NEW

STP MATHEMATICS

3rd Edition for the new 2014 KS3 Programme of Study

STP MATHEMATICS

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Oxford
For the new KS3 curriculum

Written by a renowned author team, including L.Bostock and S.Chandler, the third edition of our best-selling STP Mathematics series provides all the support you need to deliver the 2014 Key Stage 3 Programme of Study.

Retaining the series’ trusted authoritative and rigorous approach, the new edition focuses on developing problem-solving skills to help your students prepare for the highest achievement at Key Stage 4.

Here’s how STP Mathematics can help:

- There’s focus on problem-solving, essential for the new curriculum and for successful progression to GCSE.
- New content has been added to reflect the new curriculum, such as the introduction of sets in Book 7.
- Includes mental arithmetic exercises, to cover the new curriculum emphasis on fluency in arithmetic.
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- Includes thorough explanations followed by worked examples with a wealth of carefully graduated questions.
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About the authors:

Sue Chandler
Sue Chandler has been involved in mathematics education for over thirty years, both as a teacher and as an author of mathematics text books. Together with many well-reputed authors including Linda Bostock, she has written best-selling mathematics books for secondary schools both in the UK and abroad.

Ewart Smith
Ewart Smith, formerly lectured in a Technical College and was Head of Mathematics in a Grammar School and a Comprehensive School. He has been writing mathematics textbooks for more than thirty years and is the author/co-author of more than one hundred books, which have sold in the UK and throughout the world.

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Summary Test – example interactive activity to test students’ knowledge of topics from a number of chapters at once

Test Yourself – example interactive activity with automatic marking and ‘Check answers’ option for instant feedback
### 5 Sets

**Consider**

Many students were asked if they had a pen with them. They were then asked if they had a pencil with them.

- 12 students said they had a pen.
- 9 students said they had a pencil.
- 2 students said they had a pen and a pencil.

How can you find the number that each student has or not at all?

- We can think of a student as either having a pen or not having a pen, or both.
- We can think of a student as either having a pencil or not having a pencil, or both.

**Finite and infinite sets**

In many cases it is not possible to list all the members of a set. For example, if we list the members of the set of prime numbers between 0 and 20 as {2, 3, 5, 7, 11, 13, 17, 19}, we can easily see that there are 8 members in the set.

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### Exercise 5a

Write each of the following sets as a list of members:

- \{the prime factors of 30\}
- \{the different factors of 12\}
- \{the prime factors of 70\}
- \{the square numbers between 1 and 100 inclusive\}
- \{the multiples of 3 between 1 and 20\}
- \{the prime numbers between 10 and 20\}
- \{the last four letters of the Roman alphabet\}
- \{the odd numbers\}
- \{the months of the year beginning with J\}
- \{different languages spoken in the world\}
- \{grains of sand on the Earth\}
- \{months of the year\}
- \{the number of students in the class\}

**Class discussion**

These two numbers add up to more than the number of students in the class.

21 students said they had a pen.

21 students said they had a pencil.

15 used a bus. 18 used a car.

30 students wrote down what kind of transport they used one day to get to school.

22 students used a car.

3 used both a bus and a car.

21 students said they had a pen.

21 students said they had a pencil.

15 used a bus. 18 used a car.

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Each rod in an iron railing is a prism with a triangular cross-section, which is an equilateral triangle, surrounded by a straight edge or a fillet.

The length of the prism is 20 cm and the length of each side of the triangular cross-section is 10 cm. The sloping edges of the prism are 7 cm long.

1. Find the surface area of the curved surface.
2. Sketch the net for making the curved surface.
3. The radius of the circle forming the upper circle is 8 cm. The slant height is 20 cm.

a. Find the surface area of the frustum.

A factory produces 3000 of a particular type of radiators. The factory decides to change the production line to a new type of radiator.

Calculate the surface area of a new radiator and compare it to the old radiator.

A square is divided into 4 equal parts and a triangle is formed inside it. The area of the triangle is 30 cm².

a. Find the area of the square.

b. Find the area of the remaining parts of the square.

On the final page of the chapter the initial problem is reintroduced. Students will appreciate how their skills have developed and can then practise these skills through further investigation.

Summaries and revision exercises throughout for constant reinforcement of key concepts.

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Course structure

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