

Grade 8 Algebra Practice Exam

Part A: Solving Equations (10 marks)

1. (2 marks) Solve for x :

$$3x + 5 = 20$$

2. (2 marks) Solve for y :

$$2y - 4 = 14$$

3. (3 marks) Solve for z :

$$5z + 3 = 2z + 12$$

4. (3 marks) Solve for x :

$$4(x - 2) = 12$$

Part B: Simplifying Expressions (10 marks)

5. (2 marks) Simplify:

$$3x + 5x - 7$$

6. (3 marks) Simplify:

$$4(2x - 3) + 6x$$

7. (2 marks) Simplify:

$$5y + 3 - 2y + 8$$

8. (3 marks) Combine like terms:

$$2a + 4b - 3a + 6b$$

Part C: Substitution (6 marks)

9. (2 marks) Evaluate $2x + 3y$ when $x = 4$ and $y = 5$.

10. (2 marks) Evaluate $5a - 2b$ when $a = 3$ and $b = -2$.

11. (2 marks) If $z = -3$, find the value of $4z^2 + 7z + 2$.
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Part E: Word Problems (10 marks)

15. (3 marks) The sum of three times a number and 5 is 20. What is the number?

16. (3 marks) A rectangle has a length of $2x + 3$ and a width of $x + 4$. Write an expression for the perimeter.

17. (4 marks) Lisa buys x pens for \$2 each and y notebooks for \$5 each. Write an expression for her total cost.
If the total cost is \$30, and she buys 3 pens, how many notebooks did she buy?
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Part G: Graphing Linear Relations (10 marks)

21. (3 marks) Plot the points $(0,3)$, $(1,5)$, $(2,7)$, $(3,9)$. What is the pattern of the line?
22. (3 marks) Write the equation of the line passing through $(0,2)$ with a slope of 3.
23. (4 marks) Create a table of values for $y = 2x + 1$ for $x = -2, -1, 0, 1, 2$ and plot the graph.
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Part H: Real-Life Applications (10 marks)

24. (4 marks) A phone company charges \$10 per month plus \$0.05 per text message. Write an equation for the total cost C based on the number of texts t .
If the total bill is \$15, how many texts were sent?
25. (6 marks) The cost of a pizza is \$8 plus \$2 per topping. Write an equation for the total cost C based on the number of toppings n .
If a pizza costs \$14, how many toppings does it have?