Pre-Algebra & Geometry

Middle School Math Worksheet · 20 Questions · Multiple Choice

Section 1 — Pre-Algebra (Q01 – Q10)

Q01 · Order of Operations

> ★ PEMDAS: Parentheses → Exponents → Multiply/Divide → Add/Subtract

Evaluate: 3 + 6 × (5 + 4) ÷ 3 – 7

A) 14	B) 18
C) 12	D) 20

Q02 · Negative Numbers

> ★ SAME signs → ADD · DIFFERENT signs → SUBTRACT (keep sign of bigger absolute value)

What is –8 + (–5) – (–3) ?

A) –16	B) –10
C) –6	D) 0

Q03 · Fractions — Division

> ★ KCF: Keep · Change · Flip (for dividing fractions)

Simplify: 3/4 ÷ 9/16

A) 27/64	B) 3/4
C) 4/3	D) 16/9

Q04 · Solving Linear Equations

> ★ ISOLATE x: do the same operation to BOTH sides

Solve for x: 4x – 7 = 2x + 11

A) x = 2	B) x = 6
C) x = 7	D) x = 9

Q05 · Percentages

★ IS/OF = %/100 · Discount: multiply original × (1 – rate)

A shirt costs $40. It's on sale for 35% off. What is the sale price?

A) $26	B) $14
C) $28	D) $35

Q06 · Ratios & Proportions

★ CROSS-MULTIPLY: a/b = c/d → a × d = b × c

A car travels 150 miles in 3 hours. At the same rate, how far does it go in 5 hours?

A) 200 mi	B) 250 mi
C) 225 mi	D) 300 mi

Q07 · Exponent Rules

★ Same base: MULTIPLY → ADD exponents · DIVIDE → SUBTRACT exponents

Simplify: $2^3 \times 2\blacksquare \div 2^2$

A) 2■ = 16	B) 2■ = 64
C) 2■ = 32	D) 2■ = 512

Q08 · Inequalities

★ FLIP the inequality sign when multiplying or dividing by a NEGATIVE

Solve: –3x + 6 > 15. Which value of x is a solution?

A) x = –5	B) x = 3
C) x = 0	D) x = –3

Q09 · Distributive Property

★ DISTRIBUTE: a(b + c) = ab + ac — multiply outside by EVERY term inside

Expand and simplify: 2(3x – 4) + 5(x + 2)

A) 11x – 2	B) 10x + 2
C) 11x + 18	D) 11x + 2

Q10 · Word Problems — Two Variables

★ NAME → EQUATION: assign a variable to each unknown, then build the equation

A class has 32 students. There are 4 more girls than boys. How many girls?

A) 14	B) 16
C) 18	D) 20

Section 2 — Geometry (Q11 – Q20)

Q11 · Pythagorean Theorem

★ $a^2 + b^2 = c^2$ — c is ALWAYS the hypotenuse (longest side)

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

A) 10	B) 11
C) 12	D) 14

Q12 · Area of Triangle

★ A = ½ × base × height — height must be PERPENDICULAR to the base

A triangle has base 14 cm and height 9 cm. What is its area?

A) 126 cm^2	B) 46 cm^2
C) 63 cm^2	D) 54 cm^2

Q13 · Circle — Area

★ $A = \pi r^2$ — diameter ÷ 2 = radius first!

A circle has diameter 10 cm. What is its area? ($\pi \approx 3.14$)

A) 78.5 cm^2	B) 31.4 cm^2
C) 314 cm^2	D) 62.8 cm^2

Q14 · Supplementary Angles

★ Complementary = 90° · Supplementary = 180° (C before S, 90 before 180)

Two supplementary angles: one is 3 times the other. Find both angles.

A) 30° & 60°	B) 45° & 135°
C) 40° & 140°	D) 50° & 130°

Q15 · Perimeter of Rectangle

★ P = 2(l + w) — add length and width FIRST, then multiply by 2

A garden has perimeter 56 m. The length is 5 m more than the width. Find the width.

A) 10 m	B) 14 m
C) 16 m	D) 11.5 m

Q16 · Volume of Rectangular Prism

★ V = l × w × h — always cubic units (cm³, m³)

A box is 8 cm long, 5 cm wide, and 4 cm tall. What is its volume?

A) 80 cm³	B) 120 cm³
C) 160 cm³	D) 200 cm³

Q17 · Parallel Lines & Transversals

★ Co-interior = 180° · Alternate = Equal · Corresponding = Equal

Two parallel lines are cut by a transversal. One angle is 65°. Find the co-interior angle.

A) 65°	B) 25°
C) 90°	D) 115°

Q18 · Interior Angles of Polygon

★ Sum = (n – 2) × 180° where n = number of sides

What is the sum of interior angles of a hexagon?

A) 540°	B) 720°
C) 900°	D) 1080°

Q19 · Similar Figures

★ SIMILAR: same shape, different size — sides are PROPORTIONAL

Two similar triangles have sides in ratio 3:5. Smaller perimeter = 24 cm. Find larger perimeter.

A) 40 cm	B) 36 cm
C) 48 cm	D) 60 cm

Q20 · Distance Between Two Points

★ d = √[(x■–x■)² + (y■–y■)²] — Pythagorean theorem on the coordinate plane

Find the distance between A(1, 2) and B(4, 6).

A) 3	B) 4
C) 5	D) 7

Answer Key

Q01	Q02	Q03	Q04	Q05	Q06	Q07	Q08	Q09	Q10
A	B	C	D	A	B	C	A	D	C
Q11	**Q12**	**Q13**	**Q14**	**Q15**	**Q16**	**Q17**	**Q18**	**Q19**	**Q20**
A	C	A	B	D	C	D	B	A	C

Name: _____ Date: _____ Score: _____ / 20