

Placement Guide for Math 107: Intermediate Algebra

What is Math 107? Math 107 is a course designed to build your algebra skills to prepare you to succeed in Math 137 (College Algebra).

Who should take Math 107? You should take Math 107 if your major will require that you take Math 137 but you are not yet eligible or ready for Math 137. Note that if your major will require Calculus (Math 130 or Math 150) or precalculus (Math 138) then you will first need Math 137.

Who should *not* take Math 107? You should not take Math 107 if your academic plans do not eventually require Math 137 (or Math 130, 138, or Math 150). If you are only taking a math class to fulfill your General Education requirements, then you should take Math 114 or Math 117 instead. See the Placement Guides for those courses and/or consult with an Academic Counselor.

Am I ready for Math 107? What are my options? On the next page you will find some problems to help you assess your readiness for Math 107. Depending on your comfort level with these problems, you have two options:

- **Enroll in Math 107:** Choose this option if you can confidently solve most of the problems on the next page.
- **Enroll in Math 95 (Elementary Algebra) *and/or* Math 74 (Pre-Algebra refresher, a 1-unit self-paced online course):** Choose this option if you are uncomfortable with a lot of the skills required to solve these problems.

Problems to help you assess your readiness for Math 107

Note: You do not necessarily need to try to work through all these problems to completion. It may be enough to read through the problems and their solutions to get a feel for whether you are ready for Math 107 or if you would be better off starting with Math 95 or Math 74.

Do *not* use a calculator for any of these problems.

1. Evaluate the following expressions.

(a) $5 - (-3)$ (b) $\frac{24}{-6}$ (c) $\frac{5}{6} - \frac{3}{4}$ (d) $\frac{2}{5} \div \left(-\frac{1}{3}\right)$ (e) $\sqrt{16}$ (f) $(-2)^3$

2. Evaluate $4 - 3(5 - 2)^2$.

3. If $x = 3$ and $y = -2$, evaluate $\frac{2 - x^2}{3xy}$

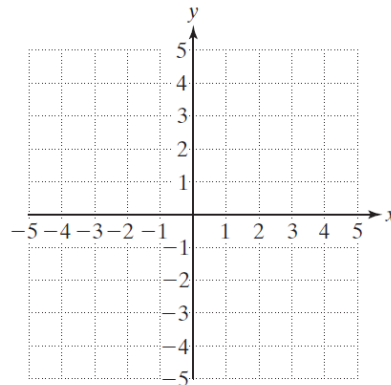
4. Clear parentheses and combine like terms for the expression $2(x^2 + 5x - 6) - 3(x^2 - 3x + 4)$.

5. Solve the equation for x :

(a) $-7 = 6x + 5$ (b) $\frac{x-3}{5} = 2$ (c) $1 = \frac{1}{4} + \frac{1}{8} + \frac{1}{2} + x$ (d) $3x - 5 = 7x + 2$

6. Fill in the table of values for the relation $y = 2x - 1$ and then graph the line.

x	y
-1	
2	
	-1



Solutions

1.

$$(a) 5 - (-3) = 5 + 3 = \boxed{8} \quad (b) \frac{24}{-6} = \boxed{-4} \quad (c) \frac{5}{6} - \frac{3}{4} = \frac{5}{6} \cdot \frac{2}{2} - \frac{3}{4} \cdot \frac{3}{3} = \frac{10}{12} - \frac{9}{12} = \boxed{\frac{1}{12}}$$

$$(d) \frac{2}{5} \div \left(-\frac{1}{3}\right) = \frac{2}{5} \cdot \left(-\frac{3}{1}\right) = \boxed{-\frac{6}{5}} \quad (e) \sqrt{16} = \boxed{4} \quad (f) (-2)^3 = (-2)(-2)(-2) = \boxed{-8}$$

$$2. 4 - 3(5 - 2)^2 = 4 - 3(3)^2 = 4 - 3 \cdot 9 = 4 - 27 = \boxed{-23}$$

$$3. \frac{2 - x^2}{3xy} = \frac{2 - 3^2}{3(3)(-2)} = \frac{2 - 9}{-18} = \frac{-7}{-18} = \boxed{\frac{7}{18}}$$

$$4. 2(x^2 + 5x - 6) - 3(x^2 - 3x + 4) = 2x^2 + 10x - 12 - 3x^2 + 9x - 12 = \boxed{-x^2 + 19x - 24}$$

$$\begin{aligned} 5. (a) \quad -7 &= 6x + 5 \\ -7 - 5 &= 6x + 5 - 7 \\ -12 &= 6x \\ \frac{-12}{6} &= \frac{6x}{6} \\ \boxed{x = -2} \end{aligned}$$

$$\begin{aligned} (b) \quad \frac{x-3}{5} &= 2 \\ 5\left(\frac{x-3}{5}\right) &= 5(2) \\ x-3 &= 10 \\ \boxed{x = 13} \end{aligned}$$

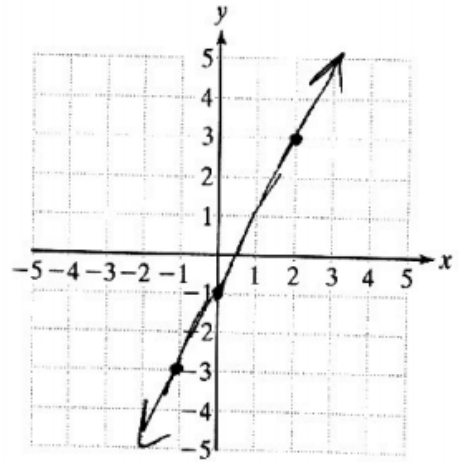
$$\begin{aligned} (c) \quad 1 &= \frac{1}{4} + \frac{1}{8} + \frac{1}{2} + x \\ 8(1) &= 8\left(\frac{1}{4} + \frac{1}{8} + \frac{1}{2} + x\right) \\ 8 &= 2 + 1 + 4 + 8x \\ 8 &= 7 + 8x \\ 1 &= 8x \\ \boxed{x = \frac{1}{8}} \end{aligned}$$

$$\begin{aligned} (d) \quad 3x - 5 &= 7x + 2 \\ 3x - 5 - 7x &= 7x + 2 - 7x \\ -4x - 5 &= 2 \\ -4x - 5 + 5 &= 2 + 5 \\ -4x &= 7 \\ \frac{-4x}{-4} &= \frac{7}{-4} \\ \boxed{x = -\frac{7}{4}} \end{aligned}$$

6.

x	y
-1	-3
2	3
0	-1

$$y = 2(-1) - 1 = -2 - 1 = \boxed{-3}$$
$$y = 2(2) - 1 = 4 - 1 = \boxed{3}$$
$$-1 = 2x - 1$$
$$+1 \quad +1$$
$$0 = 2x$$
$$x = \frac{0}{2} = \boxed{0}$$



After reading through the solutions, which of the following most closely describes you?

A. I am quite comfortable with all or almost all of these skills.

B. I am uncomfortable or unfamiliar with a lot of these skills.

If you chose **A** then you should **Enroll in Math 107**.

If you chose **B** then you should **Enroll in Math 95** (Elementary Algebra) and/or **Enroll in Math 74** (Pre-Algebra refresher)