



Problem Solving & Reasoning Practice

Name: _____

Grade: 8 _____

Date: _____

Challenge your thinking! Use logic, patterns, and reasoning to solve real-world math problems. Try the interactive mini-quizzes for instant feedback!

⚡ Quick Check

1) What do you call a close guess based on reasoning?

2) What is a repeated arrangement or sequence called?

3) What disproves a statement or conjecture?

Part 1 · Logic & Reasoning

LOGIC

1. If all squares are rectangles, and all rectangles have four sides, how many sides does a square have?

2. If x is an even number, what can you say about $x+1$?

3. If a number is divisible by 6, is it always divisible by 3?

4. If a triangle has two equal sides, what kind of triangle is it?

5. If $y > 10$, is $y+5 > 15$?

6. If a number ends in 0, is it divisible by 5?

Part 2 · Patterns & Sequences

PATTERNS

7. What is the next number: 2, 4, 8, 16, ____?

8. What is the next term: 5, 10, 15, ____?

9. What is the pattern: 1, 4, 9, 16, ____?

10. What is the next term: 100, 90, 80, ____?

11. What is the next number: 3, 6, 12, 24, ____?

12. What is the pattern: 2, 5, 10, 17, ____?

Part 3 · Word Problems & Reasoning

WORD PROBLEMS

13. A pizza costs \$8. You have \$30. How many pizzas can you buy? Will you have any money left?

14. A rectangle has length 12 cm and width 5 cm. What is its perimeter?

15. You run 2 miles every day for a week. How many miles do you run in total?

16. A book costs \$12. You buy 3 books and pay with \$50. How much change do

you get?

17. A class has 24 students. If $\frac{1}{3}$ are absent, how many are present?

18. A train leaves at 3:15 PM and arrives at 5:45 PM. How long is the trip?

Part 4 · Challenge & Reasoning

CHALLENGE

19. If n is an odd number, what can you say about n^2 ?

20. Find a counterexample: "All multiples of 4 are even and divisible by 8."

21. If a pattern starts at 1 and doubles each time, what is the 7th term?

22. If a triangle has sides 3, 4, and 5, is it a right triangle? Why?

23. If a number is divisible by 2 and 3, is it always divisible by 6? Explain.

24. If a square has area 49, what is its side length?

Part 5 · Real World Practice

REAL WORLD

25. School Fundraiser

Your class sells cookies for \$3 each. You sell 18 cookies. How much money do you raise?

26. Movie Tickets

Movie tickets cost \$7 each. You and 5 friends go to the movies. How much do

you pay in total?

27. School Bus

The school bus seats 36 students. If there are 4 buses, how many students can ride?

28. Saving Money

You save \$5 each week. After 10 weeks, how much do you have?

29. School Supplies

You buy 4 notebooks at \$2 each and 3 pens at \$1 each. What is the total cost?

Answer Key

1. 4
2. odd
3. yes
4. isosceles
5. yes
6. yes
7. 32
8. 20
9. 25
10. 70
11. 48
12. 21
13. 3 pizzas, \$6 left
14. 34 cm
15. 14 miles
16. \$14
17. 16 students
18. 2.5 hours
19. odd
20. 4 is not divisible by 8
21. 64
22. yes, right triangle
23. yes, always
24. 7
25. 54
26. 42
27. 144
28. 50
29. 11

These problems encourage reasoning, estimation, and logical thinking. Students should explain their answers and strategies.