Keeping Everything in Flux 2: The return of the killer flux

1. Solve by factorising:

   (a) $x^2 + 20 = 9x$. $\boxed{x = 4 \text{ or } x = 5}$

   (b) $t^2 + t = 20$. $\boxed{t = -5 \text{ or } t = 4}$

   (c) $3z^2 + 4 = 13z$. $\boxed{z = \frac{1}{3} \text{ or } z = 4}$

   (d) $4t^2 = 8t + 21$. $\boxed{t = -\frac{3}{2} \text{ or } t = \frac{7}{2}}$

2. In the triangle ABC, angle $A\hat{B}C$ is a right angle. Length $AB = 10$ and $AC = 13$. Find angle $C\hat{A}B$. $\boxed{39.7^\circ}$

3. In the triangle ABC, angle $A\hat{B}C$ is a right angle. Length $AB = 13$ and $BC = 2$. Find angle $A\hat{C}B$. $\boxed{81.3^\circ}$

4. In the triangle ABC, angle $A\hat{B}C$ is a right angle. Length $AB = 850$ and $ACB = 71^\circ$. Find length BC. $\boxed{292.7}$

5. Find the intersection of the lines $5x - y = 1$ and $2x - 3y = -10$. [Remember that finding the intersection of two lines is done by treating the lines as simultaneous equations.]

   $\boxed{(x, y) = (1, 4)}$

6. What is the gradient of the line $y + 4x = 2$? $\boxed{m = -4}$

7. What is the gradient of the line $2x + 3y = 5$? $\boxed{m = -\frac{2}{3}}$

8. What is the gradient of the line $7x - 2y = 9$? $\boxed{m = \frac{7}{2}}$

9. A line crosses the x-axis at $(-5, 0)$ and the y-axis at $(0, -3)$.

   (a) Find its equation in the form $y = mx + c$. $\boxed{y = -\frac{3}{5}x - 3}$

   (b) Now rearrange your answer in the form $ax + by + c = 0$ where a, b and c are integers.

   $\boxed{3x + 5y + 15 = 0}$

10. A line passes through the points $(2, 5)$ and $(7, 4)$.

    (a) Find the gradient between the two points. $\boxed{m = -\frac{1}{5}}$

    (b) Using $y - y_1 = m(x - x_1)$, find its equation in the form $y = mx + c$. $\boxed{y = -\frac{1}{5}x + \frac{27}{5}}$

    (c) Now rearrange your answer in the form $ax + by + c = 0$ where a, b and c are integers.

    $\boxed{x + 5y - 27 = 0}$

11. A line passes through the points $(\frac{2}{3}, 1)$ and $(1, \frac{1}{4})$. Find its equation in the form $ax+by+c = 0$ where a, b and c are integers. $\boxed{9x + 4y - 10 = 0}$