CA 1   9/8/30 09?0

ter:

11) $\left(-\dfrac{1}{3}\right)+\dfrac{3}{8}$

$\dfrac{-8}{24}+\dfrac{9}{24}=\boxed{\dfrac{1}{24}}$

12) $\left(-\dfrac{10}{7}\right)+\dfrac{1}{6}$

$\dfrac{-60}{42}+\dfrac{7}{42}=\boxed{\dfrac{-53}{42}}$

13) $\dfrac{9}{5}+\left(-\dfrac{4}{3}\right)$

$\dfrac{27}{15}+\dfrac{-20}{15}=\boxed{\dfrac{7}{15}}$

14) $2-\dfrac{13}{8}$

$\dfrac{16}{8}-\dfrac{13}{8}=\boxed{\dfrac{3}{8}}$

3) $\dfrac{\cancel{4}}{9}\cdot\dfrac{7}{\cancel{4}}=\boxed{\dfrac{7}{9}}$

4) $-\dfrac{\cancel{2}}{3}\cdot\dfrac{5}{\cancel{4}\,2}=\boxed{\dfrac{-5}{6}}$

5) $\dfrac{-2}{1}\cdot\dfrac{3}{7}=\boxed{\dfrac{-6}{7}}$

6) $-2\dfrac{2}{3}\cdot 4\dfrac{1}{10}$

$-\dfrac{\cancel{8}^{4}}{3}\cdot\dfrac{41}{\cancel{10}\,5}=\boxed{\dfrac{-164}{15}}$

17) $-2\div-3\dfrac{4}{5}$

$\dfrac{-2}{1}\div\dfrac{-19}{5}$

$-\dfrac{2}{1}\cdot\dfrac{-5}{19}=\boxed{\dfrac{10}{19}}$

18) $\dfrac{1}{9}\div-1\dfrac{1}{3}$

$\dfrac{1}{9}\div\dfrac{-4}{3}$

$\dfrac{1}{3\cancel{9}}\cdot\dfrac{-\cancel{3}^{1}}{4}=\boxed{\dfrac{-1}{12}}$

19) $1\dfrac{6}{7}\div 5\dfrac{3}{4}$

$\dfrac{13}{7}\div\dfrac{23}{4}$

$\dfrac{13}{7}\cdot\dfrac{4}{23}=\boxed{\dfrac{52}{161}}$

20) $-3\dfrac{7}{10}\div 2\dfrac{1}{4}$

$\dfrac{-37}{10}\div\dfrac{9}{4}$

$\dfrac{-37}{5\cancel{10}}\cdot\dfrac{\cancel{4}\,2}{9}=\boxed{\dfrac{-74}{45}}$

1-7 The Distributive Property

Objective: to use the distributive property to simplify expressions.

Vocab:

Distributive Property: let a, b and c be $\mathbb{R}$ #'s

Algebra: ex:

$a(b+c) = ab + ac$	$4(20+6) = 4(20)+4(6)$
$(b+c)a = ba + ca$	$(20+6)4 = 20(4)+6(4)$
$a(b-c) = ab - ac$	$7(30-2) = 7(30) - 7(2)$
$(b-c)a = ba - ca$	$(30-2)7 = 30(7) - 2(7)$

**You can use the distributive property to simplify the product of a number and a sum or difference.

Simplifying Expressions

What is the simplified form of each expression?

a) $3(x+8)$

$3(x+8) = 3(x) + 3(8)$ Dist. prop

$3x + 24$ simplify.

b) $(5b-4)(-7)$

$5b(-7) + -4(-7)$

$\boxed{-35b + 28}$

c) $5(x+7)$

$5(x) + 5(7)$

$\boxed{5x + 35}$

d) $12(3 - \frac{1}{6}t)$

$12(3) - 12(\frac{1}{6}t)$

$\boxed{36 - 2t}$

e) $(.4 + 1.1c)3$

$.4(3) + 1.1c(3)$

$\boxed{1.2 + 3.3c}$

f) $(2y - 1)(-y)$

$\boxed{-2y^2 + y}$

Rewriting Fraction Expressions:

What sum or difference is equivalent to:

a) $\dfrac{7x+2}{5} = \dfrac{1}{5}(7x+2)$ · write div as mult

$= \dfrac{1}{5}(7x) + \dfrac{1}{5}(2)$ · distr. prop

$\dfrac{7}{5}x + \dfrac{2}{5}$ · simpl.

b) $\dfrac{4x-16}{3} = \dfrac{1}{3}(4x-16)$

$\dfrac{1}{3}(4x) - \dfrac{1}{3}(16)$

$\boxed{\dfrac{4}{3}x - \dfrac{16}{3}}$

c) $\dfrac{11+3x}{6} = \dfrac{1}{6}(11+3x)$

$\dfrac{1}{6}(11) + \dfrac{1}{6}(3x)$

$\dfrac{11}{6} + \dfrac{3x}{6}$ $\boxed{\dfrac{11}{6} + \dfrac{1}{2}x}$

d) $\dfrac{15+6x}{12} = \dfrac{1}{12}(15+6x)$

$\dfrac{15}{12} + \dfrac{6}{12}x$

$\boxed{\dfrac{5}{4} + \dfrac{1}{2}x}$

e) $\dfrac{4-2x}{8}$

$\boxed{\dfrac{1}{2} - \dfrac{1}{4}x}$

Using the Multiplication Property of -1:

What is the simplified form of the following:

a) $-(2y-3x)$

$= -1(2y-3x)$ mult prop of -1

$= (-1)(2y) + (-1)(-3x)$ distr. prop

$= -2y + 3x$ simpl.

b) $-(a+5)$

$-a - 5$

c) $-(-x+31)$

$x - 31$

d) $-(6m-9n)$

$-6m + 9n$

e) $-(4x-12)$

$-4x + 12$

f) $-2(4x+12)$

$-8x - 12$

Vocab:

Term: in an algebraic expression a #, a variable, or the product of a # & one or more variables;

Coefficient: the numerical factor of a term

Constant: a term that has no variables

$6a^2$, $-5ab$, $3b$, -12 are terms

Ex: $6a^2 - 5ab + 3b - 12 = 6a^2 + (-5ab) + 3b + (-12)$

coefficients   constant

Like Terms: terms that have the same variable factors

Are the following terms like terms?

a) $7a$ & $-3a$ b) $4x^2$ & $12x^2$ c) $6ab$ & $-2a$ d) xy^2 & x^2y

a & a x^2 x^2 ab   a   no

yes   yes   no

An algebraic expression in simplest form has no like terms or parenthesis.

Not Simplified: Simplified:

$2(3x - 5 + 4x)$ $6x - 10 + 8x$

$\boxed{14x - 10}$

Combining Like Terms:

What is the simplified form of each expression?:

a) $8x^2 + 2x^2$

$\boxed{\text{Simplified}}$

b) $5x - 3 - 3x + 6y + 4$

$\boxed{2x + 6y + 1}$

c) $3y - y$

$\boxed{2y}$

d) $-7mn^4 - 5mn^4$

$\boxed{-12mn^4}$

e) $7y^3z - 6yz^3 + y^3z$

$\boxed{8y^3z - 6yz^3}$

1-8: An Intro to Equations:

Equation: A mathematical sentence that uses an equal sign (=)

**An equation is true when: the expressions on either side of = are equal
$$(1+1=2, \quad x+x=2x)$$

An Equation is false when: if the expression on either side of = are ~~not~~ not equal
$$(1+1=3, \quad x+x=3x$$

Open Sentence: an equation that contains one or more variables and may be true or false depending on the values of the variables

Classify the following as true, false, or open. Explain.

a) $24 + 18 = 20 + 22$

T → both = 42

d) $3y + 6 = 5y - 8$

open

b) $7 \cdot 8 = 54$

F → $7 \cdot 8 = 56$
$56 \neq 54$

e) $16 - 7 = 4 + 5$

True

c) $2x - 14 = 54$

open → variable

f) $32 + 8 = 2 \cdot 3$

false

Solution of an Equation: a value of a variable that makes an equation true

Identifying Solutions of an Equations:

③ $7 + 16y = 11, \quad \frac{1}{4}$

yes

④ $\frac{3}{2}(1) + 2 = 4, \quad \frac{2}{3}$

no

① ex: Is $x = 6$ a solution to the eq. $32 = 2x + 12$

$32 = 2(6) + 12$
$32 \overset{?}{=} 12 + 12$
$32 \neq 24$ no.

② Is $m = (\frac{1}{2})$
& $6m - 8 = -5$?