National 5 Revision C Paper 1

1. Sandi takes the bus to work each day.

Over a two week period, she records the number of minutes the bus is late each day. The results are shown below.

5 6 15 0 6 11 2 9 8 7

(*a*) From the above data, find:

(i) the median; **1**

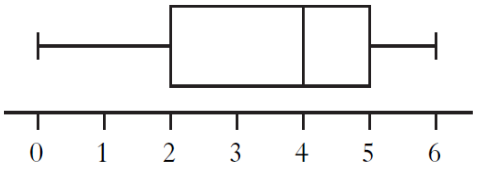
(ii) the lower quartile; **1**

(iii) the upper quartile. **1**

(*b*) Construct a boxplot for the data. **2**

Sandi decides to take the train over the next two week period and records the number of minutes the train is late each day.

The boxplot, drawn below, was constructed for the new data.

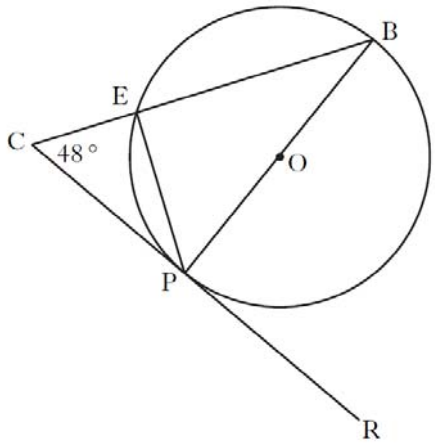


(*c*) Compare the two boxplots and comment. **1**

2. Multiply out the brackets and collect like terms.

$$5x + (3x + 2)(2x - 7)$$ **3**

3. A circle, centre O, is shown below.



In the circle

- PB is a diameter
- CR is a tangent to the circle at point P
- Angle BCP is 48°.

Calculate the size of angle EPR. 3

4. Three of the following have the same value.

$2\sqrt{6}$, $\sqrt{2} \times \sqrt{12}$, $3\sqrt{8}$, $\sqrt{24}$.

Which one has a different value? 2

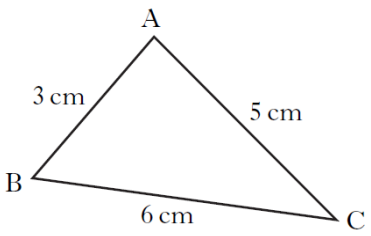
You must give a reason for your answer.

5. Complete the square for the function below:

$x^2 - 4x + 20$

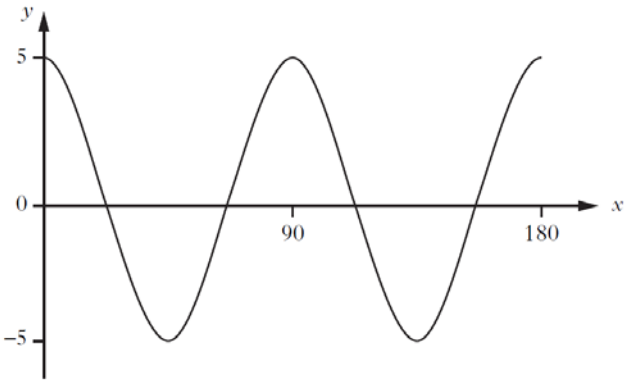
Hence make a sketch of the graph of $y = x^2 - 4x + 20$ clearly marking the turning point. 4

6. In triangle ABC, show that $\cos B = \frac{5}{9}$. 3



7. Evaluate $9^{\frac{3}{2}}$ 2

8. Part of the graph of $y = a\cos bx°$ is shown in the diagram.



State the values of *a* and *b*. 2

9. A straight line is represented by the equation $y = mx + c$.

Sketch a possible straight line graph to illustrate this equation when $m > 0$ and $c < 0$. 2

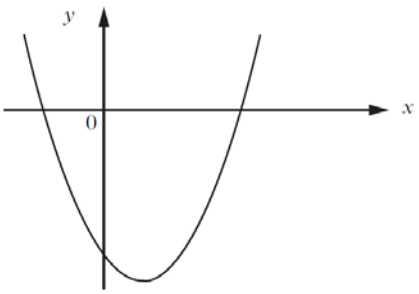
10. (*a*) Factorise $x^2 - 4x - 21$. **2**

(*b*) Hence write down the roots of the equation

$$x^2 - 4x - 21 = 0.$$ **1**

(*c*) The graph of $y = x^2 - 4x - 21$ is shown in the diagram.

Find the coordinates of the turning point. 3



11. Write down the value of cos *a* °. 1