

Algebra I NTI Packet

NTI Day 1: One-Step Equations

Solve each equation.

1) $p - 7 = -2$

2) $-5x = -45$

3) $8x = 32$

4) $p - 5 = -13$

5) $5 + x = 1$

6) $x + 7 = -1$

7) $5m = 10$

8) $n - 2 = 1$

9) $\frac{p}{6} = -10$

10) $v - 2 = 2$

11) $-4b = 40$

12) $n + 4 = 12$

13) $x + 5 = -1$

14) $n - 4 = 2$

15) $k - 9 = -14$

16) $-7m = -28$

17) $\frac{x}{9} = -7$

18) $x - 3 = 5$

19) $\frac{x}{7} = -6$

20) $p + 7 = 13$

NTI Day 2: Two-Step Equations

Solve each equation.

1) $-1 + 5x = 9$

2) $-3x + 1 = 22$

3) $5(1 + x) = -20$

4) $3 + \frac{x}{5} = 1$

5) $\frac{m}{10} - 5 = -4$

6) $\frac{n}{6} - 4 = -5$

7) $2(3 + a) = 24$

8) $2(1 + x) = 6$

9) $-5 + 5b = -55$

10) $3(-2 + v) = -27$

11) $\frac{p}{3} - 2 = 0$

12) $-3 - 3a = 21$

13) $-3 + \frac{b}{9} = -4$

14) $-4 - 4m = -44$

15) $-(-5 + k) = 13$

16) $3(-5 + r) = -30$

17) $4 + \frac{x}{2} = -1$

18) $\frac{n}{4} - 2 = -1$

19) $2(4 + x) = 14$

20) $4(n + 2) = -20$

NTI Day 3: Multi-step Equations

Solve each equation.

1) $-2p - 16 = 6 - 4p - 6$

2) $-6k - 7 = 2 - 8k + 8 - 1$

3) $-16 - 2r = r - 4$

4) $5x + 2 = 3x + 6 + 8$

5) $n - 6 = 6 + 3n$

6) $4a - 1 = -16 + 2a - a$

7) $-3x - 13 = 4x - 6$

8) $2 - 6x = 10 - 2x$

9) $k - 7 = k + 7 + 4k + 2$

10) $x + 5x = -5 + x$

11) $-7n - 2 - 5n = -8 + 2n - 8n$

12) $b - 8 + 2 = -16 - b$

13) $k + 7 = 6 + 7 - 2k + 3$

14) $-8r + r = 4 - 5r$

15) $14 + 2a = 6a + 3a$

16) $7p + 7 = 4 + 4p$

17) $-7n - 4n = -5 - 6n$

18) $5x - 5x = 5x + 3 - 7 - 16$

19) $14 - 3n = 2n - 1$

20) $8 - a - 4a = a - 4$

NTI Day 4: Finding the Slope

Find the slope of the line through each pair of points.

1) $(19, 13), (8, 10)$

2) $(-3, -14), (5, 3)$

3) $(1, -8), (-2, -19)$

4) $(-12, -3), (13, -20)$

5) $(17, 5), (14, 17)$

6) $(7, -5), (-18, 6)$

7) $(-10, 20), (-11, -10)$

8) $(-13, 12), (15, -18)$

9) $(-18, -20), (-10, -12)$

10) $(16, -10), (-8, 17)$

Find the slope of each line.

11) $y = -\frac{5}{3}x - 5$

12) $y = -2x$

13) $y = \frac{5}{3}x - 2$

14) $y = -\frac{8}{5}x + 4$

15) $y = 3x + 1$

16) $y = \frac{5}{2}x + 5$

17) $y = -x$

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

19) $y = -\frac{4}{3}x$

20) $y = -x + 3$

NTI Day 5: Slopes of Parallel and Perpendicular Lines

Find the slope of a line parallel to each given line.

1) $y = -2x - 4$

2) $y = -x + 3$

3) $y = x - 2$

4) $y = \frac{1}{5}x + 2$

5) $y = x - 5$

6) $5x - y = -5$

7) $2x + 3y = -9$

8) $y = -1$

9) $x + 3y = -6$

10) $2x - y = -5$

Find the slope of a line perpendicular to each given line.

11) $y = 2x + 5$

12) $y = \frac{5}{4}x - 4$

13) $y = \frac{1}{2}x + 5$

14) $y = -\frac{4}{3}x + 4$

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

16) $x - y = 4$

17) $x + 5y = 0$

18) $6x - 5y = -15$

19) $x - 3y = 12$

20) $8x + 5y = 15$

NTI Day 6: Writing Equations

Write the slope-intercept form of the equation of each line given the slope and y-intercept.

1) Slope = $-\frac{1}{4}$, y-intercept = -1

2) Slope = 1, y-intercept = -2

3) Slope = 7, y-intercept = 3

4) Slope = $-\frac{3}{5}$, y-intercept = 2

5) Slope = 0, y-intercept = 3

6) Slope = -3, y-intercept = 2

7) Slope = -3, y-intercept = -5

8) Slope = 0, y-intercept = -5

9) Slope = $\frac{1}{2}$, y-intercept = 0

10) Slope = $\frac{1}{2}$, y-intercept = 4

Write the slope-intercept form of the equation of the line through the given point with the given slope.

11) through: (3, 5), slope = $\frac{7}{3}$

12) through: (-4, -5), slope = $\frac{5}{2}$

13) through: (-5, 0), slope = $\frac{1}{5}$

14) through: (2, 3), slope = $\frac{5}{2}$

15) through: (4, 4), slope = $\frac{1}{4}$

16) through: (-2, -1), slope = -2

17) through: (2, -2), slope = $\frac{1}{2}$

18) through: (1, -1), slope = 1

19) through: (4, -5), slope = $-\frac{8}{5}$

20) through: (-1, 4), slope = -4

NTI Day 7: Writing Parallel and Perpendicular Equations

Write the slope-intercept form of the equation of the line described.

1) through $(-2, -1)$, parallel to $y = 3x + 4$

2) through: $(4, 1)$, parallel to $y = \frac{1}{4}x + 4$

3) through $(5, 2)$, parallel to $y = -\frac{1}{5}x + 4$

4) through: $(2, 5)$, parallel to $x = 0$

5) through $(-1, -1)$, parallel to $y = 4x$

6) through: $(3, -2)$, parallel to $y = -\frac{7}{5}x - 1$

7) through $(3, -2)$, parallel to $y = -\frac{5}{4}x + 3$

8) through: $(-3, 2)$, perp. to $y = -x - 1$

9) through $(2, 5)$, perp. to $y = -x - 1$

10) through: $(-1, -3)$, perp. to $y = \frac{1}{7}x + 5$

11) through $(4, 0)$, perp. to $y = -x$

12) through $(4, 4)$, perp. to $y = -\frac{2}{9}x - 2$

NTI Day 8: Adding & Subtracting Polynomials

Simplify each expression.

1) $(-14n^2 - 7 + 9n^4) - (-14 - 3n^2 + 9n^4)$

2) $(-6n^5 + 10n + 6n^3) - (2n - 5n^3 + 6n^5)$

3) $(12n^4 + 11n^5 + 7n) + (12n^5 + n + n^4)$

4) $(5p^3 + 4 + 5p^4) + (-14p^3 + 4 - 4p)$

5) $(6b^4 + b^2 + 13b) - (1 + 8b^4 - 9b^2)$

6) $(-10n^3 - 14n - 7n^2) + (-2 + 3n + 14n^3)$

7) $(2 - 5m^2 + 14m^3) - (11 - 7m^3 + 3m^2)$

8) $(-8x^5 + 13x^3 + 6x^4) + (6x^3 + 13x^5 - 12x^4)$

9) $(-6a - 9a^2 - 5a^3) - (-3a^2 - 10a^4 - 11a)$

10) $(13x^5 - 6 - 3x^4) - (-2x^5 + 2x^4 + 10)$

11) $(13x - 13x^4 - 10x^2) - (13x + 12x^2 + 4x^4)$

12) $(11 - 14x^4 - 8x) + (-x - x^3 - 1)$

NTI Day 9: Multiplying Polynomials

Find each product.

1) $(4x + 4)(2x - 7)$

2) $(6n + 2)(7n - 4)$

3) $(3n + 8)(8n + 5)$

4) $(2p + 3)(3p - 6)$

5) $(6r + 2)(8r + 5)$

6) $(8n - 1)(5n + 1)$

7) $(3x + 5)(6x - 1)$

8) $(b + 6)(6b - 1)$

9) $(3n - 1)(8n - 4)$

10) $(4r - 3)(4r - 4)$

11) $(5x + 4y)(3x + 6y)$

12) $(3a + 5b)(5a - 8b)$

13) $(7u + 6v)(6u + v)$

14) $(2m + 2n)(3m + 5n)$

15) $(3m + 2n)(2m + 7n)$

16) $(5m - 4)^2$

17) $(3x - 6)^2$

18) $(3x + 2)(3x - 2)$

19) $(2n + 5)(2n - 5)$

20) $(4 + 4p)^2$

NTI Day 10: Factoring

Factor the common factor out of each expression.

1) $12r^2 + 8$

2) $-40x^2y - 56x^2 + 72y + 48x$

3) $-28y^4 + 16y^2x^2 + 32y^3 + 4y^2x$

4) $-35p^3q^2 + 25p^3q^3r^2$

Factor each completely.

5) $b^2 - 9b$

6) $n^2 - n - 72$

7) $r^2 + 14r + 45$

8) $n^2 + 9n - 10$

9) $x^2 - 4x + 4$

10) $9a^2 - 25$

11) $k^2 + 10k + 25$

12) $16n^2 - 25$

13) $7m^3 + 21m^2 - 4m - 12$

14) $30n^3 - 5n^2 - 42n + 7$

15) $56a^3 - 49a^2 + 16a - 14$

16) $30r^3 + 6r^2 + 35r + 7$

Solve each equation by factoring.

17) $4x^2 + 33x + 8 = 0$

18) $5b^2 + 9b - 18 = 0$

19) $14x^2 + 49x - 343 = 0$

20) $15v^2 + 110v - 80 = 0$