

HOMESCHOOL NATIONS Mathematics

Percentages, ratios, and growth curves with money on the line.

Grade fit: Grades 3-12 · Format: printable PDF unit

About this unit

Most math complaints start with 'when will I use this.' Running a nation answers that in the first week. Tax rates are percentages, trade is ratios, population is exponential growth, and a bad estimate costs the treasury real money.

What students will be able to do

- Calculate percentages, tax rates, and net income confidently
- Use ratios and proportions to evaluate a trade deal
- Read and build line and bar charts from live data
- Model linear versus exponential growth with population and treasury numbers
- Estimate, then check, then explain the gap

These are sample pages only. The complete unit, answer keys, and printable worksheet packs are part of the Homeschool Nations bundle.

Sample lesson — topics covered

Percent and taxation

Setting a tax rate is a percent problem with a happiness penalty attached. Students test rates, record revenue, and find the practical maximum.

Ratios and trade

Resource trades are ratio comparisons. Students decide whether a two-for-one deal is actually favorable once bonuses are counted.

Growth and sequences

Daily population growth and compounding income introduce sequences and exponential behavior in a form students can graph by hand.

Try it this week

1. Run three tax rates for three days each and graph revenue versus happiness
2. Compute unit cost per soldier including upkeep, not just purchase price
3. Predict tomorrow's population, then check the actual and find your percent error

Sample worksheet

Name: _____ Date: _____

1. In one sentence, what is the big idea of this Math unit?

2. Describe one decision you made in your nation and what happened next.

3. What evidence from your nation's data supports that answer?

4. What would you do differently next week, and why?

Weekly plan at a glance

- Monday: set the week's math goal, record starting numbers
- Tuesday: skill practice on the target operation
- Wednesday: apply it to an in-game decision
- Thursday: graph the results
- Friday: written explanation of what the numbers proved

Full unit — including every worksheet, rubric, and answer key — unlocks with the Homeschool Nations bundle at sfcnations.com/homeschool-nations-launch