

Algebra & Geometry Practice Worksheet

Linear Functions · Equations · Inequalities · Triangles · Polygons · Circles

Name: _____ Date: _____ Score: _____ / 20

PART 1 — ALGEBRA: LINEAR FUNCTIONS, EQUATIONS & INEQUALITIES

MEMORY POINTS

Slope-Intercept: $y = mx + b$ | m = slope, b = y-intercept

Solving: Isolate the variable — do the same to BOTH sides

Inequality flip: Multiply/divide by NEGATIVE → flip sign

Parallel lines: Same slope | **Perpendicular:** slopes multiply to -1

1. What is the slope of the line $y = 3x - 5$?

A. -5	B. 3
C. $1/3$	D. -3

2. Solve for x : $2x + 7 = 15$

A. $x = 11$	B. $x = 3$
C. $x = 4$	D. $x = 7$

3. Which graph represents a line with slope -2 and y-intercept 4?

Hint: Negative slope = falls left to right.

A. Falls steeply, crosses y-axis at (0, 4)	B. Rises steeply, crosses y-axis at (0, 4)
C. Falls steeply, crosses y-axis at (0, -2)	D. Horizontal line at $y = 4$

4. Solve the inequality: $-3x > 12$

Hint: Dividing by a NEGATIVE flips the inequality sign!

A. $x > -4$	B. $x > 4$
C. $x < 4$	D. $x < -4$

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

Formula: $\text{slope} = (y_2 - y_1) / (x_2 - x_1)$

A. 4	B. 2
C. $1/2$	D. 8

6. Which value of x satisfies BOTH: $x > -1$ AND $x \leq 3$?

Both conditions must be true simultaneously.

A. $x = -2$	B. $x = -1$
C. $x = 0$	D. $x = 4$

7. What is the y-intercept of the line through (3, 7) with slope 2?

Use: $y - y_1 = m(x - x_1)$, then rewrite as $y = mx + b$.

A. $b = 1$	B. $b = 13$
C. $b = 5$	D. $b = -1$

8. Line 1 is $y = 4x + 1$. Which equation is parallel to Line 1?

Parallel = same slope, different intercept.

A. $y = -(1/4)x + 3$	B. $y = 4x + 1$
C. $y = 4x - 7$	D. $y = (1/4)x + 1$

9. $f(x) = -x + 6$. What is $f(-2)$?

Substitute $x = -2$. Watch the double negative!

A. 4	B. 8
C. -8	D. -4

10. An inequality is graphed with a DASHED line and shading ABOVE. Which is it?

Dashed = strict ($<$, $>$). Above = y is greater.

A. $y \leq 2x + 1$	B. $y < 2x + 1$
C. $y \geq 2x + 1$	D. $y > 2x + 1$

PART 2 — GEOMETRY: TRIANGLES, POLYGONS & CIRCLES

MEMORY POINTS

Triangle angles: Always sum to 180 deg

Pythagorean theorem: $a^2 + b^2 = c^2$ (c = hypotenuse, the longest side)

Polygon interior sum: $(n - 2) \times 180$ deg

Circle: $C = 2 \pi r$ | $A = \pi r^2$ | $\text{Arc} = (\text{theta}/360) \times 2 \pi r$

11. A triangle has angles 55 degrees and 80 degrees. What is the third angle?

A. 35 deg	B. 55 deg
C. 45 deg	D. 25 deg

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

Formula: $a^2 + b^2 = c^2$

A. 12	B. 10
C. 14	D. $\sqrt{28}$

13. What is the sum of interior angles of a hexagon (6 sides)?

Formula: $(n - 2) \times 180$ degrees

A. 540 deg	B. 900 deg
C. 720 deg	D. 1080 deg

14. A circle has radius 5. What is its circumference? ($\pi \sim 3.14$)

$C = 2 \pi r$ (don't confuse with $\text{area} = \pi r^2$)

A. ~ 31.4	B. ~ 78.5
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C. ~15.7	D. ~25
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15. Isosceles triangle ABC: AB = AC, angle A = 40 deg. Find angles B and C.

Isosceles: two base angles are equal.

A. B=40, C=100	B. B=C=70
C. B=C=80	D. B=50, C=90

16. An exterior angle of a triangle equals which of the following?

Exterior Angle Theorem.

A. The interior angle next to it	B. 180 minus all three angles
C. Sum of the two non-adjacent interior angles	D. Half the sum of all interior angles

17. Area of a circle with DIAMETER 10? (pi ~ 3.14)

Diameter = 2 x radius. Find r first!

A. ~314	B. ~78.5
C. ~31.4	D. ~157

18. Each interior angle of a regular polygon = 135 deg. How many sides?

Each angle = $(n-2) \times 180 / n$. Or: exterior angle = $180 - 135 = 45$, then $360/45$.

A. 6 sides	B. 7 sides
C. 8 sides	D. 10 sides

19. Two similar triangles: small has sides 3, 4, 5. Largest side of big = 15. Find shortest side.

Find the scale factor first.

A. 9	B. 6
C. 12	D. 7.5

20. Central angle 90 deg, radius 6. What is the arc length?

Arc = $(\theta / 360) \times 2 \pi r$

A. 2pi	B. 3pi
C. 9pi	D. 6pi

ANSWER KEY

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

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