Algebra 1 & Geometry

Self-Study Practice Worksheet · 20 Problems · Multiple Choice

Name: _____ Date: _____ Score: _____ / 20

PART A — ALGEBRA 1 (Questions 1–10)

Q1 — *Linear Inequality | KEY: 'at least' =* ≥ */ 'at most' =* ≤

Sarah has $120. She earns $15 per hour babysitting. She wants to save at least $300. Which inequality shows the minimum number of hours h she must work?

A) 120 + 15h ≤ 300

B) 120 + 15h ≥ 300

C) 15h – 120 ≥ 300

D) 120 – 15h ≥ 300

Q2 — *Systems of Equations | KEY: Set up 2 equations. 'Twice' = ×2, 'more than' = +*

Two friends, Alex and Jordan, together have 54 stickers. Alex has 6 more than twice Jordan's amount. How many stickers does Jordan have?

A) 20

B) 22

C) 16

D) 18

Q3 — *Rate & Distance | KEY: D = R × T → T = D ÷ R*

A train travels 240 miles in 4 hours. At the same speed, how long will it take to travel 390 miles?

A) 5.5 hours

B) 6.5 hours

C) 7 hours

D) 6 hours

Q4 — *Percent Change | KEY: Apply SEQUENTIALLY — discount first, then tax on new price*

A jacket originally costs $80. It is marked down 25%, then the sale price is taxed an additional 10%. What is the final price?

A) $64.00

B) $68.00

C) $66.00

D) $72.00

Q5 — *Slope-Intercept | KEY: Flat fee = b (y-intercept), per unit = m (slope)*

A plumber charges a $45 flat fee plus $30 per hour. If the total bill was $165, for how many hours did the plumber work?

A) 3 hours

B) 4 hours

C) 5 hours

D) 3.5 hours

Q6 — *Proportions | KEY: Cross-multiply a/b = c/d → ad = bc*

A recipe calls for 3 cups of flour to make 24 cookies. How many cups of flour are needed to make 40 cookies?

A) 4 cups
B) 4.5 cups
C) 5 cups
D) 5.5 cups

Q7 — *Quadratics — Vertex | KEY: t = –b/(2a), then plug back in to find max/min*

A ball is thrown upward. Its height is $h(t) = –16t^2 + 32t + 6$ (feet). What is the maximum height of the ball?

A) 22 feet
B) 38 feet
C) 32 feet
D) 44 feet

Q8 — *Absolute Value Inequality | KEY: 'within d of c' → |x – c| ≤ d*

The temperature must stay within 5°F of 68°F to keep food safe. What is the range of safe temperatures?

A) 58°F to 73°F
B) 63°F to 73°F
C) 60°F to 75°F
D) 65°F to 70°F

Q9 — *Function Evaluation | KEY: (–3)² = 9, NOT –9. Negative squared = POSITIVE!*

A function $f(x) = 3x^2 – 2$. What is $f(–3)$?

A) –29
B) –11
C) 25
D) 29

Q10 — *Mixture Problem | KEY: (volume × %) + (volume × %) = (total volume × %)*

A chemist mixes 20 liters of a 30% acid solution with x liters of a 60% acid solution to get a 50% solution. What is x?

A) 30 liters
B) 35 liters
C) 40 liters
D) 50 liters

PART B — GEOMETRY (Questions G1–G10)

QG1 — *Pythagorean Theorem | KEY: a² + b² = c² (ladder/hypotenuse = c)*

A 13-foot ladder leans against a wall. The bottom is 5 feet from the wall. How high up the wall does the ladder reach?

A) 10 feet
B) 11 feet
C) 12 feet
D) 8 feet

QG2 — *Triangle Angles | KEY: All 3 angles of a triangle ALWAYS add to 180°*

Two angles of a triangle measure 47° and 68°. What is the measure of the third angle?

A) 55°
B) 60°
C) 65°
D) 75°

QG3 — *Circle Area | KEY: A = πr^2 (use RADIUS, not diameter!)*

A circular pizza has a diameter of 14 inches. What is the area? (Use $\pi \approx 3.14$.)

A) 43.96 in²
B) 615.44 in²
C) 153.86 in²
D) 196 in²

QG4 — *Parallel Lines | KEY: Co-interior = supplementary (sum 180°) / Alt. interior = equal*

Two parallel lines are cut by a transversal. One angle measures 112°. What is the co-interior (same-side interior) angle?

A) 112°
B) 78°
C) 68°
D) 45°

QG5 — *Cylinder Volume | KEY: V = $\pi r^2 h$ (area of circle × height)*

A cylindrical tank has a radius of 4 m and height of 10 m. What is its volume? (Use $\pi \approx 3.14$.)

A) 125.6 m³
B) 200.96 m³
C) 502.4 m³
D) 1004.8 m³

QG6 — *Similar Triangles | KEY: Perimeters scale by the SAME ratio as the sides*

Two similar triangles have sides in ratio 3:5. If the smaller triangle has a perimeter of 36 cm, what is the perimeter of the larger?

A) 50 cm
B) 60 cm
C) 45 cm
D) 72 cm

QG7 — *Composite Area | KEY: Add the parts. Semicircle = (πr^2)/2 (use radius = diameter/2)*

A shape is formed by a rectangle (6 m × 4 m) with a semicircle on top (diameter = 6 m). What is the total area? ($\pi \approx 3.14$)

A) 38.13 m²
B) 52.26 m²
C) 24 m²
D) 66.27 m²

QG8 — *Exterior Angle Theorem | KEY: Exterior angle = sum of the two NON-ADJACENT interior angles*

An exterior angle of a triangle measures 130°. The two non-adjacent interior angles are x and x + 20. What is x?

A) 60°
B) 55°
C) 50°
D) 65°

QG9 — *Surface Area — Rectangular Prism | KEY: SA = 2(lw + lh + wh)*

A box has length 5 cm, width 3 cm, and height 4 cm. How much wrapping paper is needed to cover the entire box?

A) 60 cm²
B) 71 cm²
C) 94 cm²
D) 120 cm²

QG10 — *Distance Formula | KEY: d = √[(x■–x■)² + (y■–y■)²] (Pythagorean theorem on a grid)*

Point A = (1, 2) and point B = (7, 10). What is the length of segment AB?

A) 8
B) 10
C) 12
D) 14

ANSWER KEY

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
B	**C**	**B**	**C**	**B**	**C**	**A**	**B**	**C**	**C**
QG1	**QG2**	**QG3**	**QG4**	**QG5**	**QG6**	**QG7**	**QG8**	**QG9**	**QG10**
C	**C**	**C**	**C**	**C**	**B**	**A**	**B**	**C**	**B**

Each question worth 1 point · Total: 20 points