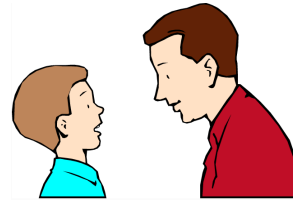Warm Up Grade 8

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?
a) Write an equation to represent this problem. Solve the equation.
b) Verify the solution.

let $x =$ amount of skittles in bag

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

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

$$\boxed{x = 63}$$

There were 63 skittles in the bag.

solve using algebra

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

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

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

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

$$\boxed{c = 24}$$

1

Quiz Time

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

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

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

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

$p = +18$

LS $\qquad$ RS

$\frac{p}{-3} + 9 \qquad 3$

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

$-6 + 9$

$+3$

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

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

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

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

$t = -36$

LS $\qquad$ RS

$\frac{t}{-6} + 12 \qquad 18$

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

$6 + 12$

18

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

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

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

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

$w = -25$

LS $\qquad$ RS

$-24 + \frac{w}{5} \qquad -29$

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

$-24 + -5$

-29

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

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

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

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

$e = -63$

LS $\qquad$ RS

$-17 + \frac{e}{-7} \qquad -8$

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

$-17 + 9$

-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.

$$\frac{n}{3} - 1 = 9$$

$$\frac{n}{5} - 1 + 1 = 9 + 1$$

$$\frac{n}{5} = 10$$

$$\frac{n}{5} \times 5 = 10 \times 5$$

$$n = 50$$

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

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

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

$$t = 117$$

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

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

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

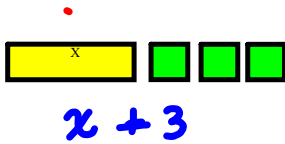$$n = +18$$

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

$$\frac{-n}{6} = 4$$

$$\times 6 - \frac{n}{6} = 4 \times 6$$
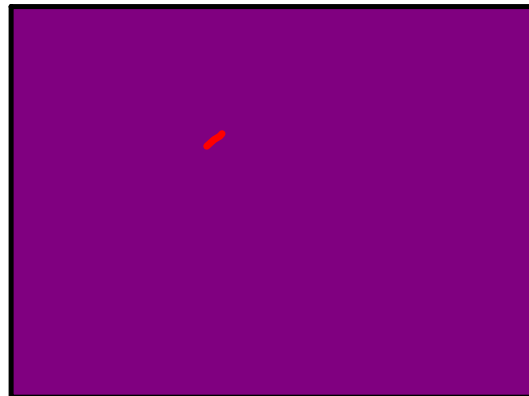
$$-n = 24$$

$$n = -24$$
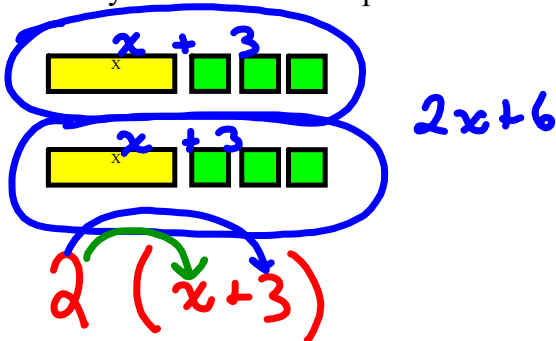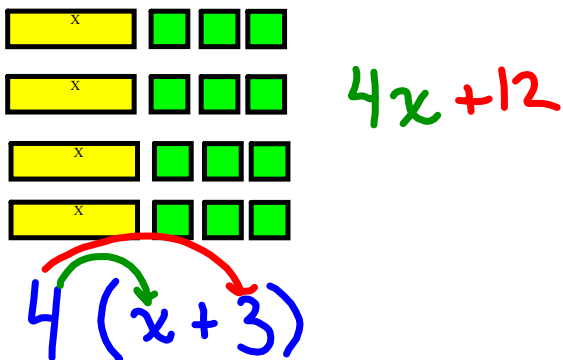
$\frac{-n}{6} + 1 = 5$

What is the algebraic expression?

$x + 3$

How could you describe the expression below?

$2x + 6$

$2(x + 3)$

What about this expression?

$4x + 12$

$4(x + 3)$

How is this related to the diagram above?
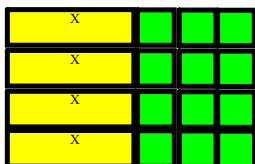
$4x + 12$
They are the same but in this one the tiles are touching. Still mean $4 \times (x+3)$

**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

$4x$ + 12

Examples: Model and give the answer for the following:

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

6 x + 3

6 x + 4

Without modelling:

3 (2x+1)

6 x +3

b)

2 (3x+2)

6x + 4

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

$$4x + 12$$

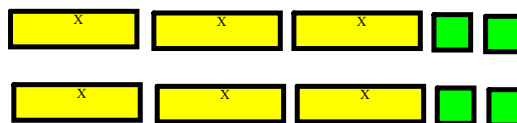Examples: Model and give the answer for the following:

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

       6x +3   6x + 4
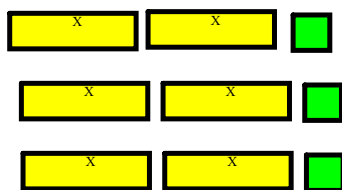
Without modelling:

The Distributive Property

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

For example: $a(b + c) = ab + ac$

$a(b - c) = ab - ac$

Ex)

$$-3(4x - 2)$$

$$-12x + 6$$

$3(4x - 5)$

<u>Box method</u>

2×24

$2 \times (20 + 4$

	4x	−5
3	12x	−15

	20	4
2		

$12x - 15$

Multiply: $7(c + 2)$

$2(x + 4)$ $3(x - 2)$

Expand:

a) $-5(x + 7)$

$-5x - 35$

b) $4(2 - c)$

$8 - 4c$