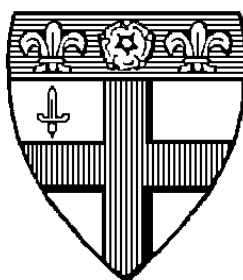


Write your name here:

MAXIMUM AVAILABLE: 60 MARKS

TOTAL

CHRIST'S HOSPITAL



**ENTRANCE EXAMINATION PAPER: YEAR 9**

**SPECIMEN PAPER**

For students presently on Year 8  
For admission to Year 9 next academic year

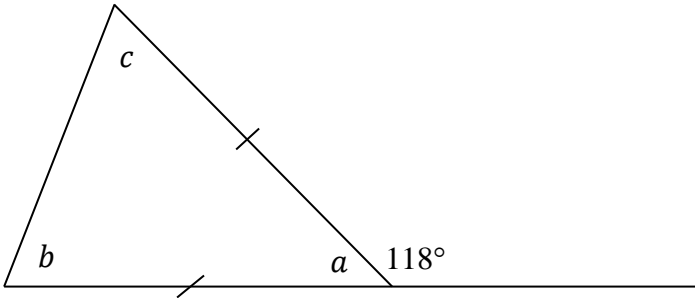
**Mathematics**

Time allowed: 60 minutes

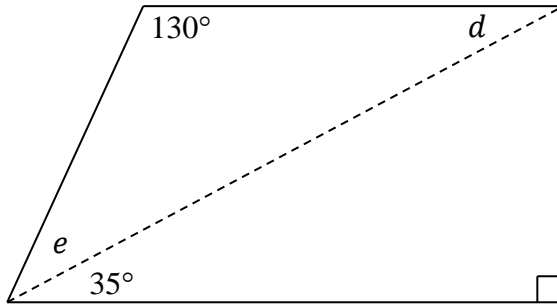
1. Write your answers clearly.
2. You may do the questions in your head if you think they are easy, or you may do your working in the space provided.
3. If you don't show any working and your answer is wrong then you will get no marks.
4. If your answer is wrong but you have shown some working then you may still earn some "method" marks.
5. Calculators must NOT be used.

<p><b>1</b></p>	<p>a) Write the number 3.1415926 correct to 3 decimal places.</p> <p>.....</p> <p>b) Write the number 208.33 correct to 2 significant figures.</p> <p>.....</p>	<p>[1]</p> <p>[1]</p>
<p><b>2</b></p>	<p>Find two numbers that add up to give 2 and multiply together to make -15.</p> <p>.....</p>	<p>[1]</p>
<p><b>3</b></p>	<p>Write <math>7 \times 7 \times 7 \times 7 \times 7</math> using power (index) notation.</p> <p>.....</p>	<p>[1]</p>
<p><b>4</b></p>	<p>Find the Lowest Common Multiple (LCM) of 9 and 24.</p> <p>.....</p>	<p>[1]</p>

<p><b>5</b></p>	<p>The Highest Common Factor (HCF) of 12 and <math>x</math> is 4.  <math>x</math> is greater than 20 but less than 40.  What number might <math>x</math> be?</p> <p>.....</p>	<p>[1]</p>
<p><b>6</b></p>	<p><math>n</math> is a whole number, and <math>\sqrt{18}</math> lies between <math>n</math> and <math>n + 1</math>.  Find the value of <math>n</math>.</p> <p>.....</p>	<p>[1]</p>
<p><b>7</b></p>	<p>Write 124 as a product of its prime factors. (You may wish to use a factor tree.)</p> <p>.....</p>	<p>[2]</p>

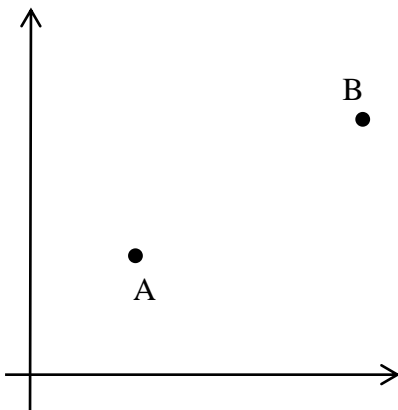
<p><b>8</b></p>	<p>Fill in the missing numbers to make a regular sequence:</p> <p style="text-align: center;">7            .....            .....            25</p>	<p>[2]</p>
<p><b>9</b></p>	<p>Write a rule for the <math>n</math>-th term of the sequence 8, 11, 14, 17, 20, ...</p> <p style="text-align: right;">.....</p>	<p>[2]</p>
<p><b>10</b></p>	<p>Find the values of the angles marked <math>a</math>, <math>b</math>, <math>c</math>.</p> <div style="text-align: center;">  </div> <p style="text-align: right;"><math>a = \dots\dots\dots</math>,    <math>b = \dots\dots\dots</math>,    <math>c = \dots\dots\dots</math></p>	<p>[3]</p>

**11** Find the values of the angles marked  $e$  and  $f$ .



$d = \dots\dots\dots$ ,  $e = \dots\dots\dots$  [2]

**12** A line is drawn from the point A (10, 4) to the point B (20, 12).  
M is the midpoint of AB.  
Find the coordinates of M.



$\dots\dots\dots$  [2]

<p><b>13</b></p>	<p>There are 100 cars in the school car park. 30 of them are silver, 13 are red and 12 are white. The rest are black. A car is chosen at random from the 100 cars. Find the probability that it is:</p> <p>a) silver</p> <p>.....</p> <p>b) red or white</p> <p>.....</p> <p>c) not red</p> <p>.....</p>	<p>[1]</p> <p>[1]</p> <p>[1]</p>				
<p><b>14</b></p>	<p>Ravi throws a drawing pin into the air and records whether it lands “pin up” or “pin down”. He does this 20 times, with the following results:</p> <table border="1" data-bbox="523 1332 962 1411"> <tr> <td>Pin up</td> <td>7 times</td> </tr> <tr> <td>Pin down</td> <td>13 times</td> </tr> </table> <p>The following day Ravi throws the same drawing pin 80 times. How many “pin down” results should he expect?</p> <p>.....</p>	Pin up	7 times	Pin down	13 times	<p>[1]</p>
Pin up	7 times					
Pin down	13 times					





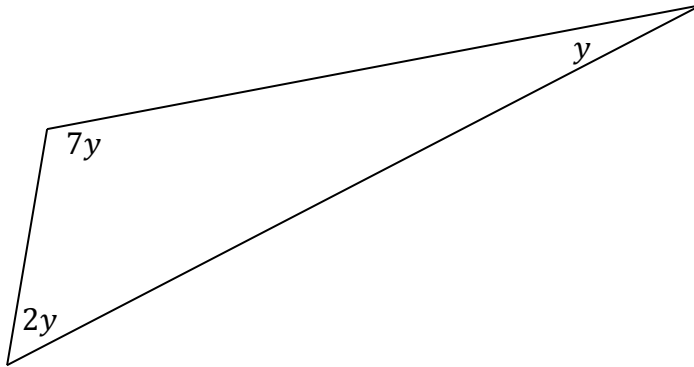


<p><b>19</b></p>	<p>Fred wants to increase £16 by 12%.          Which <b>one</b> of these is a correct calculation to achieve this?          Put a <b>tick</b> ✓ alongside the correct calculation.</p> <p>A</p> $16 \times 0.12$ <p>B</p> $16 \times 1.12$ <p>C</p> $16 \div 0.88$ <p>D</p> $\frac{16 \times 100}{12}$	<p>[1]</p>
<p><b>20</b></p>	<p>When you multiply a positive number by a fraction less than 1, is the answer a smaller number or a larger number? [You could try one or two examples of your own to help you decide.]</p> <p>.....</p>	<p>[1]</p>

<p><b>21</b></p>	<p>Expand and simplify:</p> <p>a) <math>3(5 + 2x)</math></p> <p>.....</p> <p>b) <math>5(x + 3) + 2(2x - 1)</math></p> <p>.....</p> <p>c) <math>10x - 2(x + 3)</math></p> <p>.....</p> <p>Copy and complete, filling in the two gaps represented by the blocks <math>\square</math>:</p> <p>d) <math>\square(5 + 3x) = 10 + \square</math></p> <p>.....</p>	<p>[1]</p> <p>[2]</p> <p>[2]</p> <p>[1]</p>
<p><b>22</b></p>	<p>Solve the equation</p> $3x + 5 = 21 - x$ <p>You <b>must</b> show your working.</p> <p>.....</p>	<p>[2]</p>

23

Find each angle in this triangle.



.....

[4]

24

Decide whether the point  $(3, 8)$  lies on the line with equation  $y = 4x - 3$ .  
Explain how you were able to decide.

.....  
.....  
.....

[2]

<p><b>25</b></p>	<p>A rectangle measures 18 cm by 6 cm.</p> <p>Find its perimeter.</p> <p>.....</p> <p>Find its area.</p> <p>.....</p>	<p>[2]</p> <p>[2]</p>
<p><b>26</b></p>	<p>Here is a number machine.</p> <pre> graph LR   A[INPUT x] --&gt; B[ADD 2]   B --&gt; C[MULTIPLY BY 5]   C --&gt; D[OUTPUT y]   </pre> <p>a) Find the output <math>y</math> if the input <math>x</math> is 8.</p> <p>.....</p> <p>b) Use algebra to write a rule in the form <math>y = \dots\dots\dots</math></p> <p><math>y = \dots\dots\dots</math></p>	<p>[1]</p> <p>[2]</p>

<p><b>27</b></p>	<p>Here are the ages, in years, of 10 children:</p> <p style="text-align: center;">6, 7, 7, 7, 10, 10, 12, 14, 14, 15</p> <p>Their ages add up to a total of 102 years.</p> <p>a) Work out the mean of their ages.</p> <p style="text-align: right;">.....</p> <p>b) Write down the mode of their ages.</p> <p style="text-align: right;">.....</p> <p>c) Work out the median of their ages.</p> <p style="text-align: right;">.....</p>	<p style="text-align: center;">[1]</p> <p style="text-align: center;">[1]</p> <p style="text-align: center;">[1]</p>
<p><b>28</b></p>	<p>You are given that <math>147 \times 23 = 3381</math></p> <p>a) Use this information to work out <math>1.47 \times 2.3</math></p> <p style="text-align: right;">.....</p> <p>b) Use this information to work out <math>338.1 \div 1.47</math></p> <p style="text-align: right;">.....</p>	<p style="text-align: center;">[1]</p> <p style="text-align: center;">[1]</p>

**STOP.**  
**NOW GO BACK AND CHECK YOUR WORK**  
**CAREFULLY**