MTH 161: Carney
Algebra Practice

Name: _____

For factoring practice or instructions, visit
https://tutorial.math.lamar.edu/classes/alg/factoring.aspx

1. Factor: $x^2 + 7x + 12$
2. Factor: $x^2 - 9x + 20$
3. Factor: $x^2 - 49$
4. Factor: $3x^2 + 5x - 12$
5. Factor: $x^2 + 2x - 35$
6. Factor: $4x^2 - 25$
7. Factor: $2x^2 + 7x + 3$
8. Factor: $x^2 - 16x + 64$
9. Factor: $x^3 - 8$
10. Factor: $x^3 + 27$
11. Factor: $6x^2 - 7x - 5$
12. Factor: $x^4 - 16$
13. Factor: $x^2 + 10x + 21$
14. Factor: $9x^2 - 6x + 1$
15. Factor: $12x^2 - 13x - 4$

For order of operations practice or instructions, visit https://www.khanacademy.org/math/cc-sixth-grade-math/x0267d782:cc-6th-exponents-and-order-of-operations/x0267d782:more-on-order-of-operations/e/evaluating-numerical-expressions-with-exponents

1. Simplify if possible: $\frac{6+8}{4}$
2. Simplify if possible: $\frac{3x+1}{7}$
3. Simplify if possible: $\frac{3(2x+5)}{6}$
4. Simplify if possible: $\frac{x}{x+5}$
5. Simplify if possible: $\frac{x^2+5x+3}{x-2}$
6. Simplify if possible: $\frac{12x-18}{6}$
7. Simplify if possible: $\frac{x+4}{x+2}$
8. Simplify if possible: $\frac{5x-2}{2x+5}$
9. Simplify if possible: $\frac{5x+10}{15}$
10. Simplify if possible: $\frac{x+3}{2x+3}$
11. Simplify if possible: $\frac{2x^2+1}{3x+4}$
12. Simplify if possible: $\frac{2x^2-8}{4}$
13. Simplify if possible: $\frac{7x^2+3x+8}{6}$
14. Simplify if possible: $\frac{x^2-9}{x-3}$
15. Simplify if possible: $\frac{(x+1)^2-1}{x+1}$

For distributing polynomials practice or instructions, visit https://www.khanacademy.org/math/get-ready-for-precalculus/x65c069afc012e9d0:get-ready-for-polynomials/x65c069afc012e9d0:multiplying-binomials-by-polynomials/e/multiplying_polynomials

1. Multiply: $(x+3)(x+5)$

2. Multiply: $(2x-1)(3x+4)$
3. Multiply: $(x+2)(x^2-x+1)$
4. Multiply: $(x-3)(x-3)$
5. Multiply: $3x(x^2+x+4)$
6. Multiply: $(x+4)(2x-4)$
7. Multiply: $(x+1)(x^2+3x+5)$
8. Multiply: $(2x-3)(x^2-2x+6)$
9. Multiply: $(x-5)(x+2)$
10. Multiply: $(x+3)^2$
11. Multiply: $(3x+2)(x-7)$
12. Multiply: $(x-1)(x^2+1)$
13. Multiply: $(2x^2+x+1)(x+3)$
14. Multiply: $(x+5)(x^2-4x+2)$
15. Multiply: $(3x-4)(3x+4)$

For practice or instructions on solving for x, visit https://www.khanacademy.org/math/get-ready-for-algebra-ii/x6e4201668896ef07:get-ready-for-equations/x6e4201668896ef07:solving-equations-with-variables-on-both-sides/e/linear_equations_3

1. Solve for x: $3x+7=25$
2. Solve for x: $\dfrac{2x+3}{5}=4$
3. Solve for x: $\dfrac{x+2}{x+5}=\dfrac{1}{2}$
4. Solve for x: $5(x-3)=2(x+1)$
5. Solve for x: $\dfrac{3x-1}{x-2}=4$

6. Solve for x: $(x+1)(x-3) = 10$
7. Solve for x: $\dfrac{x}{x+4} = 3$
8. Solve for x: $\dfrac{2x+5}{x-1} = 1$
9. Solve for x: $\dfrac{7}{x+2} = 3$
10. Solve for x: $x^2 - 9 = 0$
11. Solve for x: $\dfrac{x+4}{2x+3} = \dfrac{3}{5}$
12. Solve for x: $4(x-2)+3 = 2x$
13. Solve for x: $\dfrac{3}{x-1} + 2 = 5$
14. Solve for x: $\dfrac{x^2-4}{x+2} = 3$
15. Solve for x: $2x(x+1) = 3(x+1)$

For practice or instructions on finding intercepts, visit https://www.khanacademy.org/math/cc-eighth-grade-math/cc-8th-linear-equations-functions/8th-x-and-y-intercepts/e/solving_for_the_x-intercept

1. Find all intercepts of: $y = 3x + 6$
2. Find all intercepts of: $y = \dfrac{x+2}{x+5}$
3. Find all intercepts of: $y = (x-3)(x+1)$
4. Find all intercepts of: $y = \dfrac{x^2-9}{x-3}$
5. Find all intercepts of: $y = x^2 - 4x + 4$
6. Find all intercepts of: $y = \dfrac{3x-6}{2}$
7. Find all intercepts of: $y = \dfrac{x-1}{x+1}$
8. Find all intercepts of: $y = \dfrac{(x-2)(x+3)}{x-1}$

9. Find all intercepts of: $y = x^3 - x$
10. Find all intercepts of: $y = \dfrac{2x}{x^2 - 4}$
11. Find all intercepts of: $y = \dfrac{x^2 - 1}{x + 1}$
12. Find all intercepts of: $y = 5x - 10$
13. Find all intercepts of: $y = \dfrac{4}{x + 2}$
14. Find all intercepts of: $y = (x + 4)(x - 4)$
15. Find all intercepts of: $y = x + \dfrac{3}{x}$