Bellwork: Algebra

1. Write down your homework for the night.
2. You need your composition book today.
3. Take our your homework from yesterday and be ready to check.
5. Solve the following question on your bellwork in the FRIDAY box:

Consider the equations $4(x-3)=16$ and $4x-3=16$. Do they have the same solution? Why or why not?

$4x-12=16$

Consider the statement: $4 - 3 + 5 = -6 + 8 + 4$. This is a mathematically correct sentence.

Is the sentence true or false? Explain how you know.

$4-3+5 = -6+8+4$

$1+5 = -6+12$

$6 = 6$

Determine if the sentence is true. Select all that apply.

- [x] $2 + 5 = 19 - 12$ $7=7$
- [ ] $\frac{4}{5} + \frac{1}{5} = 2 - 1 - 1$ $1=0$
- [x] $5 - 4 - 3 - 2 - 1 = 30 - 34 - 1$ $-5=-5$
- [ ] $2(x + 8) = 2x - 8$
- [x] $2(x + 5) - 4x = 3(x - 2) - 5x + 16$

$2x+10-4x = 3x-6-5x+16$

$-2x+10 = -2x+10$

Determine whether the following number sentences are TRUE or FALSE. Justify your answer.

$6^3 + 5^2 = 18 + 5^2$

$108 + 25 = 18 + 25$

$108 \neq 18$

not true

$(2+2)^2 = 2^2 \cdot 2^2$

$4^2 = 4 \cdot 4$

$16 = 16$

true

Which of the following has the correct solution given for x? Check all that apply.

- [x] $3x - 3 = 24; x = 9$ — $3(9) - 3 = 24$ $27 - 3 = 24$ $24 = 24$
- [ ] $4 + x + 5 - x = 20; x = 3$
- [x] $\frac{x+5}{7} = 5; x = 30$ — $\frac{x+5}{7} = 5$ $x + 5 = 35$ $x = 30$
- [x] $9 = 2x - 3; x = 6$ — $9 = 2(6) - 3$ $9 = 12 - 3$ $9 = 9$
- [ ] $50 = \frac{1}{3}x + 5; x = 48$

Statements	Proof
$4(x+3)=20$	Given
$4x+12=20$	Distributive Property
$4x=8$	Subtraction Prop. of Equality
$x=2$	Division Property of Equality

Consider the equations $5x+10=30$ and $5(x+10)=30$.

$5x+50$

Do they have the same solution? Why or why not?

No because in equation 2 the 5 is multiplied by the 10 as well.

$5x+10=30$

$5x=20$

$x=4$

$5(x+10)=30$

$5x+50=30$

$5x=-20$

$x=-4$

Consider the equations $3x + 2 = 14$ and $2 + 3x = 14$.

Do they have the same solution? Why or why not?

Yes. They used the Commutative Property.

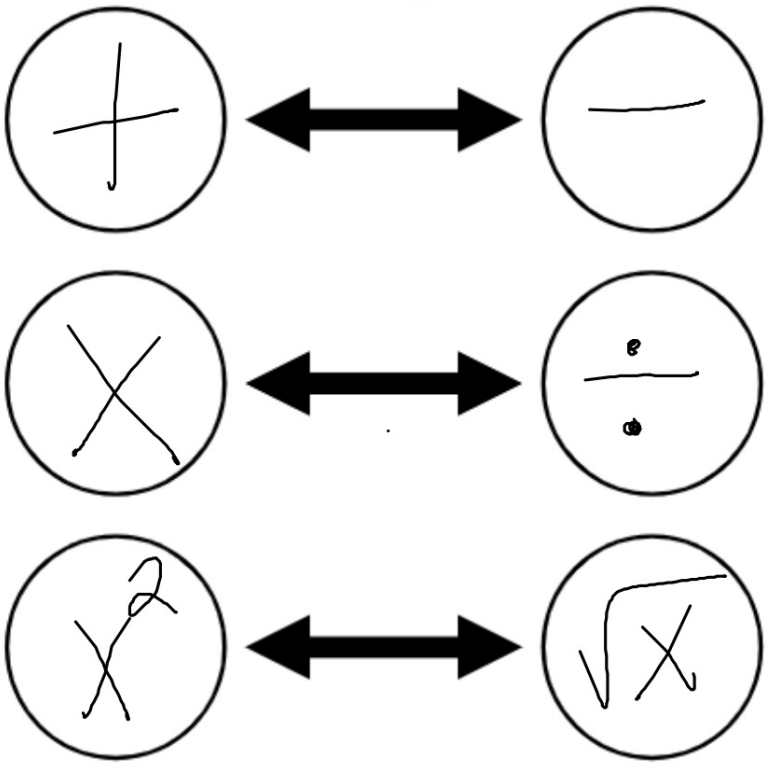
Consider the equation $3(x + 2) + 3x = 36$

Without solving, name all the properties that would be used to solve the equation.

Answers may vary.

Distributive Property, Commutative Property Subtraction Property of Equality, Division Property of Equality.

Inverse Operations



$\sqrt{4}$

$\sqrt{2^2}$

2

$2-1(x+3)$

$2-x-3$

$-6+x=10$

$+6 \quad +6$

$x=16$

$7-x=11$

$-7 \quad -7$

Main Ideas/Questions	Notes/Examples
Steps to Solve a Multi-Step Equation	① Distribute (if needed) ② Combine like terms (same side) ③ Solve two step equation.
Examples	**1.** $9x + 1 - 7x - 5 = -20$ $2x - 4 = -20$ $+4 \quad +4$ $2x = -16$ $x = -8$
	2. $91 = -7(3a - 1)$ $91 = -21a + 7$ $-7 \quad -7$ $84 = -21a$ $\frac{84}{-21} = \frac{-21a}{-21}$ $a = -4$

3. $4m - 5(3m + 10) = 126$

$4m - 15m - 50 = 126$

$-11m - 50 = 126$

$+50 \quad +50$

$-11m = 176$

$m = -16$

4. $-3(k - 8) - 1(k + 5) = 23$

$-3k + 24 - k - 5 = 23$

$-4k + 19 = 23$

$-19 \quad -19$

$\frac{-4k}{-4} = \frac{4}{-4}$

$k = -1$

5. $20 = 10x - 6(2x + 5)$

$20 = 10x - 12x - 30$

$20 = -2x - 30$

$+30 \quad +30$

$50 = -2x$

$x = -25$

6. $8(2w - 1) - 4w = -116$

7. $11h - (2h - 1) = 118$

	8. $-25 = \frac{1}{2}(10x - 2) + 3x$
	9. $7 - \frac{5}{2}(8r - 6) + 2r = 32$
Translate & Solve 	**10.** *"Five times the difference of twice a number and three, decreased by the sum of the number and eight, equals 13."*