SOLVING EQUATIONS: PART 2

RECALL

In an **EQUATION** **…there is an** equal **sign**

To **SOLVE** an Equation **…isolate the variable**

We can follow the steps below to solve equations

C	Clear fractions by multiplying all terms by a common denominator.
E	Expand using the distributive law to eliminate brackets
I	Isolate the variable on one side of the equation using opposite operations
D	Divide by the numerical coefficient attached to the variable

i) $\frac{2x+10}{3} = 20$ (×3)

$2x+10 = 60$

$2x = 60-10$

$\frac{2x}{2} = \frac{50}{2}$

$x = 25$

ii) $6x + 5 = 4x - 7$

$6x - 4x = -7-5$

$\frac{2x}{2} = \frac{-12}{2}$

$x = -6$

ii) $\frac{x+3}{8} + \frac{x+1}{3} = 3$ Common denominator = $8 \times 3 = 24$

$\frac{24(x+3)}{8} + \frac{24(x+1)}{3} = 3^{\times 24}$

$3(x+3) + 8(x+1) = 72$

$3x + 9 + 8x + 8 = 72$

$3x + 8x = 72 - 9 - 8$

$\frac{11x}{11} = \frac{55}{11}$

$x = 5$

iv) $3(x-1) + 1 = 5(x-2)$

$3x - 3 + 1 = 5x - 10$

$3x - 5x = -10 + 3 - 1$

$\frac{-2x}{-2} = \frac{-8}{-2}$

$x = 4$

EXAMPLES: Solve each of the following equations.

1. $x-4=12$

$x = 12+4$

$x = 16$

2. $5x+3=4x-12$

$5x-4x = -12-3$

$1x = -15$

$x = -15$

3. $2x-5=11$

$2x = 11+5$

$\frac{2x}{2} = \frac{16}{2}$

$x = 8$

4. $3x-11=5x+3$

$3x-5x = 3+11$

$\frac{-2x}{-2} = \frac{14}{-2}$

$x = -7$

5. $8x+13-3x=-26+2x$

$8x-3x-2x = -26-13$

$\frac{3x}{3} = \frac{-39}{3}$

$x = -13$

6. $4(2x-3)+6=(7-6x)+5$

$8x-12+6 = 7-6x+5$

$8x+6x = 7+5+12-6$

$\frac{14x}{14} = \frac{18}{14}$

$x = \frac{9}{7}$ OR 1.29

7. $\frac{r+5}{3}+5=-r$ (×3 ×3 ×3)

$r+5+15 = -3r$

$20 = -3r-r$

$\frac{20}{-4} = \frac{-4r}{-4}$

$-5 = r$

8. $0.2v = 0.6v + 1.7$

$0.2v-0.6v = 1.7$

$\frac{-0.4v}{-0.4} = \frac{1.7}{-0.4}$

$v = -4.25$

9. $4(3g-5) = -2(46+3g)$

$12g-20 = -92-6g$

$12g+6g = -92+20$

$\frac{18g}{18} = \frac{-72}{18}$

$g = -4$