# Final Exam Review
Topic Checklist

## Chapter 3:  Solve Linear Equations

☐ Can you solve one, two and multi-step equations? (3.1-3.3)

**Ex:** a)  $4 - x = -9$

b)  $\frac{2}{9}x = -4$

c) $4(x - 3) + 3 = 11$

☐ Can you solve equations with variables on both sides and interpret answers appropriately? (3.4)

**Ex:** a)  $2(x + 6) = 3(x + 4)$

b)  $4(x - 5) = 2(x + 3)$

c)  $6(3x + 6) = 9(2x + 4)$

d)  $4(3x + 4) = 6(2x + 5)$

☐ Can you set up and solve proportions?  (3.5-3.6)

**Ex:**  $\frac{2}{2x+1} = \frac{4}{6x+1}$

☐ Can you solve percent problems?  (3.7)

**Ex:** 30 is 45% of what number?

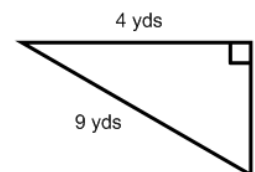☐ Can you rewrite equations in function form?  (3.8)?

**Ex:** $4x - 5y = 20$

☐ Can you solve literal equations?  (3.8) (ACC only)

**Ex:**  $P = 2l + 2w$, solve for $l$

☐ Can you solve problems involving the Pythagorean Theorem, including a)  finding missing lengths or b) deciding if three sides can form a right triangle?  (11.4)

**Ex:**
a)



4 yds

9 yds

b)  13, 12, 5

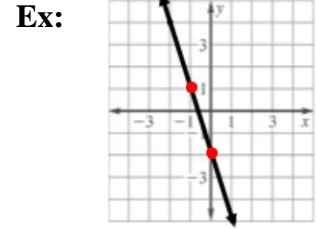☐ Can you perform operations with radicals?  (11.2)

**Ex:** a)  $3\sqrt{32}$

b)  $\sqrt{\frac{24}{7}}$

c)  $2\sqrt{7} + 3\sqrt{63}$

d) $\sqrt{3}\left(2 + \sqrt{12}\right)$

e) $\left(\sqrt{7} + \sqrt{2}\right)\left(\sqrt{7} - 3\sqrt{2}\right)$

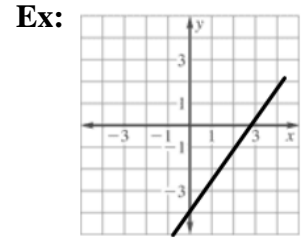☐ Can you find the slope of a graphed line? (4.4)

**Ex:**

☐ Can you find the slope of a line given two points? Including identifying different types of slopes (i.e. positive, negative, zero or undefined)? (4.4)

**Ex:** a) (20, 5), (10, 1)

b) (−3, 2), (−3, 7)

c) (4, 5), (8, 5)

☐ Can you identify $x$ and $y$ intercepts given a graph? (4.3)
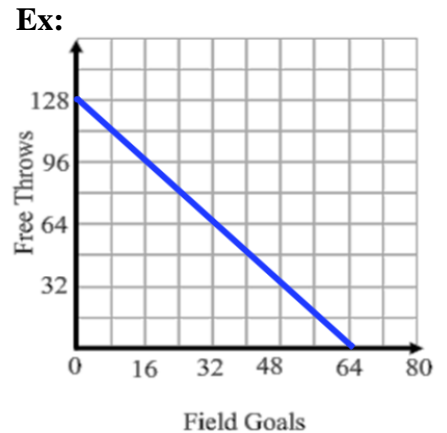
**Ex:**

☐ Can you find $x$ and $y$ intercepts given an equation? (4.3)

**Ex:** $2x - 5y = -10$

☐ Can you graph using $x$ and $y$ intercepts? (4.3)

**Ex:** Graph $7x + 2y = 14$

☐ Can you identify possible combinations of a real-world situation given a graph? (4.3)

**Ex:**

□ Can you graph a line using slope-intercept form?  (4.5)

**Ex:** Graph $y = -\frac{2}{3}x + 1$

□ Can you evaluate functions using function notation?  (4.7)

**Ex:** a) If $f(x) = 2x - 3$,
evaluate when $x = 4$.

b) Find $x$ when $f(x) = 6$ (use the same function above)

□ Can you write equations in slope-intercept form?  (5.1-5.2)

**Ex:** a) $m = 7\ b = -3$

b) Passes through $(0, 5)$ and $m = 4$

c) $(6, 3)$ slope: $-2$

d) $(-2, 5)\ (2, -1)$

□ Can you write equations in slope-intercept form of parallel and perpendicular lines?  (5.5)

**Ex:** passes through $(-3, -5)$ $||$ to $y = 3x - 1$

**Ex:** passes through $(4, -2) \perp y - 4x = 2$

□ Can you decide if two lines are parallel or perpendicular given their equations?  (5.5)

**Ex: Line A:** $y = -3x + 1$          **Line B:** $-x + 3y = 1$          **Line C:** $2x - 6y = 4$

□ Can you write equations in standard form with a variety of information. (5.6)

**Ex:** a)  passes through $(2, 2)\ (4, -2)$          b) $Ax + 3y = 2$, passes through $(-1, 0)$

□ Can you solve and graph inequalities on a number line?  (6.1-6.3)

**Ex:** Solve and graph:
$-2x + 1 \geq 5$

□ Can you identify if an inequality has "no solution" or "all real numbers?" (6.3)

**Ex:** a) $3(2x - 4) > 6x + 8$

b) $4(4x - 9) \leq 8(2x - 2)$

□ Can you graph inequalities in the coordinate plane and identify solutions?  (6.7)

**Ex:** Graph: $y > -3x + 2$

□ Can you decide if an ordered pair is a solution to a linear system? (7.1)

**Ex:** Is $(-3, 1)$ a solution to:
$x + y = -2$
$x + 5y = 2$

□ Can you solve a system of equations by graphing?  (7.1)

**Ex:** $-x + y = -7$
$x + 4y = -8$

☐ Can you solve a system of equations by substitution? (7.2)

**Ex:** $4x + 6y = 4$
$x - 2y = -6$

☐ Can you solve a system of equations by elimination a variable? (7.3-7.4)

**Ex:** a) $4x + 3y = 2$
$5x + 3y = -2$

b) $6x + 5y = 19$
$2x + 3y = 5$

☐ Can you decide if a system of equations has "one solution," "no solution," or "infinitely many solutions." (7.5)

**Ex:** a) $3x + 2y = 10$
$3x + 2y = 2$

b) $y = 2x - 4$
$-6x + 3y = -12$

☐ Can you graph a system of inequalities in the coordinate plane and identify solutions? (7.6)

**Ex:** $y < 3x$
$y \geq -2x + 1$

☐ Can you simplify expressions involving positive, negative and zero exponents? (8.1-8.3)

**Ex:** a) $\dfrac{(2x)^{-2} y^5}{-4x^2 y^2}$

b) $\dfrac{4x^{-2} y^4}{8xy^6}$

c) $(3x^{-2} y^2)^3$

☐ Can you write expressions in scientific notation? (8.4)

**Ex:** 267,500,000

☐ Can you multiply and divide expressions in scientific notation? (8.4)

**Ex:**
a) $(5.7 \times 10^3)(2.6 \times 10^4)$

b) $\dfrac{1.2 \times 10^4}{1.6 \times 10^{-3}}$

☐ Can you add/subtract/multiply polynomials? (9.1-9.3)

**Ex:**
a) $(2x^3 - 5x^2 + x) + (2x^2 + x^3 - 1)$

b) $(4x^2 - 3x + 5) - (3x^2 - x - 8)$

c) $(4n - 1)(n + 5)$

□ Can you factor and solve polynomials using the GCF? (9.4)      **Ex:** a) $14y^2 + 21y$

b) $3x^2 + 18x = 0$

□ Can you factor and solve quadratics when $a = 1$? (9.5)      **Ex:** a) $x^2 + 11x + 18$

b) $n^2 - 6n + 8$

c) $w^2 + 6w - 16 = 0$

□ Can you factor and solve quadratics when $a$ is not 1? (9.6)      **Ex:** a) $2x^2 - 7x + 3$

b) $3n^2 + 14n - 5 = 0$

ACC only - c) $-4x^2 + 12x + 7$

□ Can you factor the difference of two squares? (9.7)      **Ex:** a) $25m^2 - 16$

b) $12 - 48m^2 = 0$

**Accelerated only:**

□ Can you factor a 4-term polynomial? (9.8)      **Ex:** $x^3 + 3x^2 + 5x + 15$

□ Can you sketch a quadratic equation based on its characteristics? (10.1)      **Ex:** $y = -5x^2 + 1$

□ Can you graph a quadratic equation by findings its axis of symmetry and vertex? (10.2)      **Ex:** $y = 3x^2 - 6x + 2$

□ Can you identify the maximum and minimum of a quadratic equation? (10.2)      **Ex:** $y = -3x^2 - 12x + 10$

□ Can you solve a quadratic equation by graphing? (10.3)      **Ex:** $x^2 - 2x = 3$

□ Can you solve a quadratic equation by using the square roots method? (10.4)      **Ex:** a) $2p^2 - 7 = 2$

b) $3(t + 5)^2 = 24$

□ Can you solve a quadratic equation by using the quadratic formula? (10.6)      **Ex:** $3x^2 + 5x - 8 = 0$

□ Can you identify the number of solutions to a quadratic equation *without solving*? (10.7)      **Ex:** $3x^2 + 8x + 7 = 0$