

Geometry Summer Packet - Honors

Do work on separate paper – ALL WORK MUST BE SHOWN FOR CREDIT.

PART A:

1) Solve the following equations:

a) $3x + 61 = 2x + 13$

b) $18x - 16 = 19x - 15$

c) $-4x + 8 = -2x + 12$

2) Rewrite each expression in simplest radical form:

a) $\sqrt{50}$

b) $\sqrt{20}$

c) $\sqrt{144}$

d) $\sqrt{125}$

e) $\sqrt{32}$

3) Rationalize the denominator and simplify each expression:

a) $\frac{5}{\sqrt{3}}$

b) $\frac{4}{\sqrt{10}}$

c) $\frac{2}{\sqrt{7}}$

d) $\frac{\sqrt{7}}{\sqrt{3}}$

4) Graph each equation on graph paper. Rewrite the equation in slope-intercept form ($y=mx+b$) first if necessary.

a) $y = 2x + 1$

b) $y = -2x + 1$

c) $y = \frac{1}{3}x + 2$

d) $y = \frac{1}{3}x - 2$

e) $y + 4 = 2x$

f) $3y - 2x + 6 = 0$

g) $5y + 5x = 0$

- 5) Find the slope and derive the linear equation and (in slope-intercept form) of a line passing through points (3, - 2), and (9, 2).
- 6) Solve the following system of linear equations: $y = 7 - x$ and $2x - y = 8$
- 7) Factor and solve the following equations:
- $x^2 - 6x + 9 = 0$
 - $x^2 + 4x + 3 = 0$
 - $x^2 + 22x + 121 = 0$
 - $x^2 - 64 = 0$
 - $2x^2 - 12x + 18 = 0$
 - $x^2 - x = 0$
- 8) Solve the following equations:
- $x^2 = \frac{25}{16}$
 - $2x^2 = 98$
 - $2x^2 - 10 = 0$
 - $(x + 4)^2 = 6$
 - $\frac{12}{x} = \frac{x+10}{12}$

PART B:

Define the following terms and illustrate with a sketch:

Term	Definition	Sketch
Acute angle		
Right angle		
Obtuse Angle		

Straight Angle		
Complementary angle pair		
Supplementary angle pair		
Vertical angles		
Linear pair		
Opposite rays		

2. Use the Pythagorean Theorem to find the missing side of the given triangle:

a. Leg 1 = 5, Leg 2 = 12, Hypotenuse = ?

b. Leg 1 = 6, Hypotenuse = 10, Leg 2 = ?

3. Solve each equation using the Quadratic Formula.

a. $4x^2 + 11x - 20 = 0$

b. $x^2 = 2x + 48$

c. $x^2 + 5 = -5x$

d. $4x^2 - 1 = -8x$

4. Complete the following Algebraic Proofs. (See attached reference page for properties to use in the "Reasons" column.)

a. Given: $7y - 84 = 2y + 61$

Prove: $y = 29$

Statements	Reasons

b. Given: $4(5n + 7) - 3n = 3(4n - 9)$

Prove: $n = -11$

Statements	Reasons

Algebraic Properties of Equality

Let a , b , and c be real numbers.

Addition Property If $a = b$, then $a + c = b + c$.

Subtraction Property If $a = b$, then $a - c = b - c$.

Multiplication Property If $a = b$, then $ac = bc$.

Division Property If $a = b$ and $c \neq 0$, then $\frac{a}{c} = \frac{b}{c}$.

Substitution Property If $a = b$, then a can be substituted for b in any equation or expression.

Distributive Property

$a(b + c) = ab + ac$, where a , b , and c are real numbers.

Reflexive Property of Equality

Real Numbers For any real number a , $a = a$.

Symmetric Property of Equality

Real Numbers For any real numbers a and b , if $a = b$, then $b = a$.

Transitive Property of Equality

Real Numbers For any real numbers a , b , and c , if $a = b$ and $b = c$, then $a = c$.