

Grade 6 • Unit 6 Worksheet

Expressions and Equations

Name: _____

Date: _____

Part A • Variables and Equations

An equation says two expressions are equal. A solution makes the equation true.

1. Solve each equation. Show your work, and check by substituting your answer.

a. $x + 12 = 27$ $x =$ _____ check: _____

b. $5y = 65$ $y =$ _____ check: _____

c. $(\frac{2}{3})m = 18$ $m =$ _____ check: _____

d. $n - 4.7 = 2.5$ $n =$ _____ check: _____

2. For each equation, is $x = 6$ a solution? Show how you tested.

a. $3x + 2 = 20$ ☐ Yes ☐ No. Check:

b. $30 \div x = 5$ ☐ Yes ☐ No. Check:

c. $x^2 = 12$ ☐ Yes ☐ No. Check:

Part B • Writing Equations & Expressions

3. Lin bought 7 packs of stickers. She got 84 stickers total. Each pack had the same number of stickers.

Write an equation using a variable for the number per pack:

Solve it:

Each pack has _____ stickers.

4. Write an expression for each.

a. 5 more than a number n : _____

b. Twice a number, minus 7: _____

- c. The cost of x books at \$4.50 each: _____
- d. How many minutes are in h hours and 15 minutes: _____

Part C • Equivalent Expressions

5. Circle ALL expressions that are equivalent to $6(x + 4)$.

- a) $6x + 4$
- b) $6x + 24$
- c) $6 \cdot x + 6 \cdot 4$
- d) $10x$
- e) $2(3x + 12)$

For one expression you did NOT circle, explain why it's NOT equivalent.

6. Use the distributive property to write each expression in a different but equivalent form.

- a. $8(y + 3) =$ _____
- b. $4a + 12 =$ _____ ($\text{_____} + \text{_____}$)
- c. $5(2x - 1) =$ _____

Part D • Exponents

7. Evaluate each expression.

- a. $5^2 =$ _____
- b. $2^3 =$ _____
- c. $3^2 + 4^2 =$ _____
- d. $(2 + 3)^2 =$ _____
- e. $2 + 3^2 =$ _____

8. Is $4^2 + 4^2$ the same as 4^4 ? Show your reasoning.

- ☐ Same ☐ Different

Show:

Part E • Tables, Graphs, Equations

9. A storage company charges \$25 per month plus a one-time \$40 set-up fee. Let c be the total cost after m months.

a. Write an equation: $c =$ _____

b. Fill in the table:

Months (m)	Cost (c)
1	_____
3	_____
6	_____
12	_____

Which variable is the independent variable? Which is dependent? Explain why.

Part F • Error Analysis & Thinking Deeply

10. Tyler says $4x + 3$ and $3 + 4x$ and $7x$ are all equivalent. Is Tyler right?

Are $4x + 3$ and $3 + 4x$ equivalent? ☐ Yes ☐ No. Why?

Are $4x + 3$ and $7x$ equivalent? ☐ Yes ☐ No. Test with $x = 1$ and $x = 0$:

11. Write a word problem that can be modeled by the equation $3x + 5 = 26$. Then solve.

My problem:

Solution: $x =$ _____