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WHITGIFT

# SYLLABUS AND SAMPLE QUESTIONS

# for

# ENTRANCE EXAMINATION

MATHEMATICS (Group A) – 10+ at 1st September

MATHEMATICS (Group B) – 11+ and 12+ at 1st September

CALCULATORS ARE NOT ALLOWED IN EITHER PAPER

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# WHITGIFT SCHOOL

## ENTRANCE EXAMINATION SYLLABUS

**Mathematics (Group A)** – *Boys who will be 10 years and under 11 at 1st September of year of admission.*

Boys are expected to be working at Level 4 of the National Curriculum. Topics examined will include:

Place value.
The Four Rules (+,-,x,÷) applied to whole numbers but excluding long division.
Simple fractions, percentages and decimals including their use in real situations.
Squares, factors, multiples, divisibility and primes.
Calculations involving time, distance and speed.
Simple ideas of proportion and ratio.
Number sequences and other simple patterns.
Congruence of shapes. Angle measurement. Use of compasses and protractor.
Perimeter, area and volume of simple shapes.
12-hour and 24-hour time.
Bar and line graphs.
Reflective and rotational symmetry of 2D shapes.

**Mathematics (Group B)** - *Boys who will be 11 years and under 13 at 1st September of year of admission.*

Boys are expected to be working at Level 5 of the National Curriculum. Topics examined in addition to those above will include:

Adding, subtracting and using negative numbers in context.
The Four Rules applied to decimals, including long division by a whole number.
Area of a triangle.
Estimation of measures used in everyday situations.
Averages of sets of discrete data.
Pie charts.
Simple probability.
*Formal algebra is excluded.*

### SAMPLE QUESTIONS

*The questions which follow have all been set in past entrance examinations and have been selected to demonstrate the ways in which both basic skills and understanding of simple concepts are tested. A complete paper consists of about 25 questions to be answered in 1 hour. Two thirds of these are straight forward and for the remainder we hope candidates will enjoy trying to puzzle out some of the answers.*

**GROUPS A and B**

**1.** $\begin{array}{r} 192 \\ +\underline{888} \end{array}$ **2.** $\begin{array}{r} 888 \\ -\underline{192} \end{array}$ **3.** 14 x 7 x 2 **4.** 18-17+16-15+14-13

**5.** 531 x 135 **6.** 12321 ÷ 9 **7.** £1.28 + 57p **8.** £1.28 – 57p

**9.** Write in figures the number forty-two thousand and eight. How much is this number less than one million?

**10.** A plane leaves London Airport at 16.30 hours and takes 5¾ hours on its journey. At what time does it arrive?

**11.** (a) Express 51 km in metres. (b) Express 510 cm in metres.

**12.** I used my calculator to work out (31 x 9) ÷ 52. Before doing so I worked out in my head that the answer should be about 6. What simple calculation did I do in my head?

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13. 15p in £3.00. What percentage is this?

14. David jogs at 3 metres per second. How far does he jog in 15 minutes?

15. Write each of these amounts to the nearest hundred pounds

(a) £675 ..... (b) £2,945 ..... (c) £90,095 .....

16. Ravi has 32 smarties. He eats 24 of them. What fraction of the smarties has he eaten? (Write your answer as simply as possible)

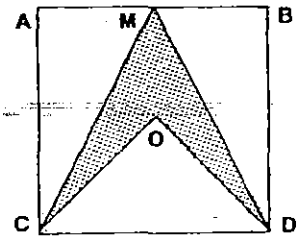
17. To cook a joint of beef, you leave it in the oven for 30 minutes for every kilogram it weighs plus 20 minutes extra. Find how long you would cook a joint weighing: (a) 2 kg (b) 3½ kg.

18. For a film, the seats cost £3 for each child and £7 for each adult. I was charged £51 for all the seats I brought.

(i) Did I buy more than 7 adult tickets?
(ii) If there were more adult tickets than child tickets, how many of each did I buy?
(iii) If there were more child tickets than adult tickets, how many of each did I buy?

19. What fraction of the whole square is the shaded area?

O is the centre of the square
and M is the mid-point of AB.




20. Write down in rising order of size all the 3-digit numbers which can be formed by using the digits 7,8, and 9 once each; the first is 789.

21. Here is a number game. There are two numbers which are first added together and then multiplied together. The answers are written in a table. Fill in the gaps in the table. (The first row is completed for you.)

| FIRST NUMBER | SECOND NUMBER | NUMBERS ADDED TOGETHER | NUMBERS MULTIPLIED TOGETHER |
|---|---|---|---|
| 4 | 7 | 11 | 28 |
| 5 | 12 | ..... | ..... |
| 9 | ..... | 16 | ..... |
| ..... | 20 | ..... | 1000 |
| ..... | ..... | 18 | 45 |
| ..... | ..... | 20 | 96 |

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## ADDITIONAL QUESTIONS FOR GROUP B:

1. $\begin{array}{r} 1177 \\ +\underline{6823} \end{array}$

2. $\begin{array}{r} 5.031 \\ -\underline{0.287} \end{array}$

3. 6 x ..... = £9.60

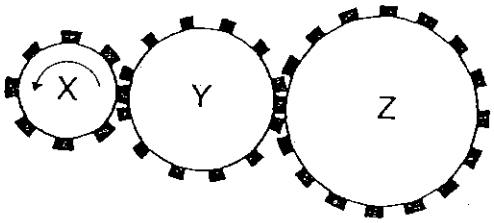
4. ..... ÷ 8 = 1.05 cm

5. 12321 ÷ 37

6. A rectangle measures 4.0 cm by 7.1 cm. What is its area?

7. There are 40 coloured counters in a box. Half of them are red, one fifth are yellow and the rest are green.

   (i) How many are green?
   (ii) If I shake the box and then pick out one counter, what is the probability that it is green?

8. 


   Three gear wheels turn one another.
   X has 8 teeth, Y has 12 teeth, and Z has 16.
   In one minute X turns 30 times.
   In this time, how many turns do Y and Z make?
   Draw arrows to show the directions in which Y and Z move.

9. A box of kiddimix contains 20 chocolates of which 8 are plain chocolates and 12 are milk chocolates. If 16 of the 20 have soft-centres, what can you say about how many plain chocolates there are with soft-centres?

10. James gives these answers to four questions. Tick any you think are likely to be correct.

    (i) A lorry weighs 2000 grams.
    (ii) A ten year old boy weighs 35 kilograms.
    (iii) Big Ben's tower is 200 centimetres high.
    (iv) A horse is 15 metres high.

11. The favourite sports of a group of 100 boys are shown in the table.

    Calculate the missing number and draw a bar chart or a pie diagram to illustrate this information.

| | |
|---|---|
| CRICKET | 15 |
| RUGBY | 25 |
| SOCCER | |
| OTHER | 10 |

12. Each of the symbols ▲, ●, ⊠, ◆ and ■ stands for a different whole number. The numbers are connected by the following rules. Write down what number each of the five symbols stands for:

    ▲ − ■ + ⊠ - ● + ◆ = 0
    ● ÷ 4 = ⊠
    ▲ − 5 = ■
    14 x ■ = 0
    ● + ⊠ = 15

    ▲ = .....
    ● = .....
    ⊠ = .....
    ◆ = .....
    ■ = .....