Trinity School Croydon

ENTRANCE EXAM.

10+

SYLLABUS and SAMPLE QUESTIONS

Mathematics

(For candidates over 10 and under 11 on 1st September of year of entry)

The 10+ entrance examination is one hour long. The use of calculators is not allowed.
If any unfamiliar techniques or notation are used they will be fully explained in the question concerned.

Some of the questions near the end of the paper are intended to be of an original nature and are particularly important for the award of Scholarships (e.g. Questions 27 and 28 below); their difficulty should not deter anyone from entering the exam.

10+ entrance examination syllabus
It is assumed that candidates are working at or about Level 4 of the National Curriculum. The paper will be in line with the teaching programme for Year 5 of the National Numeracy Strategy.

- Read and write whole numbers to at least 10 000 in figures and words and know what each digit represents.
- Order a given set of positive and negative integers or positive decimal numbers.
- Use the vocabulary of comparing and ordering numbers, including using symbols such as < (less than), > (greater than) and = (equals).
- Recognise and extend number sequences including using negative or decimal numbers.
- Column addition and subtraction of whole numbers and decimals, including applications to money, length and mass.
- Short multiplication when one of them is a whole number below ten.
- Long multiplication when both numbers are whole numbers less than hundred.
- Short division of whole numbers, and money in decimal form, by a whole number less than ten.
- Find remainders after division.
- Relate fractions to division, and use division to find simple fractions, including tenths and hundredths, of number and quantities (e.g. $\frac{3}{4}$ of 12, $\frac{1}{100}$ of £3).
- Find fractions such as $\frac{2}{3}$ or $\frac{3}{4}$ of a shape. (Formal arithmetic of fractions will not be required.)
- Use decimal notation for tenths and hundredths.
- Relate fractions to their decimal representations.
- Use, read and write standard metric units. Convert between units (e.g. convert centimetres to metres, and vice versa).
- Use all four operations to solve word problems involving numbers in 'real life'.
- Estimate the length or mass of everyday objects.
- Suggest suitable units to estimate or measure length, area, mass or capacity.
- Use units of time, including using 24–hour clock notation.
- Calculations concerning time and distance. Simple problems involving speed.
- Find the perimeters of simple shapes.
- Know and use the formula 'length × breadth' for the area of a rectangle.
- Understand area is measured in square centimetres.
- Find the area of other shapes by counting squares or the volumes by counting cubes.
- Recognise reflective symmetry.
- Complete symmetrical patterns.
- Read and plot co–ordinates in the first quadrant (positive values for both x and y).
- Recognise perpendicular and parallel lines.
- Extraction and interpretation of data from tables, charts, graphs and diagrams.
- Estimate the chance of likelihood of particular events. (The formal calculation of probabilities will not be expected.)

The exam paper is a combined question and answer paper. Space is given for workings for each queston. E.g.:

1. Add: 436 + 87 + 375 Answer:	2. Subtract: 3238 – 784 Answer: .....

Mathematics sample paper for 10–11 year group
The exam paper is a combined question and answer paper. Space is given for workings for each question.

1. Add: $436 + 87 + 375$

2. Subtract: $3238 - 784$

3. Multiply: 57×28

4. Divide: $273 \div 7$

5. Write down the number four thousand and eighty one in figures.

6. What is the value of the 5 in each of the following numbers?
   (i) 38 514 (ii) 257 983

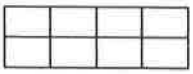
7. Small chocolate bars cost 23p each.
   (a) How much would twelve such bars cost?
   (b) How many could be bought for £4

8. Malcolm buys seven packets of biscuits at 99p each and five large cakes at £1.99 each. How much change will he receive from a £20 note?

9. Calculate $\frac{1}{8}$ of 400

10. If three identical books cost £3.90 together, how much would seven books cost?

11. How many minutes are there between 9.23 am and 11.06 am?

12. Shade in $\frac{3}{4}$ of this diagram.  What fraction is shaded here? 

13. When a fifth of the class is absent, there are 24 pupil present. What is the total number of pupils in the class?

14. Add together 3.4 m, 82 cm and 6 m 9 cm, giving your answer in cm.

15. Peter makes a sequence of numbers starting with 25. He subtracts 8 each time. Write down the next three numbers in the sequence 25 17 9 ....

16. Write down which of these numbers is the largest and which is the smallest.
   (a) 0.7 0.37 0.74 0.079
   (b) $\frac{1}{2}$ $\frac{3}{8}$ $\frac{3}{4}$ $\frac{7}{8}$

17. (a) In eight minutes a train travels 12 km. How far will it travel in 24 minutes?
   (b) How far would the same train travel in 20 minutes?

18. Here is a sequence of numbers: 5 8 11 14 17.
   This pattern could be described as "to get the next number, add three to the previous number".
   Write down in words similar rules for the patterns of each of these sequences:
   (a) 1 7 13 19 25
   (b) 3 6 12 24 48
   (c) 1 2 4 7 11 16

19. Simon is asked to add six to a number and then to multiply by three. By mistake he first multiplies by three and then adds six. If he gets the answer 54 what number did he start with and what answer should he have obtained?

20. A one-litre bottle of lemonade costs 72p; a one and half litre bottle costs £1.05. Which seems to be better value for money – explain how you decided on your answer.

21. The entrance charges to an amusement park are given in this table:

	Adult	Child
Weekday	£3.00	£2.00
Saturday	£5.00	£2.50
Sunday	£4.00	£2.30

   (a) How much would it cost for one adult and two children on a Saturday?
   (b) A family of two adults and three children are deciding whether to go on a Saturday or a Sunday; how much would they save by going on a Sunday?
   (c) The total cost for a group of people was £22.90. How many adults were in the group and which day was it?

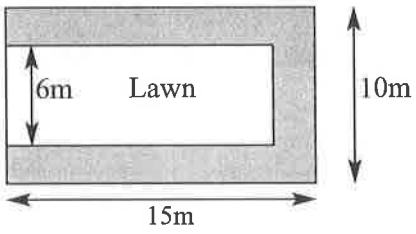
22. Look at these three signs and their meanings:

<	=	>
is less than	is equal to	is greater than

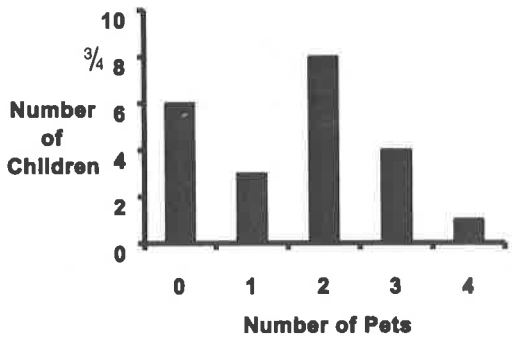
Put the correct sign into each line.

(a) $7 + 6$ ..... $4 + 9$
(b) $7 - 6$ ..... 1×1
(c) $4 - 7$ ..... -2
(d) $4 - 6$ ..... $1 - 5$

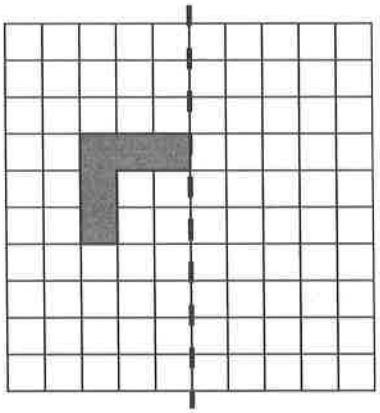
23. The diagram shows the plan of a garden with the lengths marked in metres. The path is the same width all the way round the three sides of the lawn.
(a) What is the width of the path?
(b) What is the area of the lawn?
(c) What is the area of the path?



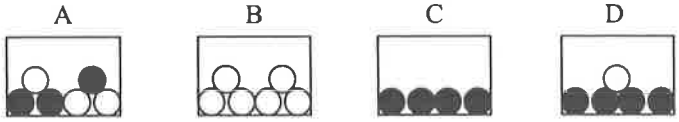
24. The diagram below shows the number of pets owned by the members of a class.
For example three children have one pet each.
(a) How many children have no pets?
(b) How many children have **more** than one pet?



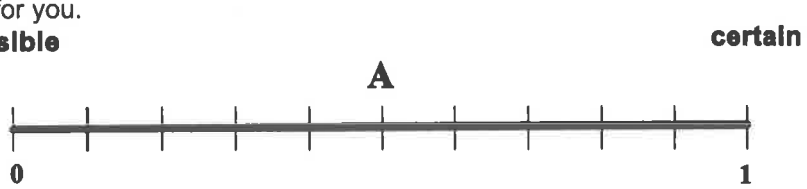
25. The shape below is reflected in the mirror line. Draw the shape in its new position



26. Joyce has four boxes with marbles in them. The marbles are either white or black. The diagrams below show how many white marbles and how many black marbles are in each box?



Put the letters B to D on the line below to show the chance (or probability) of taking a **black marble** from each box.
Box A has been done for you.

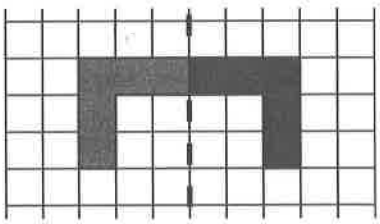


27. Two numbers are 'curdled' by adding them together and then multiplying the answer by itself.
(a) What answer do you get if you 'curdle' 2 and 4?
(b) What number must 5 be 'curdled' with to give the answer 81.

28. In mathematics, 3! is a quick way of writing $3 \times 2 \times 1$
4! is a quick way of writing $4 \times 3 \times 2 \times 1$ and so on.
(a) 5! is a quick way of writing what?
(b) Calculate the value of:
(i) 5! (ii) $3! \times 2!$ (iii) $(3 \times 2)!$ (iv) $(3!)!$ (v) $5! \div 3!$ (vi) $100! \div 98!$
(c) If $13! = 13 \times n!$ what number does 'n' stand for?

(Questions 27 and 28 are intended to be of an original nature and are particularly important for the award of Scholarships.)

Mathematics – Answers to sample paper for 10-11 year group

1. 898
2. 2454
3. 1596
4. 39
5. 4081
6. (i) hundred (ii) ten thousand
7. (a) £2.76 (b) 17
8. £3.12
9. 50
10. £9.10
11. 103 mins
12. (a) Any six boxes shaded (b) $\frac{2}{3}$
13. 30
14. 1031 cm
15. 1 –7 –15
16. (a) largest 0.74 smallest 0.079 (b) largest $\frac{7}{8}$ smallest $\frac{3}{8}$
17. (a) 36 km (b) 30 km
18. (a) Add six to the previous number (b) Double the previous number
    (c) Add 1, then 2, then 3 …to the previous number.
19. 16 66
20. The one litre bottle cost 72p per litre, whereas the $1\frac{1}{2}$ litre bottle costs 70p per litre. The $1\frac{1}{2}$ litre bottle is better value.
21. (a) £10 (b) £2.60 (c) 4 Adults on a Sunday
22. (a) = (b) = (c) < (d) >
23. (a) 2 m (b) 78 m^2 (c) 72 m^2
24. (a) 6 (b) 13
25. 
26. 

27. (a) 36 (b) 4
28. (a) $5 \times 4 \times 3 \times 2 \times 1$ (b) (i)120 (ii) 12 (iii) 720 (iv) 720 (v) 20 (vi) 9900 (c)12