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UNIT 5:   LINEAR EQUATIONS AND
**   INEQUALITIES**

SECTION 6.2:
SOLVING EQUATIONS BY
USING BALANCE
STRATEGIES

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MATH 9

WHAT'S THE POINT OF TODAY'S LESSON?

We will continue working on the Math 9 Specific Curriculum Outcome (SCO) "Patterns and Relations 3" OR "PR3" which states:

"Model and solve problems using linear equations in a variety of forms ($ax = b$; $ax + b = c$; $ax + b = cx + d$; $a(bx + c) = d(ex + f)$ etc.) concretely, pictorially and symbolically where a, b, c, d, e and f are rational numbers."

WARM UP - SOLVE AND VERIFY THE FOLLOWING EQUATION: (DEGSAMDEB)

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

$$\frac{5x - 20}{3} = 2x + 12$$

$$\frac{3}{1}\left(\frac{5x - 20}{3}\right) = 3(2x + 12)$$

$$5x - 20 = 6x + 36$$

$$5x - 5x - 20 = 6x - 5x + 36$$

$$-20 = x + 36$$

$$-56 = x$$

LS	RS
$\dfrac{5(x-4)}{3}$	$2(x+6)$
$\dfrac{5(-56-4)}{3}$	$2(-56+6)$
$\dfrac{5(-60)}{3}$	$2(-50)$
$\dfrac{-300}{3}$	-100
-100	

$$LS = RS \therefore x = -56.$$

bc

21. b) $\dfrac{5x}{16} - \dfrac{5}{4} = \dfrac{x}{4}$ LCM = 16

$$16\left(\dfrac{5x}{16}\right) - 16\left(\dfrac{5}{4}\right) = 16\left(\dfrac{x}{4}\right)$$

$$5x - 20 = 4x$$

$$5x - 4x - 20 = 4x - 4x$$

$$x - 20 = 0$$

$$x = 20$$

21. c) $\quad 2 - \dfrac{x}{24} = \dfrac{5x}{24} + 1 \qquad LCM = 24$

$$24(2) - \cancel{24}\left(\dfrac{x}{\cancel{24}}\right) = \cancel{24}\left(\dfrac{5x}{\cancel{24}}\right) + 24(1)$$

$$48 - x = 5x + 24$$

$$48 - x + x = 5x + x + 24$$

$$48 = 6x + 24$$

$$24 = 6x$$

$$4 = x$$

ONE MORE DEGSAMDEB EXAMPLE:

$$\frac{1}{9}\left(25+x\right)=\frac{1}{2}\left(\frac{7}{3}x-5\right)$$

$$\frac{25}{9}+\frac{x}{9}=\frac{7}{6}x-\frac{5}{2} \qquad LCM=18$$

$$18\left(\frac{25}{9}\right)+18\left(\frac{x}{9}\right)=18\left(\frac{7}{6}x\right)-18\left(\frac{5}{2}\right)$$

$$50+2x=21x-45$$

$$50+2x-2x=21x-2x-45$$

$$50=19x-45$$

$$95=19x$$

$$5=x$$

ONE MORE DEGSAMDEB EXAMPLE:

$$\frac{1}{9}(25 + x) = \frac{1}{2}\left(\frac{7}{3}x - 5\right) \quad Lcm = 18$$

$$\overset{2}{\cancel{18}}\left(\frac{1}{\cancel{9}}\right)(25 + x) = \overset{9}{\cancel{18}}\left(\frac{1}{\cancel{2}}\right)\left(\frac{7}{3}x - 5\right)$$

$$2(25 + x) = 9\left(\frac{7}{3}x - 5\right)$$

$$50 + 2x = 21x - 45$$
$$50 + 2x - 2x = 21x - 2x - 45$$
$$50 = 19x - 45$$
$$95 = 19x$$
$$5 = x$$

CONCEPT REINFORCEMENT:

MMS9:
Page 281:   #9
Page 282:   #15, #17 and #19

Remember to check your answers in the back of the book as part of your homework. The answers for this section begin on page 514.