Math Practice Worksheet

Algebra 2 · Geometry

20 Questions | Multiple Choice | Print Edition

Name: _____ Date: _____

Instructions: Circle the best answer. Each question = 1 point (20 total). Answer key is on the last page.

Part I — Algebra 2 (Questions 1–10)

Q1 · Quadratic Formula

■ **x = (-b ± √(b²-4ac)) / 2a**

Solve x² - 6x + 8 = 0 using the quadratic formula.

A) x = 2 or x = 4

B) x = -2 or x = -4

C) x = 3 or x = 8

D) x = 1 or x = 8

Q2 · Vertex Form

■ **y = a(x-h)² + k → vertex = (h, k) [sign FLIPS for h]**

What is the vertex of y = (x + 5)² - 3 ?

A) (-5, -3)

B) (5, -3)

C) (-5, 3)

D) (5, 3)

Q3 · Discriminant

■ **b²-4ac: >0 two roots | =0 one root | <0 no real roots**

How many real solutions does 2x² - 4x + 2 = 0 have?

A) Two distinct real solutions

B) Exactly one real solution

C) No real solutions

D) Infinitely many solutions

Q4 · Exponent Rules

■ **x^a · x^b = x^(a+b) | (x^a)^b = x^(ab) | x^(-n) = 1/x^n**

Simplify: (x^5 · x^(-2)) / x^3

A) x^0 = 1

C) x^10

B) x^6

D) x^(-1)

Q5 · Logarithms

■ **log_b(x) = y ↔ b^y = x (rewrite as exponential)**

Evaluate log base 3 of 81.

A) 3

C) 4

B) 27

D) 9

Q6 · Systems of Equations

■ **SUBSTITUTION: solve one equation → plug into the other**

Solve: y = 3x and 2x + y = 15

A) x = 3, y = 9

C) x = 3, y = 6

B) x = 5, y = 5

D) x = 15, y = 0

Q7 · Polynomial Factoring

■ **Factor Theorem: if f(a) = 0, then (x - a) is a factor**

Which of the following is a factor of $x^2 + x - 6$?

A) (x - 3)

C) (x - 2)

B) (x + 6)

D) (x + 1)

Q8 · Rational Expressions

■ **Factor numerator & denominator, cancel COMMON FACTORS only**

Simplify: $(x^2 - 9) / (x + 3)$

A) x - 3

C) $x^2 - 3$

B) x + 3

D) $x^2/3$

Q9 · Arithmetic Sequences

■ **a_n = a_1 + (n-1)d [n starts at 1, not 0]**

Find the 15th term of 5, 8, 11, 14, ...

A) 47

C) 50

B) 44

D) 41

Q10 · Function Composition

■ **(f■g)(x) = f(g(x)) → do g FIRST, then plug into f**

If f(x) = x² and g(x) = x + 3, find (f■g)(2).

A) 25

C) 49

B) 7

D) 10

Part II — Geometry (Questions 11–20)

Q11 · Triangle Congruence — SAS

■ **SAS = Side-Angle-Side (angle must be BETWEEN the two sides)**

Two triangles have two equal sides and the INCLUDED angle equal. Which rule applies?

A) SSS

B) SAS

C) AAS

D) ASA

Q12 · Inscribed Angle Theorem

■ **Inscribed Angle = 1/2 × intercepted arc**

An inscribed angle intercepts an arc of 80°. Find the inscribed angle.

A) 80°

B) 160°

C) 40°

D) 20°

Q13 · Similar Triangles

■ **SIMILAR: corresponding sides are PROPORTIONAL (cross-multiply)**

Similar triangles have sides in ratio 3:5. Shorter side = 9 cm. Find the longer corresponding side.

A) 15 cm

B) 27 cm

C) 12 cm

D) 18 cm

Q14 · Surface Area of Cylinder

■ **SA = 2*pi*r² + 2*pi*r*h (two circles + lateral)**

Surface area of cylinder with r = 4 cm, h = 6 cm. (pi ≈ 3.14)

A) 251.2 cm²

B) 150.72 cm²

C) 100.48 cm²

D) 200.96 cm²

Q15 · Exterior Angle of Triangle

■ **EXTERIOR ANGLE = sum of two NON-ADJACENT interior angles**

Triangle interior angles are 35° and 75°. Find the exterior angle at the third vertex.

A) 70°

B) 110°

C) 145°

D) 105°

Q16 · Midpoint Formula

■ **Midpoint = ((x1+x2)/2 , (y1+y2)/2)**

Find the midpoint of A(-3, 7) and B(5, -1).

A) (1, 3)

C) (-1, 3)

B) (2, 6)

D) (4, 4)

Q17 · Volume of a Cone

■ **V = (1/3)*pi*r²*h (one-third of a cylinder)**

Volume of cone with r = 5 cm, h = 9 cm. (pi ≈ 3.14)

A) 235.5 cm^3

C) 78.5 cm^3

B) 706.5 cm^3

D) 471 cm^3

Q18 · Angle Bisector

■ **ANGLE BISECTOR divides angle into TWO EQUAL parts (÷ 2)**

Ray BD bisects angle ABC. If angle ABC = 126°, find angle ABD.

A) 63°

C) 54°

B) 126°

D) 32°

Q19 · Parallel & Perpendicular Slopes

■ **PERPENDICULAR: negative reciprocal (flip fraction + change sign)**

A line has slope 2/5. What is the slope of a perpendicular line?

A) -5/2

C) -2/5

B) 5/2

D) 2/5

Q20 · Arc Length

■ **Arc Length = (angle/360) × 2*pi*r**

Arc length of circle with r = 6 cm, central angle = 60°. (pi ≈ 3.14)

A) 6.28 cm

C) 37.68 cm

B) 12.56 cm

D) 3.14 cm

Answer Key

Q1: A	**Q2: A**	**Q3: B**	**Q4: A**	**Q5: C**
Q6: A	**Q7: C**	**Q8: A**	**Q9: A**	**Q10: A**
Q11: B	**Q12: C**	**Q13: A**	**Q14: A**	**Q15: B**
Q16: A	**Q17: A**	**Q18: A**	**Q19: A**	**Q20: A**

Score: _____ / 20 · Percentage: _____ % · Date Checked: _____