Thinking Right

The Complete Logic Textbook for Young Minds

by Frank Davies

Curriculum Overview

Thirty-six chapters with five days each. New words appear in *italics* the first time they're used and also in the Glossary. Colored boxes mark examples, exercises, definitions, challenges, and teacher notes.

- 💡 Examples
- 🖍️ Exercises
- 🧠 Definitions
- 🔍 Challenge
- 📘 Teacher Notes

Lesson 1: What Is Logic? — Day 1

🧠

Logic: Careful thinking to decide what is true or false.

💡

True or false?

- Birds can fly.
- Cars are fish.
- Dogs are animals.

✏️

Sort these

1. Sun shines at night.
2. Fish live in water.
3. All pencils are made of cheese.

🔍

Explain why

Lesson 1: What Is Logic? — Day 2

🧠

Aristotle: An ancient Greek thinker who studied how we reason.

💡

Inductive vs Deductive

- Inductive: Many birds we saw can fly → maybe birds fly.
- Deductive: All squares have four sides; this is a square → it has four sides.

✏️

Label I or D

1. Five friends like apples → maybe most kids do.

2. All mammals breathe air; whales are mammals → whales breathe air.

📘

Teacher Note: Underline the rule in deductive examples.

Lesson 1: What Is Logic? — Day 3

💡

Spot the type

- “I saw 3 red cars, maybe most cars are red.” (I)
- “All dogs bark; Fido is a dog → Fido barks.” (D)

🖍️

Make your own

1. Write one inductive idea from your day.
2. Write one deductive rule you can use.

🔍

Mini Story

- Write 3 sentences that show an inductive guess, then a deductive check.

Lesson 1: What Is Logic? — Day 4

💡

Everyday logic

- If it is cloudy, we might take a coat. If rules say 'walk', we walk.

✏️

Apply it

1. Write a classroom rule you can use deductively.

2. Write a guess you made inductively.

📘

Teacher Note: Praise clear explanations over ‘right’ answers.

Lesson 1: What Is Logic? — Day 5

Journal

1. Draw Aristotle and write one thing about logic.
2. Write one way logic helps you.

Lesson 2: Statements & Quantifiers — Day 1

🧠

Statement: A sentence that can be true or false.

🧠

Quantifier: A word like *all*, *some*, or *none* that tells how many.

💡

Examples

- All birds have feathers.
- Some snacks are sweet.
- No cars can fly.

✏️

Find the quantifier

1. All dogs bark.
2. Some books are long.
3. No trees are blue.

Lesson 2: Statements & Quantifiers — Day 2

💡

Is it a statement?

- “Close the door.” (No, command)
- “The door is closed.” (Yes)

✏️

Write statements

1. Use ‘all’
2. Use ‘some’
3. Use ‘none’

🔍

Fix it

- Turn a question into a statement: “Is it raining?” → _____.

Lesson 2: Statements & Quantifiers — Day 3

💡

True/False with quantifiers

- All cats are plants. (F)
- Some fruits are red. (T)

🖍️

Mark T or F

1. All fish swim on land.

2. Some birds can fly.

📘

Teacher Note: Let students justify T/F.

Lesson 2: Statements & Quantifiers — Day 4

Apply

1. Write 3 statements about your class: one with all, some, none.
2. Explain how to check one of them.

Lesson 2: Statements & Quantifiers — Day 5

Journal

1. Which quantifier was easiest? Why?

Lesson 3: Syllogisms — Day 1

🧠

Syllogism: Two premises lead to a conclusion.

💡

Model

- All cats are animals. Mittens is a cat. So Mittens is an animal.

✏️

Identify parts

1. Premise 1: _____
2. Premise 2: _____
3. Conclusion: _____

Lesson 3: Syllogisms — Day 2

💡

Correct/Incorrect

- All dogs are pets. Fido is a dog. → Fido is a pet. (✓)
- All dogs are pets. Fido is a pet. → Fido is a dog. (✗)

🖍️

Fix the mistake

1. All kids like apples. Sam likes apples. → Sam is a kid. (What's wrong?)

Lesson 3: Syllogisms — Day 3

Finish

1. All birds have feathers. Tweety is a bird. So _____.
2. All toys are fun. This is a toy. So _____.

Create one

- Write a syllogism about animals or school.

Lesson 3: Syllogisms — Day 4

✏️

Apply

1. Make a picture for your syllogism and label premises and conclusion.

Lesson 3: Syllogisms — Day 5

Journal

1. What makes a syllogism incorrect?

Lesson 4: Fallacies — Day 1

🧠

Fallacy: A thinking mistake that seems right but isn't.

💡

Common fallacies

- Hasty generalization
- False cause
- Ad hominem

✏️

Spot it

1. "One puppy barked, so all puppies bark loudly." (Which fallacy?)

Lesson 4: Fallacies — Day 2

💡

False cause

- I wore a hat and it rained → Hats cause rain? (No)

✏️

Explain

1. Why is that a mistake?

📘

Teacher Note: Ask for better evidence.

Lesson 4: Fallacies — Day 3

💡

Ad hominem

- “You’re wrong because you’re little.” (Not a reason)

✏️

Fix the fallacy

1. Give a fair reason instead of an insult.

Lesson 4: Fallacies — Day 4

✏️

Apply

1. Rewrite: “I met a grumpy cat, so cats are mean.” → _____

Lesson 4: Fallacies — Day 5

Journal

1. Draw a comic: fallacy → fix.

Lesson 5: True or False — Day 1

💡

Examples

- Fish swim. (T)
- Birds drive cars. (F)
- Rain is wet. (T)

✏️

Try It

1. Mark T/F: Cats are animals.
2. Mark T/F: Cars are fish.
3. Write 1 true and 1 false sentence.

🔍

Challenge Corner

- Explain how you checked one answer.

Lesson 5: True or False — Day 2

💡

Examples

- Fish swim. (T)
- Birds drive cars. (F)
- Rain is wet. (T)

✏️

Try It

1. Mark T/F: Cats are animals.
2. Mark T/F: Cars are fish.
3. Write 1 true and 1 false sentence.

🔍

Challenge Corner

- Explain how you checked one answer.

Lesson 5: True or False — Day 3

💡

Examples

- Fish swim. (T)
- Birds drive cars. (F)
- Rain is wet. (T)

✏️

Try It

1. Mark T/F: Cats are animals.
2. Mark T/F: Cars are fish.
3. Write 1 true and 1 false sentence.

🔍

Challenge Corner

- Explain how you checked one answer.

Lesson 5: True or False — Day 4

💡

Examples

- Fish swim. (T)
- Birds drive cars. (F)
- Rain is wet. (T)

✏️

Try It

1. Mark T/F: Cats are animals.
2. Mark T/F: Cars are fish.
3. Write 1 true and 1 false sentence.

🔍

Challenge Corner

- Explain how you checked one answer.

Lesson 5: True or False — Day 5

💡

Examples

- Fish swim. (T)
- Birds drive cars. (F)
- Rain is wet. (T)

✏️

Try It

1. Mark T/F: Cats are animals.
2. Mark T/F: Cars are fish.
3. Write 1 true and 1 false sentence.

🔍

Challenge Corner

- Explain how you checked one answer.

Lesson 6: If...Then (Conditionals) — Day 1

🧠

Conditional: An 'if...then' statement.

💡

Examples

- If it rains, then we use umbrellas.
- If we finish lunch, then we play.

✏️

Try It

1. Turn into if–then: We read → We learn.
2. Chain: If A then B; If B then C; So If A then C.

🔍

Challenge Corner

- Make a 3-step chain from home or school.

Lesson 6: If...Then (Conditionals) — Day 2

🧠

Conditional: An 'if...then' statement.

💡

Examples

- If it rains, then we use umbrellas.
- If we finish lunch, then we play.

✏️

Try It

1. Turn into if–then: We read → We learn.
2. Chain: If A then B; If B then C; So If A then C.

🔍

Challenge Corner

- Make a 3-step chain from home or school.

Lesson 6: If...Then (Conditionals) — Day 3

🧠

Conditional: An 'if...then' statement.

💡

Examples

- If it rains, then we use umbrellas.
- If we finish lunch, then we play.

✏️

Try It

1. Turn into if–then: We read → We learn.
2. Chain: If A then B; If B then C; So If A then C.

🔍

Challenge Corner

- Make a 3-step chain from home or school.

Lesson 6: If...Then (Conditionals) — Day 4

🧠

Conditional: An 'if...then' statement.

💡

Examples

- If it rains, then we use umbrellas.
- If we finish lunch, then we play.

✏️

Try It

1. Turn into if–then: We read → We learn.
2. Chain: If A then B; If B then C; So If A then C.

🔍

Challenge Corner

- Make a 3-step chain from home or school.

Lesson 6: If…Then (Conditionals) — Day 5

🧠

Conditional: An ‘if…then’ statement.

💡

Examples

- If it rains, then we use umbrellas.
- If we finish lunch, then we play.

✏️

Try It

1. Turn into if–then: We read → We learn.
2. Chain: If A then B; If B then C; So If A then C.

🔍

Challenge Corner

- Make a 3-step chain from home or school.

Lesson 7: Grouping & Sorting — Day 1

💡

Examples

- Sort by color: red vs blue.
- Sort by use: toys vs snacks.

✏️

Try It

1. Make 2 groups from 8 items.
2. Explain your rule for each group.

🔍

Challenge Corner

- Find an item that fits both groups.
- Draw the two groups.

Lesson 7: Grouping & Sorting — Day 2

💡

Examples

- Sort by color: red vs blue.
- Sort by use: toys vs snacks.

✏️

Try It

1. Make 2 groups from 8 items.
2. Explain your rule for each group.

🔍

Challenge Corner

- Find an item that fits both groups.
- Draw the two groups.

Lesson 7: Grouping & Sorting — Day 3

💡

Examples

- Sort by color: red vs blue.
- Sort by use: toys vs snacks.

✏️

Try It

1. Make 2 groups from 8 items.
2. Explain your rule for each group.

🔍

Challenge Corner

- Find an item that fits both groups.
- Draw the two groups.

Lesson 7: Grouping & Sorting — Day 4

💡

Examples

- Sort by color: red vs blue.
- Sort by use: toys vs snacks.

✏️

Try It

1. Make 2 groups from 8 items.
2. Explain your rule for each group.

🔍

Challenge Corner

- Find an item that fits both groups.
- Draw the two groups.

Lesson 7: Grouping & Sorting — Day 5

💡

Examples

- Sort by color: red vs blue.
- Sort by use: toys vs snacks.

✏️

Try It

1. Make 2 groups from 8 items.
2. Explain your rule for each group.

🔍

Challenge Corner

- Find an item that fits both groups.
- Draw the two groups.

Lesson 8: Finding Clues (Evidence) — Day 1

🧠

Evidence: Clues or facts that help us decide.

💡

Examples

- Crumbs on the dog, empty bowl, open jar → The dog ate cookie.

✏️

Try It

1. Write 3 clues for a tiny mystery.
2. Trade clues and solve.

🔍

Challenge Corner

- Which clue was most helpful? Why?

Lesson 8: Finding Clues (Evidence) — Day 2

🧠

Evidence: Clues or facts that help us decide.

💡

Examples

- Crumbs on the dog, empty bowl, open jar → The dog ate cookie.

✏️

Try It

1. Write 3 clues for a tiny mystery.
2. Trade clues and solve.

🔍

Challenge Corner

- Which clue was most helpful? Why?

Lesson 8: Finding Clues (Evidence) — Day 3

🧠

Evidence: Clues or facts that help us decide.

💡

Examples

- Crumbs on the dog, empty bowl, open jar → The dog ate cookie.

✏️

Try It

1. Write 3 clues for a tiny mystery.
2. Trade clues and solve.

🔍

Challenge Corner

- Which clue was most helpful? Why?

Lesson 8: Finding Clues (Evidence) — Day 4

🧠

Evidence: Clues or facts that help us decide.

💡

Examples

- Crumbs on the dog, empty bowl, open jar → The dog ate cookie.

✏️

Try It

1. Write 3 clues for a tiny mystery.
2. Trade clues and solve.

🔍

Challenge Corner

- Which clue was most helpful? Why?

Lesson 8: Finding Clues (Evidence) — Day 5

🧠

Evidence: Clues or facts that help us decide.

💡

Examples

- Crumbs on the dog, empty bowl, open jar → The dog ate cookie.

🖍️

Try It

1. Write 3 clues for a tiny mystery.
2. Trade clues and solve.

🔍

Challenge Corner

- Which clue was most helpful? Why?

Lesson 9: Cause & Effect — Day 1

💡

Examples

- Cause: Water the plant → Effect: Plant grows.
- Cause: Study → Effect: Learn.

🖍️

Try It

1. Match causes to effects.
2. Write one cause from your day and its effect.

🔍

Challenge Corner

- Make a 3-step cause→effect chain and draw it.

Lesson 9: Cause & Effect — Day 2

💡

Examples

- Cause: Water the plant → Effect: Plant grows.
- Cause: Study → Effect: Learn.

🖍️

Try It

1. Match causes to effects.
2. Write one cause from your day and its effect.

🔍

Challenge Corner

- Make a 3-step cause→effect chain and draw it.

Lesson 9: Cause & Effect — Day 3

💡

Examples

- Cause: Water the plant → Effect: Plant grows.
- Cause: Study → Effect: Learn.

🖍️

Try It

1. Match causes to effects.
2. Write one cause from your day and its effect.

🔍

Challenge Corner

- Make a 3-step cause→effect chain and draw it.

Lesson 9: Cause & Effect — Day 4

💡

Examples

- Cause: Water the plant → Effect: Plant grows.
- Cause: Study → Effect: Learn.

🖍️

Try It

1. Match causes to effects.
2. Write one cause from your day and its effect.

🔍

Challenge Corner

- Make a 3-step cause→effect chain and draw it.

Lesson 9: Cause & Effect — Day 5

💡

Examples

- Cause: Water the plant → Effect: Plant grows.
- Cause: Study → Effect: Learn.

🖍️

Try It

1. Match causes to effects.
2. Write one cause from your day and its effect.

🔍

Challenge Corner

- Make a 3-step cause→effect chain and draw it.

Lesson 10: Choices: AND / OR / NOT — Day 1

🧠

AND / OR / NOT: *AND* means both; *OR* means at least one; *NOT* flips truth.

💡

Examples

- Go outside if warm AND sunny.
- Go outside if warm OR sunny.
- Do NOT go outside if raining.

✏️

Try It

1. Write one AND sentence.
2. Write one OR sentence.
3. Write one NOT sentence.

🔍

Challenge Corner

Lesson 10: Choices: AND / OR / NOT — Day 2

🧠

AND / OR / NOT: *AND* means both; *OR* means at least one; *NOT* flips truth.

💡

Examples

- Go outside if warm AND sunny.
- Go outside if warm OR sunny.
- Do NOT go outside if raining.

✏️

Try It

1. Write one AND sentence.
2. Write one OR sentence.
3. Write one NOT sentence.

🔍

Challenge Corner

Lesson 10: Choices: AND / OR / NOT — Day 3

🧠

AND / OR / NOT: *AND* means both; *OR* means at least one; *NOT* flips truth.

💡

Examples

- Go outside if warm AND sunny.
- Go outside if warm OR sunny.
- Do NOT go outside if raining.

✏️

Try It

1. Write one AND sentence.
2. Write one OR sentence.
3. Write one NOT sentence.

🔍

Challenge Corner

Lesson 10: Choices: AND / OR / NOT — Day 4

🧠

AND / OR / NOT: *AND* means both; *OR* means at least one; *NOT* flips truth.

💡

Examples

- Go outside if warm AND sunny.
- Go outside if warm OR sunny.
- Do NOT go outside if raining.

✏️

Try It

1. Write one AND sentence.
2. Write one OR sentence.
3. Write one NOT sentence.

🔍

Challenge Corner

Lesson 10: Choices: AND / OR / NOT — Day 5

🧠

AND / OR / NOT: *AND* means both; *OR* means at least one; *NOT* flips truth.

💡

Examples

- Go outside if warm AND sunny.
- Go outside if warm OR sunny.
- Do NOT go outside if raining.

✏️

Try It

1. Write one AND sentence.
2. Write one OR sentence.
3. Write one NOT sentence.

🔍

Challenge Corner

Lesson 11: Symbols for Statements — Day 1

💡

Examples

- Let P = “It is sunny.” Q = “We play.”
- If P then Q → P → Q

✏️

Try It

1. Write P · Q for “P and Q”.
2. Write P + Q for “P or Q”.
3. Let R be a third statement.

🔍

Challenge Corner

- Create your own P, Q and make a rule.

Lesson 11: Symbols for Statements — Day 2

💡

Examples

- Let P = “It is sunny.” Q = “We play.”
- If P then Q → P → Q

✏️

Try It

1. Write P · Q for “P and Q”.
2. Write P + Q for “P or Q”.
3. Let R be a third statement.

🔍

Challenge Corner

- Create your own P, Q and make a rule.

Lesson 11: Symbols for Statements — Day 3

💡

Examples

- Let P = “It is sunny.” Q = “We play.”
- If P then Q → P → Q

✏️

Try It

1. Write P · Q for “P and Q”.
2. Write P + Q for “P or Q”.
3. Let R be a third statement.

🔍

Challenge Corner

- Create your own P, Q and make a rule.

Lesson 11: Symbols for Statements — Day 4

💡

Examples

- Let P = “It is sunny.” Q = “We play.”
- If P then Q → P → Q

✏️

Try It

1. Write P · Q for “P and Q”.
2. Write P + Q for “P or Q”.
3. Let R be a third statement.

🔍

Challenge Corner

- Create your own P, Q and make a rule.

Lesson 11: Symbols for Statements — Day 5

💡

Examples

- Let P = “It is sunny.” Q = “We play.”
- If P then Q → P → Q

🖍️

Try It

1. Write P · Q for “P and Q”.
2. Write P + Q for “P or Q”.
3. Let R be a third statement.

🔍

Challenge Corner

- Create your own P, Q and make a rule.

Lesson 12: Negation (~) — Day 1

🧠

Negation: The ‘not’ of a statement; it flips the truth.

💡

Examples

- P: Light is on. ~P: Light is not on.
- P: It is raining. ~P: It is not raining.

✏️

Try It

1. Write ~Q for “It is sunny.”
2. Make a 2-row table for P and ~P.

🔍

Challenge Corner

- Draw ON vs OFF and label P, ~P.

Lesson 12: Negation (~) — Day 2

🧠

Negation: The ‘not’ of a statement; it flips the truth.

💡

Examples

- P: Light is on. ~P: Light is not on.
- P: It is raining. ~P: It is not raining.

✏️

Try It

1. Write ~Q for “It is sunny.”
2. Make a 2-row table for P and ~P.

🔍

Challenge Corner

- Draw ON vs OFF and label P, ~P.

Lesson 12: Negation (~) — Day 3

🧠

Negation: The ‘not’ of a statement; it flips the truth.

💡

Examples

- P: Light is on. ~P: Light is not on.
- P: It is raining. ~P: It is not raining.

✏️

Try It

1. Write ~Q for “It is sunny.”
2. Make a 2-row table for P and ~P.

🔍

Challenge Corner

- Draw ON vs OFF and label P, ~P.

Lesson 12: Negation (~) — Day 4

🧠

Negation: The ‘not’ of a statement; it flips the truth.

💡

Examples

- P: Light is on. ~P: Light is not on.
- P: It is raining. ~P: It is not raining.

✏️

Try It

1. Write ~Q for “It is sunny.”
2. Make a 2-row table for P and ~P.

🔍

Challenge Corner

- Draw ON vs OFF and label P, ~P.

Lesson 12: Negation (~) — Day 5

🧠

Negation: The ‘not’ of a statement; it flips the truth.

💡

Examples

- P: Light is on. ~P: Light is not on.
- P: It is raining. ~P: It is not raining.

✏️

Try It

1. Write ~Q for “It is sunny.”
2. Make a 2-row table for P and ~P.

🔍

Challenge Corner

- Draw ON vs OFF and label P, ~P.

Lesson 13: Connectives (·, +, ⊕) — Day 1

💡

Examples

- Use · for AND; + for inclusive OR; ⊕ for exclusive OR (one but not both).

✏️

Try It

1. Fill table cells for P · Q, P + Q, P ⊕ Q.
2. Draw circuits for P + Q and P · Q.

🔍

Challenge Corner

- Write P ⊕ Q in words and give an example.

Lesson 13: Connectives (·, +, ⊕) — Day 2

💡

Examples

- Use · for AND; + for inclusive OR; ⊕ for exclusive OR (one but not both).

✏️

Try It

1. Fill table cells for P · Q, P + Q, P ⊕ Q.
2. Draw circuits for P + Q and P · Q.

🔍

Challenge Corner

- Write P ⊕ Q in words and give an example.

Lesson 13: Connectives (·, +, ⊕) — Day 3

💡

Examples

- Use · for AND; + for inclusive OR; ⊕ for exclusive OR (one but not both).

✏️

Try It

1. Fill table cells for P · Q, P + Q, P ⊕ Q.
2. Draw circuits for P + Q and P · Q.

🔍

Challenge Corner

- Write P ⊕ Q in words and give an example.

Lesson 13: Connectives (·, +, ⊕) — Day 4

💡

Examples

- Use · for AND; + for inclusive OR; ⊕ for exclusive OR (one but not both).

✏️

Try It

1. Fill table cells for P · Q, P + Q, P ⊕ Q.
2. Draw circuits for P + Q and P · Q.

🔍

Challenge Corner

- Write P ⊕ Q in words and give an example.

Lesson 13: Connectives (·, +, ⊕) — Day 5

💡

Examples

- Use · for AND; + for inclusive OR; ⊕ for exclusive OR (one but not both).

✏️

Try It

1. Fill table cells for P · Q, P + Q, P ⊕ Q.
2. Draw circuits for P + Q and P · Q.

🔍

Challenge Corner

- Write P ⊕ Q in words and give an example.

Lesson 14: Truth Tables — Day 1

💡

Examples

- Make a 4-row table for P · Q.

✏️

Try It

1. Add columns for P + Q and ~P.
2. Check each row carefully.

🔍

Challenge Corner

- Table for (P · Q) + (~P · Q). Why does this work?

Lesson 14: Truth Tables — Day 2

💡

Examples

- Make a 4-row table for P · Q.

✏️

Try It

1. Add columns for P + Q and ~P.
2. Check each row carefully.

🔍

Challenge Corner

- Table for (P · Q) + (~P · Q). Why does this work?

Lesson 14: Truth Tables — Day 3

💡

Examples

- Make a 4-row table for P · Q.

✏️

Try It

1. Add columns for P + Q and ~P.
2. Check each row carefully.

🔍

Challenge Corner

- Table for (P · Q) + (~P · Q). Why does this work?

Lesson 14: Truth Tables — Day 4

💡

Examples

- Make a 4-row table for P · Q.

✏️

Try It

1. Add columns for P + Q and ~P.
2. Check each row carefully.

🔍

Challenge Corner

- Table for (P · Q) + (~P · Q). Why does this work?

Lesson 14: Truth Tables — Day 5

💡

Examples

- Make a 4-row table for P · Q.

✏️

Try It

1. Add columns for P + Q and ~P.
2. Check each row carefully.

🔍

Challenge Corner

- Table for (P · Q) + (~P · Q). Why does this work?

Lesson 15: Logic Puzzles — Day 1

💡

Examples

- Story puzzle parts for Logic Puzzles.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 15: Logic Puzzles — Day 2

💡

Examples

- Story puzzle parts for Logic Puzzles.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 15: Logic Puzzles — Day 3

💡

Examples

- Story puzzle parts for Logic Puzzles.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 15: Logic Puzzles — Day 4

💡

Examples

- Story puzzle parts for Logic Puzzles.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 15: Logic Puzzles — Day 5

💡

Examples

- Story puzzle parts for Logic Puzzles.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 16: Order & Sequence — Day 1

💡

Examples

- Story puzzle parts for Order & Sequence.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 16: Order & Sequence — Day 2

💡

Examples

- Story puzzle parts for Order & Sequence.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 16: Order & Sequence — Day 3

💡

Examples

- Story puzzle parts for Order & Sequence.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 16: Order & Sequence — Day 4

💡

Examples

- Story puzzle parts for Order & Sequence.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 16: Order & Sequence — Day 5

💡

Examples

- Story puzzle parts for Order & Sequence.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 17: Conditional Chains — Day 1

💡

Examples

- Story puzzle parts for Conditional Chains.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 17: Conditional Chains — Day 2

💡

Examples

- Story puzzle parts for Conditional Chains.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 17: Conditional Chains — Day 3

💡

Examples

- Story puzzle parts for Conditional Chains.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 17: Conditional Chains — Day 4

💡

Examples

- Story puzzle parts for Conditional Chains.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 17: Conditional Chains — Day 5

💡

Examples

- Story puzzle parts for Conditional Chains.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 18: Review Project — Day 1

💡

Examples

- Story puzzle parts for Review Project.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 18: Review Project — Day 2

💡

Examples

- Story puzzle parts for Review Project.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 18: Review Project — Day 3

💡

Examples

- Story puzzle parts for Review Project.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 18: Review Project — Day 4

💡

Examples

- Story puzzle parts for Review Project.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 18: Review Project — Day 5

💡

Examples

- Story puzzle parts for Review Project.
- Fill a clue table.
- Check one clue at a time.

✏️

Try It

1. Write 3 clues.
2. Eliminate impossible choices.
3. Circle the only solution.

🔍

Challenge Corner

- Swap puzzles with a friend.

Lesson 19: Patterns in Logic — Day 1

💡

Examples

- Examples for Patterns in Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 19: Patterns in Logic — Day 2

💡

Examples

- Examples for Patterns in Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 19: Patterns in Logic — Day 3

💡

Examples

- Examples for Patterns in Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 19: Patterns in Logic — Day 4

💡

Examples

- Examples for Patterns in Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 19: Patterns in Logic — Day 5

💡

Examples

- Examples for Patterns in Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 20: Analogies & Relations — Day 1

💡

Examples

- Examples for Analogies & Relations.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 20: Analogies & Relations — Day 2

💡

Examples

- Examples for Analogies & Relations.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 20: Analogies & Relations — Day 3

💡

Examples

- Examples for Analogies & Relations.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 20: Analogies & Relations — Day 4

💡

Examples

- Examples for Analogies & Relations.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 20: Analogies & Relations — Day 5

💡

Examples

- Examples for Analogies & Relations.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 21: Opposites & Complements — Day 1

💡

Examples

- Examples for Opposites & Complements.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 21: Opposites & Complements — Day 2

💡

Examples

- Examples for Opposites & Complements.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 21: Opposites & Complements — Day 3

💡

Examples

- Examples for Opposites & Complements.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 21: Opposites & Complements — Day 4

💡

Examples

- Examples for Opposites & Complements.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 21: Opposites & Complements — Day 5

💡

Examples

- Examples for Opposites & Complements.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 22: Visual Logic (Groups) — Day 1

💡

Examples

- Examples for Visual Logic (Groups).
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 22: Visual Logic (Groups) — Day 2

💡

Examples

- Examples for Visual Logic (Groups).
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 22: Visual Logic (Groups) — Day 3

💡

Examples

- Examples for Visual Logic (Groups).
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 22: Visual Logic (Groups) — Day 4

💡

Examples

- Examples for Visual Logic (Groups).
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 22: Visual Logic (Groups) — Day 5

💡

Examples

- Examples for Visual Logic (Groups).
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 23: Math & Logic — Day 1

💡

Examples

- Examples for Math & Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 23: Math & Logic — Day 2

💡

Examples

- Examples for Math & Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 23: Math & Logic — Day 3

💡

Examples

- Examples for Math & Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 23: Math & Logic — Day 4

💡

Examples

- Examples for Math & Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 23: Math & Logic — Day 5

💡

Examples

- Examples for Math & Logic.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 24: Equivalence — Day 1

💡

Examples

- Examples for Equivalence.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 24: Equivalence — Day 2

💡

Examples

- Examples for Equivalence.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 24: Equivalence — Day 3

💡

Examples

- Examples for Equivalence.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 24: Equivalence — Day 4

💡

Examples

- Examples for Equivalence.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 24: Equivalence — Day 5

💡

Examples

- Examples for Equivalence.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 25: Tautology & Contradiction — Day 1

💡

Examples

- Examples for Tautology & Contradiction.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 25: Tautology & Contradiction — Day 2

💡

Examples

- Examples for Tautology & Contradiction.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 25: Tautology & Contradiction — Day 3

💡

Examples

- Examples for Tautology & Contradiction.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 25: Tautology & Contradiction — Day 4

💡

Examples

- Examples for Tautology & Contradiction.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 25: Tautology & Contradiction — Day 5

💡

Examples

- Examples for Tautology & Contradiction.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 26: Project 2: Detective's Notebook — Day 1

💡

Examples

- Examples for Project 2: Detective's Notebook.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 26: Project 2: Detective's Notebook — Day 2

💡

Examples

- Examples for Project 2: Detective's Notebook.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 26: Project 2: Detective's Notebook — Day 3

💡

Examples

- Examples for Project 2: Detective's Notebook.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 26: Project 2: Detective's Notebook — Day 4

💡

Examples

- Examples for Project 2: Detective's Notebook.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 26: Project 2: Detective's Notebook — Day 5

💡

Examples

- Examples for Project 2: Detective's Notebook.
- Model solution steps.
- Discuss why the answer fits.

✏️

Try It

1. Try 4 quick problems.
2. Explain one choice.
3. Create one of your own.

🔍

Challenge Corner

- Make it trickier: add a condition.

Lesson 27: Intro to Boolean Algebra — Day 1

🧠

Boolean algebra: Math with only 1 (true) and 0 (false).

💡

Switch & Valve

- Switch closed = 1; open = 0.
- Valve open = 1; closed = 0.

✏️

Mark 1 or 0

1. Light is on.
2. Valve is closed.
3. Door is open.

🔍

Explain

Lesson 27: Intro to Boolean Algebra — Day 2

💡

Truth as numbers

- True = 1
- False = 0

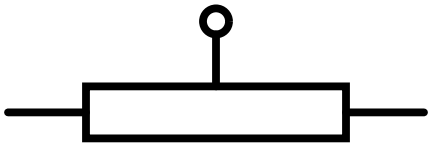
Statement	Truth	Number
It is daytime	True	1
Fish walk on land	False	0

🖍️

Convert

1. “It is raining.” → 1 or 0 (today?)
2. “Cats are animals.” → 1
3. “Cars are fish.” → 0

Lesson 27: Intro to Boolean Algebra — Day 3



💡

Hydraulics

- Faucet open = water flows (1).
- Faucet closed = no flow (0).

✏️

Picture read

1. Mark 1/0 for three faucet sketches.

Lesson 27: Intro to Boolean Algebra — Day 4

Apply

1. Write two everyday booleans.
2. Explain your 1/0 choice for each.

Lesson 27: Intro to Boolean Algebra — Day 5

Journal

1. Draw a switch or faucet labeled 1 and 0.

Lesson 28: Boolean Operations (~, ·, +) — Day 1

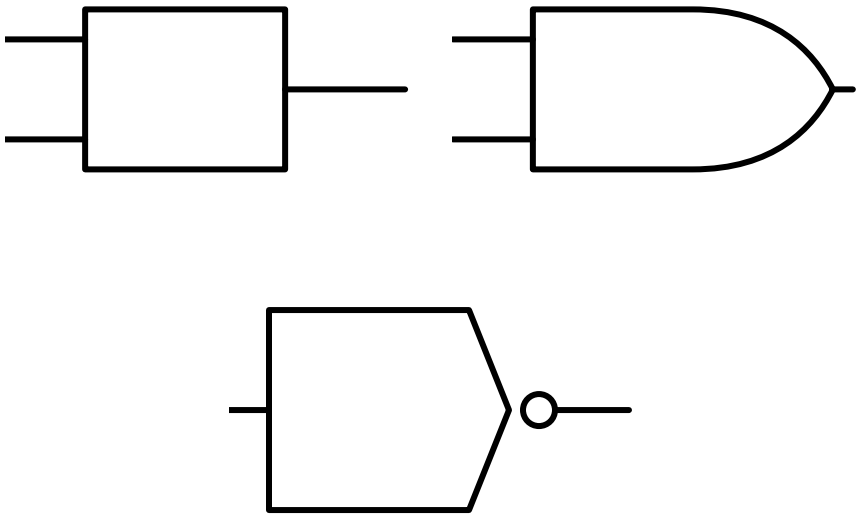
🧠

NOT (~), AND (·), OR (+): Flip, require both, or allow either.

P	~P
1	0
0	1

P	Q	P · Q	P + Q
1	1	1	1
1	0	0	1
0	1	0	1
0	0	0	0

Lesson 28: Boolean Operations (~, ·, +) — Day 2



💡

Switch models

- Series switches → AND
- Parallel switches → OR

✏️

Label

1. Is this series or parallel?

Lesson 28: Boolean Operations (~, ·, +) — Day 3

✏️

Fill tables

1. Complete ~P for P=1,0

2. Complete P·Q and P+Q for four rows.

🔍

Valves

- Two valves in series: AND or OR? Why?

Lesson 28: Boolean Operations (~, ·, +) — Day 4

Apply

1. Write (L+R)·M as words.

2. Explain each part: L, R, M.

Lesson 28: Boolean Operations (~, ·, +) — Day 5

Journal

1. Draw AND vs OR circuits and label them.

Lesson 29: Simplifying Expressions — Day 1

🧠

Identities: Shortcuts to make expressions simpler.

💡

Useful facts

- $P+0=P$
- $P\cdot 1=P$
- $P+P=P$
- $P\cdot P=P$
- $P+\sim P=1$
- $P\cdot\sim P=0$

✏️

Simplify

1. $(P+0)\cdot 1$
2. $P\cdot(Q+Q)$
3. $(P\cdot\sim P)+Q$

Lesson 29: Simplifying Expressions — Day 2

💡

Circuit view

- Parallel duplicates collapse (P+P=P).
- Series duplicates collapse (P·P=P).

✏️

Circle simpler

1. P·1 or P
2. Q+0 or Q

Lesson 29: Simplifying Expressions — Day 3

✏️

Practice

1. ~P+P

2. (P+R)·(P+~R)

3. P·(Q+0)

Lesson 29: Simplifying Expressions — Day 4

✏️

Apply

1. Simplify (L+R)+(L·R).

2. Explain why.

Lesson 29: Simplifying Expressions — Day 5

Journal

1. Draw two equivalent circuits and explain.

Lesson 30: Truth Tables in Boolean Algebra — Day 1

🧠

Truth table: A table that shows when a rule is true (1) or false (0).

P	Q	P·Q
1	1	1
1	0	0
0	1	0
0	0	0

Lesson 30: Truth Tables in Boolean Algebra — Day 2

✏️

Build tables

1. Add P+Q and ~P columns to a 4-row table.

Lesson 30: Truth Tables in Boolean Algebra — Day 3

✏️

Three variables

1. Compute (P·Q)+R for (1,0,1) and (0,1,1).

Lesson 30: Truth Tables in Boolean Algebra — Day 4

Apply

1. Make a table for L+(M·~R). Which rows are 1?

Lesson 30: Truth Tables in Boolean Algebra — Day 5

Journal

1. Write a rule and build a tiny table.

Lesson 31: Equivalence & Duality — Day 1

🧠

Equivalence: Two expressions always match.

🧠

Duality: Swap +/· and 1/0 to find a paired truth.

💡

Example

- (P·Q)+(P·~Q) ≡ P
- Dual of P+0=P is P·1=P

Lesson 31: Equivalence & Duality — Day 2

P	Q	P+Q	P+~Q	Product	P
1	1	1	1	1	1
1	0	1	1	1	1
0	1	1	0	0	0
0	0	0	1	0	0

Lesson 31: Equivalence & Duality — Day 3

✏️

Find duals

1. $P+1=1 \rightarrow$ _____

2. $P\cdot 0=0 \rightarrow$ _____

📘

Teacher Note: Answer: $P\cdot 0=0$; $P+1=1$.

Lesson 31: Equivalence & Duality — Day 4

✏️

Apply

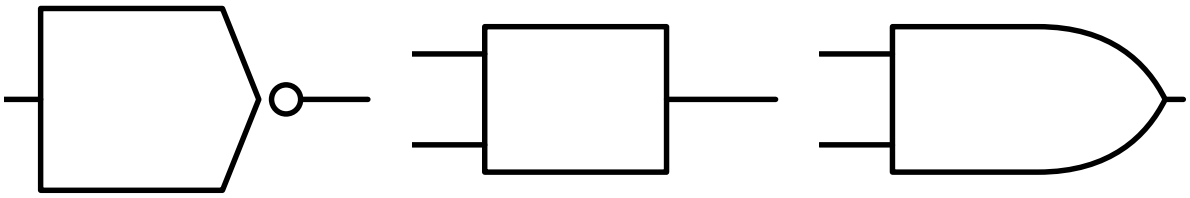
1. Show P+(Q·~Q) ≡ P (sentence + table).

Lesson 31: Equivalence & Duality — Day 5

Journal

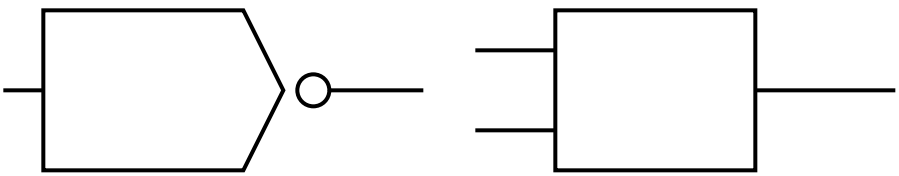
1. Write two equivalent expressions and explain why.

Lesson 32: Logic Gates: NOT, AND, OR — Day 1

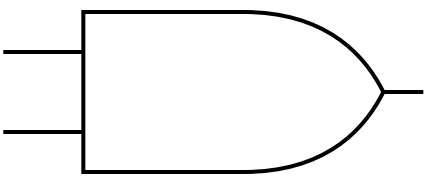


🧠

Logic gates: Symbols that show how inputs make outputs.



NOT (~) AND (·)



OR (+)

Lesson 32: Logic Gates: NOT, AND, OR — Day 2

💡

Switch & Valve models

- NOT as an opposite control
- AND = series; OR = parallel

✏️

Tiny tables

1. Fill 2-row NOT table
2. Fill 4-row AND table
3. Fill 4-row OR table

Lesson 32: Logic Gates: NOT, AND, OR — Day 3

✏️

Practice

1. Compute A·B for rows.

2. Compute A+B for rows.

Lesson 32: Logic Gates: NOT, AND, OR — Day 4

Apply

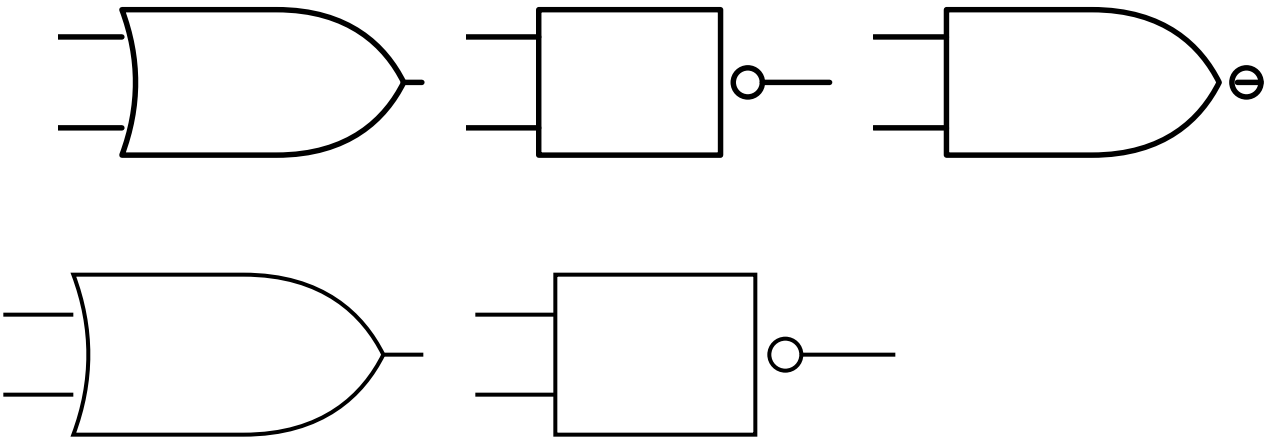
1. Draw two-switch circuits for AND and OR.

Lesson 32: Logic Gates: NOT, AND, OR — Day 5

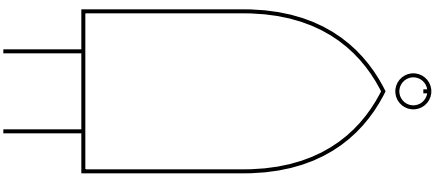
Journal

1. Explain a gate using switches or valves.

Lesson 33: More Gates: XOR, NAND, NOR — Day 1



XOR (⊕) NAND



NOR

🧠

XOR: Either input true, but not both.

🧠

NAND/NOR: NOT(AND) and NOT(OR).

Lesson 33: More Gates: XOR, NAND, NOR — Day 2

A	B	A ⊕ B
1	1	0
1	0	1
0	1	1
0	0	0

✏️

Explain

1. Why is $1 \oplus 1 = 0$?

Lesson 33: More Gates: XOR, NAND, NOR — Day 3

Fill

1. Complete NAND and NOR columns for four rows.

Lesson 33: More Gates: XOR, NAND, NOR — Day 4

Apply

1. Build a ‘choose one’ light with XOR.
2. Make a water version with two valves.

Lesson 33: More Gates: XOR, NAND, NOR — Day 5

Journal

1. Explain NAND using NOT and AND.

Lesson 34: From Tables to Circuits — Day 1

🧠

From tables to circuits: Use 1-rows to build product terms and OR them.

A	B	~B	A·~B
1	1	0	0
1	0	1	1
0	1	0	0
0	0	1	0

Lesson 34: From Tables to Circuits — Day 2

💡

SOP (Sum of Products)

- F=A·~B + ~A·B (XOR).

✏️

Write SOP

1. Make SOP from the 1-rows of a small table.

Lesson 34: From Tables to Circuits — Day 3

Practice

1. Draw circuit for F=(L+R)·M.

Lesson 34: From Tables to Circuits — Day 4

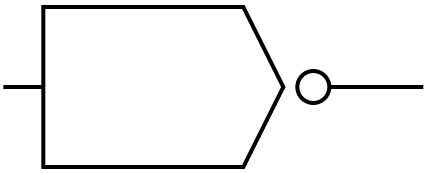
Apply

1. Design sprinkler: (Front OR Back) AND Timer.

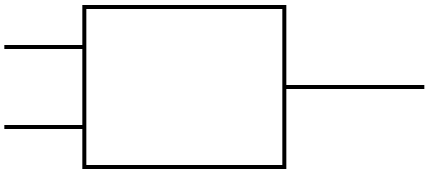
Lesson 34: From Tables to Circuits — Day 5

2-input truth table template

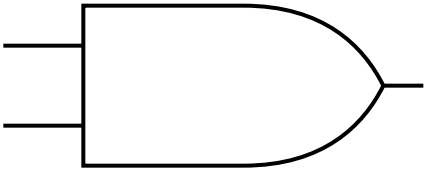
Digital Logic Symbols Guide



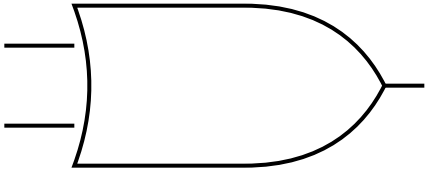
NOT (~)



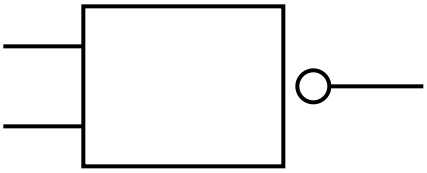
AND (·)



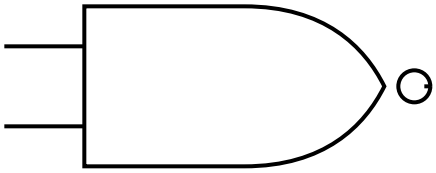
OR (+)



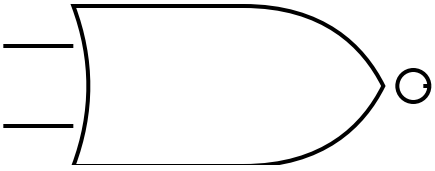
XOR (⊕)



NAND



NOR



Lesson 35: Designing a Logic Machine (Capstone) — Day 1

💡

Ideas

- Door light: (Door open) · (Night)
- Sprinkler: (Front + Back) · Timer

🖍️

Plan

1. List inputs (P,Q,R).
2. What is the output (F)?
3. Write the rule.

🔍

Test

- Make a truth table for your design.

Lesson 35: Designing a Logic Machine (Capstone) — Day 2

💡

Ideas

- Door light: (Door open) · (Night)
- Sprinkler: (Front + Back) · Timer

🖍️

Plan

1. List inputs (P,Q,R).
2. What is the output (F)?
3. Write the rule.

🔍

Test

- Make a truth table for your design.

Lesson 35: Designing a Logic Machine (Capstone) — Day 3

💡

Ideas

- Door light: (Door open) · (Night)
- Sprinkler: (Front + Back) · Timer

🖍️

Plan

1. List inputs (P,Q,R).
2. What is the output (F)?
3. Write the rule.

🔍

Test

- Make a truth table for your design.

Lesson 35: Designing a Logic Machine (Capstone) — Day 4

💡

Ideas

- Door light: (Door open) · (Night)
- Sprinkler: (Front + Back) · Timer

🖍️

Plan

1. List inputs (P,Q,R).
2. What is the output (F)?
3. Write the rule.

🔍

Test

- Make a truth table for your design.

Lesson 35: Designing a Logic Machine (Capstone) — Day 5

💡

Ideas

- Door light: (Door open) · (Night)
- Sprinkler: (Front + Back) · Timer

🖍️

Plan

1. List inputs (P,Q,R).
2. What is the output (F)?
3. Write the rule.

🔍

Test

- Make a truth table for your design.

Lesson 36: Thinking About Thinking (Reflection) — Day 1

💡

Look Back

- Aristotle and clear thinking
- Your favorite puzzle
- A gate you remember

🖍️

Share

1. Write a short story using if–then.
2. Teach a friend one new thing from this book.

🔍

Future You

- Where will logic help you next year?

Lesson 36: Thinking About Thinking (Reflection) — Day 2

💡

Look Back

- Aristotle and clear thinking
- Your favorite puzzle
- A gate you remember

🖍️

Share

1. Write a short story using if–then.
2. Teach a friend one new thing from this book.

🔍

Future You

- Where will logic help you next year?

Lesson 36: Thinking About Thinking (Reflection) — Day 3

💡

Look Back

- Aristotle and clear thinking
- Your favorite puzzle
- A gate you remember

🖍️

Share

1. Write a short story using if–then.
2. Teach a friend one new thing from this book.

🔍

Future You

- Where will logic help you next year?

Lesson 36: Thinking About Thinking (Reflection) — Day 4

💡

Look Back

- Aristotle and clear thinking
- Your favorite puzzle
- A gate you remember

🖍️

Share

1. Write a short story using if–then.
2. Teach a friend one new thing from this book.

🔍

Future You

- Where will logic help you next year?

Lesson 36: Thinking About Thinking (Reflection) — Day 5

💡

Look Back

- Aristotle and clear thinking
- Your favorite puzzle
- A gate you remember

🖍️

Share

1. Write a short story using if–then.
2. Teach a friend one new thing from this book.

🔍

Future You

- Where will logic help you next year?

Glossary

🧠 *Analogies*: A way to show how two pairs of things are related in a similar way.

🧠 *AND (·)*: A way of joining statements so both must be true.

🧠 *AND gate*: A circuit symbol that only outputs 1 when both inputs are 1.

🧠 *Aristotle*: An ancient Greek thinker who studied how we reason, helping start the study of logic.

🧠 *Boolean algebra*: Math that uses only 1 (true) and 0 (false).

🧠 *Complement*: Opposite parts that fit together, like P and ~P.

🧠 *Conditional*: An ‘if…then’ statement.

🧠 *Contradiction*: A statement that can never be true (always false).

Index

Instructor & Parent Section

💡

Teaching Approach

Keep it playful and visual. Ask students to explain *why*. Use mistakes as learning moments.

🖍️

Pacing (5 Days per Lesson)

1. Day 1: Discover — stories, pictures, sorting
2. Day 2: Model — demonstration
3. Day 3: Practice — guided/independent
4. Day 4: Apply — new situations
5. Day 5: Journal/Project — reflect or present

📘

Answer Keys (Highlights)

- L1 D vs I: #1 D, #2 I.
- L3 Correct vs Incorrect syllogisms shown.
- L13 Tables: XOR = one but not both.
- L25: P+~P=1 (tautology); P·~P=0 (contradiction).
- L31 Duals: P+1=1 ↔ P·0=0.

🔍

Extensions