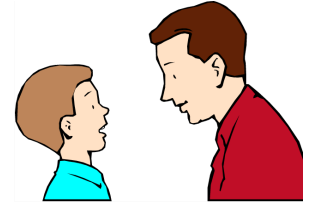Warm Up Grade 8

1) Stan ate 21 skittles. His dad says that he ate one-third of the bag.
How many skittles were in the bag to start with? $\div 3$
a) Write an equation to represent this problem. Solve the equation.
b) Verify the solution.

let X ≡ # of skittles in the bag orginally.

$$\frac{x}{3} = 21$$

$$3 \times \frac{x}{3} = 21 \times 3$$

$$x = 63$$

There were
63 skittles
in the bag.

solve using algebra

2) $\frac{c}{2} - 7 = 5$

$$\frac{c}{2} - 7^{+7} = 5^{+7}$$

$$\frac{c}{2} = 12$$

$$2 \times \frac{c}{2} = 12 \times 2$$

$$c = 24$$

$$-2x + 4^{-4} = 14^{-4}$$

$$-2x = 10$$
$$\div -2 \qquad \div -2$$

$$x = -5$$

Pg 336

8 a) $\dfrac{p}{-3} + 9 = 3$

$\dfrac{p}{-3} + 9 - 9 = 3 - 9$

$\dfrac{p}{-3} = -6$

$\dfrac{p}{-3} \times -3 = -6 \times -3$

$p = +18$

LS $\quad$ RS
$\dfrac{p}{-3} + 9 \quad$ 3

$\dfrac{18}{-3} + 9$

$-6 + 9$

$+3$

b) $\dfrac{t}{-6} + 12 = 18$

$\dfrac{t}{-6} + 12 - 12 = 18 - 12$

$\dfrac{t}{-6} = 6$

$\dfrac{t}{-6} \times -6 = 6 \times -6$

$t = -36$

LS $\quad$ RS
$\dfrac{t}{-6} + 12 \quad$ 18

$\dfrac{-36}{-6} + 12$

$6 + 12$

18

c) $-24 + \dfrac{w}{5} = -29$

$-24 + \dfrac{w}{5} + 24 = -29 + 24$

$\dfrac{w}{5} = -5$

$\dfrac{w}{5} \times 5 = -5 \times 5$

$w = -25$

LS $\quad$ RS
$-24 + \dfrac{w}{5} \quad$ -29

$-24 + \dfrac{-25}{5}$

$-24 + -5$

-29

d) $-17 + \dfrac{e}{-7} = -8$

$-17 + \dfrac{e}{-7} + 17 = -8 + 17$

$\dfrac{e}{-7} = 9$

$\dfrac{e}{-7} \times -7 = 9 \times -7$

$e = -63$

LS $\quad$ RS
$-17 + \dfrac{e}{-7} \quad$ -8

$-17 + \dfrac{-63}{-7}$

$-17 + 9$

-8

9. $n = $ the number

a) $\dfrac{n}{-3} + 1 = 6$

$\dfrac{n}{-3} + 1 - 1 = 6 - 1$

$\dfrac{n}{-3} = 5$

$\dfrac{n}{-3} \times -3 = 5 \times -3$

$n = -15$

b) $3 - \dfrac{n}{9} = 0$

$3 - \dfrac{n}{9} - 3 = 0 - 3$

$-\dfrac{n}{9} = -3$

$-\dfrac{n}{9} \times 9 = -3 \times 9$

$-n = -27$

$n = 27$

c) $4 + \dfrac{n}{-2} = -3$

$4 + \dfrac{n}{-2} - 4 = -3 - 4$

$\dfrac{n}{-2} = -7$

$\dfrac{n}{-2} \times -2 = -7 \times -2$

$n = +14$

10.
$$\frac{x}{2} - 11 = 12$$
$$\frac{x}{2} - 11 + 11 = 12 + 11$$
$$\frac{x}{2} = 23$$
$$\frac{x}{2} \times 2 = 23 \times 2$$
$$x = 46$$

11. a) Yes, correct

n is the number of candy in the bag, dividing by 5 represents the 5 students, subtract 1 is the candy given to the teacher and 9 is how many candy each student had.

$$\frac{n}{3} - 1 = 9$$
$$\frac{h}{5} - 1 + 1 = 9 + 1$$
$$\frac{h}{5} = 10$$
$$\frac{n}{5} \times 5 = 10 \times 5$$
$$h = 50$$

LS
$$\frac{n}{5} - 1$$
$$\frac{50}{5} - 1$$
$$10 - 1$$
$$9$$

RJ
$$9.$$

12   $n = $ grade 8 students

$$\frac{n}{3} + 5 = 41$$

$$\frac{n}{3} + 5 - 5 = 41 - 5$$

$$\frac{n}{3} = 36$$

$$\frac{n}{3} \times 3 = 36 \times 3$$

$$n = 108$$

13a) Correct

b) Didn't isolate the variable first

c) Should have multiplied by -4.

Extra Practice 3

2a) $\dfrac{d}{5} = -8$

$\dfrac{d}{5} \times 5 = -8 \times 5$

$d = -40$

checks

b) $\dfrac{f}{-6} = 10$

$\dfrac{f}{-6} \times -6 = 10 \times -6$

$f = -60$

c) $\dfrac{k}{-2} = -11$

$\dfrac{k}{2} \times -2 = -11 \times -2$

$k = 22$

d) $\dfrac{g}{3} = -12$

$\dfrac{g}{3} \times 3 = -12 \times 3$

$g = -36$

3 a) $x \equiv$ Chicken Pieces

$$\frac{x}{4} = 7$$

There was total of 28 pieces

$$4 \times \frac{x}{4} = 7 \times 4$$

$$x = 28$$

4 a) $\frac{n}{3} - 2 = 10$

$$\frac{n}{3} - 2 + 2 = 10 + 2$$

$$\frac{n}{3} = 12$$

$$3 \times \frac{n}{3} = 12 \times 3$$

$$n = 36$$

b) $4 - \frac{p}{5} = 13$

$$4^{-4} - \frac{p}{5} = 13 - 4$$

$$5 \times \frac{-p}{5} = 9 \times 5$$

$$-p = 45$$

$$p = -45$$

d) $\frac{t}{-9} + 8 = -5 - 8$

$$\frac{t}{-9} = -13$$

$$(-9) \frac{t}{-9} = -13 \times -9$$

$$t = 117$$

d) $-17^{+17} + \frac{n}{-3} = 9 + 17$

$$\frac{n}{-3} = 26$$

$$-3 \times \frac{n}{-3} = 26 \times -3$$

$$n = -78$$

5 a) $\frac{n}{-4} = 7$

$$n = -28$$

b) $4 + \frac{n}{-3} = 2^{-4}$

$$\frac{n}{-3} = -6$$

$$-3 \times \frac{n}{-3} = -6 \times 3$$

$$n = +18$$

c) $1^{-1} - \frac{n}{6} = 5^{-1}$
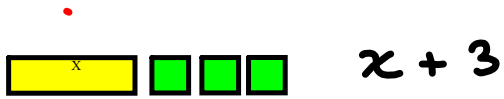
$$\frac{-n}{6} = 4$$
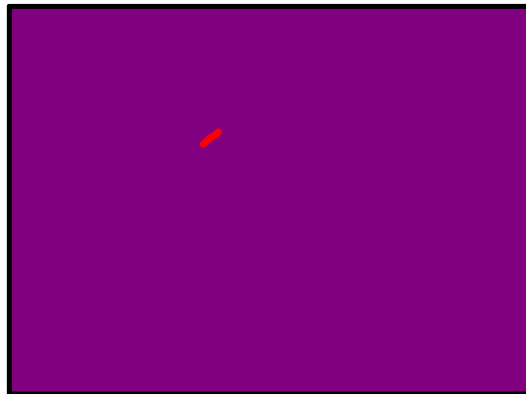
$$-\frac{n}{6} + 1 = 5$$
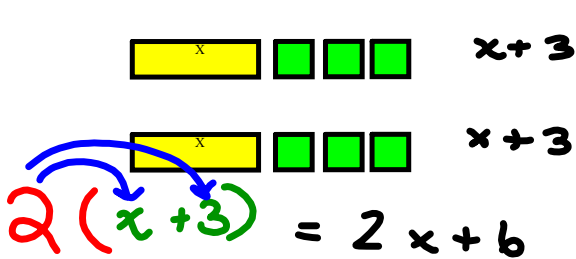
$$\times 6 - \frac{n}{6} = 4 \times 6$$

$$-n = 24$$

$$n = -24$$

What is the algebraic expression?

$x + 3$

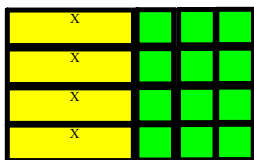How could you describe the expression below?

$x + 3$

$x + 3$

$2(x + 3) = 2x + 6$

What about this expression?
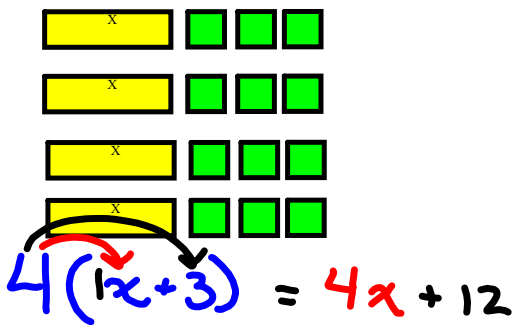
$4(x + 3) = 4x + 12$

How is this related to the diagram above?

What we just showed is the <u>Distributive Property</u> in math.

4 (x + 3)   means the 4 is distributed to the x and to the 3, so we get

4 x x + 4 x 3

$4x + 12$

Examples: Model and give the answer for the following:

(a) 3(2x + 1)   (b) 2(3x + 2)

6x +3   6x + 4
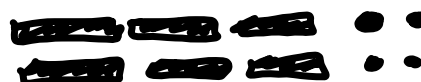
Without modelling:

3 (2x+1)   b)   2 (3x+2)
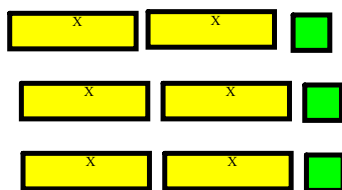
What we just showed is the Distributive Property in math.
4 (x+ 3) means the 4 is distributed to the x and to the 3,
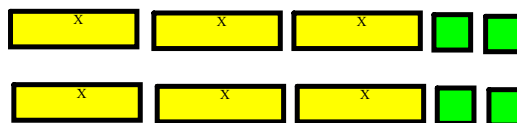so we get 4 x x + 4 x 3
$\qquad$ $4x + 12$

Examples: Model and give the answer for the following:

(a) 3(2x + 1)　　　　　　　　　　　　　(b) 2(3x + 2)

6x +3　　　　　　　　　　　　　　　　6x + 4

Without modelling:

3 (2x+1)
6x + 3

2 (3x+2)
6x + 4

The Distributive Property

The property stating that a product can be written as a sum or difference of two products.

For example: $a(b + c) = \underline{ab} + \underline{ac}$

$a(b - c) = \underline{ab} - \underline{ac}$

<u>Box method</u>

23×7

	20	3
7	20×7 140	7×3 21

$$\begin{array}{r} 140 \\ +21 \\ \hline 161 \end{array}$$

Multiply: $7(c + 2)$

	C	+2
7	7c	14

$7c + 14$

$2(x + 4)$

$2x + 8$

$3(x - 2)$

$3x - 6$

12

Expand:

a) $-5(x + 7)$

$-5x - 35$

b) $4(2 - c)$

$8 - 4c$

Class/Homework

pg. 342 # 1,2,3,4,5,6,7