

Well done Boss!!

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1. Give
- one example**
- of each of the following: (5 /5)

(a) Expression

$3x$

(b) Equation that is Solved for the Unknown

$3n = 12$

(c) Equation that Expresses a Mathematical Relationship

$A = \frac{h(a+b)}{2}$

(d) Identity

$x + x = 2x$

(e) A Value that Satisfies the Equation $x^2 = 169$

$x = 13$ or $x = -13$

2. For the given equation,
- solve for l**
- both by completing the flowchart and by performing operations to
- both sides**
- . (7 /7)

Equation	Solve for l using the Flowchart	Solve the Equation for l by Performing Operations to B.S.
$P = 2l + 2w$ This equation relates the perimeter of a rectangle to its length and width.		$P = 2l + 2w$ $\therefore P - 2w = 2l + 2w - 2w$ $\therefore P - 2w = 2l$ $\therefore \frac{P - 2w}{2} = \frac{2l}{2}$ $\therefore \frac{P - 2w}{2} = l$ $\therefore l = \frac{P - 2w}{2}$

3. Solve the given equation for h by performing operations to both sides. (4 /4)

$A = 2\pi r^2 + 2\pi rh$

$\therefore A - 2\pi r^2 = 2\pi r^2 + 2\pi rh - 2\pi r^2$

Subtract $2\pi r^2$ from B.S. to isolate the term containing h.

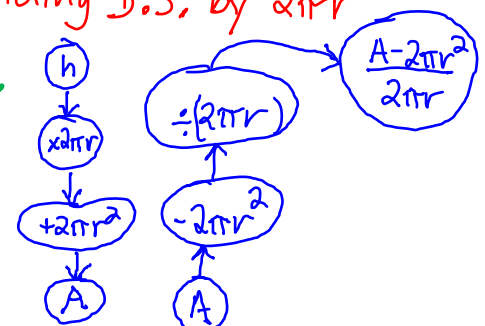
$\therefore A - 2\pi r^2 = 2\pi rh$

$\therefore \frac{A - 2\pi r^2}{2\pi r} = \frac{2\pi rh}{2\pi r}$

Since h is multiplied by $2\pi r$, it is isolated by dividing B.S. by $2\pi r$

$\therefore \frac{A - 2\pi r^2}{2\pi r} = h$

$\therefore h = \frac{A - 2\pi r^2}{2\pi r}$



4. To rent the grand ballroom, a hotel charges \$250 per day plus \$15 per person. (9 /9)

- (a) Let C represent the cost in dollars of renting the ballroom and n represent the number of people.

Write a formula that relates C to n .

$$C = 250 + 15n$$

Must be an equation!!
No marks awarded for an expression.

- (b) Use your formula from part (a) to calculate how much the hotel would charge for 100 people to rent the ballroom.

$$n = 100, C = ?$$

$$C = 250 + 15n$$

$$= 250 + 15(100)$$

$$= 250 + 1500$$

$$= 1750$$

The hotel would charge \$1750 for 100 people to rent the ballroom.

- (c) Rearrange your formula to express n in terms of C .

$$C = 250 + 15n$$

$$\therefore C - 250 = 250 + 15n - 250$$

$$\therefore C - 250 = 15n$$

$$\therefore \frac{C - 250}{15} = \frac{15n}{15}$$

$$\therefore n = \frac{C - 250}{15}$$

- (d) Use your formula from part (c) to calculate how many people attended an event at the ballroom if the total cost turned out to be \$5500. $C = 5500, n = ?$

$$n = \frac{C - 250}{15}$$

$$= \frac{5500 - 250}{15}$$

$$= \frac{5250}{15} = 350$$

The event was attended by 350 people.

5. Students in a math class were asked to rearrange the formula $E = \frac{1}{2}mv^2$ to solve for v . A student named Jabroni wrote the response shown in the left column of the table. Unfortunately, Jabroni's response contains many errors. First circle the errors in Jabroni's response. Then provide a correct response. (8 /8)

Jabroni's Response – Circle all the Errors	Your Corrected Solution
$E = \frac{1}{2}mv^2$ $\therefore 2E = \left(\frac{2}{1}\right)\frac{1}{2}mv^2$ ✓ $\therefore 2E = \frac{1}{4}mv^2$ ✗ ✓ $2\left(\frac{1}{2}\right) = 1$ $\therefore 2E \frac{1}{4}m = \frac{1}{4}mv^2 \frac{1}{4}m$ ✓ $\therefore 2E \frac{1}{4}m = v^2$ ✓ $2E \frac{1}{4}m = v^2$ ✓ $\therefore \frac{2E \frac{1}{4}m}{2} = \frac{v^2}{2}$ ✓ $\therefore \frac{2E \frac{1}{4}m}{2} = v$ ✗ $\therefore v = \frac{2E \frac{1}{4}m}{2}$ ✗	$E = \frac{1}{2}mv^2$ $\therefore 2E = \frac{2}{1}\left(\frac{1}{2}mv^2\right)$ ✓ $\therefore 2E = mv^2$ $\therefore \frac{2E}{m} = \frac{mv^2}{m}$ ✓ $\therefore \frac{2E}{m} = v^2$ $\therefore \sqrt{\frac{2E}{m}} = \sqrt{v^2}$ ✓ $\therefore v = \sqrt{\frac{2E}{m}}$ ✓