



Warm Up Grade 8



1) Solve a)  $3x - 11 = 52$   
 $3x = 63$   
 $x = 21$

b)  $\frac{n}{-4} + 5 = -8$   
 $\frac{n}{-4} = -13$   
 $n = 52$

Expand

2) a)  $10(9x - 8)$   
 $90x - 80$

b)  $3(-2g + 7)$   
 $-6g + 21$

3) Write an equation and SOLVE for the following:

a) "7 more than a third of a number is 11"

$\frac{x}{3} + 7 = 11$   
 $\frac{x}{3} + 7 - 7 = 11 - 7$   
 $\frac{x}{3} = 4$   
 $x = 12$

b) Double a number reduced by 3 is 19

$2x - 3 = 19$

Mental Math

4) 35% of 80

$2x - 3 = 19$   
 $2x = 22$   
 $x = 11$

1) Solve a)  $3x - 11 = 52$

SAMDEB  
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Mental Math

4) 35% of 80

SAMDEB

1) Solve a)  $3x - 11 = 52$

$$3x - 11 + 11 = 52 + 11$$

$$\frac{3x}{3} = \frac{63}{3}$$

$$x = 21$$

b)  $\frac{n}{-4} + 5 = -8$

$$\frac{n}{-4} + 5 - 5 = -8 - 5$$

$$\frac{n}{-4} = -13$$

$$n = +52$$

Expand

2) a)  $10(9x - 8)$

$$90x - 80$$

b)  $3(-2g + 7)$

$$-6g + 21$$

3) Write an equation and SOLVE for the following:

a) "7 more than a third of a number is 11"

$$\frac{n}{3} + 7 = 11$$

b) Double a number reduced by 3 is 19

$$\frac{n}{3} + 7 - 7 = 11 - 7$$

$$2n - 3 = 19$$

$$2n - 3 + 3 = 19 + 3$$

$$\frac{2n}{2} = \frac{22}{2}$$

$$n = 11$$

$$\frac{n}{3} = 4$$

$$n = 12$$

$$n = 12$$

Mental Math

4) 35% of 80

$$\begin{array}{r} 10\% \text{ of } 80 = 8 \\ \times 3 \qquad \qquad \times 3 \\ \hline 30\% \text{ of } 80 = 24 \end{array}$$

$$\begin{array}{r} 10\% \text{ of } 80 = 8 \\ 5\% \text{ of } 80 = 4 \\ \hline \end{array}$$

$$\begin{array}{r} 30\% + 5\% \\ 35\% \text{ of } 80 = 24 + 4 \\ = 28 \end{array}$$

$$\begin{aligned} 4a) & 7(3+8) \\ & 7(11) \\ & 77 \end{aligned}$$

$$\begin{aligned} & 7 \times 3 + 7 \times 8 \\ & 21 + 56 \\ & 77 \end{aligned}$$

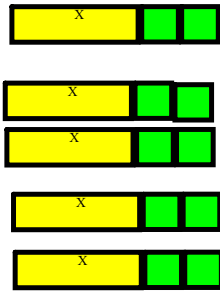
$$\begin{aligned} b) & 5(7-2) \\ & 5 \times 5 \\ & 25 \end{aligned}$$

$$\begin{aligned} & 5 \times 7 - 5 \times 2 \\ & 35 - 10 \\ & 25 \end{aligned}$$

$$\begin{aligned} c) & -2(9-4) \quad [9+(-4)] \quad -2 \times 9 + -2 \times -4 \\ & -2(5) \quad \quad \quad -18 + (+8) \\ & -10 \quad \quad \quad -10 \end{aligned}$$

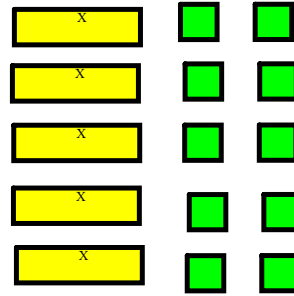
The answers are the same for each pair.

5.  $5(x+2)$



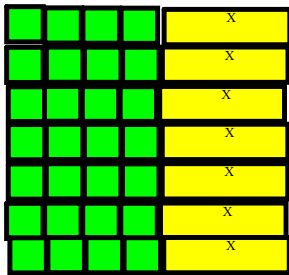
5 groups of  $x+2$

$5x + 10$



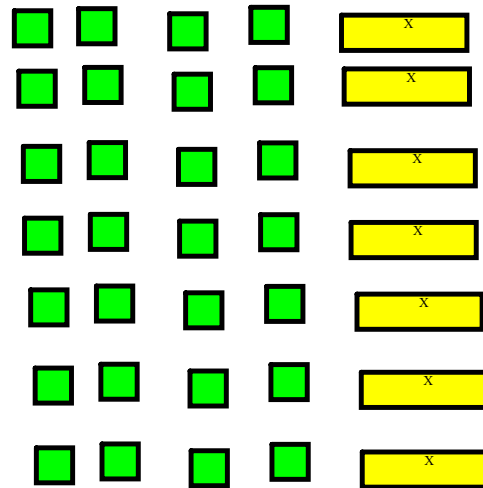
5 x's and ten 1's

6.  $7(4+5)$



7 groups of  
 $4+5$

$28 + 7x$



28 ones and 7 x's

$$7a) 2(x+10) \\ 2x+20$$

$$c) 10(f+2) \\ 10f+20$$

$$e) 8(8+y) \\ 64+8y$$

$$g) 3(9+p) \\ 27+3p$$

$$i) 7(g+15) \\ 7g+105$$

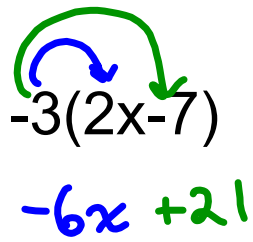
$$b) 5(a+1) \\ \boxed{\phantom{000000}}$$

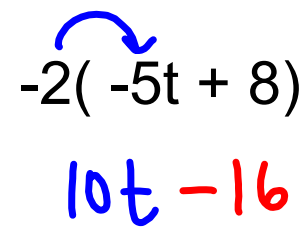
$$d) 6(12+g) \\ \boxed{\phantom{000000}}$$

$$f) 5(5+6) \\ \boxed{\phantom{000000}}$$

$$h) 4(11+r) \\ \boxed{\phantom{000000}}$$

$$j) 9(7+h) \\ \boxed{\phantom{000000}}$$

$$\begin{array}{l} -3(2x-7) \\ -6x + 21 \end{array}$$


$$\begin{array}{l} -2(-5t + 8) \\ 10t - 16 \end{array}$$


### Solving Equations that Involve the Distributive Property

The Distributive property may also appear in solving equations.

When it does, **first you have to apply the distributive property, then solve as you normally would.**

# outside Bracket, you multiply  
each term on inside bracket. Then  
solve as usual

Solve the following:

(a)  $2(x + 4) = 18$

$$2x + 8 = 18$$

$$2x + 8^{-8} = 18^{-8}$$

$$2x = 10$$

$$\div 2 \quad \div 2$$

$$\boxed{x = 5}$$

(b)  $3(x - 5) = 9$

$$3x - 15 = 9$$

$$3x - 15^{+15} = 9^{+15}$$

$$3x = 24$$

$$\div 3 \quad \div 3$$

$$\boxed{x = 8}$$





### Word Problem

Ex)

I have 4 friends. We each have a package of cookies and we each have 2 cookies that are not in the package. If we have 50 cookies in total, how many cookies are in each package?

Let  $c$  represent the package.

hint : How many people?

$$5(c + 2) = 50$$

$$5c + 10 = 50$$

$$5c + 10 - 10 = 50 - 10$$

$$5c = 40$$

$$\div 5 \quad \div 5$$

$$c = 8$$

There are 8 cookies in each package

2) Bill's Mom pays Bill \$0.25 for each sock he folds. But gave him \$20 for being a great son. If she gave him \$25.50, then how many socks did he fold? (Show work)

Let  $x = \#$  of socks he folded

$$0.25x + 20 = 25.50$$

$$0.25x + 20^{-20} = 25.50^{-20}$$

$$0.25x = 5.50$$

$\div 0.25 \qquad \div 0.25$

$$x = 22$$

Bill folded 22 Socks

# Class/Homework

~~pg. 342 #12 acc. 1-5~~

Homework pg. 347 # 4-5

## Test PART 1 outline

5 MC

6 Short Response

#1 Draw tiles and solve an equation

#2 Use Algebra tiles or box method to prove distributive property

#3 For each problem, state the variable, write and solve the equation, verify and give a statement. (Like warm up on Friday)

#4 Solve Ex)  $2(x-3)=16$

#5 For each of the following tell whether the pair of expressions is equivalent or not.

#6 (Is it correct if yes then verify if no then redo)

pg. 342 # 7-16, 18,19 Reflect

$$7a) 2(x+10) \\ 2x+20$$

$$b) 5(a+1) \\ 5a+5$$

$$c) 10(f+2) \\ 10f+20$$

$$d) 6(12+g) \\ 72+7g$$

$$e) 8(8+y) \\ 64+8y$$

$$f) 5(s+6) \\ 5s+30$$

$$g) 3(9+p) \\ 27+3p$$

$$h) 4(11+r) \\ 44+4r$$

$$i) 7(g+15) \\ 7g+105$$

$$j) 9(7+h) \\ 63+9h$$

$$8a) 3(x-7)$$

$$3x-21$$

$$b) 4(a-3)$$

$$4a-12$$

$$c) 9(h-5)$$

$$9h-45$$

$$d) 7(g-f)$$

$$56-7f$$

$$e) 5(l-s)$$

$$5-5s$$

$$f) 6(p-2)$$

$$6p-12$$

$$g) 8(11-t)$$

$$88-8t$$

$$h) 2(15-v)$$

$$30-2v$$

$$i) 10(b-8)$$

$$10b-80$$

$$j) 11(c-4)$$

$$11c-44$$



$$9. \text{Per} = s + t + s + t + s$$

$$= b + h + b + h$$

$$\text{or } 2b + 2h$$

$$\text{or}$$

$$\text{Per} = 2(b+h)$$

$$= 2b + 2h$$

(Discuss)

10.  $hb = bh$

When you multiply order does not matter

$2 \times 3 = 3 \times 2$

therefore


$h \times b = b \times h$

11.  $9(6-t)$


$= 54 - 9t$

which is (a)


12. a)  $-6(c+4)$   
 $-6c - 24$

b)  $-8(a-5)$  (-8)(-5)  



c)  $10(f-7)$   
 $10f - 70$

d)  $3(-8-g)$   


e)  $-8(8-y)$  -64 - (-8y)  
 $-64 + 8y$  -64 + 8y

f)  $-2(-5+3)$   


g)  $-5(-t-8)$  5t - (-40)  
 $5t + 40$

h)  $-9(9-w)$  -81 - (-9w)  


13. a)  $2x+20$  and  $2(x+20)$

not equivalent

$$2(x+20)$$

$$= 2x+40$$

They didn't multiply the 20 by 2.

b)  $3x+7$  and  $10x$

not equivalent

could model  
to show

$3x+7x$  equals  $10x$ , but you don't add the 3 and the 7 in  $3x+7$  because they are unlike terms.

c)  $6+2t$  and  $2(t+3)$

equivalent

$$2(t+3)$$

$2t+6$  which is the same as  $6+2t$   
(add in any order).

d)  $9+x$  and  $x+9$

equivalent

you can add in any order.

14.  $15 \times 25 + 15 \times 14$  OR  $15(25+14)$   
 Jersey for each      Hat for each      (Jersey and hat together)

b)  $375 + 210$   
 $585$

$15(39)$   
 $585$

15a)(b)

$5 \times 9 + 5 \times 8$   
 $45 + 40$   
 $85$

OR  $5(9+8)$   
 $5(17)$   
 $85$

16. Column 1

Column 2

a)  $6(t-6)$   
 $6t-36$

(i)

b)  $-6(t-6)$   
 $-6t+36$

(ii)

c)  $6(t+6)$   
 $6t+36$

(iii)

d)  $6(6+t)$   
 $36+6t$

(i)



$$\begin{array}{l}
 18. \quad 7(\underline{5+y-2}) \\
 \text{a) } \quad 7(3+y) \\
 \quad \quad 21+7y
 \end{array}$$

$$\begin{array}{l}
 \text{or } 7(5+y-2) \\
 \quad 35+7y-14 \\
 \quad \quad 21+7y
 \end{array}$$

$$\begin{array}{l}
 \text{b) } -3(-t+8-3) \\
 \quad -3(-t+5) \\
 \quad \quad 3t-15
 \end{array}$$

$$\begin{array}{l}
 \text{c) } -8(\underline{-9+s+5}) \\
 \quad -8(-4+s) \\
 \quad \quad 32+(-8s) \\
 \quad \quad 32-8s
 \end{array}$$

$$\begin{array}{l}
 \text{d) } 12(\underline{-10-p+7}) \\
 \quad 12(-3-p) \\
 \quad \quad -36-12p
 \end{array}$$

$$19 \text{ a) } 2(7+b+c) \\ 14 + 2b + 2c$$

$$\text{b) } 11(-6+e-f) \\ -66 + 11e - 11f$$

$$\text{c) } -1(-r+s-8) \\ r - s + 8$$

$$\text{d) } -10(-6-v-w) \\ 60 + 10v + 10w$$

$$\text{e) } 5(j-1s-k) \\ 5j - 5s - 5k$$

$$\text{f) } -4(-g+12-h) \\ 4g - 48 + 4h$$