Collecting Like Terms, Distributive Property and Solving Equations Oh My…

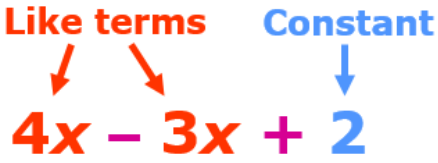
TLW review collecting like terms

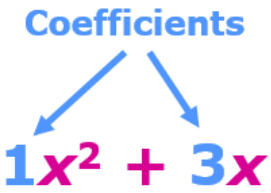
TLW review the distributive property

TLW review solving one-step, two-step and multi-step equations

TLW review solving equations with variables on both sides

The **terms** of an expression are the parts to be added or subtracted.
Like terms are terms that contain the same variables raised to the same powers.
Constants are also like terms.





A **coefficient** is a number multiplied by a variable.
Like terms can have different coefficients.

A variable written without a coefficient has a coefficient of 1.

Terms can be combined only if they are **like terms**.
Like terms can have different coefficients, but they must have the same variables raised to the same powers.

Like Terms	Not Like Terms
$4x^2$, $7x^2$	$3m$, $5m^3$
$12y$, $18y$	$12y$, $12xy$
$5ab^2$, $-ab^2$	st^4, $3s^4t$

Simplify the expressions below by combining like terms.

(a) $3x-7y+4x-7y$ (b) $8+x^2-11$ (c) $5a+7b-9a-2$

Using the Distributive Property can help you combine like terms.
Notice that you can combine like terms by adding or subtracting the coefficients and keeping the variables and exponents the same.

Simplify $4(x+y)+5x-9$.

$4x+4y+5x-9$	*Distribute 4.*
$4x+5x+4y-9$	*Use the Commutative Property.*
$9x+4y-9$	*Add the like terms 4x and 5x.*
$9x+4y-9$	*No other terms are like terms.*

Simplify each expression by applying the distributive property.

(a) $3(x-2)$ (b) $5(a-b)$ (c) $-7(y-8)$ (d) $-6(x+7)$

Simplify each expression by using the distributive property and combining like terms where possible.

(a) $3(x+6)-2$ (b) $7y+2(y-5)+y$ (c) $-5(x-2)-2x+6$

Guided Practice

Simplify each expression by combining like terms [if possible].

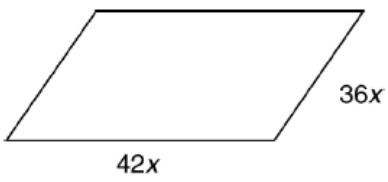
1. $32y+17y$
2. $8.3p^2+4.8p$
3. $-22n+18n-15$
4. $3x+8x^2-11x$
5. $-6+7m+8$
6. $9x^2-4x-12x-15x^2$

Simplify each expression by using the distributive property and combining like terms where possible.

7. $-3(8x+4)+\frac{1}{2}(6x-24)$
8. $4(x+9)+5x$
9. $-2(y-6)+12$
10. $\frac{1}{3}(3x-9)+13x$
11. $5x-\frac{1}{4}(8x^2-20x)$
12. $-4(3d-1)+2(7d+9)$

Write an expression for the perimeter of the figures shown below.

13.



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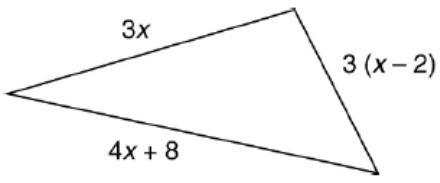


Solving One-Step Equations Review & Practice

One Step Addition Example

The Opposite of Addition is Subtraction

$y + 14 = 20$

$-14 \quad -14$

$y = 6$ ✓

The value which makes the equation true is 6.

ONE STEP SUBTRACTION EXAMPLE

The Opposite of Subtraction is Addition

$x - 120 = 80$

$+120 \quad +120$

$x = 200$ ✓

The value which makes the equation true is 200.

Multiplication Example

The Opposite of Multiplication is Division

$3n = 12$

$\frac{3n}{3} = \frac{12}{3}$ — 3/3 cancels down to become 1/1 =1

$n = 4$ ✓ — 1n is simply "n"

The value which makes the equation true is 4.

One Step Division Example

The Opposite of Division is Multiplication.

$\frac{k}{2} = 16$ — K is divided by 2, so we need to multiply both sides by 2

$\frac{k}{2} \times 2 = 16 \times 2$ — 2/2 cancels down to become 1/1 =1

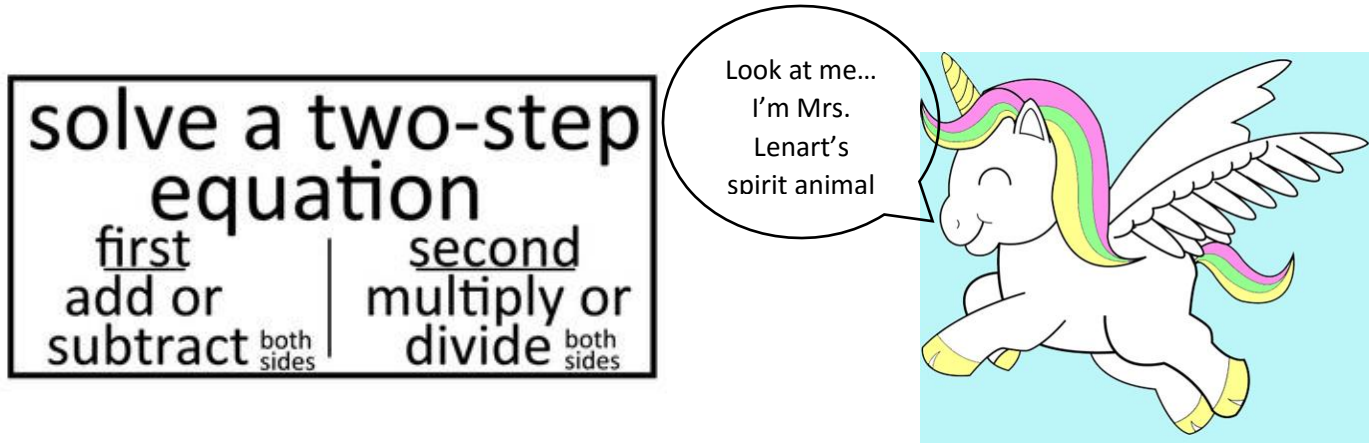
$k = 32$ ✓ — 1k is simply "k"

The value which makes the equation true is 32.

Solve each equation for the indicated variable.

1. $x-(-3)=17$
2. $41=w-4$
3. $k-8=-19$
4. $t-5=12$
5. $-2+d=97$
6. $-7+x=-18$
7. $\frac{5}{8}=t-\frac{3}{8}$
8. $-\frac{3}{7}+c=-\frac{3}{7}$
9. $x-\frac{4}{7}=\frac{3}{7}$
10. $\frac{k}{9}=-8$
11. $\frac{x}{-12}=-4$
12. $-16=\frac{t}{-2}$
13. $24x=-12$
14. $-y=-145$
15. $-7m=-49$

Solving Two Step Equations Review & Practice



Solve each equation for the indicated variable.

1. $4a+3=11$

2. $8=3r-1$

3. $42=-2d+6$

4. $3x+0.3=3.3$

5. $15y+31=61$

6. $9-c=-13$

7. $\frac{x}{6}+4=15$

8. $4-\frac{m}{2}=10$

9. $7y-7=0$

10. $3t+7=19$

11. $28=4x-12$

12. $6h-7=17$

13. $3x+3=18$

14. $3t+44=50$

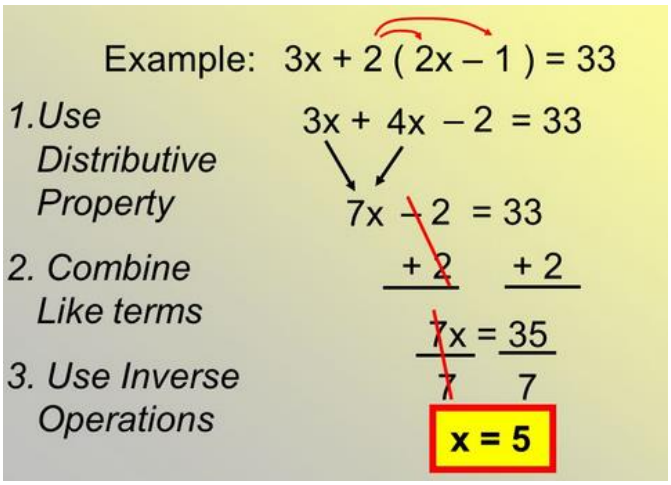
15. $15=\frac{c}{3}-2$

16. $6+6x=30$

17. $9-6x=45$

18. $32=5-3t$

Solving Multi-Step Equations & Equations with Variables on Both Sides Review & Practice



Solve each equation for the indicated variable.

1. $2(x-7)=10$

2. $\frac{m}{6}+4=12$

3. $5(c+2)=-20$

4. $12a+5-8a=-1$

5. $m-3-6m=-27$

6. $-4+7d+13=33$

7. $b+11-2b=6$

8. $5j-9j+3=-34$

9. $-2d-5-2d=-9$

Solve $7n - 2 = 5n + 6$.

$7n - 2 = 5n + 6$

$-5n \quad -5n$

$2n - 2 = 6$

$+2 \quad +2$

$2n = 8$

$\frac{2n}{2} = \frac{8}{2}$

$n = 4$

To collect the variable terms on one side, subtract 5n from both sides.

Since n is multiplied by 2, divide both sides by 2 to undo the multiplication.

Solve each equation for the indicated variable.

1. $4x + 24 = 6x$

2. $3y - 8 = 13 - 4y$

3. $5x = 14 - 2x$

4. $8x - 1 = 47 - 4x$

5. $20 + x = 2 - 5x$

6. $39x = 33x - 30$

7. $\frac{x}{2} + 5 = x$

8. $\frac{4}{5}x = 6 - \frac{1}{5}x$

9. $4y + 5 = 6y + 7$

Equations, Equations, and more Equations…

Solve each equation for the given variable. Please circle, rectangle, or triangle your answer.

1. $4x-7=37$

2. $3x=6-9$

3. $8-9y=35$

4. $7x-12=2$

5. $8-12x=32$

6. $0=25x+75$

7. $4e+16=-12$

8. $3n-9=9$

9. $3x+12+5=35$

10. $9x-3=24$

11. $5-\frac{1}{2}x=-9$

12. $12=\frac{2}{3}x-2$

13. $13x+50=-54$

14. $\frac{x}{3}-8=-12$

15. $3-\frac{1}{5}x=-7$

16. $7-\frac{1}{9}k=32$

17. $\frac{2x}{5}+3=9$

18. $7=-4m-5$

19. $\frac{1}{4}x+2=11$

20. $8-\frac{1}{2}y=-6$

21. $5n-8=-23$

22. $6x-2=22$

23. $5t-8=-18$

24. $6x-5=-41$

25. $4(3y-1)=5y-11$

26. $-7a=-12a+65$

27. $4(x+2)=6x+10$

28. $5x+2(1-x)=2(2x-1)$

29. $3(2+v)=5v+16$

30. $\frac{x}{2}+5=x$