

Pre-Requisites

This section covers the skills that a MAC1140 student is expected to be **fluent** in.

An introductory MAC1140 student should be fluent in the skills necessary to correctly answer all of the following problems. In particular, this page should take less than 35 minutes to finish, from the time a student begins the problems. If you find you are struggling to complete these problems (either at all, or in time), you should **strongly** consider dropping back to MAC1105 to review these skills and problem types before taking this course. A student that cannot complete this page with 100% accuracy within 35 minutes has a very low chance of getting an acceptable grade in MAC1140.

Problem 1 Perform the following operations **without using a calculator**.

- $17 + 21 = \boxed{38}$
- $213 + 389 = \boxed{602}$
- $17 \times 3 = \boxed{51}$
- $22 \times 34 = \boxed{748}$
- $98 \div 7 = \boxed{14}$
- $252 \div 6 = \boxed{42}$
- $\frac{33}{5} + \frac{12}{5} = \boxed{9}$
- $\frac{22}{3} + \frac{12}{7} = \boxed{\frac{190}{21}}$
- $13 \cdot \frac{13}{7} = \boxed{\frac{169}{7}}$
- $\frac{12}{5} \div \frac{5}{6} = \boxed{\frac{72}{25}}$
- $3(2 + 7) - 9 = \boxed{18}$
- $3 - 2(5 - 1) + 1 = \boxed{-4}$
- $12 + 2 \cdot 3 - 12 \div 4 = \boxed{15}$

Problem 2 Solve the following equations for the specified variable.

- Solve for x : $3x + 2y = 17$. Then $x = \boxed{\frac{17 - 2y}{3}}$.
- Solve for a : $13a + 3(2a - 7b) + 10b = 2a$. Then $a = \boxed{\frac{11b}{17}}$
- Solve for r : $-4(3 - q) + 12r = 13(q + 1)$: Then $r = \boxed{\frac{9q + 25}{12}}$
- Solve for d : $3a - 21b - 3(b + c + d) = 12$: Then $d = \boxed{a - 8b - c - 4}$

Learning outcomes:

Problem 3 For the following problems, expand everything fully, then enter in the resulting coefficients in front of each variable. For example:

$$(x + y)(3x + 22) = 3x^2 + 3xy + 22x + 22y = (3) \cdot x^2 + (3) \cdot xy + (22) \cdot x + (22) \cdot y$$

- $3(x + 7) = \boxed{3} \cdot x + \boxed{21}$
- $-2(12x - 3y) = \boxed{-24} \cdot x + \boxed{6} \cdot y$
- $(2 - x)(3 + y) = \boxed{-1} \cdot xy + \boxed{-3} \cdot x + \boxed{2} \cdot y + \boxed{6}$

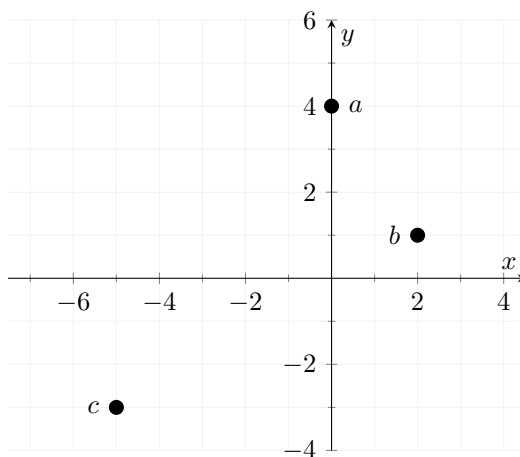
Problem 4 For the following problems, select the correct interval notation options to reflect the written expression.

- “All real numbers strictly between 3 and 7.” $((3 \checkmark / [3 / (7 / [7], (3) / 3] / 7) \checkmark / 7])$.
- “Real numbers that are, at most, seven.” $((-\infty \checkmark / [-\infty / (\infty / [\infty / (7 / [7 / (-7 / [-7], (-\infty) / -\infty] / \infty) / \infty] / 7) / 7] \checkmark / -7) / -7])$.

Problem 5 Consider the fraction $\frac{3}{7}$.

What is the Numerator? $\boxed{3}$. What is the Denominator? $\boxed{7}$.

Problem 6 Consider the following graph:



- What are the coordinates of a ? $(\boxed{0}, \boxed{4})$
- What are the coordinates of b ? $(\boxed{2}, \boxed{1})$
- What are the coordinates of c ? $(\boxed{-5}, \boxed{-3})$