

Alpha School

Pre-Algebra

Homework Assignment

Name: _____ Date: _____ Grade: _____

Homework: apply what you learned to real-life situations. Answer in complete sentences where asked.

1. A phone plan charges \$25 per month plus \$0.10 per text. Maya sends 120 texts in a month. Write an expression for her bill and find the total.

2. Solve and graph on a number line: $3x + 5 < 20$.

3. A store raises the price of a \$60 game by 15%, then later marks it down 15%. Is the final price \$60? Explain why or why not, with calculations.

4. The ratio of boys to girls in a class is 3:5. There are 24 students in total. How many boys and how many girls are there?

5. A box has length 10 cm, width 6 cm, and height 4 cm. Find its volume. If the height is doubled, what happens to the volume? Show your work.

6. Convert 0.375 to a fraction in lowest terms and to a percent.

7. Which is greater: $\frac{7}{8}$ or 0.85? Justify your answer by converting to a common form.

8. A map scale is 1 cm = 25 km. Two towns are 7.5 cm apart on the map. How far apart are they in real life?

9. EXPLAIN IN YOUR OWN WORDS: Why does the order of operations matter? Give an example where doing the steps in a different order gives a different (wrong) answer.

10. PROJECT: Plan a small party for 12 people. Juice costs \$3 per bottle and each bottle serves 3 people. Snacks cost \$4 per bag and each bag serves 4 people. How many bottles and bags do you need, and what is the total cost? Show a table of your plan.

ANSWER KEY - For Teacher/Parent Use

1. Expression: $25 + 0.10t$. For $t = 120$: $25 + 12 = \$37$.
2. $3x < 15$, so $x < 5$. Open circle at 5, arrow to the left.
3. No. After the increase: $\$60 \times 1.15 = \69 . After the markdown: $\$69 \times 0.85 = \58.65 . The 15% is taken from a larger amount, so the final price is below \$60.
4. Total parts = 8. Each part = 3 students. Boys = 9, girls = 15.
5. Volume = $10 \times 6 \times 4 = 240$ cubic cm. Doubling height gives 480 cubic cm: the volume doubles.
6. $0.375 = 375/1000 = 3/8 = 37.5\%$.
7. $7/8 = 0.875$, which is greater than 0.85.
8. $7.5 \times 25 = 187.5$ km.
9. Accept any correct explanation: operations must be done in a fixed order (parentheses, exponents, multiply/divide, add/subtract) so everyone gets the same result. Example: $2 + 3 \times 4 = 14$, not 20.
10. 4 bottles of juice $(12 / 3) = \$12$; 3 bags of snacks $(12 / 4) = \$12$; total \$24.

Note: For show-your-work and explain-in-your-own-words items, accept any correct reasoning that reaches the stated result. Partial credit is encouraged.