MPM 1DI Unit 3 Solving Equations: Practice Quiz Questions for QUIZ #2

1. **Solve and check each of the following.** Use opposite operation to solve. To get full marks on the quiz you must show all steps.

b) $-4(5x+1) = 5(x+2) + 11$

$-20x - 4 = 5x + 10 + 11$

$-20x - 4 + 4 = 5x + 21 + 4$

$-20x - 5x = 5x + 25 - 5x$

$\frac{-25x}{-25} = \frac{25}{-25}$

$x = -1$

check

LS	RS
$-4[5(-1)+1]$	$5[(-1)+2]+11$
$= -4(-5+1)$	$= 5(1) + 11$
$= -4(-4)$	$= 5 + 11$
$= 16$	$= 16$

(11)

a) $\frac{x}{7} - 5 = -3$

$\frac{x}{7} - 5 + 5 = -3 + 5$

$\frac{x}{7} \times 7 = 2 \times 7$

$x = 14$

check

LS	RS
$\frac{14}{7} - 5$	-3
$= 2 - 5$	
$= -3$	(11)

c) $\frac{-2}{7}y = 10$

$\frac{-2y}{7} \times \frac{10}{1}$

$-2y = 70$

$\frac{-2y}{-2} = \frac{70}{-2}$

$y = -35$

check

LS	RS
$-\frac{2}{7}(-35)$	10
$= \frac{70}{7}$	(11)
$= 10$	

d) $\frac{x+8}{6} \times \frac{4}{3}$

$3(x+8) = 6(4)$

$3x + 24 - 24 = 24 - 24$

$\frac{3x}{3} = \frac{0}{3}$

$x = 0$

check

LS	RS
$\frac{0+8}{6}$	$\frac{4}{3}$
$= \frac{8}{6}$	(11)
$= \frac{4}{3}$	

e) $4x - 5 = 2x + 7$

$4x - 5 + 5 = 2x + 7 + 5$

$4x - 2x = 2x + 12 - 2x$

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

$x = 6$

check

LS	RS
$4(6) - 5$	$2(6) + 7$
$= 24 - 5$	$= 12 + 7$
$= 19$	$= 19$ (11)

f) $\frac{2t-5}{9} = 7$

$\frac{2t-5}{9} \times \frac{7}{1}$

$2t - 5 = 63$

$2t - 5 + 5 = 63 + 5$

$\frac{2t}{2} = \frac{68}{2}$

$t = 34$

check

LS	RS
$\frac{2(34)-5}{9}$	7
$= \frac{68-5}{9}$	(11)
$= \frac{63}{9}$	
$= 7$	

g) $\frac{-4}{7}(5x+1) = 8$

$\frac{-20x-4}{7} \times \frac{8}{1}$

$-20x - 4 = 56$

$-20x - 4 + 4 = 56 + 4$

$\frac{-20x}{-20} = \frac{60}{-20}$

$x = -3$

check

LS	RS
$-\frac{4}{7}[5(-3)+1]$	8
$= -\frac{4}{7}(-15+1)$	(11)
$= -\frac{4}{7}(-14)$	
$= 8$	

h) $\frac{3x-1}{5} = \frac{2(x-5)}{7}$

$\frac{3x-1}{5} \times \frac{2x-10}{7}$

$7(3x-1) = 5(2x-10)$

$21x - 7 = 10x - 50$

$21x - 7 + 7 = 10x - 50 + 7$

$21x - 10x = 10x - 43 - 10x$

$\frac{11x}{11} = \frac{-43}{11}$

$x = -\frac{43}{11}$

i) $\frac{2}{3} - \frac{4x+3}{6} = \frac{5x}{12} - 2$ LCM 12

$\frac{12}{8}(2) - \frac{12}{6}(4x+3) = \frac{12}{12}(5x) - \frac{12}{1}(2)$

$8 - 8x - 6 = 5x - 24$

$-8x + 2 - 2 = 5x - 24 - 2$

$-8x - 5x = 5x - 26 - 5x$

$\frac{-13x}{-13} = \frac{-26}{-13}$

$x = 2$

check

LS	RS
$\frac{1}{3} - \frac{4(2)+3}{6}$	$= \frac{5(2)}{12_6} - \frac{2}{1}$
$= \frac{4}{6} - \frac{8+3}{6}$	$= \frac{5}{6} - \frac{12}{6}$
$= \frac{4}{6} - \frac{11}{6}$	$= \frac{-7}{6}$
$= \frac{-7}{6}$	(11)

j) $\frac{x}{6} + \frac{3}{4} = 1 - \frac{1}{12}x + \frac{1}{6}$

LCM 12

$\frac{12}{6}(x) + \frac{12}{4}(3) = 12(1) - \frac{12}{12}(1x) + \frac{12}{6}(1)$

$2x + 3(3) = 12 - x + 2$

$2x + 9 = 14 - x$

$+x \quad -9 \qquad -9 \quad +x$

$3x = 5$

$\frac{3x}{3} = \frac{5}{3}$

$x = \frac{5}{3}$

Check

LS

$\frac{5}{3} \div 6 + \frac{3}{4}$

$= \frac{5}{3} \times \frac{1}{6} + \frac{3}{4}$

$= \frac{5}{18} + \frac{3}{4}$

LCD 36

$= \frac{10 + 27}{36}$

$= \frac{37}{36}$

RS

$1 - \frac{1}{12}\left(\frac{5}{3}\right) + \frac{1}{6}$

$= \frac{36}{36} - \frac{5}{36} + \frac{6}{36}$

$= \frac{37}{36}$

11

11, $x = \frac{5}{3}$

k) $\frac{2}{3}(x+5) = \frac{3}{7}(2x-1)$

$\frac{2x+10}{3} \neq \frac{6x-3}{7}$

$7(2x+10) = 3(6x-3)$

$14x + 70 = 18x - 9$

$-18x \quad -70 \qquad -18x \quad -70$

$-4x = -79$

$\frac{-4x}{-4} = \frac{-79}{-4}$

$x = \frac{79}{4}$

check

LS

$\frac{2}{3}\left(\frac{79}{4} + \frac{5}{1}\right)$

$= \frac{2}{3}\left(\frac{79}{4} + \frac{20}{4}\right)$

$= \frac{1}{\cancel{2}}{}_{\cancel{3}_1}\left(\frac{33}{\cancel{99}_{\cancel{4}_2}}\right)$

$= \frac{33}{2}$

RS

$\frac{3}{7}\left(\cancel{2}^{1}\left(\frac{79}{\cancel{4}_2}\right) - 1\right)$

$= \frac{3}{7}\left(\frac{79}{2} - \frac{2}{2}\right)$

$= \frac{3}{\cancel{7}_1}\left(\frac{\cancel{77}^{11}}{2}\right)$

$= \frac{33}{2}$

$\therefore x = \frac{79}{4}$