

Write your name here:

Leave this space blank.

CHRIST'S HOSPITAL



Entrance Examinations: January 2003

Mathematics

Time allowed: 1 hour

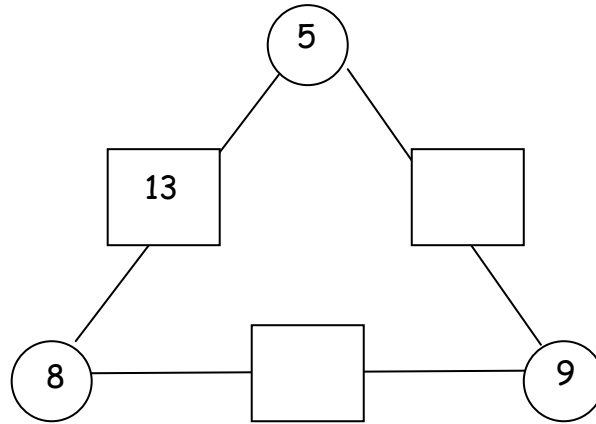
1. Write your answers clearly.
2. You may do the questions in your head if you think they are easy, or you may do your working in the space provided.
3. If you don't show any working and your answer is wrong then you will get no marks.
4. If your answer is wrong but you have shown some working then you may still earn some "method" marks.
5. Calculators must NOT be used.
6. The approximate number of marks for each question is shown in brackets, e.g. [2]
7. At the foot of each page you will see a large circle: this is to be left blank. (It will be used by the person marking your paper.)

6.

This question is all about triangular arithmagons.

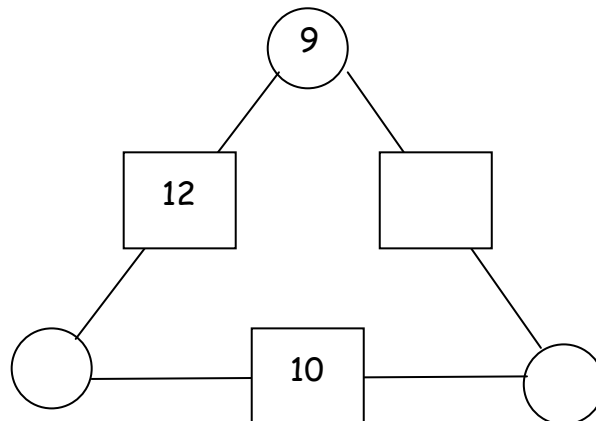
If you add together the two numbers in a pair of corners, the total goes in the box along one side.

i) In the arithmagon below, the number 13 has been filled in one of the boxes, because $5 + 8 = 13$. Complete the other two boxes.



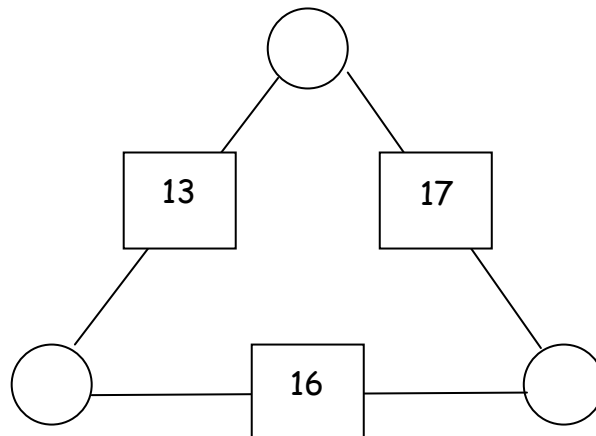
[2]

ii) Fill in the missing numbers in this arithmagon.




[2]

iii) Fill in the missing numbers in this arithmagon.



[2]

7.	<p>Britain's commonest bat, the pipstrelle, is only 4 cm long and weighs 5 grams - less than a 2p coin!</p> <p>How many pipstrelle bats would be needed to weigh 1 kilogram?</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p>	[2]
8.	<p>Write down the next two items in each of these patterns:</p> <p>a) 12, 14, 18, 24, <input style="width: 40px; height: 20px;" type="text"/>, <input style="width: 40px; height: 20px;" type="text"/></p> <p>b) 1, 4, 9, 16, <input style="width: 40px; height: 20px;" type="text"/>, <input style="width: 40px; height: 20px;" type="text"/></p> <p>c) 1, 2, 3, 4, 5, 8, 7, 16 <input style="width: 40px; height: 20px;" type="text"/>, <input style="width: 40px; height: 20px;" type="text"/></p>	[2] [2] [2]
9.	<p>Work out these divisions:</p> <p>i) 168 divided by 12</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>ii) 745 divided by 9</p> <p style="text-align: right;">Answer: <input style="width: 250px; height: 20px;" type="text"/></p>	[2] [3]
10.	<p>An ostrich egg weighs 5 pounds. How many ounces is this? [1 pound = 16 ounces]</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p>	[2]

11.	<p>Here are some facts about Christopher Wren.</p> <ul style="list-style-type: none"> • He was born on 20 October 1632. • He died on 25th February 1723. <p>How old was Christopher Wren when he died?</p>		
<p style="text-align: right;">Answer: <input style="width: 150px;" type="text"/> years old</p>		[2]	
12.	<p>A wandering albatross can have a wingspan of 3.5 metres. Draw a ring around the correct answer to each statement below:</p> <p>i) 3.5 metres is the same as:</p> <p>a) 35 cm b) 350 cm c) 3500 cm d) none of these</p> <p>ii) 3.5 metres is about the same as</p> <p>a) 1 foot b) 3.5 feet c) 11 feet d) 35 feet</p>		
[1]			
[1]			
13.	<p>Multiply 637 by 53.</p>		
<p>Answer: <input style="width: 150px;" type="text"/></p>		[3]	

14.	<p>Look at this list of numbers:</p> <div style="border: 1px solid black; padding: 5px; display: inline-block; margin: 10px 0;">61 62 63 64 65 66</div> <p>From the numbers in this list, write down:</p> <p>i) a multiple of 5</p> <p>ii) a square number</p> <p>iii) a prime number</p> <p>iv) a number which is exactly divisible by 11.</p>	<p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p>
15.	<p>The square root of a number has the property that, when you <u>multiply it by itself</u>, you get the original number.</p> <p>For example, the square root of 36 is 6, because $6 \times 6 = 36$.</p> <p>i) Find the square root of 25.</p> <p>ii) Find the square root of 144.</p> <p>iii) Of what number is 17 the square root?</p>	<p>[1]</p> <p>[1]</p> <p>[1]</p>
16.	<p>Find three-quarters of one hundred and eighty.</p>	<p>[2]</p>

Answer:

17.

Solve this puzzle.

If you know that

$$\text{rooster} + \text{rooster} + \text{rooster} + \text{beetle} + \text{beetle} = 71$$

and

$$\text{rooster} + \text{rooster} + \text{beetle} + \text{beetle} + \text{beetle} = 79$$

find the value of

$$\text{rooster} + \text{beetle}$$

Answer:

[4]

18.

i) Write 450 mm in centimetres.

Answer:

[1]

ii) Write one and a quarter hours in minutes.

Answer:

[1]

ii) Write 7 minutes in seconds

Answer:

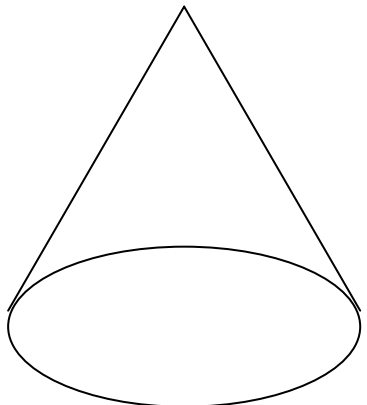
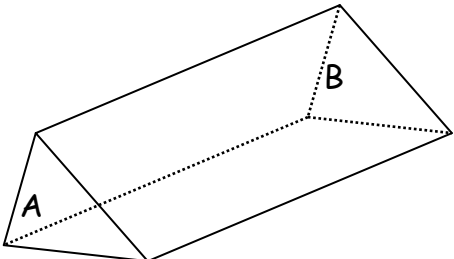
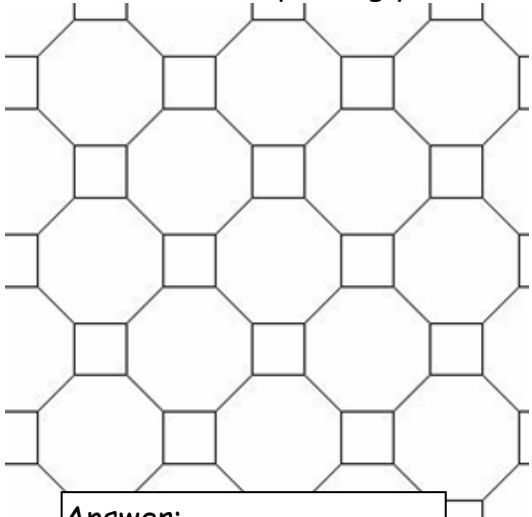
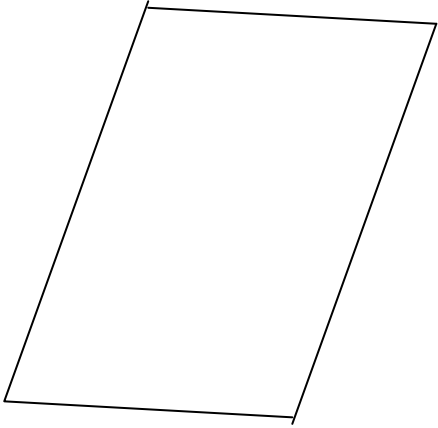
[1]

iii) Write 625 millilitres in litres

Answer:

[1]

<p>19.</p>	<p>A zoo has 420 birds.</p> <p>i) One-third of the birds live on Bird Island. How many birds is this?</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>ii) Two-sevenths of the birds are parrots. How many birds is this?</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>iii) Forty per cent of the birds are African. How many birds is this?</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p>	<p>[2]</p> <p>[2]</p> <p>[2]</p>
<p>20.</p>	<p>There are 49 starlings in a flock, and they have an average weight of 73 grams.</p> <p>Write down a rough calculation that you could make to find the total weight of all the starlings in the flock. Then do the calculation.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>Now write down an exact calculation that you could make to find the total weight of all the starlings in the flock. Then do the calculation.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p>	<p>[2]</p> <p>[2]</p>

<p>21.</p>	<p>i) What name is given to this 3-D mathematical object?</p>  <p>Answer: <input type="text"/></p>	<p>ii) What is this type of 3-D mathematical solid? Faces A and B are parallel.</p>  <p>Answer: <input type="text"/></p>	<p>[2]</p>
	<p>iii) What two mathematical shapes are used in this repeating pattern?</p>  <p>Answer: <input type="text"/></p> <p>Answer: <input type="text"/></p>	<p>iv) What name is given to this 2-D mathematical shape?</p>  <p>Answer: <input type="text"/></p>	<p>[3]</p>
<p>22.</p>	<p>A bird-watching expedition sets off on June 23rd and returns on August 19th (of the same year). How many days does the expedition last, including the start and finish days?</p> <p>Answer: <input type="text"/></p>		<p>[2]</p>

23.	<p>Look at this list of mathematical words:</p> <ul style="list-style-type: none"> • IMPOSSIBLE • UNLIKELY • EVEN CHANCE • LIKELY • CERTAIN. <p>Use them to describe these five situations.</p> <p>i) A letter is selected at random from the letters of the word CONDOR. The result is an R.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>ii) A letter is selected at random from the letters of the word BUDGIE. The result is a vowel.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>iii) A letter is selected at random from the letters of the word OSPREY. The result is a T.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>iv) A letter is selected at random from the letters of the word CURLEW. The result is NOT a W.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p> <p>v) A letter is selected at random from the letters of the word PTARMIGAN. The result is NOT a W.</p> <p style="text-align: right;">Answer: <input style="width: 150px; height: 20px;" type="text"/></p>	<p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p> <p>[1]</p>
24.	<p>Find all the factors of 48.</p> <p style="text-align: right;">Answer: <input style="width: 400px; height: 20px;" type="text"/></p>	<p>[3]</p>

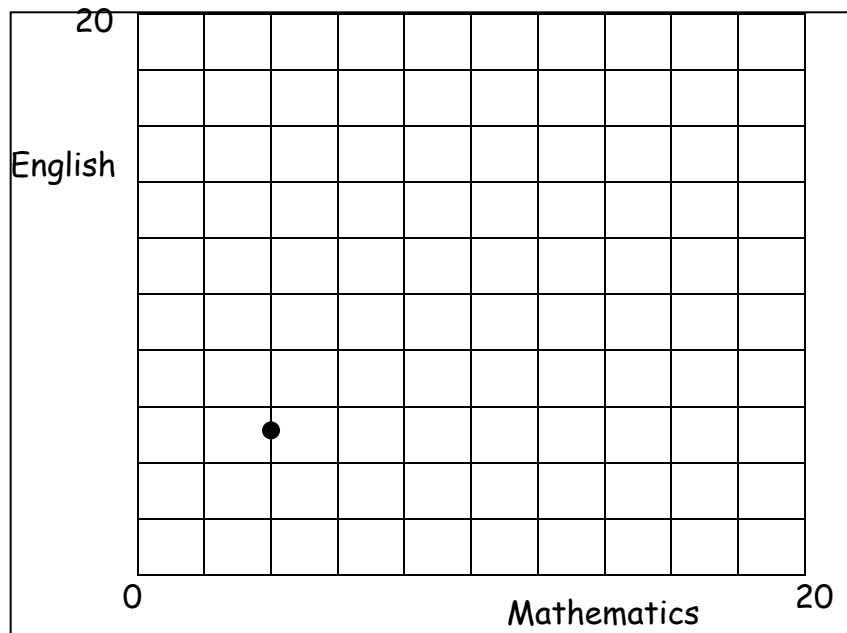
25.

Some children from class 1 have taken tests in Mathematics and English. Here are their scores:

	Mathematics	English
Alan	4	5
Arthur	15	13
Chris	18	17
Damini	13	11
David	20	20
Debbie	12	12
Lois	14	14
Peter	absent	16
Rich	17	7
Sean	18	20

Séan decides to make a diagram to show these results. He plots each person's scores as a point on a coordinate grid. The diagram below shows the grid, with Alan's scores plotted on it.

i) Complete the diagram, to show the results for the nine children who took both tests.



ii) Peter was absent from the Mathematics test. Use your diagram to estimate what score he might have got in Mathematics. Explain how you got this score.

[4]

26.

i) Find 25% of 320.

Answer:

[1]

ii) Find 30% of 470.

Answer:

[2]

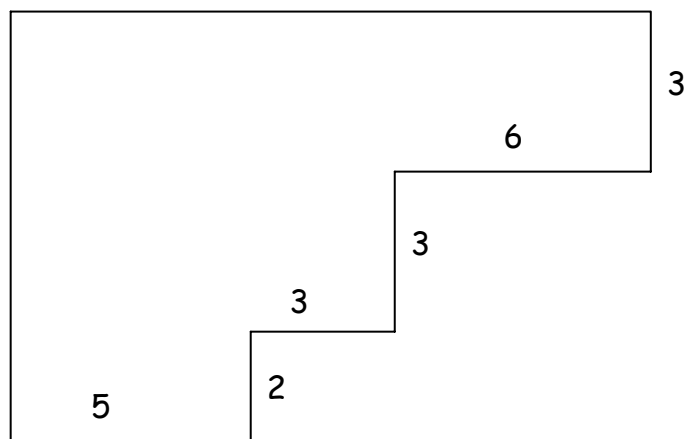
iii) Find 21% of 4200.

Answer:

[3]

27.

Find the perimeter (distance all the way around the outside) of this duck pond. The numbers indicate lengths in metres.



Answer:

[2]

28.

A town council is deciding what types of road crossing to install.

- There are three types of crossing available.
- Each type costs a different amount.
- The council wants to install 10 crossings altogether.

Type of crossing:	Cost (£)
Zebra crossing	1 800
Pelican crossing	16 800
Puffin crossing	22 000

i) Work out the cost if the council decides to install 10 zebra crossings.

Answer: £

[2]

ii) Work out the costs if the council decides, instead, to install 5 pelican crossings and 5 puffin crossings.

Answer: £

[2]

iii) In fact, the council ends up spending a total of £184 200 on the 10 crossings. Work out how many of each type they use.

Answer:

[2]

6

STOP. Now go back and check your answers carefully.