

Pre-Algebra Class — Answer Key

6 Foundational Concepts · 60 practice questions with worked solutions

1. Whole Numbers & Place Value

Q1. What is the value of the digit 7 in **27,304**?

Solution: The 7 is in the thousands place. Value = $7 \times 1,000 = 7,000$.

Q2. Write **58,206** in expanded form.

Solution: $50,000 + 8,000 + 200 + 0 + 6 = 50,000 + 8,000 + 200 + 6$.

Q3. Write **forty thousand, three hundred nine** in standard form.

Solution: $40,000 + 300 + 9 = 40,309$.

Q4. Which number is greater: **63,481** or **63,418**?

Solution: Same 6 (ten-thousands), same 3 (thousands), same 4 (hundreds). Tens digit: 8 vs 1, so **$63,481 > 63,418$** .

Q5. Order from least to greatest: **5,082 5,802 5,028 5,820**.

Solution: **$5,028 < 5,082 < 5,802 < 5,820$** .

Q6. How many hundreds are in **12,347**?

Solution: The hundreds digit is 3, so there are **3 hundreds** in the hundreds place. (Total hundreds in 12,347: 123 with 47 left over.)

Q7. What is the place value of the underlined digit in **45,678**?

Solution: **Thousands**; value **5,000**.

Q8. Write $6,000 + 300 + 40 + 2$ in standard form.

Solution: **6,342**.

Q9. Which is the greatest whole number less than 10,000?

Solution: **9,999**.

Q10. A digit's value moves one place to the LEFT. What happens to its value?

Solution: It becomes **10 times greater**.

2. Operations with Whole Numbers

Q1. Compute $4,687 + 2,548$.

Solution: 7,235.

Q2. Compute $8,003 - 2,547$.

Solution: 5,456.

Q3. Compute 236×47 .

Solution: $236 \times 7 = 1,652$; $236 \times 40 = 9,440$; sum **11,092**.

Q4. Compute $1,296 \div 8$.

Solution: 162 ($8 \times 162 = 1,296$).

Q5. Estimate $4,872 + 3,158$ by rounding each to the nearest thousand.

Solution: $5,000 + 3,000 = \mathbf{8,000}$ (actual 8,030).

Q6. A theater has 24 rows of 38 seats. How many seats total?

Solution: $24 \times 38 = \mathbf{912}$ seats.

Q7. Divide 4,725 by 15.

Solution: 315 ($15 \times 315 = 4,725$).

Q8. Write the number 305,072 in words.

Solution: Three hundred five thousand, seventy-two.

Q9. Compare using $>$, $<$, or $=$: $9,876$? $9,867$.

Solution: $9,876 > 9,867$ (tens: 7 vs 6).

Q10. A truck holds 1,250 kg. If 6 identical crates weigh 7,320 kg total, how much does one crate weigh, and does one crate fit?

Solution: One crate $= 7,320 \div 6 = \mathbf{1,220}$ kg. $1,220 < 1,250$, so **yes**.

3. Number Properties

Q1. Name the property: $6 + 9 = 9 + 6$.

Solution: Commutative Property of Addition.

Q2. Name the property: $(2 \times 5) \times 4 = 2 \times (5 \times 4)$.

Solution: Associative Property of Multiplication.

Q3. Fill the blank using the distributive property: $7(3 + 5) = 7 \cdot 3 + \underline{\hspace{1cm}}$.

Solution: $7 \times 5 = 35$. Full: $21 + 35 = 56$.

Q4. What is 143×1 ?

Solution: 143 (multiplicative identity).

Q5. What is $89 + 0$?

Solution: 89 (additive identity).

Q6. What is the additive inverse of -12 ?

Solution: 12.

Q7. What is the multiplicative inverse (reciprocal) of 4?

Solution: $1/4$.

Q8. Use the distributive property to compute 6×27 mentally.

Solution: $6 \cdot (20+7) = 120 + 42 = 162$.

Q9. True or false: subtraction is commutative.

Solution: False. $7-4 = 3$ but $4-7 = -3$.

Q10. Simplify using the zero property: $15 \times 0 + 8$.

Solution: $0 + 8 = 8$.

4. Factors and Multiples

Q1. List all factors of 36.

Solution: 1, 2, 3, 4, 6, 9, 12, 18, 36.

Q2. List the first 8 multiples of 7 (starting at 0).

Solution: 0, 7, 14, 21, 28, 35, 42, 49.

Q3. Give all factor pairs of 30.

Solution: (1,30), (2,15), (3,10), (5,6).

Q4. Is 29 prime or composite? Justify.

Solution: Prime (only factors are 1 and 29).

Q5. Is 51 prime or composite?

Solution: Composite: $51 = 3 \times 17$.

Q6. Find GCF(24, 36).

Solution: GCF = 12.

Q7. Find LCM(8, 12).

Solution: LCM = 24.

Q8. Find the common factors of 20 and 30.

Solution: 1, 2, 5, 10.

Q9. Find GCF(45, 60) and LCM(45, 60).

Solution: GCF = 15; LCM = 180.

Q10. Two lights blink every 6 and 9 seconds. If they blink together at time 0, when do they next blink together?

Solution: LCM(6,9) = 18 seconds.

5. Integers

Q1. Compute $-7 + 12$.

Solution: 5.

Q2. Compute $-8 + (-5)$.

Solution: -13.

Q3. Compute $4 - 9$.

Solution: -5.

Q4. Compute $-6 - (-10)$.

Solution: 4.

Q5. Compute $(-3) \times 8$.

Solution: -24.

Q6. Compute $(-6) \times (-7)$.

Solution: 42.

Q7. Compute $(-36) \div 4$.

Solution: -9.

Q8. Compute $(-56) \div (-7)$.

Solution: 8.

Q9. Order from least to greatest: -3, 4, 0, -7, 2.

Solution: -7, -3, 0, 2, 4.

Q10. Evaluate $|-15| + |4| - |-9|$.

Solution: $15 + 4 - 9 = 10$.

6. Equivalent Fractions

Q1. Write two fractions equivalent to $\frac{2}{3}$.

Solution: $\frac{4}{6}$, $\frac{6}{9}$ (or $\frac{8}{12}$, $\frac{10}{15}$, ...)

Q2. Simplify $\frac{18}{24}$ to lowest terms.

Solution: $\text{GCF}=6 \rightarrow \frac{3}{4}$.

Q3. Fill in: $\frac{5}{8} = \frac{?}{40}$.

Solution: $\frac{25}{40}$.

Q4. Are $\frac{6}{9}$ and $\frac{8}{12}$ equivalent?

Solution: Yes, both simplify to $\frac{2}{3}$.

Q5. Are $\frac{3}{5}$ and $\frac{4}{7}$ equivalent?

Solution: No: $3 \cdot 7=21$, $5 \cdot 4=20$.

Q6. Simplify $\frac{45}{60}$.

Solution: $\frac{3}{4}$ ($\text{GCF}=15$).

Q7. Which is larger: $\frac{2}{3}$ or $\frac{5}{8}$?

Solution: Common denominator 24: $\frac{16}{24}$ vs $\frac{15}{24}$. $\frac{2}{3} > \frac{5}{8}$.

Q8. Fraction with denominator 100 equivalent to $\frac{7}{20}$.

Solution: $\frac{35}{100}$.

Q9. Simplify $\frac{24}{36}$ in two steps.

Solution: $\div 2 \rightarrow \frac{12}{18}$; $\div 6 \rightarrow \frac{2}{3}$.

Q10. A recipe uses $\frac{6}{8}$ cup of flour. Simplest form + two equivalents.

Solution: $\frac{3}{4}$; equivalents: $\frac{9}{12}$, $\frac{12}{16}$, ...