

IBEW Aptitude Test Study Guide

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About the Test

The NJATC Aptitude Test has two timed sections: **33 math/algebra questions in 46 minutes** and **36 reading comprehension questions in 30 minutes**. Scores range 1-9. Most locals require 4.0+ to pass; 6.0+ is competitive.

Section 1: Math & Algebra Formulas

Fractions

Adding: $a/b + c/d = (ad + bc) / bd$ Need common denominator

Multiplying: $(a/b) \times (c/d) = ac / bd$ Multiply straight across

Dividing: $(a/b) / (c/d) = (a/b) \times (d/c)$ Flip and multiply

Tip: Convert mixed numbers to improper fractions first. $2-1/2 = 5/2$

Percentages

% to decimal: divide by 100 $75\% = 0.75$

X% of N = $0.XX \times N$ $25\% \text{ of } 80 = 0.25 \times 80 = 20$

Ratios & Proportions

If $a/b = c/d$, then $a \times d = b \times c$ (cross multiply)

Tip: Most word problems on the test are rate, ratio, or work problems. Set up the proportion and cross-multiply.

Order of Operations (PEMDAS)

Parentheses → Exponents → Multiply/Divide → Add/Subtract

Key Electrical Formulas (Math Section)

Formula	Meaning
$E = I \times R$	Ohm's Law: Voltage = Amps x Ohms
$P = E \times I$	Power = Volts x Amps
$P = I^2 \times R$	Power from current and resistance
1 HP = 746 Watts	Horsepower conversion

Section 2: Number Sequences

Look for the pattern before picking an answer. Common types:

Pattern Type	Example	Rule
Add same number	3, 6, 9, 12, ___	+3 each time → 15
Multiply	2, 4, 8, 16, ___	x2 each time → 32
Fibonacci	1, 1, 2, 3, 5, 8, ___	Add previous two → 13
Squares	1, 4, 9, 16, 25, ___	$1^2, 2^2, 3^2, \dots$ → 36
Alternating	2, 5, 2, 7, 2, 9, ___	Two interleaved sequences → 2

Tip: If you can't spot it in 20 seconds, skip and come back. Don't spend more than 60 seconds on any sequence question.

Section 3: Reading Comprehension Strategy

36 questions, 30 minutes = 50 seconds per question. Time management is critical.

1. **Read the questions first** — know what to look for before reading the passage
2. **Skim for structure** — first and last sentence of each paragraph
3. **Underline key terms** mentioned in the questions
4. **Eliminate wrong answers** — usually 2 are clearly off
5. **Never leave a blank** — wrong answer = 0 pts, blank = 0 pts, guess if needed

2-Week Study Schedule

Week	Focus	Daily Task (30 min)
Week 1, Days 1-3	Fractions & Percentages	10 fraction problems + 5 % problems
Week 1, Days 4-5	Number Sequences	15 sequence problems, time yourself
Week 1, Days 6-7	Word Problems	10 rate/ratio word problems
Week 2, Days 1-2	Reading Comprehension	1 passage + all questions, timed
Week 2, Days 3-4	Mechanical Reasoning	10 gear/pulley/lever questions
Week 2, Days 5-6	Full Practice Test	Timed mock exam, review misses
Week 2, Day 7	Review weak section only	Target your lowest score section

Most common mistake: Running out of time on reading comprehension. Practice reading fast and skimming. The math section has more time per question.