MATHEMATICS ENTRANCE EXAMINATION SYLLABUS

AND SAMPLE QUESTIONS FOR 10+ AND 11+ AGE GROUPS

- Group A – Boys aged 10+ as at 1st September
- Group B – Boys aged 11+ as at 1st September

Calculators are **NOT** allowed.

WHITGIFT SCHOOL

ENTRANCE EXAMINATION SYLLABUS

Mathematics **(Group A/10+)** – Boys who will be aged 10 years and under 11 years as at 1st September on year of entry.

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

Place value
The four basic operations (+,-,×,÷) 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/11+)** – Boys who will be aged 11 years and under 12 years as at 1st September on year of entry.

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 basic operations 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

The questions which follow have 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 straightforward and for the remainder we hope candidates will enjoy trying to puzzle out some of the answers.*

No calculators are allowed. The marks allocated for each question will be shown in brackets at the end of the question.

The exam paper is a combined question and answer paper; all working should be shown in the space provided and (where relevant) answers should be written on the dotted line. An example of the kind of layout to expect is given in the first four questions below.

1. Multiply 4321 by 7 ....(2)	2. Subtract 867 from 1024 ....(2)

3.   Write down the next two numbers in each of these sequences:

    a)   4, 7, 10, 13, 16, ..., ...

    b)   57, 46, 35, 24, ..., ...

    c)   3.25, 4, 4.75, 5.5, 6.25, ..., ...

    (6)

4.   What fraction of the diagram below is shaded?

    a)   Write your answer as simply as possible

    .... (1)
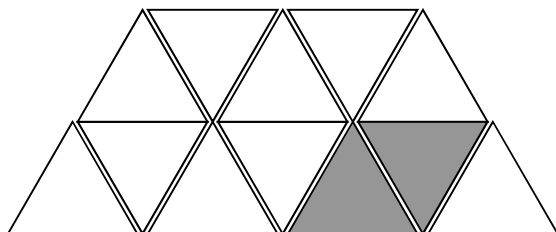
    b)   Now shade in more triangles until three-quarters of the picture is shaded.   (1)

5. A football crowd is made up of 24,000 people. 30% of them are away supporters. How many away supporters are in the crowd?

6. How many tenths are there in 3½?

7. How many hours are there in one week?

8. What is three-fifths of 1800?

9. Write the following numbers in order from smallest to largest

$$4.32, \quad 4.03, \quad 4.3, \quad 3.4, \quad 3.94$$

10. A plane leaves London Heathrow Airport at 16:30 and takes 5¾ hours on its journey. At what time does it arrive?

11.

    (a) Express 74km in metres   (b) Express 3200 cm in metres

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

13. What percentage is 15p out of £3.00?

14. Complete the diagrams below to make each shape symmetrical about the mirror line.

15. Sarah jogs at a speed of 3 metres per second. How far does she jog in 15 minutes?

16. Write each of these amounts to the nearest hundred pounds:

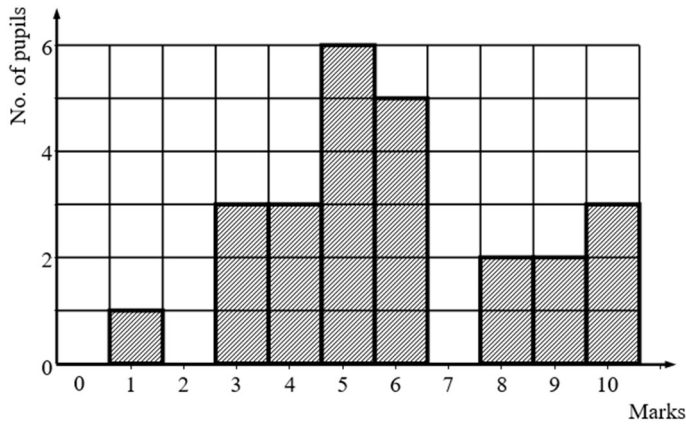   (a) £675   (b) £2,945   (c) £90,095

17. Ravi has 32 sweets. He eats 24 of them. What fraction of the sweets has he eaten? Write your answer in its simplest form.

18. The bar chart below shows the marks out of 10 obtained by some pupils in a test.

a) Four pupils scored seven out of ten on the test. Fill this in on the chart.

b) What was the most common mark?

c) How many pupils scored 6 marks?

d) Calculate how many pupils took the test.

19. To cook a joint of meat, 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

20. To go and watch a film at the cinema, the tickets cost £3 each for a child and £7 each for an adult. I was charged £51 for all of the tickets I bought.

a) Did I buy more than 7 adult tickets?

b) If there were more adult tickets than child tickets, how many of each did I buy?

c) If there were more child tickets than adult tickets, how many of each did I buy?

21. Find the perimeter and area of this shape. It is not drawn to scale.
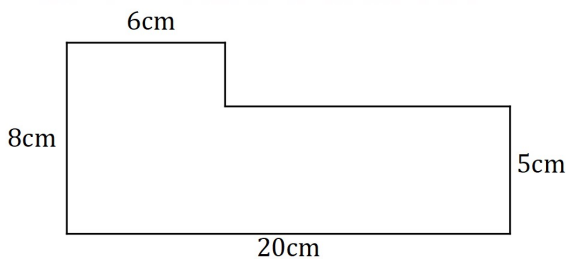
22. Write down in rising order of size all the 3-digit numbers which can be formed by using the digits 7,8 and 9 once each. The first is 789.

23. Here is a numbers game. There are two numbers which are first added together and then multiplied together. Fill in the gaps in the table (the first row is done 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

Additional questions for 11+

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

    a) How many are green?

    b) If I shake the box and then pick out one counter at random, what is the probability that it is green. (give your answer as a fraction in its simplest form)

25. Complete the blanks
    a) 6 × …………………= £9.60   b) …………… ÷ 8 = 1.05cm

26. Calculate 12321 ÷ 37

27. In January, the average temperature in Oslo (Norway) is -4.3°C. The average temperature in Lisbon (Portugal) is 16°C warmer than it is in Oslo. What is the average temperature in Lisbon?

28. The area of a triangle is 54 cm² and it has a base length of 12cm.

    What is the height of the triangle?

29. The favourite sports of a group of 100 boys are shown in the table below. Calculate the missing number and draw a pie chart to illustrate this information.

Cricket	15
Rugby	25
Soccer	
Other	10

30. Each of the symbols Δ, ⌂, ◊, ○ and ● stand for a different whole number. The numbers are connected by the following rules. Write down what number each of the five symbols stands for:

Δ - ● + ◊ - ⌂ + ○ = 0   Δ = ...

⌂ ÷ 4 = ◊   ⌂ = ...

Δ - 5 = ●   ◊ = ...

14 × ● = 0   ○ = ...

⌂ + ◊ = 15   ● = ...
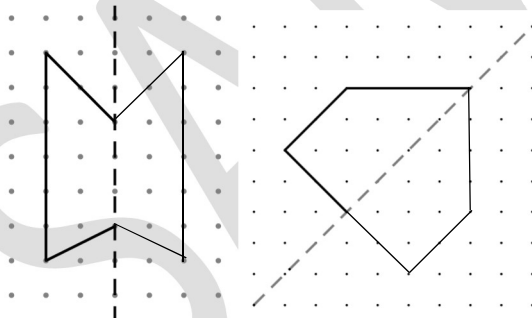
Answers - 10+ and 11+ Sample Questions

1. 30247
2. 157
3. a) 19, 22
   b) 13, 2
   c) 7, 7.75
4. a) $\frac{1}{6}$

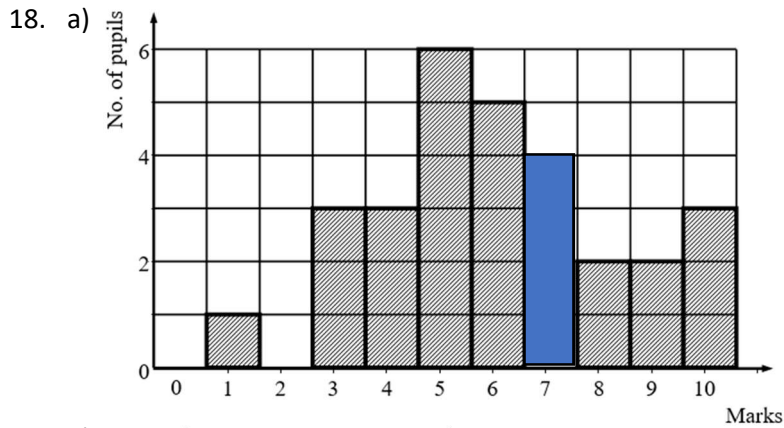   b) Any seven additional triangles so that nine triangles are shaded.
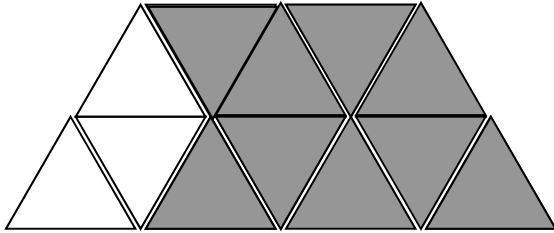
5. 7200
6. 35
7. 168
8. 1080
9. Smallest 3.4, 3.94, 4.03, 4.3, 4.32
10. 22.15
11. a) 74000m
    b) 32m
12. $30 \times 10 = 300$ and then $300 \div 50 = 6$
13. 5%
14.

15. 2700m or 2.7km
16. a) £700
    b) £2900
    c) £90,100
17. $\frac{3}{4}$

18. a)

b) 5 was the most common mark

c) 5 students scored 6 marks

d) 29

19. a) 1 hour 20 minutes or 80 minutes
    b) 2 hours 5 minutes or 125 minutes
20. a) No, because 7 adult tickets cost £49
    b) 6 adults and 3 children
    c) 3 adults and 10 children
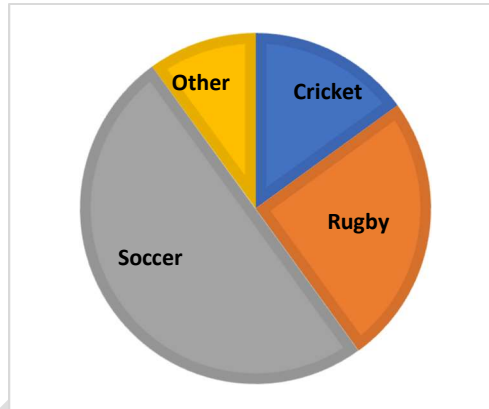21. 56cm and 118cm^2
22. 789, 798, 879, 897, 978, 987
23.

First Number	Second Number	Numbers Added Together	Numbers Multiplied Together
4	7	11	28
5	12	17	60
9	7	16	63
50	20	70	1000
15	3	18	45
12	8	20	96

Additional Questions for 11+

24. a) 12

    b) $\frac{3}{10}$

25. a) $6 \times £1.60 = £9.60$

    b) $8.4 \text{ cm} \div 8 = 1.05 \text{ cm}$

26. 333

27. 11.7

28. 9 cm

29.

Cricket	15
Rugby	25
Soccer	50
Other	10

30. ●=0, Δ=5, ◊=3, △=12, ○=4