Homework Exercise: Shape Puzzle Mastery

Name: _____ **Date:** _____ **Class:** _____

Lesson Topic: Collecting & Disappearing Rules in Shape Puzzles

Website: https://oatutors.co.uk/

Instructions for Young Detectives

Look carefully at each shape puzzle. Remember the two main rules:

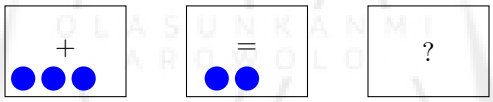
- **Collecting Rule:** When shapes are the SAME, they join together
- **Disappearing Rule:** When shapes are DIFFERENT, they cancel each other out

Think step by step and check your answer makes sense!

1 Section A: Warm-Up Puzzles (8 Questions)

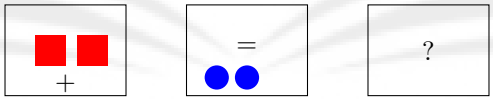
Simple practice with our two rules

Question 1: Same shapes collecting together



Draw your answer: _____ circles

Question 2: Different shapes disappearing



What's left? _____

Questions 3-8: Quick Practice

For each puzzle, write what you see in the answer box:

3. 4 triangles + 2 triangles = _____
4. 3 stars + 3 stars = _____
5. 5 circles + 2 squares = _____
6. 4 diamonds + 4 hearts = _____
7. 6 rectangles + 1 rectangle = _____
8. 3 hexagons + 3 circles = _____

2 Section B: Color Combinations (10 Questions)

Now we add colors to our shape rules

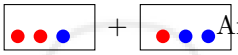
Remember: Same shape AND same color = they collect together

Question 1-5: Color Matching

1. 2 red circles + 3 red circles = _____
2. 4 blue squares + 2 yellow squares = _____
3. 3 green triangles + 3 green triangles = _____
4. 5 purple stars + 2 purple hearts = _____
5. 1 orange hexagon + 4 orange hexagons = _____

Question 6-10: Mixed Colors

What happens when we mix these?

Q6:  + Answer: _____

7. 2 red + 1 blue circles PLUS 1 red + 2 blue circles = _____
8. 3 yellow squares + 2 green squares = _____
9. 4 purple triangles + 1 purple + 2 orange triangles = _____
10. 2 pink hearts + 3 pink diamonds = _____

3 Section C: Step-by-Step Problems (12 Questions)

More challenging puzzles - show your working!

Question 1: Multi-step puzzle

Step 1: 3 circles + 2 circles + 1 square = ?
Step 2: Your answer from Step 1 + 2 squares = ?
Final Answer: _____

Show your working:

Question 2-4: Pattern Puzzles

2. Look at this pattern:

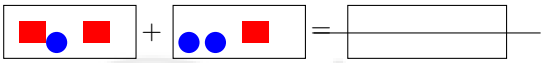
   Box 1: 1 star
   Box 2: 1 star + 1 heart
   Box 3: 1 star + 1 heart + 1 circle
   What's in Box 4? _____

3. If 5 triangles + something = 3 triangles, what was added?
   Answer: _____
   Explain why: _____

4. Complete the equation:
   4 diamonds + _____ = 2 diamonds + 3 squares

Question 5-8: Real Puzzle Practice

Question 5:



6. Answer for Question 5: _____

7. If you have 6 blue stars and add 4 red hearts, what's your total collection?
   _____

8. 7 shapes disappear when you add some different shapes. You end up with 2 shapes. How many did you add? _____

Question 9-12: Challenge Problems

9. Create your own puzzle:
   _____ + _____ = _____

10. If Box A has twice as many circles as Box B, and Box B has 3 circles, what happens when you add them together?
    _____

11. Mystery box challenge:
    Something + 4 squares = 7 squares
    What was in the mystery box? _____

12. Design challenge: Draw a puzzle where the answer is exactly 5 triangles.

4 Section D: Visual Puzzles (8 Questions)

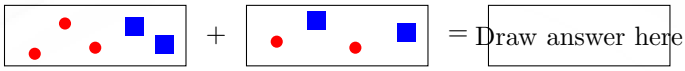
Look at the pictures and apply the rules

Instructions:

Look carefully at each diagram. Count the shapes, apply the rules, and draw or describe your answer.

Question 1-4: Shape Counting

Question 1:



1. Count and solve Question 1 above
2. Draw a puzzle where 3 yellow triangles meet 2 green circles
3. What happens when 5 identical shapes meet 5 different shapes?
4. Design your own visual puzzle using at least 3 different shapes

Question 5-8: Advanced Visuals

5. If shapes are arranged in a 2×2 grid, and you add another 2×2 grid with different shapes, describe what happens:
   _____
6. Create a puzzle where the final answer has exactly 3 shapes of 2 different types:
   _____
7. Memory challenge: Look at this for 10 seconds, then cover it and draw what you remember plus 2 extra circles.
8. Pattern extension: If the pattern is circle, square, circle, square, what comes next when you add triangle, triangle?
   _____

5 Section E: Problem-Solving Adventures (6 Questions)

Use your detective skills!

Question 1: The Missing Shapes Mystery

Detective work: A box had some shapes. When 3 triangles were added, there were 8 triangles total. How many triangles were in the box originally?

Answer: _____ triangles

Explain your thinking: _____

Question 2: The Disappearing Act

Magic trick: A magician had 10 stars. After the trick, there were only 4 stars left. What could the magician have added to make 6 stars disappear?

Possible answer: _____

Question 3: The Shape Factory

A factory makes shape combinations. Today's output: - Morning: 5 circles + 3 squares = ? - Afternoon: 4 triangles + 4 hearts = ? - Evening: Morning result + Afternoon result = ?

Final factory output: _____

Question 4: The Puzzle Master Challenge

Create a three-step puzzle where: - Step 1 creates 6 of something - Step 2 makes some disappear - Step 3 leaves exactly 2 shapes

Your puzzle:

1. _____
2. _____
3. _____

Question 5: The Great Shape Sort

You have a mixed collection: 4 red circles, 3 blue circles, 2 red squares, 5 blue squares, 1 green triangle.

If you could only keep shapes that have partners (same shape AND color), what would you keep?

Answer: _____

Question 6: Invent and Solve

Create the most challenging puzzle you can think of, then solve it yourself!

Your challenge puzzle: _____

Your solution: _____

Reflection Corner

Skill Area	I'm Great!	Getting Better	Need Practice
Collecting Rule	☐	☐	☐
Disappearing Rule	☐	☐	☐
Color Combinations	☐	☐	☐
Visual Puzzles	☐	☐	☐
Problem Solving	☐	☐	☐

What I found most interesting: _____

What I want to practice more: _____

Parent/Guardian Signature: _____ **Date:** _____

Parent comments: _____

Teacher Assessment

Section A - Warm-Up	___/8	Comments:
Section B - Colors	___/10	
Section C - Step-by-Step	___/12	
Section D - Visual	___/8	
Section E - Problem Solving	___/6	
Total Score	___/44	
Effort Level	Excellent / Good / Satisfactory	
Next Steps		

Teacher Signature: _____ **Date:** _____