

1-7 The Distributive Property Notes

* See "Additional Vocabulary Support" worksheet for vocabulary words.

Examples of Distributive Property:

$$\textcircled{A} \quad 5(x+7) \\ 5x+35$$

$$\textcircled{B} \quad 12(3 - \frac{1}{6}t) \\ 36 - 2t$$

$$\textcircled{C} \quad (2y-1)(-y) \\ -2y^2 + y$$

* term that is being distributed can be in front of the quantity or after

$$\textcircled{D} \quad \text{What sum or difference is equivalent to} \\ \frac{4x-16}{8}?$$

→ What operation is equivalent to dividing by 8? multiplying by $\frac{1}{8}$

$$\frac{4x-16}{8} = \frac{1}{8}(4x-16)$$

$$= \frac{4}{8}x - \frac{16}{8}$$

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

$$\textcircled{E} \quad -(x+7) \quad \textcircled{F} \quad -(-y+4)$$

$$\quad \quad \quad -x-7 \quad \quad \quad y-4$$

*the negative in front of the parentheses indicates the opposite of the entire quantity

\textcircled{G} Julia commutes to work on the train 4 times each week. A round trip ticket costs \$7.25. What is her weekly cost for tickets?

mentally without a calculator

$$4(7) + 4(0.25) \quad \underline{\text{OR}} \quad 4(7.25)$$

$$28 + 1.00 \quad \quad \quad \textcircled{\$29}$$

$$\quad \quad \quad \textcircled{\$29}$$

Simplify:

$$\textcircled{+1} \quad -7mn^4 - 5mn^4$$

$$\textcircled{+1} \quad 7y^3z - 6yz^3 + y^3z$$

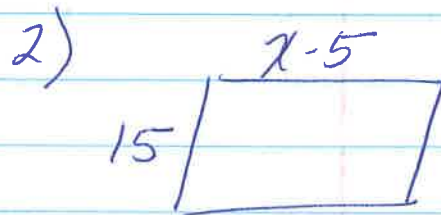
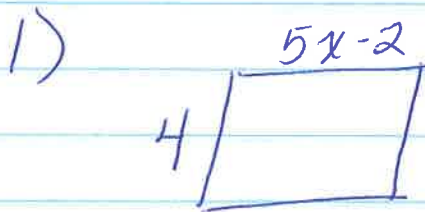
*like terms so you can combine

*only 2 terms are like. ($7y^3z$ & y^3z)

$$\textcircled{-12mn^4}$$

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

* Write an expression in simplified form for the area of each rectangle.



$$\begin{aligned} A &= l \cdot w \\ A &= (5x-2)(4) \\ A &= 20x-8 \end{aligned}$$

units²

$$\begin{aligned} A &= l \cdot w \\ A &= (x-5)(15) \\ A &= 15x-75 \end{aligned}$$

units²

* Is the following true? Explain

$$\frac{12x-6}{6} \neq 2x-6$$

True, $\frac{12x-6}{6} = \frac{12x}{6} - \frac{6}{6} =$

$2x-1$

* Write an expression in simplified form for the area of each rectangle.



$A = 2 \cdot 4$

$A = (2x) \cdot 4$

$A = 2x \cdot 2x$

units

$A = 2 \cdot 4$

$A = (2x) \cdot 4$

$A = 2x \cdot 2x$

units

* For the following use the following

$100 - 2x$

$100 - 2x$

$(100 - 2x)$

1-7 Additional Vocabulary Support

The Distributive Property

Complete the vocabulary chart by filling in the missing information.

Word or Word Phrase	Definition	Picture or Example
coefficient	numerical factor of a term that contains a variable	$3x$ $2xyz$ \uparrow \uparrow $(4^3)x$ $64x$
constant	a term that has no variable (a # by itself)	$2x + y^2 + 3$ \uparrow
Distributive Property	For real # a, b, & c the product of a & (b+c) is $ab + ac$	$7(3+2)$ $7(x+y)$ $7 \cdot 3 + 7 \cdot 2$ $7x + 7y$ $21 + 14$ (35)
like terms (can combine + / - / \cdot / \div)	terms that have exactly the same variable @ the same exact power	$5x$ & $2x$ $5x^2$ & $2x^3$
term	a #, a variable, or the product of a # & one or more variables	2 y $2y$ $2xyz$ $4x^3$

everything on the outside gets something on the inside

~~$\frac{7}{3}$~~
 $(\frac{1}{3}z)$

$2 + y + 2y + 2xyz$
 $\uparrow \quad \uparrow \quad \uparrow \quad \uparrow$
 4 terms

terms

unlike terms

definition

- terms that do not have the exact same variable or are not @ the same power

- can combine unlike terms \cdot & \div

- cannot combine unlike terms $(+)$ or $(-)$

Examples

$$5x \neq 2y$$

$$6y^2 \neq 3nq$$

$$5x(2y)$$

$$10xy$$

$$5x + 2y$$

already simplified

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#9-37 EOO

#53-63 odd

#69-81 all

FIVE STAR.
★★★★★

(9) $6(a+10)$
 $6a+60$

(29) $\frac{25-8t}{5} = \frac{25}{5} - \frac{8t}{5}$

(11) skip

(13) $10(9-t)$
 $90-10t$
 $-10t+90$

$\frac{-8t+5}{5} = \frac{5-8t}{5}$

FIVE STAR.
★★★★★

(15) skip

(31) skip

(17) $(3-8c)1.5$
 $4.5-12c$
 $-12c+4.5$

(33) $-(20+d)$
 $-20-d$
 $-d-20$

FIVE STAR.
★★★★★

(19) skip

(35) skip

(21) $(-8z-10)(-1.5)$
 $12z+15$

(37) $-(18a-17b)$
 $-18a+17b$

FIVE STAR.
★★★★★

(23) skip

(53) $11x+9x$
 $20x$

(25) $\frac{2x+7}{5} = \frac{2x}{5} + \frac{7}{5}$

(55) $5t-7t$
 $-2t$

(27) skip

(57) $5w^2 + 12w^2$
 $(17w^2)$

(59) $-4y^2 + 9y^2$
 $(5y^2)$

(61) $5 - 3x + y + 6$
 $11 - 3x + y$
 $(-3x + y + 11)$

(63) $-7h + 3h^2 - 4h - 3$
 $(3h^2 - 11h - 3)$

(69) ERROR: The sum (not the product of the terms should be found).

CORRECTION: $4(x+5)$

$(4x+20)$

(70) ERROR: The student did not distribute the 4 to the second term in the quantity.

CORRECTION: $4(2b-5)$

$(8b-20)$

FIVE STAR
★★★★★

(71)

$$A = l \cdot w$$

$$A = 11(3x + 2)$$

$$A = \underline{33x + 22 \text{ units}^2}$$

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★★★★★

(72)

$$A = l \cdot w$$

$$A = 5(5 + 2y)$$

$$A = 25 + 10y$$

$$A = \underline{10y + 25 \text{ units}^2}$$

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★★★★★

(73)

$$A = l \cdot w$$

$$A = 7(5n - 9)$$

$$A = \underline{35n - 63 \text{ units}^2}$$

* Remember Labels! The answer is not correct without labels!

FIVE STAR
★★★★★

(74)

	<u>NEW</u>	<u>OLD</u>
	Gallons (minutes)	Gallons (minutes)
	2.5 (8)	7 (8)
	20g	56 gal

* The new Shower head saves 36 gallons.
(56 - 20 = 36)

(75)

$$6yz + 2yz - 8yz$$

0

* Be Careful 0yz is NOT a simplified answer.

$$-2ab + ab + 9ab - 3ab$$

$$(76) \quad 5ab$$

$$(77) \quad -9m^3n + 4m^3n + 5mn$$
$$-5m^3n + 5mn$$

$$(78) \quad 3(-4cd - 5)$$
$$-12cd - 15$$

$$(79) \quad 12x^2y - 8x^2y^2 + 11x^2y - 4x^3y^2 - 9xy^2$$

$$23x^2y - 8x^2y^2 - 4x^3y^2 - 9xy^2$$

or

$$-4x^3y^2 - 8x^2y^2 + 23x^2y - 9xy^2$$

$$(80) \quad a - \frac{a}{4} + \frac{3}{4}a$$

$$\frac{4}{4}a - \frac{1}{4}a + \frac{3}{4}a$$

$$\frac{6}{4}a = \frac{3a}{2}$$

$$(81) \quad \frac{9 + 12n}{3}$$

$$\rightarrow 3 + 4n$$

$$4n + 3$$

$$\frac{9}{3} + \frac{12n}{3}$$