

5. The formula $F = \frac{9}{5}C + 32$ changes Celsius temperature to Fahrenheit temperature. Solve the equation for Celsius and find the temperature if Fahrenheit is 43 degrees.

$$\begin{aligned}
 F &= \frac{9}{5}C + 32 \\
 5F &= 9C + 160 \\
 5F - 160 &= 9C
 \end{aligned}$$

$$\frac{5F - 160}{9} = C$$

$$\frac{5(43) - 160}{9} = C$$

$$\frac{215 - 160}{9} = C$$

$$\frac{55}{9} = C$$

$$6.\bar{1} = C$$

$$6^\circ \text{ Celsius}$$

6. Simply

$$\begin{aligned}
 \frac{\frac{2}{3x} - \frac{1}{5}}{-\frac{5}{x^2}} &= \frac{\frac{10 - 3x}{15x}}{-\frac{5}{x^2}} = \frac{10 - 3x}{15x} \cdot \frac{x^2}{5} = \frac{(10 - 3x)}{15} \cdot \frac{x}{5} \\
 &= -\frac{10x - 3x^2}{75}
 \end{aligned}$$

7. Below is an equation which is being solved for "x". For each line (a, b, c, & d) an **Algebra Power Tool** was used from the line above it. Determine and then state what **Tool** was used to generate the result of each line.

$$3(-4x + 5) - 2x = 8$$

- a.) $-12x + 15 - 2x = 8$ Distributive
- b.) $-14x + 15 = 8$ Assoc./Comm.
- c.) $-14x = -7$ Additive Inverse
- d.) $x = \frac{1}{2}$ Multiplicative Inverse

8. Use **Order of Operations** to simplify and replace “ ? ” with $<$, $>$, \leq , or \geq to make a true statement.

$$(12 - 3^3) - 12 \cdot 5 \quad ? \quad -(100 \div 5^2)^2 - 72 \div (-6)^2$$

$$(12 - 27) - 60 \quad - (100 \div 25)^2 - 72 \div 36$$

$$-15 - 60 \quad - (4)^2 - 72 \div 36$$

$$-75 \quad -16 - 72 \div 36$$

$$-16 - 2$$

$$\boxed{-75 < -18}$$

9. Solve

$$\text{Solve } \left(\frac{x}{5} - \frac{9}{2} = -\frac{5}{3} \right) \quad \text{LCD: } 30$$

$$6x - 135 = -50$$

$$6x = 85$$

$$\boxed{x = \frac{85}{6}}$$

CR

$$\frac{\frac{85}{6}}{5} - \frac{9}{2} = -\frac{5}{3} \quad \left| \quad -\frac{10}{6} = -\frac{5}{3}\right.$$

$$\frac{17}{6} - \frac{9}{2} = -\frac{5}{3} \quad \left| \quad -\frac{9}{3} = -\frac{5}{3} \checkmark\right.$$

$$\frac{17}{6} - \frac{9}{2} = -\frac{5}{3}$$

$$\frac{17-27}{6} = -\frac{5}{3}$$

10. Solve

$$4x - 9(6 - 2x) = 2(5x + 7)$$

$$4x - 54 + 18x = 10x + 14$$

$$22x - 54 = 10x + 14$$

$$12x = 68$$

$$x = \frac{68}{12}$$

$$\boxed{x = \frac{17}{3}}$$

CR

$$4\left(\frac{17}{3}\right) - 9\left(6 - 2\left(\frac{17}{3}\right)\right) = 2\left(5\left(\frac{17}{3}\right) + 7\right)$$

$$\frac{68}{3} - 9\left(6 - \frac{34}{3}\right) = 2\left(\frac{85}{3} + 7\right)$$

$$\frac{68}{3} - 9\left(\frac{18-34}{3}\right) = 2\left(\frac{85+21}{3}\right)$$

$$\frac{68}{3} - \frac{9}{3}\left(-\frac{16}{3}\right) = 2\left(\frac{106}{3}\right)$$

$$\frac{68}{3} + \frac{48}{3} = \frac{212}{3}$$

11. Rewrite the following using the **Distributive Tool**: $aby - 3b + 5xby - b^2$

$$\boxed{b(ay - 3 + 5xy - b)}$$

$$\frac{68+144}{3}$$

$$3$$

$$\frac{212}{3} = \frac{212}{3} \checkmark$$

12. Is $x = -\frac{2}{3}$ and $-\frac{26}{33} = \frac{13}{11}x$ equivalent equations? Support your answer by showing your

Algebra.

Case 1

$$33 \left(-\frac{26}{33} = \frac{13}{11}x \right)$$

$$-26 = 39x$$

$$\frac{-26}{39} = x$$

$$-\frac{2}{3} = x \quad \checkmark$$

Case 2

$$-\frac{26}{33} = \frac{13}{11} \cdot -\frac{2}{3}$$

$$-\frac{26}{33} = -\frac{26}{33} \quad \checkmark$$

yes they are equivalent

13. If two numbers are added and the result is zero, what Algebra Power Tool is being used?

Additive Inverse

$$-6 + 6 = 0$$

Solve the following equation by using and stating the "correct" Algebraic Power Tool for each new line you write as done in class. Hint: pay close attention to what tool you select!

14. $\phi(\forall + \odot) - ! = \infty$, for \forall

$$\phi \forall + \phi \odot - ! = \infty \quad \text{Dist}$$

$$\phi \forall = \infty - \phi \odot + ! \quad \text{A. A.}$$

$$\forall = \frac{\infty - \phi \odot + !}{\phi} \quad \text{M. A.}$$

15. True or False: does $\frac{3x+9}{3}$ simplify to $x+3$? Support your answer.

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

yes