

Name: _____ Date: _____

Plan With Tax and Shortfall

GRADE 8

MATHEMATICS

F1.2

F1.3

Tax sits on the spending side only, which makes the two sides of a plan behave differently. A dollar less spent removes its tax as well; a dollar more earned does not. That asymmetry decides which repair is worth more.

PART A: TAX CHANGES THE PLAN

1. Pre-tax spending of \$16.00 a week at 5% tax is \$_____.
2. With income of \$34 a week, weekly net savings come to \$_____.
3. Across 15 weeks that is \$_____.
4. Against a \$270 goal the shortfall is \$_____.

PART B: CLOSE THE GAP

5. Spread across the 15 weeks, how much extra must be saved each week to close the \$12 shortfall?

SHOW YOUR WORK

Answer: _____

6. Instead of saving more, pre-tax spending is cut to \$15.00 a week. Does that close the gap?

SHOW YOUR WORK

Answer: _____

7. Which is worth more over the term: cutting pre-tax spending by \$1.00 a week, or raising income by \$1.00 a week?

SHOW YOUR WORK

Answer: _____

PART C: WHERE TAX LANDS

8. Tax makes a spending cut worth more than an equal income rise because:
- (A) the cut removes the tax on that spending as well (B) tax is charged on income too
- (C) the tax rate rises each week
9. A \$24.00 pre-tax weekly spend at 5% tax really costs:
- (A) \$25.20 (B) \$24.05 (C) \$28.80

PART D: BUILD ONE THAT WORKS

10. Write a plan for a \$300 goal over 20 weeks with 5% tax on spending. Show the weekly income, the pre-tax spending, the taxed spending, the weekly saving and the term total, then say whether it reaches the goal.

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ANSWER KEY

1. \$16.80
2. \$17.20
3. 258
4. 12
5. \$0.80 a week.
6. Yes. Taxed spending falls to \$15.75, so weekly savings rise to \$18.25 and 15 weeks give \$273.75, clearing the goal with \$3.75 to spare.
7. Cutting spending. A dollar less spent also removes \$0.05 of tax, so it is worth \$1.05 a week against the \$1.00 that extra income brings.
8. A) the cut removes the tax on that spending as well
9. A) \$25.20
10. Answers will vary and must show all five figures with the tax applied to spending only.
Example: income \$30, pre-tax spending \$14, taxed spending \$14.70, weekly saving \$15.30, and 20 weeks giving \$306, which clears the \$300 goal with \$6 to spare.

TEACHER NOTES

Extension beyond the grade-level expectation: Part B question 3 is the point of the sheet, because the answer surprises most students and follows directly from where the tax sits. The numbers are chosen so the shortfall divides evenly across the term and the spending cut clears the goal by a visible margin.