

Grade 7 - Equivalent Linear Expressions - Answer Key

Common Core 7.EE.A.1, 7.EE.A.2 · maths-pdf.fr/en/

Use this answer key to check your work on the equivalent expressions worksheet. Every solution shows the steps, and the final answer appears in bold. If your answer is different, compare each step and look for the first place where the work changes.

Grade 7 · Common Core State Standards: **7.EE.A.1, 7.EE.A.2**

Exercise 1 - Combine like terms

$$3+5=8, \text{ so } 3x+5x=8x.$$

$$8x$$

Exercise 2 - Terms and constants

$$7y-2y=5y; \text{ the constant 4 stays.}$$

$$5y+4$$

Exercise 3 - Group like terms

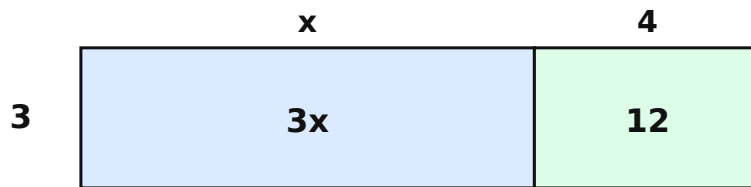
$$(4a+2a)+(3-7)=6a-4$$

$$6a-4$$

Exercise 4 - Distribute

$$3 \cdot x + 3 \cdot 4 = 3x + 12$$

$$3x + 12$$



$$3(x + 4) = 3x + 12.$$

Exercise 5 - Distribute a negative

$$(-2)(y) + (-2)(-5) = -2y + 10$$

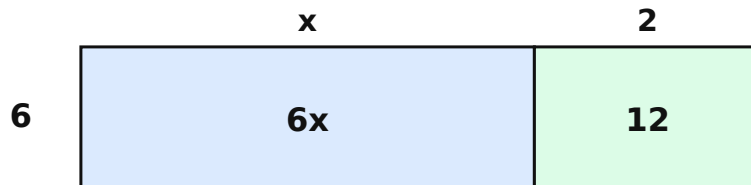
$$-2y + 10$$

Exercise 6 - Factor out the GCF

The GCF of 6 and 12 is 6.

$$6x + 12 = 6(x + 2)$$

$$6(x + 2)$$



$$6x + 12 = 6(x + 2).$$

Exercise 7 - Factor with subtraction

The GCF of 15 and 10 is 5.

$$15a - 10 = 5(3a - 2)$$

$$5(3a - 2)$$

Exercise 8 - Subtract expressions

Add the opposite: $7x + 3 - 2x + 4$.

$$=5x+7$$

$$5x+7$$

Exercise 9 - Add expressions

$$3x+2x=5x \text{ and } -5+9=4.$$

$$5x+4$$

Exercise 10 - Fraction coefficients

$$\frac{2}{4} + \frac{3}{4} = \frac{5}{4}$$

$$\frac{5}{4}x$$

x	1/2 x	3/4 x	5/4 x
4	2	3	5

Check with $x = 4$.

Exercise 11 - Decimal coefficient

$$0.4 \cdot 5x = 2x \text{ and } 0.4 \cdot (-10) = -4.$$

$$2x-4$$

Exercise 12 - Expand and combine

$$6x+2+4x-8$$

$$=10x-6$$

$$10x-6$$

Exercise 13 - Factor a fraction

$$3 = \frac{1}{2} \cdot 6, \text{ so } \frac{1}{2}x + 3 = \frac{1}{2}(x+6).$$

$$\frac{1}{2}(x+6)$$

Exercise 14 - Equivalent or not?

At $x=1$: $3(2-4)=-6$ but $6-4=2$.

Expanding gives $3(2x-4)=6x-12$.

No, the expressions are not equivalent

x	$3(2x-4)$	$6x-4$
1	-6	2
2	0	8

The values differ.

Exercise 15 - Perimeter of a rectangle

$$P = 2w + 2(w+5) = 2w + 2w + 10 = 4w + 10.$$

For $w=7$: $4(7)+10=38$.

$4w+10$; **38 feet**

Exercise 16 - School store

$$2.5n + 4.$$

$$2.5(6) + 4 = 15 + 4 = 19$$

$2.5n+4$; **\$19**

Exercise 17 - Sales tax form

$$p + 0.08p = 1p + 0.08p = 1.08p.$$

$$1.08(25) = 27.$$

$1.08p$; **\$27**

Exercise 18 - Discount form

$$x - 0.25x = 0.75x.$$

$$0.75(48) = 36$$

$$0.75x; \textbf{\$36}$$

Exercise 19 - Triangle perimeter

$$(x+3)+(2x-1)+(3x+2)=6x+4.$$

$$6(5)+4=34$$

$$6x+4; \textbf{34 inches}$$

Exercise 20 - Garden area

$$\text{Product: } 5(x+3). \text{ Sum: } 5x+15.$$

$$\text{Check: } 5(6+3)=45 \text{ and } 5(6)+15=45.$$

$$5(x+3)=5x+15; \textbf{45 square feet}$$