16.11.15

Unit 3 - Equations

Solving Multi-step Equations Verifying your solution *Section 7.3* *Pg. 350-353*	Multi-step equations, Equations with Decimals, Equations with Fractions. Check that the left-side equals the right-side (LS = RS?) Classwork p 353: 4, 6, 8, 10, 12, 17, 19, 23, 25, 26, 28, 33, 35, 42 Homework p. 353: 5, 7, 9, 13, 16, 20, 21, 22, 24, 27, 29, 31, 34, 36, 38, 40, 46, 47, 54

Notes : To isolate the variable (ie. to find the solution) we need to use SAMDEB

⇒ opposite operations ($\times \div + -$) will "UNDO" the given operation : eg $3x = 9$

INVERSE

UNDO ↪ $\frac{3x}{3} = \frac{9}{3}$

Solve.

2 STEPS

4. $2y - 5 = 9$

① $2y - 5 + 5 = 9 + 5$

$\Rightarrow 2y = 14$

② $\frac{2y}{2} = \frac{14}{2} \Rightarrow y = 7$

6. $3m + 7 = 19$

$3m + 7 - 7 = 19 - 7$

$3m = 12$

$\Rightarrow \frac{3m}{3} = \frac{12}{3}$

$\Rightarrow m = 4$

~~**6.** $3m + 7 = 19$~~

10. $6n + 3n = -18$

$9n = -18$

$\frac{9n}{9} = -\frac{18}{9}$

$\Rightarrow n = -2$

Solve and check.

12. $3t + 7t = -30$

$10t = -30$

$\Rightarrow \frac{10t}{10} = \frac{-30}{10}$

$\Rightarrow t = -3$

Check

LHS: $3t + 7t$

$\Rightarrow 3(-3) + 7(-3)$

$= -9 - 21$

$= -30$ ✓

RHS: -30

17. $3 + m = -7$

$3 + (-10) = -7$

$m = -10$

LHS	RHS
$3 + m$	-7
$3 + -10$	
-7	
$= RHS$	

(!) ☺

19. $\frac{x}{3} = 4 + 2$

$\frac{x}{3} = 6$

$\frac{x}{3}(3) = 6(3) = 6$

$x = 18$

LHS	RHS
$\frac{x}{3} = \frac{18}{3}$	$4 + 2$
$= 6$	$= 6$
	$= RHS$

23. $4 + \frac{x}{3} = -7$

$4 - 4 + \frac{x}{3} = -7 - 4$

$\frac{x}{3} = -11$

$\frac{x}{3}(3) = -11(3)$

$x = -33$

LHS	RHS
$4 + \frac{x}{3}$	-7
$4 + \frac{-33}{3}$	
$4 + -11$	
$-4 - 11$	
$= -7$	
$= RHS$	

✓

25. $\frac{x}{4} - \frac{1}{4} = -\frac{3}{4}$

LS: $\frac{x}{4} - \frac{1}{4}$

$= -\frac{3}{4}$

$= RHS$ ✓

RS: $-\frac{3}{4}$

$\frac{x}{4} - \frac{1}{4} + \frac{1}{4} = -\frac{3}{4} + \frac{1}{4}$

$\frac{x}{4} = -\frac{2}{4}$

$\frac{x}{4} \times 4 = -\frac{2}{4} \times 4$

$x = -2$

26. $\frac{y}{2} + \frac{1}{4} = \frac{3}{4}$

$\frac{y}{2} + \frac{1}{4} - \frac{1}{4} = \frac{3}{4} - \frac{1}{4}$

$\frac{y}{2} = \frac{2}{4}$

$(2)\frac{y}{2} = (2)\frac{2}{4}$

$y = \frac{4}{4}$

$y = 1$

LHS	RHS
$\frac{y}{2} + \frac{1}{4}$	$\frac{3}{4}$
$\frac{1}{2} + \frac{1}{4}$	
$\frac{2}{4} + \frac{1}{4}$	
$= \frac{3}{4}$ ✓	

28. $2y - 5y - 5 = 13$

$-3y - 5 + 5 = 13 + 5$

$-3y = 18$

$\frac{-3y}{-3} = \frac{18}{-3}$

$y = -6$

CHECK

LHS	RHS
$2y - 5y - 5$	13
$2(-6) - 5(-6) - 5$	
$= -12 + 30 - 5$	
$= 13 =$ RHS ✓	

Solve

33. $4 + 3t = -6 - 2$

$4 - 4 + 3t = -8 - 4$

$3t = -12$

$\frac{3t}{3} = -\frac{12}{3}$

$t = -4$

35. $5n + 3n - 2n = 17 - 2 + 9$

$6n = 24$

$\frac{6n}{6} = \frac{24}{6}$

$n = 4$

42. $5t - 2.1 = 8.9$

$5t - 2.1 + 2.1 = 8.9 + 2.1$

$5t = 11$

$\frac{5t}{5} = \frac{11}{5}$

$t = \frac{11}{5} = 2.2$