

Mr. Nolfi

Victim:

Mr. Solutions Well done Mr. S.!!

KU	APP	TIPS	COM
32/32	16/16	6/6	10/10

Modified True/False (3 KU)

Indicate whether each statement is **true** or **false**. If **false**, **change** the **underlined part** to make the statement true.

- F ✓ $x = 2$ is the solution to the equation $4x - 2 = 4 - 2x$. Change: $x = 1$ ✓
- F ✓ "Triple a number reduced by 4 is fifteen" is modelled by $4 - 3n = 15$. Change: $3n - 4 = 15$ ✓
- F ✓ The algebraic expression $x - 7$ is equivalent to $7 - x$. Change: $-7 + x$ ✓
(many other answers possible)

Multiple Choice (7 KU)

For questions 4 to 10, select the best answer. Write the letter of your choice in the provided blank space.

- a ✓ Which is the correct solution for $x + 2 = -10$? $-12 + 2 = -10$
 (a) $x = -12$ (b) $x = -8$ (c) $x = 8$ (d) $x = -5$
- b ✓ $y = -2$ is the correct solution for which equation?
 (a) $2y - 5 = 1$ (b) $y - 3 = -5$ (c) $3y + 1 = 5$ (d) $4y + 8 = -4$
- c ✓ Andy sells electronic items such as digital music players and cell phones. He is paid \$15/h plus 5% commission on sales. Which expression represents Andy's total earnings?
 (a) $0.5t + 15s$ (b) $0.05t + 15s$ (c) $15t + 0.05s$ (d) $15t + 0.5s$
- a ✓ Which of the following equations **does not** describe a mathematical relationship?
 (a) $3(x - 7) = -3x - 7$ (b) $y = \frac{2A - hx}{h}$ (c) $y = mx + b$ (d) $A = lw$
- b ✓ The distance, d , in kilometres, a spaceship travels in t **hours** is given by the formula $d = 30000t$. How long will it take the spaceship to travel 120000 km? $4h = 240 \text{ minutes}$
 (a) 4 minutes (b) 240 minutes (c) 0.25 minutes (d) 36000000000 minutes
- d ✓ Which of the following equation is **not** an equation that is solved for the unknown?
 (a) $3(x - 7) = -3x - 7$ (b) $x^2 = x + x$ (c) $-8y - 19 = -7$ (d) $2x = x + x$
- b ✓ Which of the following is **not** an identity?
 (a) $2x = x + x$ (b) $x^2 = x + x$ (c) $2(x - y) = 2x - 2y$ (d) $x^2 + 3x^2 = 4x^2$

11. Solve each of the following equations. Remember to show the operation that is performed to each side.

(a) $-8y - 19 = -7$ (3 KU)

$$\begin{aligned} \therefore -8y - 19 + 19 &= -7 + 19 \checkmark \\ \therefore -8y &= 12 \\ \therefore \frac{-8y}{-8} &= \frac{12}{-8} \checkmark \\ \therefore y &= -\frac{4}{3} \checkmark \end{aligned}$$

(b) $-5 + 7a - 8 + 3a = -a - 16$ (4 KU)

$$\begin{aligned} \therefore 10a - 13 &= -a - 16 \checkmark \\ \therefore 10a - 13 + a &= -a - 16 + a \checkmark \\ \therefore 11a - 13 &= -16 \checkmark \\ \therefore 11a - 13 + 13 &= -16 + 13 \checkmark \\ \therefore 11a &= -3 \checkmark \\ \therefore \frac{11a}{11} &= \frac{-3}{11} \checkmark \rightarrow \therefore a = -\frac{3}{11} \checkmark \end{aligned}$$

(c) $-3(w-5) + 11 = -(3-6w)$ (5 KU)

$$\begin{aligned} \therefore -3w + 15 + 11 &= -3 + 6w \checkmark \\ \therefore -3w + 26 &= -3 + 6w \\ \therefore -3w + 26 - 6w &= -3 + 6w - 6w \checkmark \\ \therefore -3w + 26 &= -3 \\ \therefore -3w + 26 - 26 &= -3 - 26 \checkmark \\ \therefore -3w &= -29 \\ \therefore \frac{-3w}{-3} &= \frac{-29}{-3} \checkmark \rightarrow \therefore w = \frac{29}{3} \checkmark \end{aligned}$$

(d) $\frac{-3(b-4)}{5} = -2$ (4 KU)

$$\begin{aligned} \therefore \frac{5}{1} \left[\frac{-3(b-4)}{5} \right] &= 5(-2) \checkmark \\ \therefore -3(b-4) &= -10 \checkmark \\ \therefore -3b + 12 &= -10 \\ \therefore -3b + 12 - 12 &= -10 - 12 \checkmark \\ \therefore -3b &= -22 \\ \therefore \frac{-3b}{-3} &= \frac{-22}{-3} \checkmark \\ \therefore b &= \frac{22}{3} \checkmark \end{aligned}$$

12. Solve the following equation. Then check your solution to verify that it is correct. (10 APP)

$\frac{5u}{2} - \frac{1}{4}(u+3) = 9 - \frac{2u+3}{3}$ (The solution is $u=3$.)

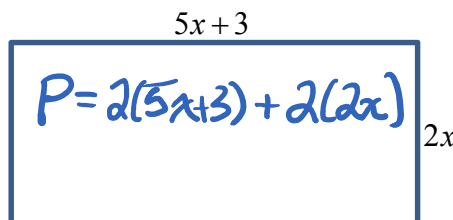
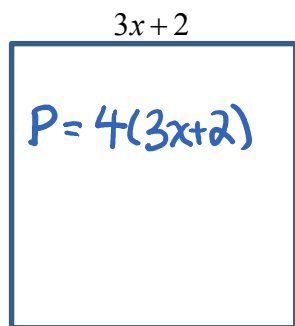
$$\begin{aligned} \frac{12}{1} \left(\frac{5u}{2} \right) - \frac{12}{1} \left(\frac{1}{4} \right) (u+3) &= 12(9) - \frac{12}{1} \left(\frac{2u+3}{3} \right) \checkmark \\ \therefore \frac{12}{1} \left(\frac{5u}{2} \right) - \frac{12}{1} \left(\frac{1}{4} \right) (u+3) &= 108 - \frac{12}{1} \left(\frac{2u+3}{3} \right) \checkmark \\ \therefore 6(5u) - 3(u+3) &= 108 - 4(2u+3) \checkmark \\ \therefore 30u - 3u - 9 &= 108 - 8u - 12 \\ \therefore 27u - 9 &= 96 - 8u \checkmark \\ \therefore 27u - 9 + 8u &= 96 - 8u + 8u \checkmark \\ \therefore 35u - 9 &= 96 \\ \therefore 35u - 9 + 9 &= 96 + 9 \checkmark \\ \therefore 35u &= 105 \\ \therefore \frac{35u}{35} &= \frac{105}{35} \rightarrow u = 3 \checkmark \end{aligned}$$

Left-hand Side	Right-hand Side
$\frac{5u}{2} - \frac{1}{4}(u+3)$ $= \frac{5(3)}{2} - \frac{1}{4}(3+3)$ $= \frac{15}{2} - \frac{1}{4} \left(\frac{6}{1} \right)$ $= \frac{15}{2} - \frac{6}{4}$ $= \frac{30}{4} - \frac{6}{4}$ $= \frac{24}{4}$ $= 6 \checkmark$	$9 - \frac{2u+3}{3}$ $= 9 - \frac{2(3)+3}{3}$ $= 9 - \frac{6+3}{3}$ $= 9 - \frac{9}{3}$ $= 9 - 3$ $= 6 \checkmark$

-1C for not stating

Since L.H.S. = R.H.S., $u=3$ is the correct solution.

13. The square and rectangle shown below have the same perimeter. Use an equation to find the side lengths of each shape. (6 TIPS)



-IC for not stating reason

Since the shapes have the same perimeter,

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

$$\therefore 12x+8 = 10x+6+4x$$

$$\therefore 12x+8 = 14x+6$$

$$\therefore 12x+8 - 14x = 14x+6 - 14x$$

$$\therefore -2x+8 = 6$$

$$\therefore -2x+8-8 = 6-8$$

$$\therefore -2x = -2$$

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

$$x = 1$$

$\therefore$ Square side length

$$= 3x+2$$

$$= 3(1)+2$$

$$= 5$$

Rectangle length

$$= 5x+3$$

$$= 5(1)+3$$

$$= 8$$

Rectangle width

$$= 2x$$

$$= 2(1)$$

$$= 2$$

The square has a side length of 5 units. ✓

The rectangle has a length of 8 units and a width of 2 units. ✓