



St Paul's School
FOUNDED 1509

St Paul's School Maths 13+ Exam Guidance

Objective

The paper is designed to test how fluent pupils are with the concepts that they have been taught and examine their overall understanding of maths.

Duration

The paper is 70 minutes, including five minutes of reading time at the start. This is to enable candidates to read through the entire paper, so hopefully they will realise that even if they get stuck on an early question, it is worth moving through the paper as there will be questions later in the paper that they will hopefully be able to attempt.

Content

The main topics examined are those from the Year 5/6 National Curriculum, as listed on the ISEB 11+ Maths Examination Guidance.

Structure

The questions build in difficulty throughout the paper and develop from testing core skills to having more of an emphasis on problem solving, with the hardest questions serving to help identify gifted candidates.

Questions are often asked in context, and some questions will have multiple parts, with each part increasing in difficulty.

Exemplars

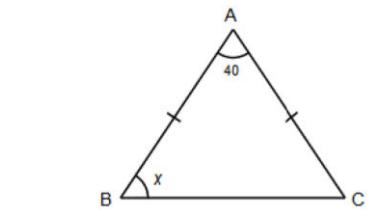
To aid with preparation, some example questions are included below. In some cases, these examples may be the earlier parts of a question with multiple parts.

1. I think of a number. I then multiply it by seven and add nine. The answer is 51. What number did I think of?
2. Work out the following:
 - a) $12 - 1000$
 - b) $123 - 1000 \times 1000$



3. The average (mean) of three different numbers is 16. The middle number is 17 and the difference between the largest and smallest number is 9. What is the largest number?

4. In triangle ABC, the two sides AB and AC are equal in length. The angle at A is 40° . What is the size of the angle at B , which is labelled x on the diagram?



5. Write down the largest number that is less than 700 and is a multiple of both 6 and 7.

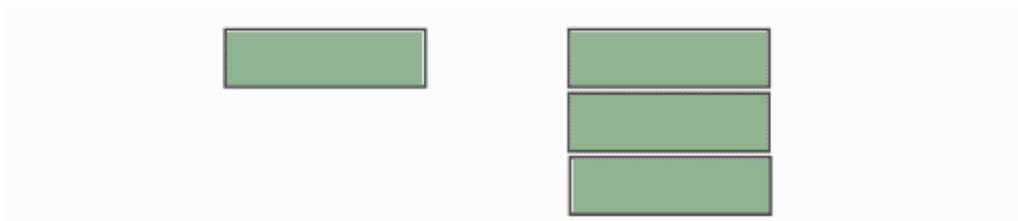
6. When the digits of the four-digit number 2543 are multiplied they make 120.

a) The digits of a different four-digit number are multiplied together and give 147. What is the largest this four-digit number could be?

b) How many different four-digit numbers have a total of 147?

c) What is the sum of all of the numbers with a total of 147?

7. The perimeter of a single rectangular block is 14cm. When three of these rectangles are laid next to each other along their longest sides, they form a rectangle of perimeter 24cm. What is the length of the shorter side of a single rectangle?



8. In the Summer term at St George's School, Year 7 boys choose between athletics, cricket or tennis as their sport. Two sevenths of the boys play cricket, three fifths choose athletics and 12 boys play tennis. How many boys are there in Year 7?



9. Consider the following calculation $8 \times 4 \times 5 \times 5$.

- Explain why the result of this calculation will have two zeros at the end.
- How many zeros will be at the end of the following multiplication sum?
 $1 \times 2 \times 3 \times \dots \times 28 \times 29 \times 30$ (Hint: $25 = 5 \times 5$)
- How many zeros will there be between the decimal point and the first non-zero digit of the following multiplication?

$$\frac{1}{2} \times \frac{1}{3} \times \frac{1}{4} \dots \times \frac{1}{30}$$

10. This question is about a number pattern.

- Look at the pattern below and complete the next two lines.

$\frac{1}{1} - \frac{1}{2} = \frac{1}{2} = \frac{1}{1} \times \frac{1}{2}$
$\frac{1}{2} - \frac{1}{3} = \frac{1}{6} = \frac{1}{2} \times \frac{1}{3}$
$\frac{1}{3} - \frac{1}{4} = \frac{1}{12} = \frac{1}{3} \times \frac{1}{4}$

- Use the pattern above to find the value of $\frac{1}{6} + \frac{1}{12} + \frac{1}{20} + \frac{1}{30}$.
- Find the value of

$$\frac{1}{1} \times \frac{1}{2} + \frac{1}{2} \times \frac{1}{3} + \frac{1}{3} \times \frac{1}{4} + \dots + \frac{1}{199} \times \frac{1}{200}$$