F Summer Intro

1. Factorise fully $2ax^3 - 8ax$. $\boxed{2ax(x-2)(x+2)}$
2. Factorise fully $4x^2 + 4x - 15$. $\boxed{(2x+5)(2x-3)}$
3. Make x the subject in $\sqrt{x-3} = a$. $\boxed{x = a^2 + 3}$
4. Make x the subject in $\frac{2x+a}{x-c} = b$. $\boxed{x = \frac{a+bc}{b-2}}$
5. Solve $\frac{u+1}{2} - u - \frac{2u-1}{3} = u + 2$. $\boxed{u = -\frac{7}{13}}$
6. Solve $(x-1)(x+2) = (x-7)(x+1)$. $\boxed{x = -\frac{5}{7}}$
7. Solve $x^2 + 3x = 40$. $\boxed{x = -8 \text{ or } x = 5}$
8. Solve $3x^2 = 24 + x$. $\boxed{x = 3 \text{ or } x = -\frac{8}{3}}$
9. Solve $\frac{x+3}{-7} > -4$. $\boxed{x < 25}$
10. Find the gradient of the line $3x - 7y = 9$. $\boxed{m = \frac{3}{7}}$
11. Find the equation of the line with gradient $\frac{2}{3}$ through the point $(6, 1)$ in the form $y = mx + c$. $\boxed{y = \frac{2}{3}x - 3}$
12. Find the equation of the line through $(-1, 0)$ and $(1, 1)$. Give your final answer in the form $ax + by + c = 0$ where a, b and c are integers. $\boxed{x - 2y + 1 = 0}$
13. The triangle ABC, there is a right angle at B. If $AC = 7$ and $BC = 4$. Find angle CAB. $\boxed{34.8 \text{ (3sf)}}$
14. The triangle ABC, there is a right angle at B. If $AB = 11$ and $CAB = 27°$. Find AC. $\boxed{12.3 \text{ (3sf)}}$
15. Find the 1000th term of the following sequence: $56, 62, 68, 74, 80, \ldots$. $\boxed{6050}$
16. Solve the simultaneous equations $\begin{matrix} 2x - y = 3 \\ 3x - 2y = 1 \end{matrix}$. $\boxed{(x, y) = (5, 7)}$