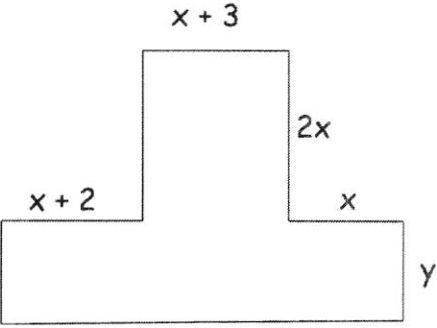


| 7th July | |
|--|--|
| Write down the exact value of $\sin 870^\circ$ | $= \sin 150^\circ$ $= \underline{\underline{\frac{1}{2}}}$ |
| Work out the image of the point $(5, -2)$ when transformed by the matrix $\begin{pmatrix} 2 & -3 \\ 5 & 1 \end{pmatrix}$ | $\begin{pmatrix} 2 & -3 \\ 5 & 1 \end{pmatrix} \begin{pmatrix} 5 \\ -2 \end{pmatrix} = \begin{pmatrix} 16 \\ 23 \end{pmatrix}$ $(5, -2) \rightarrow \underline{\underline{(16, 23)}}$ |
| <p>The shape below is made from two rectangles.</p>  <p>The perimeter of the shape is 80cm.</p> <p>The area of the shape is $A \text{ cm}^2$</p> | <p>Show that $y = 35 - 5x$</p> $x + 2 + x + 3 + x + 4x + 2y + 3x + 5 = 80$ $10x + 10 + 2y = 80$ $2y = 70 - 10x$ $y = \underline{\underline{35 - 5x}}$ <p>Show that $A = 175 + 86x - 13x^2$</p> $A = 2x(x+3) + y(3x+5)$ $= 2x^2 + 6x + (35-5x)(3x+5)$ $= 2x^2 + 6x + 175 + 80x - 15x^2$ $= \underline{\underline{175 + 86x - 13x^2}}$ <p>Use differentiation to find the value of x for which A is a maximum</p> $\frac{dA}{dx} = 86 - 26x$ $\text{At max } 86 - 26x = 0$ $\Rightarrow x = \underline{\underline{\frac{43}{13} \text{ (3.31cm)}}}}$ |