2.5B Distributive Property - Day 2

Ex. 1 Simplify.

a) $4(2a + b)$

$= 8a + 4b$

b) $2(4a - 3)$

$= 8a - 6$

c) $-4(2a + b)$

$= -8a - 4b$

d) $-2(4a - 3)$

$= -8a + 6$

Ex. 2 Simplify.

a) $2x(x + 1)$

$= 2x^2 + 2x$

$2x \cdot x = 2x^2$

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

$= -12xy + 6y^2$

c) $4a(2a^2 - 3ab^2) + 5b(a + 2ab)$

$= 8a^3 - 12a^2b^2 + 5ab + 10ab^2$

$4a(-3ab^2)$

$= 4(-3)(a)(a)(b^2)$

$= -12a^2b^2$

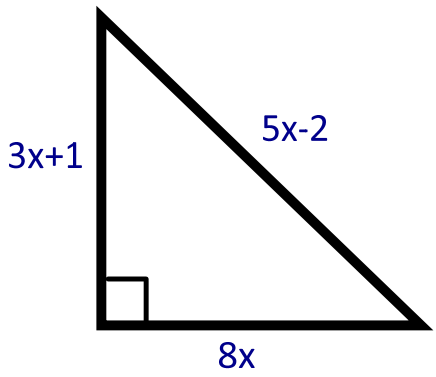
d) $6xy(2x^2 - y) - 3y(4x^3 - 5xy)$

$= 12x^3y - 6xy^2 - 12x^3y + 15xy^2$

$= 9xy^2 + 0x^3y$

$= 9xy^2$

Ex. 3 Find the area and perimeter of the right angle triangle.



$P = 3x+1 + 5x-2 + 8x$

$= 16x - 1$

$A = \frac{bh}{2}$ or $\frac{1}{2} b \cdot h$

$= \frac{1}{2}(8x)(3x+1)$

$= 4x(3x+1)$

$= 12x^2 + 4x$

Ex. 4 Are these the same?

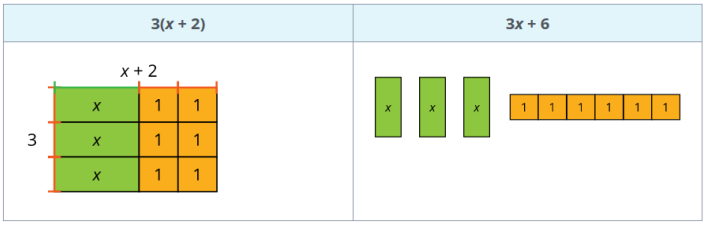
a) $(a^3)(a^5)$ and $(a^2)^4$

$= a^{3+5}$ $= a^{2\times 4}$

$= a^8$ $= a^8$

YES

b)



YES

c) $\frac{y^{-2}(y^3)^{-1}}{y^{-5}}$ and 1 ?

$= \frac{y^{-2}(y^{-3})}{y^{-5}}$

$= \frac{y^{-5}}{y^{-5}}$ YES

$= y^{-5-(-5)}$

$= y^0$

$= 1$

d) $2(x-3) + 3x$ and $5(x-2) + 2$?

$= 2x - 6 + 3x$ $= 5x - 10 + 2$

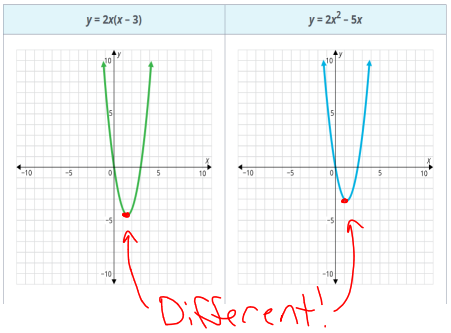
$= 5x - 6$ $= 5x - 8$

NO

e) x(x-4) and x^2-4x given the following.

x	x(x − 4)	$x^2 - 4x$
0	0(0 − 4) = 0	$0^2 - 4(0)$ = 0
1	1(1 − 4) = 1(−3) = −3	$1^2 - 4(1)$ = 1 − 4 = −3
5	5(5 − 4) = 5(1) = 5	$5^2 - 4(5)$ = 25 − 20 = 5
10	10(10 − 4) = 10(6) = 60	$10^2 - 4(10)$ = 100 − 40 = 60
$\frac{1}{2}$	$\frac{1}{2}\left(\frac{1}{2} - 4\right)$ $= \frac{1}{2}\left(-\frac{7}{2}\right)$ $= -\frac{7}{4}$	$\left(\frac{1}{2}\right)^2 - 4\left(\frac{1}{2}\right)$ $= \frac{1}{4} - 2$ $= -\frac{7}{4}$
−2	−2(−2 − 4) = −2(−6) = 12	$(-2)^2 - 4(-2)$ = 4 + 8 = 12

f)



Although these expressions are equivalent for the tested inputs, it is impossible to determine for certain whether they are always equivalent without using another method. Substitution method can tell you if they are NOT equal

Pull

Ex. 5 Expand and simplify. CAN YOU DO IT???

$$\frac{2}{3}(3m-2)-\frac{3}{4}(8m-2)$$

$= \frac{2}{3}\cdot 3m + \frac{2}{3}(-2) - \frac{3}{4}(8)m - \frac{3}{4}(-2)$

$= \frac{6}{3}m - \frac{4}{3} - \frac{24}{4}m + \frac{6}{4}$

$= 2m - \frac{4}{3} - 6m + \frac{3}{2}$

$= -4m - \frac{4}{3} + \frac{3}{2}$

$= -4m - \frac{8}{6} + \frac{9}{6}$

$= -4m + \frac{1}{6}$

$\frac{2}{3}\cdot\frac{3}{1} = \frac{2}{1}$

$= 2$