U3D6_T - Solving Equations with Fractions II

Sunday, March 4, 2018   8:14 PM

📕 PDF

U3D6_T -
Solving Eq...

U3D6   Warm Up:

a) $\dfrac{5(9+v)}{3} = 20$ <u>ANS</u>
                                $V=3$

b) $15 + \dfrac{5x}{3} = 20$ $x = 3$

c) $\dfrac{3(x-1)}{5} = \dfrac{2x+6}{2}$ $x = -9$

d) $\dfrac{x}{4} - \dfrac{3}{1} + \dfrac{2x}{3} = \dfrac{44-9x}{12}$ LCM $\overset{\text{ans.}}{x=4}$
                                                    12

* using today's lesson

$\dfrac{12}{4}(x) - \dfrac{12}{1}(3) + \dfrac{12}{3}(2x) = \dfrac{12}{12}(44-9x)$

$3x - 36 + 4(2x) = 44 - 9x$

$3x - 36 + 8x + 9x = 44 - 9x + 9x$

$20x - 36 + 36 = 44 + 36$

$20x = 80$

$\dfrac{20x}{20} = \dfrac{80}{20}$

$x = 4$

Day 6 - <u>Solving Equations with Fractions II</u>

To solve equations with fractions... GET RID OF THEM!!

... by multiplying by the <u>least</u>

<u>common</u> <u>multiple</u> (LCM)

(Same value as the lowest common

Example 1: Solve the following: (LCD) denominator)

a) $\dfrac{w-1}{4} = \dfrac{w+2}{3}$

LCM
12

* multiply both sides by 12

$12 \times \dfrac{(w-1)}{4} = 12 \times \dfrac{(w+2)}{3}$

$\dfrac{12}{4} \times (w-1) = \dfrac{12}{3} \times (w+2)$

$3(w-1) = 4(w+2)$

* This is why cross multiplying works when

$3w - 3 - 4w + 3 = 4w + 8 - 4w + 3$

$-w = 11$

$\dfrac{-w}{-1} = \dfrac{11}{-1}$

$w = -11$

$\dfrac{\square}{\square} = \dfrac{\square}{\square}$

b) $\dfrac{5-2a}{4} \times \dfrac{6-a}{5}$ ✱ can cross multiply.

$4(6-a) = 5(5-2a)$

$24-4a = 25-10a$

$24-4a+10a = 25-10a+10a$

$24+6a-24 = 25-24$

$\dfrac{6a}{6} = \dfrac{1}{6}$

$a = \dfrac{1}{6}$

c) $\dfrac{3x}{4} + \dfrac{x-5}{3} = \dfrac{1}{6}$ LCM 12

$$\dfrac{\square}{\square} + \dfrac{\square}{\square} = \dfrac{\square}{\square}$$

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

* CANNOT cross multiply

$3(3x) + 4(x-5) = 2(1)$

$9x + 4x - 20 = 2$

$13x - 20 = 2$

$13x - 20 + 20 = 2 + 20$

$13x = 22$

$\dfrac{13x}{13} = \dfrac{22}{13}$

$$\boxed{x = \dfrac{22}{13}}$$

Example 2: Solve and check

$$\boxed{\frac{2}{3}(3d+5) = \frac{3}{4}(2d+4)} \quad \text{LCM } 12$$

$$\frac{12}{3}(2)(3d+5) = \frac{12}{4}(3)(2d+4)$$

$$4(2)(3d+5) = 3(3)(2d+4)$$

$$8(3d+5) = 9(2d+4)$$

$$24d+40 = 18d+36$$

$$24d+40-18d = 18d+36-18d$$

$$6d+40-40 = 36-40$$

$$6d = -4$$

$$\frac{6d}{6} = \frac{-4}{6}$$

$$\boxed{d = \frac{-2}{3}}$$

Left Side | Right Side

$$\frac{2}{3}\left[3\left(\frac{-2}{3}\right)+5\right] \quad \frac{3}{4}\left[2\left(\frac{-2}{3}\right)+\frac{4}{1}\right]$$

$$=\frac{2}{3}[-2+5] \qquad =\frac{3}{4}\left(\frac{-4}{3}+\frac{12}{3}\right)$$

$$=\frac{2}{3}(3) \qquad\qquad =\frac{3}{4}\left(\frac{8}{6}\right)$$

$$=2 \qquad\qquad\qquad =2$$

$$\therefore \boxed{d = \frac{-2}{3}}$$

U3D6 Practice: Pg. 208-210 #3bd, 4bd, 11, 12, Worksheet 3.3, **Challenge**
page 210 #13
<u>REMINDER:</u> **QUIZ NEXT CLASS!**