

BE-1A TUESDAY 9-2-08

① $\frac{1}{2} \left(\frac{2}{3} \right)$

② $\frac{1}{2} (100 + 40)$

③ EVALUATE: $X = 2$ $Y = 3$

💡 use your
"FRIENDS"

$$\begin{array}{r} X^4 Y \\ \hline XY \end{array}$$

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- Exam 1 Thursday
 - Midterms at end of next week.



Like Terms

This is
A
biggie!!

Same variable(s) AND each
variable has the same exponent.

* You can only combine (+ or -)
like terms.

Note: fractions are like terms if
they have the same
denominator

$$\text{EX) } 2x + x = 3x$$

$$5x^2 - 2x^2 = 3x^2$$

$$6x + y = 6x + y$$

$$6x + 8 = 6x + 8$$

You cannot combine
numbers and variables!!

$$3xyz + 4xyz = 7xyz$$

$$\frac{1}{x} + \frac{1}{x} = \frac{2}{x}$$

$$3x^2 + 4x = 3x^2 + 4x$$

$$2x^2 + x + 5x^2 + 5x = 7x^2 + 6x$$

$$x + 1 = x + 1$$

$$x + x = 2x$$

➡ Distributive Property For Any numbers a, b, c
 $a(b+c) = ab+bc$

Technically, this is the "Distributive Property of Multiplication over Addition"

See if it is true for a simple example.

Use PE(MD)(AS) to EVALUATE $4(3+5)$

$$\Rightarrow 4(8) = \boxed{32}$$

Use the DP to EVALUATE $4(3+5)$

➡ USE { EACH ARROW
ARROWS } IS ONE MULTIPLICATION

$$\Rightarrow 4(3+5)$$

$$12 + 20 = \boxed{32} \checkmark$$

I have shown you some MENTAL MATH tricks that make some problems easier, most of the time these tricks are based on the DP: ex) $8 \cdot 64$

$$\Rightarrow 8(60+4) \quad \text{MENTAL MATH!}$$

$$= 480 + 32 = \boxed{512}$$

So is the DP simply a convenience?

Not in Algebra, because we are often, often, often⁵, dealing with unlike terms in parentheses.

(*) M
"PARENTHESES
JAIL"

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

↑↑

the $2x+3$ terms ARE NOT LIKE terms,
so you CANNOT CONTINUE WITHOUT THE DP

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

NOTE

You can multiply
numbers ARE
variables SINCE

$$5 \cdot 2x$$

$$= 2x + 2x + 2x + 2x + 2x$$

Like terms

$$10x + 15 + 4x - 6$$

$$(14x + 9)$$

↑↑

THIS is NOW the ORIGINAL
Algebraic Expression in Simplest Terms

⇒ NO LIKE TERMS

⇒ NO PARENTHESES

Since the order of multiplication does NOT MATTER, you may see THIS:

$$(x+2)3 \Rightarrow (x+2)3 = \boxed{3x+6}$$

Even mixed fractions fall to the DP:

$$4\left(3\frac{1}{2}\right) = 4\left(3+\frac{1}{2}\right) = 4\left(\overbrace{3+\frac{1}{2}}\right) \\ = 12+2 = \boxed{14}$$

PRACTICE: (Simplify)

$$\frac{8(2x-6)}{5(x+4) - 2x + 8}$$

$$\frac{3(x^2+x) + 10x^2}{\frac{1}{5}(10x-5)}$$

Use DP
(MENTAL MATH)

$$4(56)$$

$$6(205)$$

Homework: • organize NOTES

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💡 $x(a+b+c)$ use 3 Arrows