| Coordinates and Ratios Mark Scheme |  |  |
| :---: | :---: | :---: |
| 1(a) | $(2,3)$ | [1] |
| 1(b) | $(0,0)$ | [1] |
| 1(c) | $(-0.5,0.5)$ | [1] |
| 2(a) | $(11,9)$ | [1] |
| 2(b) | $(-4.5,-12)$ | [1] |
| 2(c) | $(-3,-5)$ | [1] |
| 3 | $(5,0)$ and $(3,-2)$ | [1] Correct coordinates for a square |
|  | $(1,4)$ and $(-1,2)$ | [1] Correct coordinates for a square |
| 4(a) | $\begin{gathered} 17-2=15 \\ 13-4=9 \end{gathered}$ | [1] Finding difference in $x$ and $y$ |
|  | $15 \times \frac{2}{3}=10 ; \quad 9 \times \frac{2}{3}=6$ | [1] Use of ratio to find the distance along the line |
|  | $\begin{gathered} 2+10=12 \\ 4+6=10 \\ (12,10) \end{gathered}$ | [1] Correct coordinates |
| 4(b) | $\begin{gathered} -21-0=-21 \\ -25-10=-35 \end{gathered}$ | [1] Finding difference in $x$ and $y$ |
|  | $-21 \times \frac{5}{7}=-15 ; \quad-35 \times \frac{5}{7}=-25$ | [1] Use of ratio to find the distance along the line |
|  | $\begin{gathered} 0+(-15)=-15 \\ 10+(-25)=-15 \\ (-15,-15) \end{gathered}$ | [1] Correct coordinates |
| 5(a) | $\begin{gathered} A(-4,-5), \quad B(2,4) \\ 2-(-4)=6 \\ 4-(-5)=9 \end{gathered}$ | [1] Distance along the line to $C$ |
|  | $\begin{gathered} 6 \times \frac{1}{3}=\underset{(-2,-2)}{2} ; \quad 9 \times \frac{1}{3}=3 \\ \hline \end{gathered}$ | [1] Allow use of graph to find answer. |
| 5(b) | $\begin{gathered} C(-2,-2), \quad B(2,4) \\ C X: X B=1: 3 \\ -2-2=-4 ;-2-4=-6 \end{gathered}$ | [1] Use of ratio to find the distance along the line |
|  | $4 \times \frac{1}{4}=1 ; \quad 6 \times \frac{1}{4}=1.5$ | [1] Use of ratio to find the distance along the line |
|  | $\begin{gathered} -2+1=-1 \\ -2+1.5=-0.5 \\ (-1,-0.5) \end{gathered}$ | [1] Correct coordinates |


| 6(a) | Change in $x=+20$ Change in $y=-8$ $\begin{gathered} 20 \times \frac{3}{4}=15 \\ -9 \times \frac{3}{4}=--6 \end{gathered}$ | [1] Distance along the line to $F$ |
| :---: | :---: | :---: |
|  | $(15,-6)$ | [1] Coordinates of $F$ |
| 6(b) | $A G: G F: F B=1: 2: 1$ | [1] Use of ratio |
| 6(c) | $\begin{gathered} A(0,0) \text { and } F(15,-6) \\ \text { Change in } x=+15 \\ \text { Change in } y=-6 \\ 15 \times \frac{1}{3}=5 \\ -6 \times \frac{1}{3}=-2 \end{gathered}$ | [1] Distance along the line to $G$ |
|  | $(5,-2)$ | [1] Coordinates of $G$ |
| 7 | $X(5,-3)$ | [1] Coordinates of $X$ |
|  | $Y(1,-7)$ | [1] Coordinates of $Y$ |
|  | Crosses $y-$ axis at $-8, y-$ intercept $c=-8$ | [1] Intercept |
|  | $y=x-8$ | [1] Correct equation of the line |
| 8 |  |  |
|  | $X(2,-5)$ | [1] Coordinates of $X$ |
|  | $Y(0,-5)$ | [1] Coordinates of $Y$ |
|  | $Z(2,-9)$ | [1] Shape correctly drawn for final mark. |

