

Pre-Algebra & Geometry

Self-Study Worksheet · 20 Questions · Multiple Choice

Instructions: Circle the best answer for each question. Check your answers using the answer key on the last page. Review the Memory Point before each question — it holds the key formula!

Part I — Pre-Algebra

■ **PEMDAS** — Parentheses > Exponents > Multiply/Divide > Add/Subtract (left to right)

Q01 [Pre-Algebra]

Simplify: $3 + 4 \times 2 - (6 / 3)$

A) 12

B) 9

C) 11

D) 7

■ **INTEGER RULES** — neg x neg = positive | neg x pos = negative

Q02 [Pre-Algebra]

What is $(-3) \times (-4) + (-5)$?

A) 17

B) -17

C) 7

D) -7

■ **FRACTION MULTIPLY** — Multiply numerators together, denominators together (no need to find LCD)

Q03 [Pre-Algebra]

A recipe uses $\frac{3}{4}$ cup of sugar. You make $\frac{1}{2}$ of the recipe. How much sugar?

A) $\frac{1}{4}$ cup

B) $\frac{3}{8}$ cup

C) $\frac{3}{2}$ cup

D) $\frac{5}{4}$ cup

■ **BALANCE EQUATION** — Whatever you do to one side, do to the other. Inverse operations undo each other.

Q04 [Pre-Algebra]

Solve for x: $2x + 5 = 17$

A) $x = 11$	B) $x = 6$
C) $x = 7$	D) $x = 4$

■ **PERCENT DISCOUNT** — Discount = original \times rate | Sale price = original - discount

Q05 [Pre-Algebra]

A shirt costs \$40. It is on sale for 25% off. What is the sale price?

A) \$35	B) \$10
C) \$30	D) \$25

■ **UNIT RATE** — Find cost per 1 unit, then multiply. Or use proportion: $a/b = c/d \rightarrow$ cross-multiply

Q06 [Pre-Algebra]

If 3 apples cost \$1.50, how much do 7 apples cost?

A) \$3.00	B) \$3.50
C) \$4.50	D) \$2.50

■ **EXPONENT PRODUCT RULE** — Same base: $x^a \times x^b = x^{(a+b)}$. ADD the exponents, keep the base.

Q07 [Pre-Algebra]

What is $2^3 \times 2^2$?

A) 16	B) 32
C) 64	D) 100

■ **MEAN / MEDIAN / MODE** — MEAN=sum/count | MEDIAN=middle after sorting | MODE=most frequent

Q08 [Pre-Algebra]

Test scores: 72, 85, 90, 85, 68. What is the median?

A) 80	B) 72
C) 85	D) 68

■ **FLIP THE INEQUALITY** — Multiply or divide by a NEGATIVE number \rightarrow flip the inequality sign!

Q09 [Pre-Algebra]

Solve: $-2x > 8$. Which value of x is a solution?

A) $x = -3$	B) $x = -5$
C) $x = 0$	D) $x = -4$

■ **DISTRIBUTE + COMBINE** — $a(b+c) = ab+ac$. Then collect 'like terms' (same variable, same exponent).

Q10 [Pre-Algebra]

Simplify: $3(x + 4) - 2x + 1$

A) $5x + 13$

B) $x + 13$

C) $x + 5$

D) $3x + 13$

Part II — Geometry

■ **PYTHAGOREAN THEOREM** — $a^2 + b^2 = c^2$ (c = hypotenuse, the longest side opposite the right angle)

Q11 [Geometry]

A right triangle has legs of length 6 and 8. What is the hypotenuse?

A) 14

B) 10

C) 12

D) 100

■ **TRIANGLE ANGLE SUM = 180 deg** — All three interior angles of ANY triangle add up to exactly 180 degrees.

Q12 [Geometry]

Two angles of a triangle are 47 deg and 63 deg. What is the third angle?

A) 80 deg

B) 70 deg

C) 110 deg

D) 90 deg

■ **TRIANGLE AREA = $(1/2)bh$** — Area of triangle = half the area of the rectangle with same base and height.

Q13 [Geometry]

A triangle: base = 10 cm, height = 6 cm. What is its area?

A) 60 cm^2

B) 30 cm^2

C) 16 cm^2

D) 48 cm^2

■ **CIRCLE: $C = \pi \cdot d$ (use diameter!)** — Circumference = $\pi \times \text{diameter} = 2 \times \pi \times \text{radius}$. Check if you're given r or d !

Q14 [Geometry]

A circle has a diameter of 14 cm. Circumference = ? ($\pi \sim 3.14$)

A) 87.92 cm

B) 43.96 cm

C) 153.86 cm

D) 21.98 cm

■ **CO-INTERIOR ANGLES = 180 deg** — Parallel lines cut by transversal: co-interior (same side) = 180. Alternate = equal.

Q15 [Geometry]

Parallel lines, transversal cuts at 65 deg. Co-interior angle = ?

A) 65 deg

B) 115 deg

C) 90 deg

D) 25 deg

■ **VOLUME = l x w x h** — Volume always uses cubic units (cm³, m³). Area uses square units (cm²).

Q16 [Geometry]

A box is 5 cm long, 4 cm wide, and 3 cm tall. Volume = ?

A) 24 cm³

B) 60 cm³

C) 47 cm³

D) 94 cm²

■ **SIMILAR TRIANGLES: PROPORTION** — Set up ratio: small/large = small/large, then cross-multiply to solve.

Q17 [Geometry]

Similar triangles ratio 2:5. Smaller side = 8 cm. Larger side = ?

A) 16 cm

B) 20 cm

C) 25 cm

D) 40 cm

■ **PERIMETER of RECTANGLE** — $P = 2(l + w)$. Don't forget: two lengths AND two widths. Always divide by 2!

Q18 [Geometry]

Rectangle: perimeter = 36 cm, width = 6 cm. Length = ?

A) 30 cm

B) 12 cm

C) 24 cm

D) 6 cm

■ **SUPPLEMENTARY = 180 deg** — Supplementary: two angles add to 180. Complementary: add to 90.

Q19 [Geometry]

Angle A and B are supplementary. $A = 3 \times B$. What is angle A?

A) 45 deg

B) 135 deg

C) 90 deg

D) 120 deg

■ MIDPOINT FORMULA — Midpoint = $(\frac{x_1+x_2}{2}, \frac{y_1+y_2}{2})$ -- just average the x's and y's

Q20 [Geometry]

Midpoint of A(2, 4) and B(8, 12) = ?

A) (5, 7)

B) (5, 8)

C) (6, 8)

D) (10, 16)

Answer Key

Pre-Algebra & Geometry Worksheet

Q#	Answer	Q#	Answer
Q01	B) 9	Q02	C) 7
Q03	B) $\frac{3}{8}$ cup	Q04	B) $x = 6$
Q05	C) \$30	Q06	B) \$3.50
Q07	B) 32	Q08	C) 85
Q09	B) $x = -5$	Q10	B) $x + 13$
Q11	B) 10	Q12	B) 70 deg
Q13	B) 30 cm^2	Q14	B) 43.96 cm
Q15	B) 115 deg	Q16	B) 60 cm^3
Q17	B) 20 cm	Q18	B) 12 cm
Q19	B) 135 deg	Q20	B) (5, 8)