EMANUEL SCHOOL ENTRANCE EXAMINATION

Mathematics

Sample Examination Paper

Year 7 (11+) Entry

Time allowed : 1 hour

1.	Your first name **and** surname.
2.	Your present school.
3.	Boy/girl:

Fill in the boxes above and read the following carefully :-

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1. **There are 32 questions.** You should attempt all of them in any order you like.
2. **Write neatly and show all your working**. It may be possible to give you marks if your working makes sense even if your final answer is wrong.
3. **Put your answer in the space provided.** If you think you have finished check that you have answered all the questions.
4. **Keep an eye on the time.** Work carefully and steadily. If you find yourself spending too long on a question move on to another one.
5. **You may NOT use a calculator.**

Good luck!

- The year 6 examination paper is substantially similar to the year 7 paper and the two papers have -50% of questions in common. It consists of some easier basic number bond questions at the beginning and contains fewer of the more demanding questions at the end. Overall it is slightly shorter. The standard expected is comparable to the year 7 exam.
- Year 8 candidates sit the year 7 paper but are expected to achieve higher marks.

1. Do the following sums

(a)
$$\begin{array}{r} 7\ 8\ 5 \\ +\ 5\ 4\ 1 \\ \hline \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 8\ 6\ 7 \\ -\ 3\ 8\ 2 \\ \hline \\ \hline \end{array}$$

2. Work out 53 + 3209 + 664

Answer _____

3. Do the following multiplication sums

(a)
$$\begin{array}{r} 56 \\ \times\ 4 \\ \hline \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 732 \\ \times\ 9 \\ \hline \\ \hline \end{array}$$

4. Work out the following divisions

(a) $7 \overline{)6146}$

Answer _____

(b) 56,400 divided by 12

Answer _____

5. Add together

two thousand three hundred and seven
AND
one thousand and twenty-four.

Answer _____

6. (a) 4 British coins in Jo's pocket add up to 73p.
What are they?

Answer _____

(b) 5 British coins in Arati's pocket add up to 61p.
Three of the coins are the same.
What are the 5 coins?

Answer _____

7. When two numbers are added together the total is 32.
When the same two numbers are subtracted the result is 6.
Find the two numbers.

Answer _____ and _____

8. What number must fit into the squares to make these sums correct?

(a) 34 + ☐ = 91

(b) 72 - ☐ = 39

(c) ☐ x 7 = 119

(d) 448 ÷ ☐ = 8.

9. Sam takes a £20 note to a restaurant. He buys a burger for £3.99, a milk shake for £1.65, and a fudge sundae for £1.80

(a) How much money does he spend altogether?

£ _____

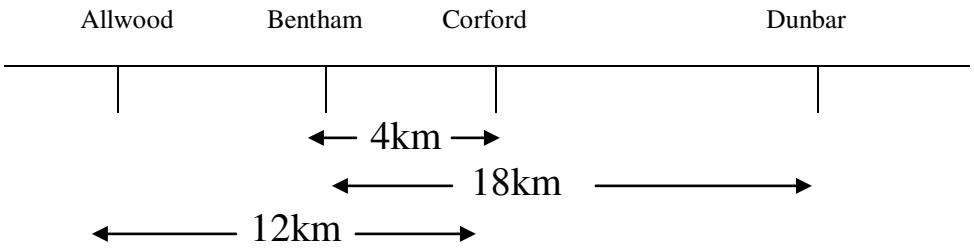
(b) How much change should he get from the £20 note?

£ _____

10. Work out the following multiplication

$$\begin{array}{r} 477 \\ \times\ 26 \\ \hline \\ \hline \\ \hline \end{array}$$

11. On a very long straight road there are four villages:
Allwood, Bentham, Corford and Dunbar, which are shown in the diagram below.



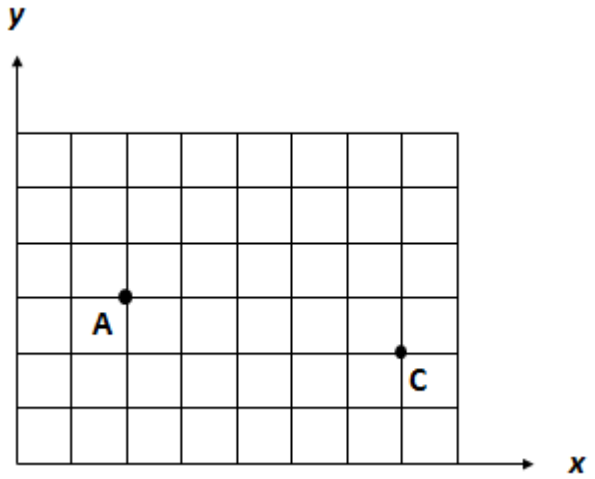
The arrows show distances between villages.

Find the distances from

(a) Corford to Dunbar _____

(b) Allwood to Dunbar _____

12.



On the axes shown A is the point (2,3)

a) Write down the coordinates of the point C. (,)

b) Mark on the diagram the point B which is (5,5).

c) Mark on the diagram the point D so that ABCD is a square.

13.

	Angola	Namibia	Zimbabwe	Zambia
Population	10 002 000	1 203 000	9 369 000	8 456 000
Area in square kilometres	1 246 700	823 168	390 759	752 614
Highest mountain in metres	2610	2579	2592	2164

The table above shows some information about four African countries. Answer the following questions using the table.

(a) Which country has the largest area? _____

(b) Which country has the smallest population? _____

(c) Which country has the third highest mountain? _____

(d) Which country is the most densely populated (most people for each square kilometre of land)? _____

14. Sophie thinks of a number, doubles it and adds 8.
The answer was 26. What was the number she was thinking of?

Answer _____

15. Find the next two numbers in each of the following sequences

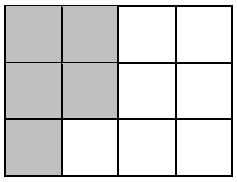
(a) 1, 8, 15, 22, 29, ___, ___

(b) 4, 6, 9, 13, 18, ___, ___

(c) 96, 48, 24, 12, 6, ___, ___

(d) 3, 4, 7, 11, 18, 29, ___, ___

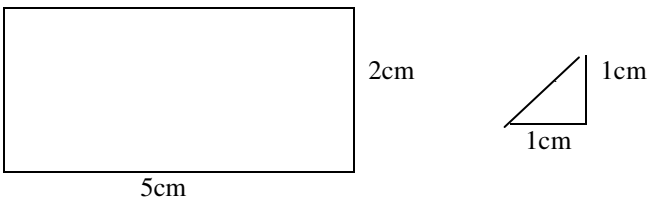
16.



(a) What fraction of the large rectangle is shaded? _____

(b) How many more squares need to be shaded so that three quarters of the large rectangle is shaded? _____

17.



(a) What is the area of the rectangle? _____

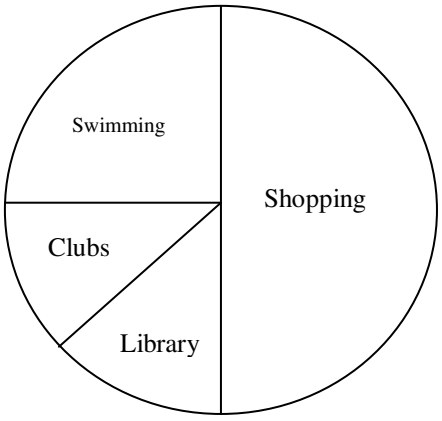
(b) How many triangles of the size shown will fit into the rectangle above?
Neither diagram is drawn to scale.

Answer _____

18. In the British Army there are 4500 men who are taller than 180cms. Of these 750 are taller than 190cms.
How many men are there who are between 180 and 190 cms tall?

_____

19.



The pie chart shows the activities of a group of children on a Saturday morning. 8 children went to the Library.

(a) How many children went swimming? _____

(b) How many children went shopping? _____

(c) How many children were there altogether in the group? _____

20. When Aunt Jane comes to visit, Tom always goes out to play. Last Sunday, Aunt Jane came to visit. It was raining.

The following sentences are either TRUE, or FALSE, or NOT CERTAIN. Ring the one you think applies to each sentence.

(a) Tom went out to play.

(True / False / Not certain)

(b) Aunt Jane and Tom both went out to play.

(True / False / Not certain)

(c) As it was raining Tom stayed inside last Sunday.

(True / False / Not certain)

21. A train leaves London at 10.35 a.m. and arrives in Exeter 3 hours and 35 minutes later. What time does it arrive?

Answer _____

22. Look at the following long multiplication.

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  576
x  48
 4608
23040
27648
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Without doing any more calculations give the answers to:

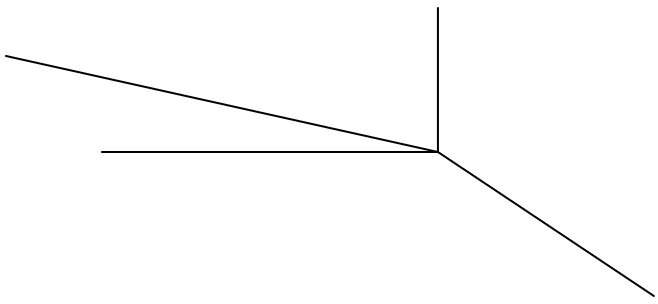
(a) 576 x 8 = _____

(b) 576 x 4 = _____

(c) 27,648 ÷ 576 = _____

(d) 27,648 - 23,040 = _____

23. How many different sized acute angles are there in the diagram below?



_____

24. A rule for a number sequence is ‘multiply by 2 and subtract 7’.

(a) Write down the next number in the sequence

$8 \rightarrow 9 \rightarrow 11 \rightarrow 15$ _____

(b) Here is part of another number sequence with the same rule. Write down the first number which is missing.

_____ $\rightarrow 17 \rightarrow 27 \rightarrow 47 \rightarrow 87$

25. Put a single number in the boxes to make each of these sums correct

(a)
$$\begin{array}{r} 6\,\square\,5 \\ +\,2\;\;2\;\;7 \\ \hline 1 \end{array}$$

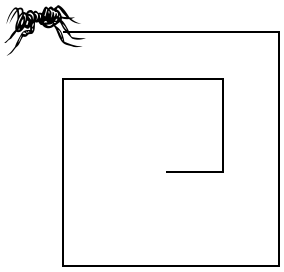
(b)
$$\begin{array}{r} 5\,\square\,4 \\ -2\;\;7\;\;9 \\ \hline 4 \end{array}$$

(c)
$$\begin{array}{r} 77 \\ \times\ \square \\ \hline 231 \end{array}$$

(d)
$$\frac{48}{\square + 1} = 6$$

26.

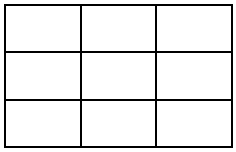
The diagram shows Woody the ant setting off for a walk he took recently in search of food. On this journey Woody walked a certain distance, and turned right. Each time he turned right he walked 2 metres less than he did the time before.



On the last part of his journey before stopping he walked one metre. How far did he walk altogether?

_____

27.



Draw out a 3 by 3 grid like that shown.
Place the numbers 2 2 2 3 3 3 4 4 4 in it so that when any line of three numbers is added up in any direction (including diagonally), the total is always 9.

Answer _____

28. When my age is divided by 2, 3, 4 or 6 there is always a remainder of 1. But when divided by 7 there is no remainder.
How old am I?

Answer _____

29. If there are 5 Mondays, 5 Tuesdays and 5 Wednesdays in January, on what day of the week will February 1st fall?
(There are 31 days in January)

Answer _____

30. There are three islands close together near Australia: Azure, Bounty, and Coconut. On the three islands live three types of guinea pig: Pongos, Quangos and Ringos.

The following are all true facts well known to sailors in this part of the world.

1. There are no Pongos on Bounty Island.

2. All the guinea pigs on Coconut Island are Ringos.

3. Pongos and Quangos are the only type of guinea pig on Azure Island.

A shipwrecked sailor lands on one of the islands. She sees a guinea pig which she thinks is a Ringo

(a) Which island does the sailor think she is definitely **not** on?

Answer _____

Later on she sees another guinea pig. She is not sure what it is but it is certainly different from the first kind of guinea pig.

(b) Which island is she definitely not on?

Answer _____

After looking closely she identifies the second guinea pig as being without doubt a Pongo.

(c) What type of guinea pig did she see first of all?

Answer _____

31. In the Cybercafe you can buy Gigaburgers and cans of Megapop.

1 Gigaburger and 2 Megapops cost £2.80

 = £2.80

2 Gigaburgers and 5 Megapops costs £6.10

 = £6.10

Find the cost of (a) 1 glass of Megapop

Answer _____

(b) 1 Gigaburger

Answer _____

32. (a) Find two numbers which when multiplied together make a hundred. Neither of the two numbers must use any 0's.

Answer_____ and _____

(b) Find two numbers which when multiplied together make a thousand. Once again, neither of the two numbers must use any 0's.

Answer_____ and _____

(c) Find two numbers which when multiplied together make a million. And, you guessed, neither of the two numbers must use any 0's.

Answer_____ and _____

_____

_____

Well done! This is the end of the exam. Now check your answers carefully.