three papers to the tests:

Paper 1: Arithmetic – 30 minutes (40 marks)

- These questions assess confidence with a range of mathematical operations.
- Most questions are worth 1 mark. However, 2 marks will be available for long multiplication and long division questions.
- It is important to show your working – this may gain you a mark in questions worth 2 marks, even if you get the answer wrong.

Papers 2 and 3: Reasoning – 40 minutes (35 marks) per paper

- These questions test mathematical fluency, solving mathematical problems and mathematical reasoning.
- Most questions are worth 1 or 2 marks. However, there may be one question worth 3 marks.
- There will be a mixture of question types, including multiple-choice, true/false or yes/no questions, matching questions, short responses such as completing a chart or table or drawing a shape, or longer responses where you need to explain your answer.
- In questions that have a method box it is important to show your method – this may gain you a mark, even if you get the answer wrong.

You will be allowed to use: a pencil/black pen, an eraser, a ruler, an angle measurer/protractor and a mirror. You **are not allowed** to use a calculator in any of the test papers.

Test techniques

- Before the tests**
- Try to revise little and often, rather than in long sessions.
 - Choose a time of day when you are not tired or hungry.
 - Choose somewhere quiet so you can focus.
 - Revise with a friend. You can encourage and learn from each other.
 - Read the 'Top tips' throughout this book to remind you of important points in answering test questions.

- During the tests**
- READ THE QUESTION AND READ IT AGAIN.
 - If you find a question difficult to answer, move on; you can always come back to it later.
 - Always answer a multiple-choice question. If you really can't work out an answer, try to think of the most sensible response and read the question again.
 - Check to see how many marks a question is worth. Have you written enough to 'earn' those marks in your answer?
 - Read the question again after you have answered it. Make sure you have given the correct number of answers within a question, e.g. if there are two boxes for two missing numbers.
 - If you have any time left at the end, go back to the questions you have missed.

Where to get help:

- **Pages 6–10** practise number and place value.
- **Pages 11–19** practise number – addition, subtraction, multiplication and division.
- **Pages 20–28** practise number – fractions, decimals and percentages.
- **Page 29** practises ratio and proportion.
- **Pages 30–32** practise algebra.
- **Pages 33–41** practise measurement.
- **Pages 42–46** practise geometry – properties of shapes.
- **Pages 47–50** practise geometry – position and direction.
- **Pages 51–56** practise statistics.

The answers can be found in a pull-out section in the middle of this book.

Place value of whole numbers

To achieve the expected standard, you need to:

- ★ know the **place value** of digits in whole numbers up to 1,000,000 and begin to know the place value of digits in whole numbers up to 10,000,000.

1 Write the value of the digit **9** in each of these numbers.

1,904 29,456 4,125,692 1,932,400

1
(1 mark)

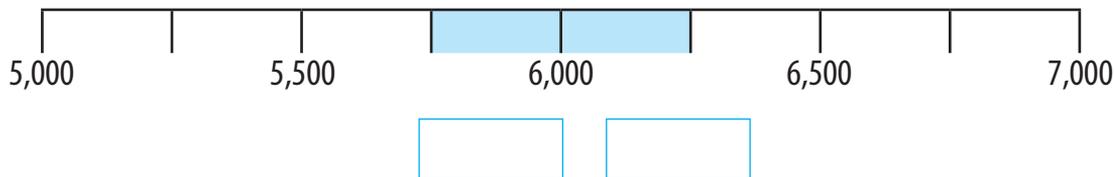
2 Draw lines to match the numbers with the value of the digit shown.

7 thousand	1,233,420
900 thousand	597,302
30 thousand	3,095,799
3 million	979,200

2
(2 marks)

3 Use **all** of the digit cards to make **two** different numbers that can be placed on the shaded part of this number line. You can only use each card once.

0 1 3 4 5 6 7 8



3
(1 mark)

4 Circle the **two** numbers that have a difference of 20,000

134,200 3,463,400 3,263,400 136,200 3,483,400

4
(1 mark)

5 Asha subtracts two numbers from the value shown on the calculator.



Her calculator display then reads 6,000,803

The first number she subtracted was 400,000

What was the second number?

5
(1 mark)



Top tip

- Find the missing values on a number line first.

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Total for this page

Addition

To achieve the expected standard, you need to:

- ★ secure adding whole numbers up to four digits
- ★ add whole numbers with more than four digits
- ★ use formal written methods.

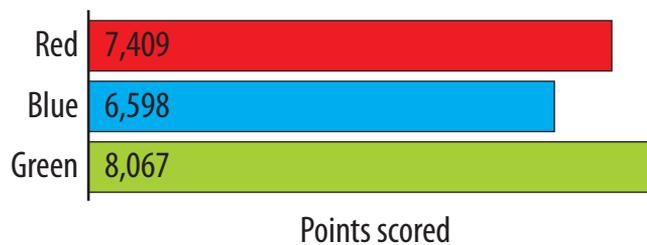
1 Write the missing digits. $9,000 + 7,000 + \boxed{} = 16,800$

1
(1 mark)

2 $72,545 + 48,938 =$

2
(1 mark)

3 a) How many points do the Red and Green teams score altogether?



3a
(1 mark)

b) What is the total number of points scored by all three teams?

3b
(1 mark)

4 Write the missing digits to make the addition correct.

$$\begin{array}{r} \boxed{} \ 9 \ 4 \ 8 \\ + \ 2 \ \boxed{} \ 4 \ 5 \\ \hline 6 \ 0 \ \boxed{} \ \boxed{} \end{array}$$

4
(1 mark)

5 A marathon run raised £235,748 for a charity in 2016

In 2017 the run raised £79,200 more than in 2016

What is the total amount of money raised so far?

£

5
(2 marks)

Top tip

- Write down any numbers that you need to carry in the correct column so you remember to include them.

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Total for this page

Fractions of amounts

To achieve the expected standard, you need to:

★ calculate simple fractions of whole numbers and quantities.

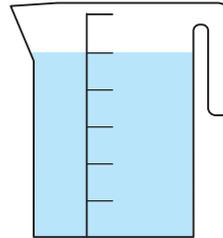
1 a) $\frac{1}{8}$ of 40 = b) $\frac{3}{8}$ of 40 =

1
(1 mark)

2 Megan has $\frac{3}{4}$ of £120 and Ali has $\frac{3}{8}$ of £160
How much **more** money does Megan have?

2
(1 mark)

3 The **whole** container holds **3.6 litres** of water.
How much water is shown here? litres

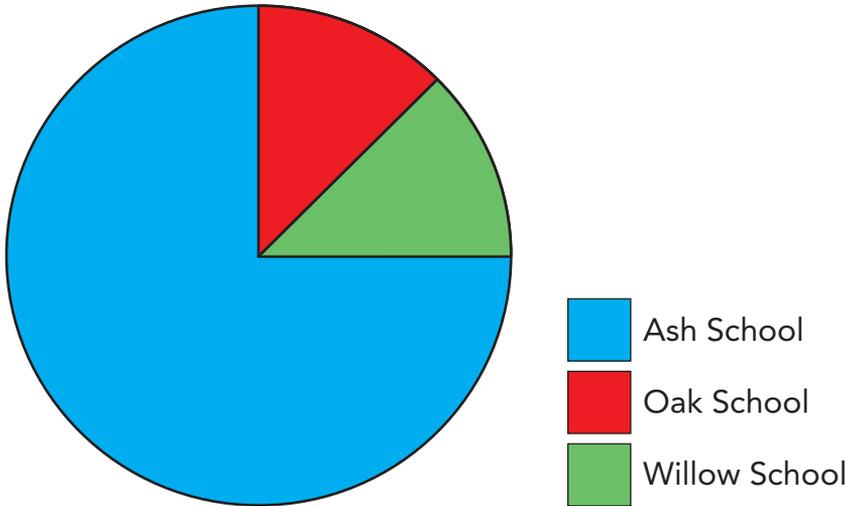


3
(1 mark)

4 Three schools raised £4,800 in total.
a) was raised by Oak School.
b) was raised by Ash School.

4a
(1 mark)

4b
(1 mark)



5 £45 is $\frac{\square}{5}$ of £75

5
(1 mark)

6 On Monday, Ben read $\frac{1}{3}$ of his book.
On Tuesday, he read the **other** 72 pages to finish the book.
How many pages are there in Ben's book?

6
(2 marks)

Top tip

- To find fractions of amounts always divide by the denominator and then multiply by the numerator.

/8

Total for this page

Ratio and proportion

To achieve the expected standard, you need to:

- ★ use simple **ratio** to compare quantities
- ★ estimate the distance on a map using a simple scale.

- 1 In Class 2W there are 3 girls to every 2 boys.

There are 18 girls in the class.

How many boys are there? boys

 1
(1 mark)

- 2 A recipe uses 100ml milk for every 250g flour.

How much milk is needed for **1 kg** of flour? ml

 2
(1 mark)

- 3 What is the real distance between Ashley Town and Mason Park?

km


 3
(2 marks)

- 4 In a group of 20 people, 3 people are left-handed.

What **proportion** of the group is **not** left-handed?

 4
(1 mark)

- 5 A total of 160 points was scored in a quiz.

The Red Team scored 5 points **for every** 3 points scored by the Blue Team.

How many points were scored by each team?

Red Team

Blue Team

 5
(2 marks)


Top tip

- Use your knowledge of multiplication facts to solve direct proportion problems.
- Use factors to help simplify ratios.

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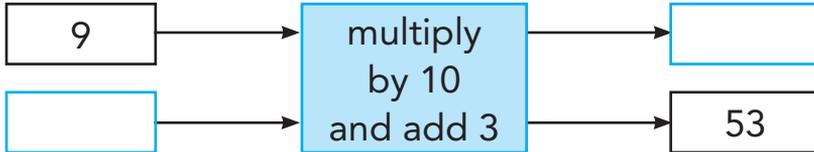
Total for this page

Algebra

To achieve the expected standard, you need to:

★ use simple formulae expressed in words.

1 Use the rule to find the missing numbers.

 1
(1 mark)

2 Use the rule below to fill in the empty boxes.

Double a number and subtract 12

Start number **Answer**

24 →

 → 58

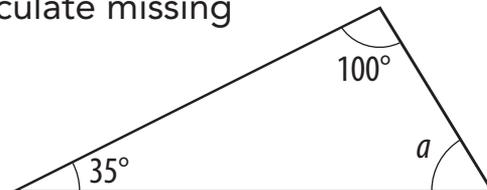
12.5 →

 2
(1 mark)

3 What formula can you write to help James find the area of any rectangle?

 3
(1 mark)

4 a) Describe the formula needed to calculate missing angle a in this triangle.

 4a
(1 mark)

b) Angle $a =$ °

 4b
(1 mark)

5 a) $n = 8$

What is $4n + 16$?

 5a
(1 mark)

b) $4q + 10 = 90$

Work out the value of q .

 5b
(1 mark)


Top tip

- You may want to use brackets to show which part of the calculation to do first.

/7

Total for this page

Length

To achieve the expected standard, you need to:

- ★ use, read, write and convert between metric units of length
- ★ use all four operations to solve problems involving length
- ★ use decimals to two decimal places.

1 $2\text{ m} + \boxed{}\text{ cm} = 525\text{ cm}$

1

(1 mark)

2 How many **25 centimetre** lengths can be cut from a **4.5 metre** rope?

2

(1 mark)

3 Draw lines to match the equivalent lengths.

38 cm 38 mm

3.8 cm 380 cm

3.8 m 0.38 m

3

(1 mark)

4 A car travels a distance of 5.6 kilometres.

How many **metres** is 5.6 kilometres? m

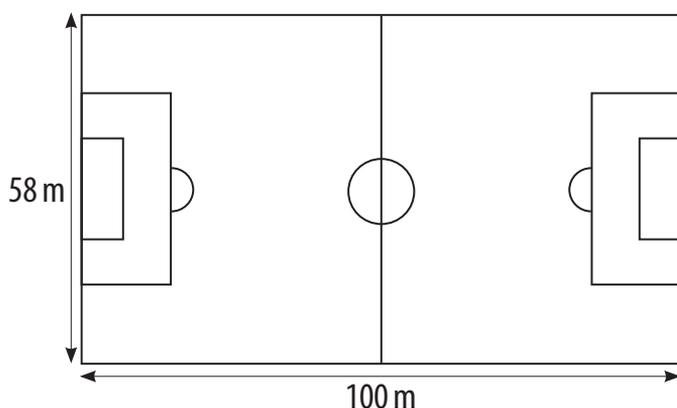
4

(1 mark)

5 What is the **perimeter** of the pitch in kilometres? km

5

(1 mark)



6 The height of a model car is **7.2 centimetres**.

The length of the real car is **60 times** the height of the model.

What is the **length** of the real car?

Give your answer in **metres**. m

6

(2 marks)



Top tip

- Check the unit of measurement in each question and answer.

/7

Total for
this page

Drawing lines and angles

To achieve the expected standard, you need to:

- ★ complete simple 2-D shapes using given lengths and acute angles that are multiples of 5 degrees.

1 Draw a rectangle with lengths 6.5 cm and 3.5 cm.

1
(1 mark)

2 A right-angled triangle has a base of 11 cm.

a) What is the height of the triangle (x)? cm

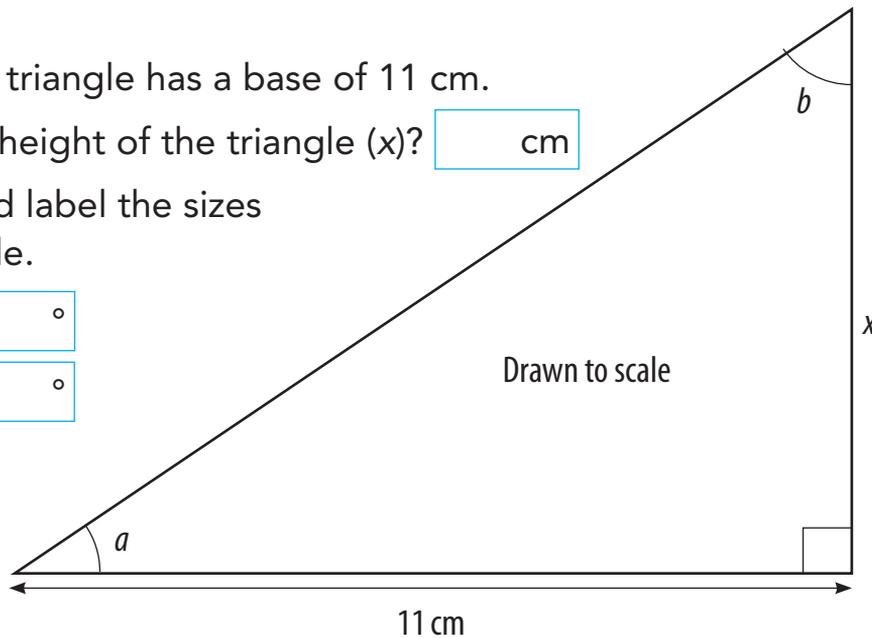
2a
(1 mark)

b) Measure and label the sizes of each angle.

Angle $a =$ °

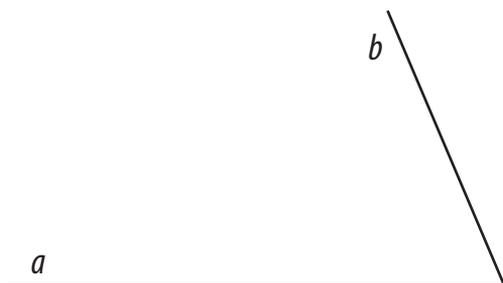
2b
(1 mark)

Angle $b =$ °



3 a) Complete the trapezium with angle $a = 65^\circ$.

3a
(1 mark)



b) Write the size of angle b to the nearest 5 degrees. °

3b
(1 mark)

Top tip

- Think how you can be sure that an angle is a right angle.
- Remember that lines or angles on shapes **drawn to scale** can be **measured**.

/5

Total for this page

Coordinates

To achieve the expected standard, you need to:

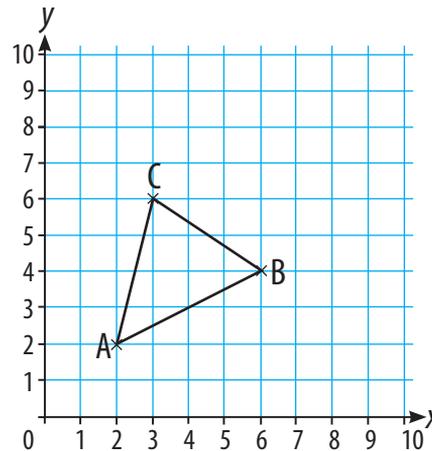
- ★ describe the positions on a 2-D coordinate grid using axes with equal scales in the first quadrant and become more confident in plotting points in all four quadrants
- ★ use **coordinates** to complete a given rectangle.

1 Write the coordinates of each vertex of the triangle.

A (,)

B (,)

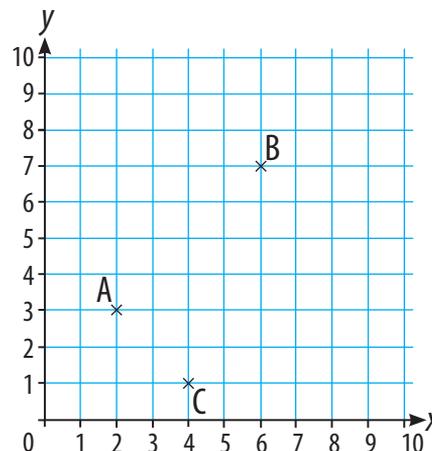
C (,)



1
(1 mark)

2 Write the coordinate of vertex D that completes the rectangle.

D (,)



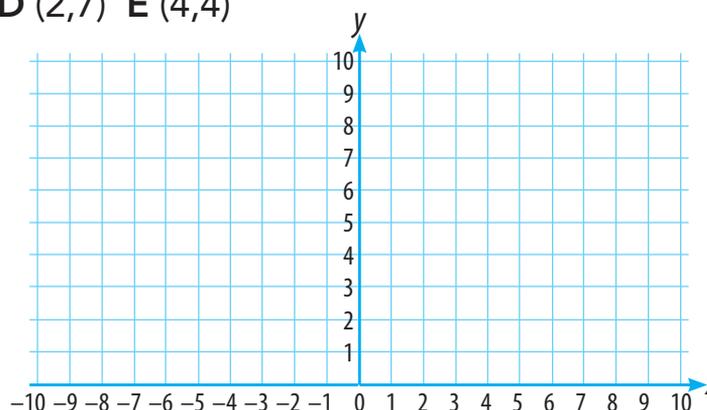
2
(1 mark)

3 Plot these coordinates on the grid.

A (1,0) B (-2,2) C (-2,7) D (2,7) E (4,4)

Join the coordinates in order to make a closed shape.

Name the shape:



3
(2 marks)

4 Jayden plots (5,4) and (8,4) as two vertices of a square.

What could the coordinates of the other corners be?

(,) and (,)



Top tip

- Coordinates are always written in the order (x,y).

4
(1 mark)

/5

Total for this page

Tables

To achieve the expected standard, you need to:

★ complete, read and interpret information in **tables**.

1 Complete the table showing the children's favourite sport.

Favourite sport	Tally	Total
badminton		
hockey		12
football		
		53

1
(1 mark)

2 a) How much money have the children saved in total?

	Sally	Ash	Peta	Pav
Money saved	£7.75	£10.99	£9.20	£11.49

2a
(1 mark)

b) How much **more** has Pav saved than Sally?

2b
(1 mark)

3 The table shows the days of the week the players are free to play a tennis match.

	Monday	Tuesday	Wednesday	Thursday	Friday
Kate	✓		✓		✓
Zack		✓			✓
Jayden		✓		✓	
Dina	✓			✓	✓

a) On which day of the week can **no** matches be played?

3a
(1 mark)

b) Which two players are **not** able to have a match together?

_____ and _____

3b
(1 mark)

4 This table shows how much water was collected in a week in three different containers.

	Container A	Container B	Container C
Amount of water container holds	$3\frac{1}{2}$ litres	$4\frac{1}{4}$ litres	$2\frac{3}{4}$ litres
Number of containers filled	4	3	2

a) How much **more** water can container B hold than container C? litres

4a
(1 mark)

b) How many litres have been collected **altogether**? litres

4b
(2 marks)

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Total for this page