

Math Core Worksheet

ALGEBRA 1 · GEOMETRY · 20 QUESTIONS

SECTION 1 — ALGEBRA 1

Linear Functions · Equations · Inequalities

Q1. [ALG]

Easy

Key: $SLOPE = (y_2 - y_1) / (x_2 - x_1)$

What is the slope of the line through (2, 5) and (6, 13)?

- A) 1 B) 2 C) 3 D) 4

Q2. [ALG]

Easy

Key: $y = mx + b \rightarrow b = y\text{-intercept}$ (where line crosses y-axis)

The line $y = -3x + 7$: what is the y-intercept?

- A) (0, -3) B) (0, 3) C) (0, 7) D) (7, 0)

Q3. [ALG]

Medium

Key: Standard form: isolate y to find slope. Dividing by negative \rightarrow FLIP sign.

What is the slope of the line $4x - 2y = 10$?

- A) -2 B) 2 C) -5 D) 5

Q4. [ALG]

Medium

Key: PERPENDICULAR: slopes are negative reciprocals. $m_1 \times m_2 = -1$

Line l has slope 3. What slope is perpendicular to l?

- A) 3 B) -3 C) 1/3 D) -1/3

Q5. [ALG]

Medium

Key: Point-slope form: $y - y_1 = m(x - x_1)$

Find the equation of a line with slope -2 through point (3, 1).

- A) $y = -2x + 5$ B) $y = -2x + 7$ C) $y = -2x - 5$ D) $y = 2x - 5$

Q6. [ALG]

Medium

Key: INEQUALITY: multiply/divide by NEGATIVE \rightarrow FLIP the inequality sign!

Solve: $-3x + 6 > 15$

- A) $x > -3$ B) $x < -3$ C) $x > 3$ D) $x < 3$

Q7. [ALG]

Hard

Key: SYSTEM: substitute one equation into the other

Solve $y = 3x - 1$ and $2x + y = 9$. What is x?

- A) $x = 1$ B) $x = 2$ C) $x = 3$ D) $x = 4$

Q8. [ALG]

Medium

Key: $>$ or $<$ \rightarrow DASHED line. \geq or \leq \rightarrow SOLID line. Shade the TRUE side.

Which describes the graph of $y \leq -x + 4$?

- A) Dashed, shaded above B) Solid, shaded above C) Dashed, shaded below D) Solid, shaded below

Q9. [ALG]

Hard

Key: LINEAR function -> CONSTANT rate of change (slope)

$x=0,y=2$; $x=3,y=8$; $x=6,y=14$. Is this linear? Rate of change?

- A) Not linear B) Linear, rate=3 C) Linear, rate=2 D) Linear, rate=6
-

Q10. [ALG]

Hard

Key: COMPOUND inequality AND -> both must be true at the same time

Which x satisfies BOTH: $x + 3 > 7$ AND $2x - 1 < 11$?

- A) $x = 3$ B) $x = 5$ C) $x = 6$ D) $x = 7$
-

SECTION 2 — GEOMETRY

Triangles · Polygons · Circles

Q11. [GEO]

Easy

Key: Triangle angles: always add to 180 degrees

A triangle has angles 47 deg and 83 deg. Find the third angle.

- A) 40 deg B) 50 deg C) 55 deg D) 60 deg
-

Q12. [GEO]

Easy

Key: Pythagorean Theorem: $a^2 + b^2 = c^2$ (c = hypotenuse, right triangles only!)

Right triangle with legs 5 and 12. Find the hypotenuse.

- A) 11 B) 13 C) 15 D) 17
-

Q13. [GEO]

Medium

Key: Interior angles of polygon = $(n - 2) \times 180$ deg

Find the sum of interior angles of a hexagon.

- A) 540 deg B) 720 deg C) 900 deg D) 1080 deg
-

Q14. [GEO]

Medium

Key: Circumference = $\pi \times d = 2 \times \pi \times r$. Don't confuse radius and diameter!

Circle with diameter 10 cm. Find circumference. ($\pi = 3.14$)

- A) 15.7 cm B) 31.4 cm C) 78.5 cm D) 62.8 cm
-

Q15. [GEO]

Medium

Key: ISOSCELES: 2 equal sides -> 2 equal BASE angles

Isosceles triangle, vertex angle = 50 deg. Each base angle = ?

- A) 55 deg B) 65 deg C) 75 deg D) 85 deg
-

Q16. [GEO]

Medium

Key: Area of triangle = $(1/2) \times \text{base} \times \text{height}$

Triangle: base = 14 cm, height = 9 cm. Find the area.

- A) 63 cm² B) 126 cm² C) 46 cm² D) 23 cm²
-

Q17. [GEO]

Hard

Key: EXTERIOR angle = sum of the 2 non-adjacent interior angles

Interior angles 35 deg and 65 deg. Find the exterior angle at the third vertex.

- A) 80 deg B) 90 deg C) 100 deg D) 110 deg
-

Q18. [GEO]

Medium

Key: Regular polygon interior angle = $(n-2) \times 180 / n$

Find each interior angle of a regular pentagon.

A) 100 deg

B) 108 deg

C) 120 deg

D) 135 deg

Q19. [GEO]

Hard

Key: Arc length = (central angle / 360) x 2 x pi x r

Sector: central angle 60 deg, radius 6. Find arc length. (pi = 3.14)

A) 3.14

B) 6.28

C) 9.42

D) 12.56

Q20. [GEO]

Hard

Key: SIMILAR figures: area ratio = (length ratio)²

Similar triangles, side ratio 1:3, smaller area = 8 cm². Larger area?

A) 24 cm²

B) 48 cm²

C) 72 cm²

D) 96 cm²

ANSWER KEY

Q	A	Q	A	Q	A	Q	A	Q	A
1	B	2	C	3	B	4	D	5	B
6	B	7	B	8	D	9	C	10	B
11	B	12	B	13	B	14	B	15	B
16	A	17	C	18	B	19	B	20	C