Chapter 2
Solving Equations

In this chapter we will:

   simplify variable expressions

   solve equations using mental math

   solve equations using properties of equality

   solve equations with decimals

Section 2.1
Properties and Operations

Goal: use properties of addition and multiplication

Properties of Addition and Multiplication are used to simplify expressions.

Commutative and Associative

You can add or multiply in any order	You can regroup when multiplying or adding
$4 + 5 = 5 + 4$	$(5 + 4) + 6 = 5 + (4 + 6)$
$5(-2) = -2(5)$	$(3 \cdot -4) \cdot 5 = 3 \cdot (-4 \cdot 5)$
$a + b = b + a$	$a + (b + c) = (a + b) + c$
$xy = yx$	$(r \cdot s) \cdot t = r \cdot (s \cdot t)$

Break the property words down to understand the property:

Commutative Property
→ driving back & forth
add/multi.

Associative Property
→ groups that you belong to
⇒ regroup & still be the same

Which property is illustrated?

9 + (51 + 14) = (9 + 51) + 14

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Why is this property useful in this problem?

Mr. Newman collections papers from his 3 classes of 28 students, 25 students and 22 students. How many students does he have? Explain what you did. Did you use a property?

75 Students

Evaluate 5mp when m = 9 and p = -12.

$$5(9)(-12)$$
$$5(-12)(9) \quad -640$$

What property do you use to do mental math on this problem?

Simplify. Name the property used (if any):

1. m + 5 + 9

   m + 14

2. 6(3k)

   18k

3. (4) + x + (-1)

   comm.(2.-5) *3 + x* *Commut. Prop.*
   Associative Prop

4. (2r)(-5)

   -10r

Identity Property:

What do you add/multiply by to get the same thing back out?

Of Addition:	Of Multiplication:
$a + 0 = a$	$4(1) = 4$
$4 + 0 = 4$	$a(1) = a$
$-10 + 0 = -10$	$-15(1) = -15$

Converting units:

A marathon is 26.2 miles long. How long is that in feet?

$1 \text{ mile} = 5280 \text{ ft.}$

$$26.2 \text{ miles} \times \frac{5280 \text{ ft}}{1 \text{ mile}} = 138{,}336 \text{ ft.}$$

Figure out how old you are in months and years.

$117 \text{ yrs} \Rightarrow 1404 \text{ months}$

$36 \times 12 =$

178 mo 191 mo $+1$

189 mo

$\boxed{433 \text{ months}}$

Hwk: pg. 66-68

#16-26 evens, 28 - 32 all,

34, 37, 38, 44, 46, 47, 51