Trinity School Croydon

ENTRANCE EXAM.

11+

SYLLABUS and SAMPLE QUESTIONS

Mathematics

(For candidates over 11 and under 12 on 1st September of year of entry)

The 11+ 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.

11+ entrance examination syllabus
It is assumed that candidates are working at or about Level 5 of the National Curriculum. The paper will be in line with the teaching programme for Year 6 of the National Numeracy Strategy.

- Read and write whole numbers in figures and words and know what each digit represents.
- Order a mixed set of numbers with up to three decimal places, including positive and negative numbers.
- Use the vocabulary of comparing and ordering numbers, including using symbols such as < (less than), > (greater than) and = (equals).
- Give one or more numbers, including decimals, lying between two given numbers.
- Recognise and extend number sequences including using negative or decimal numbers.
- Find the pairs of factors of any number up to 100. Recognise prime numbers.
- Column addition and subtraction of whole numbers and decimals, including applications to money, length and mass.
- Short multiplication of numbers, including numbers involving decimals.
- Long multiplication of integers, including a three-digit number by a two-digit number.
- Division of whole numbers, and money in decimal form, by a whole number less than twenty.
- Recognise when two fractions are equivalent.
- Order a set of fractions.
- Find simple fractions, including tenths and hundredths, of a number or quantity (e.g. $\frac{5}{8}$ of 32, $\frac{9}{100}$ of £400).
- Relate fractions to their decimal representations.
- Solve simple problems involving ratio and proportion.
- Use all four operations to solve word problems involving numbers in 'real life'.
- Use, read and write standard metric units. Convert between units (e.g. convert centimetres to metres, and vice versa).
- Estimate the length, mass or capacity 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 perimeter and area of rectangles and simple compound shapes that can be split into rectangles.
- Understand area is measured in square centimetres.
- Recognise reflective symmetry and know where a shape will be after a reflection. Complete symmetrical patterns.
- Classify triangles (isosceles, equilateral, scalene) using criteria such as equal sides, equal angles, lines of symmetry.
- Read and plot co–ordinates in the first quadrant (positive values for both x and y).
- Recognise perpendicular and parallel lines.
- Know that angles are measured in degrees and recognise, estimate and order acute and obtuse angles.
- Know that one whole turn is 360°; angles on a straight-line total 180° and the sum of the angles in a triangle is 180°
- Extraction and interpretation of data from tables, charts, graphs and diagrams.
- Estimate the chance of likelihood of particular events. Use the language associated with probability.

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

1. Add: 7268 + 94 + 567 Answer:	2. Subtract: 4125 – 837 Answer: .....

Mathematics – sample paper for 11–12 year group
The exam paper is a combined question and answer paper. Space is given for workings for each question.

1. Add: 7268 + 94 + 567

2. Subtract: 4125 – 837

3. Multiply: 374 × 36

4. Divide: 9786 ÷ 7

5. (a) Write down the number eleven thousand and seventy three in figures.
   (b) Write down the number ten and forty seven hundredth as a decimal.

6. Ben has £68. He gives a quarter of this to his sister. How much does he have left?

7. Malcolm buys 7 packets of biscuits at 73p each and 9 large cakes at £1.13 each. How much change will he receive from a £20 note?

8. When two fifths of the class are absent, there are 18 pupils present. What is the total number of pupils in the class?

9. If nine identical books cost £38.79 together, how much would seven books cost?

10. How many minutes are there between 9.23 am and 1.06 pm?

11. Each time Peter runs around the school, he travels $\frac{1}{4}$ mile. How many times would he need to go around the school to run a total of 3.75 miles?

12. Simon is asked to add 15 to a number and then multiply by 3. By mistake he first multiplies by 3 and then adds 15. If he gets the answer 105 what number did he start with and what answer should he have obtained?

13. If a hovercraft travels at 80 kilometres per hour how far will it travel in 1 hour and 45 minutes?

14. In 3 hours a train travels 156 km. What is it speed in km/h?

15. For each set of numbers write down which of the numbers is the largest and which is the smallest.

(a)	$\frac{4}{5}$	0.9	0.1	$\frac{1}{100}$	$\frac{2}{10}$
(b)	$\frac{3}{4}$	$\frac{1}{2}$	$\frac{4}{3}$	$\frac{4}{5}$	1
(c)	0.8	0.803	0.828	0.84	0.087

16. Add together 3.7 metres and 64 cm and then subtract 2 metres 7cm. Give your answer in metres.

17. A two litre bottle of lemonade costs £1.44; a one and half litre bottle costs £1.05. Which seems to be better value for money - explain how you decided on your answer.

18. In each of the sets of boxes below there is a close connection between the top numbers and the ones directly below each of them. Fill in the two gaps in each sets of boxes.

(a)

7	5	2		3
21		6	18	9

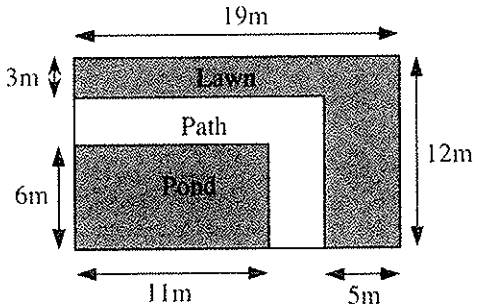
(b)

5		1	7	2
25	9	1		4

(c)

3	11	10		5
17	9		6	15

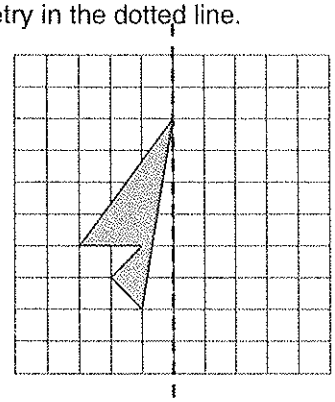
19. The diagram shows the plan of a garden with the lengths marked in metres.



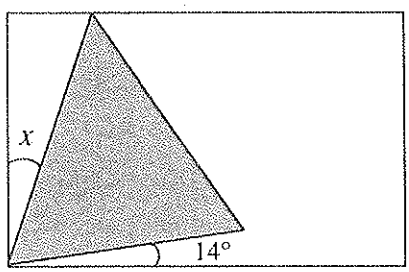
   (a) What is the area of the pond?
   (b) Draw a line on the diagram which splits the lawn into two rectangles.
   Now calculate the area of the lawn
   (c) What is the area of the path?

20. This calculation is correct: 1467 × 76 = 111492
   Use this result to answer these questions:
   (a) 14.67 × 7.6
   (b) 1114.92 ÷ 76
   (c) 111492 ÷ 0.76

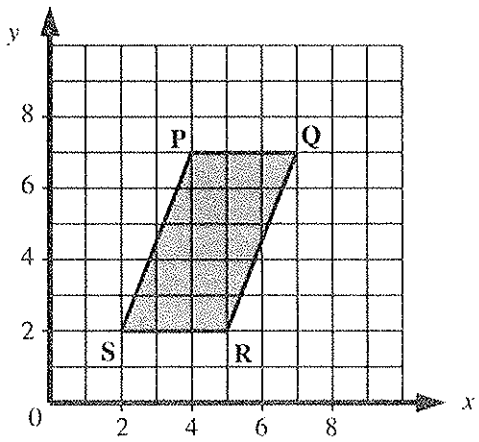
21. Complete the diagram so that it has reflective symmetry in the dotted line.



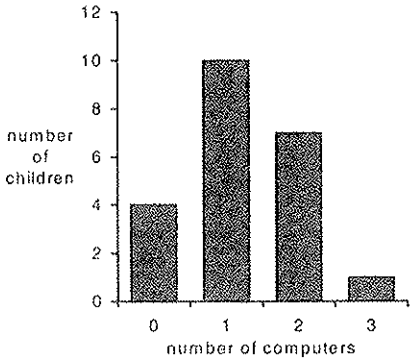
22. Here is an equilateral triangle inside a rectangle.
Calculate the value of angle x.



23. (a) Write down the co-ordinates of the point P.
(b) Name the quadrilateral PQRS.

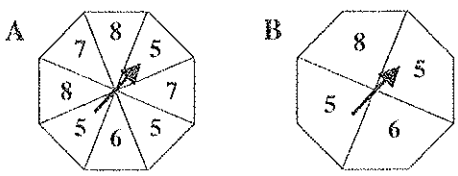


24. The diagram below shows the number of computers that members of a class had in their homes.
For example, 10 children had one computer at home



(a) How many children had no computer at home?
(b) How many children were there in the class?
(c) What is the total number of computers owned by the whole class?

25. Here are two spinners, A and B. Each one is a regular octagon.



For each statement say whether it is true or false.
(a) Scoring '5' is more likely on A than on B.
(b) Scoring '6' is as equally likely on A as on B.
(c) Scoring '8' is as equally likely on A as on B.

26. The timetable shows the bus times between Short Street and London Road. I must allow 6 minutes to walk from my home to the bus stop in Short Street where I will catch a bus to London Road. From there it takes 8 minutes to walk to John's house. I want to be at John's house by 2.00pm

(a) Which bus should I catch?
(b) What time should I leave home?
(c) How long will the journey from my home to John's home take?

	Bus A	Bus B	Bus C	Bus D
Short Street	12.49	13.11	13.29	13.43
Main Road	13.02	13.24	13.42	13.56
London Road	13.14	13.36	13.54	14.08

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 11–12 year group

1. 7929
2. 3288
3. 13464
4. 1398
5. (a) 11073 (b) 10.47
6. £51
7. £4.72
8. 30
9. £30.17
10. 223 minutes
11. 15
12. 30, 135
13. 140 km
14. 52 km/h
15. (a) largest 0.9 smallest $\frac{1}{100}$ (b) largest $\frac{4}{3}$ smallest $\frac{1}{2}$ (c) largest 0.84 smallest 0.087
16. 2.27 m
17. 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.
18. (a)

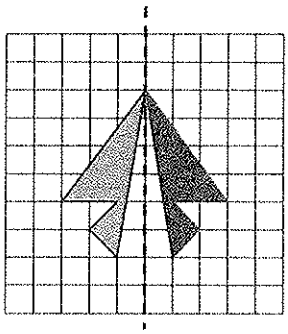
7	5	2	6	3
21	15	6	18	9

(b)

5	3	1	7	2
25	9	1	49	4

(c)

3	11	10	14	5
17	9	10	6	15

19. (a) 66 m^2 (b) 102 m^2 (c) 60 m^2
20. (a) 111.492 (b) 14.67 (c) 146700
21. 
22. 16°
23. (a) (4,7) (b) Parallelogram
24. (a) 4 (b) 22 (c) 27
25. (a) False (b) False (c) True
26. (a) B (b) 13.05 or 1.05pm (c) 39 mins
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