

Alpha School

Pre-Algebra

Practice Worksheet

Name: _____ Date: _____ Grade: _____

Practice problems covering number sense, fractions and percents, ratios, equations, inequalities, graphing, and geometry. Show your work where asked.

1. Order these integers from least to greatest: 3, -4, 0, -1, 2.

2. Evaluate: $(-3)^2 + 4 \times (-2)$. Show your work.

3. Evaluate: $2^4 + \sqrt{81}$.

4. Write $\frac{3}{4}$ as a percent.

(B) 75%

(C) 0.75%

(D) 175%

(A) 34%

5. A jacket costs \$45. It is on sale for 20% off. Sales tax is 8%. What is the sale price before tax, and what is the total cost?

6. A recipe uses 2 cups of flour for every 3 cups of sugar. How much flour is needed for 12 cups of sugar?

7. Solve for x: $x + 7 = 15$.

8. Solve for x: $2x - 3 = 11$. Show each step.

9. Which graph on a number line shows $x \geq -2$?

(B) Closed circle at -2, arrow to the right

(C) Open circle at 2, arrow to the right

(D) Closed circle at 2, arrow to the left

(A) Op

10. Plot and label the points A(2, 3), B(-1, 4), and C(0, -2) on a coordinate grid. In which quadrant (or axis) is each point?

11. A rectangle is 8 cm long and 5 cm wide. Find its area and perimeter.

12. Find the volume of a rectangular prism with length 6 cm, width 4 cm, and height 3 cm.

13. Compute: $\frac{3}{5} + \frac{2}{3}$. Write your answer as a mixed number in lowest terms.

14. What is 60% of 40?

15. Solve the proportion: $\frac{3}{4} = \frac{x}{20}$.

16. Use order of operations to evaluate: $6 + 3 \times 4 - 2^3$.

17. Which of the following is a prime number?

(A) 21

(B) 27

(C) 29

(D) 33

18. **SHOW YOUR WORK:** A garden is 12 m long and 9 m wide. Fencing costs \$5 per metre. How much will it cost to fence the whole garden? Explain how you found the perimeter first.

ANSWER KEY - For Teacher/Parent Use

1. Least to greatest: -4, -1, 0, 2, 3.
2. $(-3)^2 = 9$; $4 \times (-2) = -8$; $9 + (-8) = 1$.
3. $2^4 = 16$; $\sqrt{81} = 9$; $16 + 9 = 25$.
4. (B) 75%.
5. Sale price: $\$45 \times 0.80 = \36.00 . Total with tax: $\$36 \times 1.08 = \38.88 .
6. Set up $\frac{2}{3} = \frac{f}{12}$, so $f = 8$ cups of flour.
7. $x = 8$.
8. Add 3: $2x = 14$; divide by 2: $x = 7$.
9. (B) Closed circle at -2, arrow to the right.
10. A(2, 3): Quadrant I. B(-1, 4): Quadrant II. C(0, -2): on the y-axis.
11. Area = $8 \times 5 = 40$ sq cm. Perimeter = $2(8 + 5) = 26$ cm.
12. Volume = $6 \times 4 \times 3 = 72$ cubic cm.
13. $\frac{3}{5} + \frac{2}{3} = \frac{9}{15} + \frac{10}{15} = \frac{19}{15} = 1 \frac{4}{15}$.
14. $0.60 \times 40 = 24$.
15. Cross-multiply: $4x = 60$, so $x = 15$.
16. $6 + 12 - 8 = 10$.
17. (C) 29.
18. Perimeter = $2(12 + 9) = 42$ m. Cost = $42 \times \$5 = \210 .

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.