

Combining Like Terms

Like terms are terms with the same letter combination and the letters must have the same exponents. To combine like terms you add or subtract the numbers of the same terms. (Watch the signs). LEAVE THE EXPONENTS ALONE.

Here are some examples.

1. $5x^2 + 3x^2 = 8x^2$
2. $-3a^3b^4 - 6a^3b^4 = -9a^3b^4$
3. $4x + 6y - 2x + 4y = 2x + 10y$

Now let's try some.

1. $2xy + 7x + 6xy + 3xy - 3x$

2. $4b + 10 + b$

3. $-4x^2 + 3y - 2x^2 - 5y$



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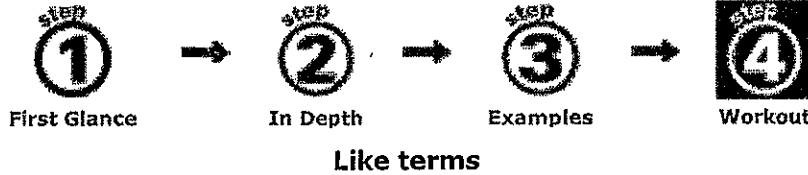
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The expressions on the right have had their like terms combined. Match each expression on the left with an expression on the right. Type the letter of the correct expression in the box.

- | | |
|---------------------------------------|---------------------|
| _____ $8x - 3x$ | a. $5x^2y + 2xy^2$ |
| _____ $3c + 9y - 5c$ | b. $5x$ |
| _____ $-4m + 5m - 7mn$ | c. $3c + 9y$ |
| _____ $6ab + 4bc - 3ab + 5c$ | d. $3ab + 5bc$ |
| _____ $7x^2y - 2x^2y + 5xy^2 - 3xy^2$ | e. $-2c + 9y$ |
| _____ $-4m - 7mn + 8n$ | f. $-4m - 7mn + 8n$ |
| _____ $8c + 9y - 5c$ | g. $m - 7mn$ |

- Properties of Real Numbers
- Exponents
- Evaluating expressions
- Like terms
- Simplifying

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Like Terms and Unlike Terms

Terms that have equivalent variable parts are called **like terms**. Terms with variable parts that are not equivalent are called **unlike terms**.

$2x$, $3x$ and $-5x$ are like terms.

$-6a^3$, a^3 , $5aaa$ and $32a^3$ are like terms.

8, 1, -63 and -4 are like terms.

$7x^3y^2$, x^3y^2 , $4xxxxyy$ and $-6y^2x^3$ are like terms.

Look at each pair of terms and decide if they are like terms or unlike terms. Circle the right answer.

$3x^2$ and $4xx$ <input checked="" type="radio"/> like <input type="radio"/> unlike	$2a^3$ and $5a^3$ <input type="radio"/> like <input type="radio"/> unlike	$4x$ and $7y$ <input type="radio"/> like <input type="radio"/> unlike
$6x^4$ and $2x^3$ <input type="radio"/> like <input type="radio"/> unlike	$3xy$ and $2yx$ <input type="radio"/> like <input type="radio"/> unlike	$7c$ and 7 <input type="radio"/> like <input type="radio"/> unlike
5 and -13 <input type="radio"/> like <input type="radio"/> unlike	$7x^2y$ and $3yxx$ <input type="radio"/> like <input type="radio"/> unlike	$4x$ and $-4x$ <input type="radio"/> like <input type="radio"/> unlike

Match like terms.

$3x$ ————— $6y^2$

$-4y^2$ ————— $7xy$

$17x^4y$ ————— $5x$

$6a^4$ ————— 13

$3xxx$ ————— $3x^4y$

$10s$ ————— $9a^4$

-8 ————— $-7c$

$6yx$ ————— s

c ————— $10x^3$

Be careful on these problems! Just add *like* terms.

$$\underline{4x} + 8y + \underline{3x} = 7x + 8y$$

↑ like terms ↓

$$\underline{5y} + \underline{8y} + 4z =$$

↑ like ↓

$$\underline{3} + 9b + \underline{10} =$$

$$\underline{8x^2} + \underline{2x^2} + 7x =$$

$$6xy + 3xy + 3x =$$

$$-3ab + -10a + -8a =$$

$$6a + 7b + 5a + 7b = 11a + 14b$$

$$3x + 6y + 2y + 8x =$$

$$9x^2 + 10 + 4x^2 + 7 =$$

$$4x + x + 3x + 8y =$$

$$7x^2y + 8 + -5x^2y + 4 =$$

$$5a + 3b + 4c + 2a =$$

$$6x^3 + 9x + 10x^3 + 4x^2 =$$

$$8a^2 + 4ab + 6a + -8a^2 =$$

$$7a + 5b + c + 4a + -3b =$$

$$(6xy + -8xy) + (5xy + -2xy) =$$

$$10x^4 + -8x^3 + 4x^3 + -5x^2 + 3x =$$

$$4xy + -4xz + 7xy + -11xy =$$

$$8x + 6 + 7x + -10 + -5x + 8 =$$

$$7a + 5c + 4c =$$

$$4x^2 + 9 + 4x^2 =$$

$$x + 3y + 3x =$$

$$10x^4 + 8x^4 + 6x^3 =$$

$$xy + x + xy =$$

$$a + a + 5 =$$

$$-4x^2y + -6 + -6x^2y =$$

Here are some expressions with subtraction. Every time you see a subtraction sign, you should add the opposite of the next term. Do all the figuring in your head. Just write down the answer.

$$3x + -7x = -4x$$

$$3x - 7x = -4x$$

$$12a + -2a = 10a$$

$$12a - 2a =$$

$$5 + -8 =$$

$$5 - 8 =$$

$$2xy - 7xy =$$

$$10x^2 - 6x^2 =$$

$$6abc - 5abc =$$

$$5x + 3x + -11x =$$

$$5x + 3x - 11x =$$

$$3a^2 - 6a^2 + 10a^2 =$$

$$10 + 5 - 8 =$$

$$7xy - 5xy - 5xy =$$

$$4m + m - 2m =$$

$$6x^2y - 2x^2y - 10x^2y + 8x^2y =$$

$$9p - 3p - 9p + 3p =$$

$$a + 3a + a - 2a + 4a - 2a =$$

$$9y - 13y =$$

$$3m - 10m =$$

$$7ab - 7ab =$$

$$14a - 9a =$$

$$3 - 8 =$$

$$x - 8x =$$

$$4xy - xy =$$

$$x^2 - x^2 =$$

Remember, just combine *like* terms.

$$3a + 5b - 7b = 3a - 2b$$

$$3a + 5b - 7b = 3a - 2b$$

$$8s - 3s + 4k =$$

$$10x + 6y - 5x =$$

$$10x - 6y + 5x =$$

$$16a + 9 - 7a =$$

$$a + 2b - 8a =$$

$$2x - 6y + 7x + 2y =$$

$$6s^2 - 3s^2 + 4t - 6s^2 =$$

$$2b + 4 + 3b + 9 =$$

$$10 - 14xy + 12xy + 21 =$$

$$3x - 7y + 5x - y =$$

$$6c - 5 - 2c - 7 - 8d =$$

$$2x + 5y + 3 + 7x + 2y + 7 =$$

$$12 + 6p + 3q - 5p + 7q - 2 =$$

$$a^2 + 5a - 3 - 7a + 6a^2 - 4 =$$

$$6x^2y + 3xy^2 - 4x^2y - 3xy^2 + x^2y =$$

$$5 + x - 3 + 2x - x + 7 - 8 + x =$$

$$x^2 - 7x + 4 + x^2 + 4x + 6 =$$

$$3x^2 + 5 + x^2 - 9 + x^2 + 16 =$$

$$5a - 4b + 2c - 3b - 6c + a =$$

Combine Like Terms

$$9x + 7y + -21x = -12x + 7y$$

Combine like terms.

1. $5x + 7x$

2. $19x + x$

3. $k - (-8k)$

4. $-12x + (-4x)$

5. $13c - 12c$

6. $-e + 8e$

7. $3yz + 5yz$

8. $-12n - (-13n)$

9. $12b + (-34b)$

10. $13ab + (-12ab)$

11. $4.7x - 5.9x$

12. $7s + 5x - 8s$

13. $4a + 9 + a$

14. $5x - 6y - 8y + 7x$

15. $23x + 8 + 6x + 3y$

16. $4xy + 7xy + 6x^2y + 7xy^2$

17. $2x - y + 2x + 3xy$

18. $4x + 3y + (-5y) + 3xy + y$

19. $2xy + 7x + 6xy + 3xy + (-3x)$

20. $4x^2 + (-7y) + (-4xy) + 9x^2 + 2xy$

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Combining Like Terms

1) $18k + 6k$

6) $7 - 17p + 14p$

2) $-13p + 10 - 7p + 15$

7) $10 - 6d - 17d$

3) $-5f - 16 - 19 + 17f$

8) $12z + z$

4) $16k + 17k + 18 - 9$

9) $7h - h$

5) $7m - 17 + 3m$

10) $9q - 2q$

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Simplifying Algebraic Expressions

1) $2(6 + 7r)$

6) $7(-5r + 2) - 4$

2) $-6 + 8(4m + 9)$

7) $9h - 5(-6 - 2h)$

3) $3(-5c - 4)$


8) $7(-4 - 5y)$

4) $-7(3w - 9)$

9) $-6(-5g + 4)$

5) $5(4n + 2) + 7n$

10) $2(-8 - 4w) + 5$

 Simplify each expression.

1) $6(-6n + 4) + 8n$

2) $-6 + 6(6 - 2x)$

3) $5 + 7(-2k + 4)$

4) $-2(n - 7) + 2n$

5) $3(1 - 7p) + 8p$

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

7) $-6x - 8(x + 7)$

8) $-7 + 3(1 + 5v)$

9) $4a - 8(8a + 5)$


10) $3b - 2(1 - 3b)$

11) $4(-8r - 2) - 3r$

12) $3(3x + 4) - 2$

13) $2 + 8(1 - 4n)$

14) $-7 + 3(x + 6)$

 15) $-(2r - 1) + r$

16) $5(4m - 3) + 6m$

17) $-3p + 2(-5 - 8p)$

18) $6(8k - 8) + 8$

19) $7(7 - 3n) + 8n$

20) $-5x + 4(-x + 4)$



date _____ sec _____ Name _____

HOMEWORK - DISTRIBUTIVE Property & Combining Like Terms

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Use Distributive Property to simplify each expression. Easy to Medium problems.

1) $7(1 - 8n)$

2) $-8(b + 3)$

3) $-6(9 - 9v)$

4) $-(3x - 9)$

5) $-9(n + 6)$

6) $-10(a + 2)$

7) $(5k - 10) \cdot -9$

8) $-4(4 + 3p)$

Use Distributive Property AND Combining Like Terms to simplify each expression. Easy to Medium problems.

9) $-6(x + 2) - 2$

10) $4n - (7 - 6n)$

11) $-3 - 7(-3 - 6v)$

12) $-5(a - 6) + 2a$

Use Distributive Property AND Combining Like terms to simplify each expression. Medium problems.

13) $7(5n - 8) + 6(4 + 6n)$

14) $-(3a + 2) - 3(5a + 7)$

15) $-5(1 + 2k) - 8(-4 + 5k)$

16) $5(-3p + 7) + 5(p - 1)$

17) $-5(x + 2) + 5(x - 5)$

18) $-4(1 - 8n) - 4(8n + 4)$

Use Distributive Property AND Combining Like terms to simplify each expression. Challenging problems.

19) $9(m + 8) + 11(3m + 4)$

20) $11(8r + 3) - 2(-9 + 6r)$

21) $7(-12x - 3) + 10(6x + 7)$

22) $-9(1 - 10n) - 2(3n + 9)$

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Combining Like Terms

1) $-5k + 9(4k + 2)$

6) $9q - 2q$

2) $8z - z$

7) $4n + 2n - 7$

3) $8m + 2(-9 + 3m)$

8) $8 + 4c - 6 - 5c$

4) $-9(8d + 2)$

9) $8 + 2r + 7r$

5) $-4 + 2r - 8r + 9$

10) $-6(-3 - 7x)$