



## EduTrend Contents

G4C · LOGICAL THINKING GAMES · MIDDLE SCHOOL

# Venn Rule Challenge

Sort objects into two and three overlapping circles, then set and crack AND, OR and NOT rules

Ages 12–14

Level: Intermediate

45 minutes

Pairs and groups of 4 ·  
up to 30

Activity 04

Inside: activity at a glance · step-by-step session plan · facilitator notes · 3 student worksheets · assessment checklist

## ACTIVITY 04 · AT A GLANCE

# Venn Rule Challenge

Groups sort objects or cards into two overlapping circles labelled with rules, such as “red” and “round”. They explain what belongs in the overlap and outside both circles. Next they try three circles and rules using AND, OR and NOT. Finally, each group places items for a secret Venn rule and other groups test items to crack it.

## Learning outcomes

By the end of the session students can:

- sort with overlapping rules;
- use AND, OR and NOT;
- reason about regions;
- create and crack rules.

**KEY WORDS**

Venn · overlap · AND · OR · NOT · region

**CURRICULUM LINKS**

Maths: sets and classification.  
Computing: logic operators.

**1****WARM UP**

Minds ready

**2****EXPLAIN**

One game, clear rules

**3****NOTICE**

Spot the pattern

**4****TEST**

Try an idea

**5****REASON**

How do you know?

**6****CLOSE**

Calm and positive

## Materials (per group)

- Sorting objects or picture cards
- Hoops or drawn circles
- Worksheets 1, 2 and 3

## Before the session

- Prepare sets.
- Model a two-circle sort.
- Explain AND, OR, NOT.
- Plan groups.

**SAFETY**

Use safe objects or cards.

ACTIVITY 04 · SESSION PLAN

# Step by step

Hearing each other’s reasoning widens what the group looks for.

| Time                        | What happens                 | Say or ask                        |
|-----------------------------|------------------------------|-----------------------------------|
| 0–5 min<br>Warm up          | Two-circle sort of names.    | <i>“Who goes in the middle?”</i>  |
| 5–12 min<br>Explain         | Regions and operators.       | <i>“What does NOT mean here?”</i> |
| 12–37 min<br>Sort and crack | Three circles; secret rules. | <i>“How do you know?”</i>         |
| 37–45 min<br>Share          | Hardest rules.               | <i>“Which region was tricky?”</i> |

**CHALLENGE CARD (print or copy onto the board)**

Crack another group’s secret Venn rule and explain the evidence.

## ACTIVITY 04 · FACILITATOR NOTES

# The logic game know-how in brief

Sorting by two features at once extends early sorting rules.

AND, OR and NOT are the building blocks of logical conditions.

## Common ideas to listen for

- “The overlap is extra.” It shows items with both features.
- “OR means one or the other only.” It usually includes both.
- “Outside means wrong.” It means neither rule applies.

## Adapting the activity

### Support

Use two circles only.

### Stretch

Use three circles with a NOT rule.

**WORKSHEET 1**

# Two-circle sort

Name: \_\_\_\_\_

Class: \_\_\_\_\_ Date: \_\_\_\_\_

Draw your sort.

## Venn diagram

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WORKSHEET 2

# Secret rules

Record rules cracked.

## Rules

| Group | Rule | Evidence |
|-------|------|----------|
|       |      |          |
|       |      |          |
|       |      |          |

**WORKSHEET 3**

# Reflection

Reflect.

**AND, OR and NOT are different because...**

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## FOR THE TEACHER

# Assessment checklist

Use during the session. One sheet covers up to eight students; copy as needed.

| Student | Sorts accurately | Uses operators | Cracks rules with evidence |
|---------|------------------|----------------|----------------------------|
|         |                  |                |                            |
|         |                  |                |                            |
|         |                  |                |                            |
|         |                  |                |                            |
|         |                  |                |                            |
|         |                  |                |                            |
|         |                  |                |                            |

Suggested codes: W = working towards · E = expected · G = greater depth

## ABOUT THIS ACTIVITY

Venn Rule Challenge is a sample activity from the EduTrend Contents G4C Logical Thinking Games programme (middle school, level: intermediate). Every activity in the programme follows the same format: a practical challenge, a clear session plan, facilitator notes and ready-to-print worksheets, so that teachers, club leaders and parents can run it without extra preparation.

Full 15-, 20- and 32-week programmes are available from EduStore at [edutrend.org](https://edutrend.org).

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