MATH 081 - Basic Mathematical Skills (2 cr)

Course Topics

- Operations with integers
- Operations with fractions
- Operations with decimals
- Solving basic linear equations
- Using percentages and ratios
- Basic Geometry
- Unit Conversion (Customary and Metric)

Course Grade

This course's grade will appear on your transcript, but it will not be calculated into your GPA. It also does not count as college credit and can not satisfy general education, major, or minor requirements.

Course Placement

An ACT math sub-score of 16 and below or an SAT math sub score of 440 and below will place you into this course.

Sample Problems

1. Write $\frac{1}{6}$ as a decimal.
2. Evaluate: $-(-1)^{10}$
3. Determine whether 3 is a solution of the equation $5x + 2 = 40$.
4. Simplify the fraction $\frac{-13}{0}$ to its simplest form.
5. If Harry earned $370 in 5 weeks, find the unit rate of his earnings.
6. A gold and diamond bracelet sells for $1200. Find the sales tax and the total price if the sales tax rate is 3.5%.
7. 8.4 is what percent of 20?
8. $\frac{3}{14} - \frac{3}{7}$
9. $\left(-\frac{2}{3}\right)^3 \div 2$
10. Simplify $\sqrt{\frac{25}{64}}$
11. Solve: $-15x - 20 = -14x + 55$
12. Solve: $-28 - 33 = \frac{x}{7}$

MATH 082 - Beginning Algebra (4 cr)

Course Topics

- Operations with fractions
- Order of operations
- Simplifying expressions
- Solving and applying linear equations/inequalities
- Graphing and finding the equation of lines on the $x - y$ plane
- Solving and applying systems of linear equations
- Properties and connections of exponents and radicals
- Polynomial operations, including factoring
- Operations with rational expressions
- Solving and applying quadratic equations

Course Grade

This course's grade will appear on your transcript, but it will not be calculated into your GPA. It also does not count as college credit and can not satisfy general education, major, or minor requirements.

Course Placement

An ACT math sub-score of 17-20 or an SAT math sub score of 450-510 will place you into this course.

Sample Problems

1. Simplify the expression: $2y^2 - 5y + 13 - 13y^2 + 4y - 3$
2. Evaluate for $t = -1$: $\dfrac{2t^3 - 8}{t^2 + 5}$
3. Write the slope-intercept form of the line passing through the points $(2, 3)$ and $(6, 4)$.
4. Solve $(x - 2)(x + 1) = 28$
5. Solve: $\dfrac{7}{3}x - \dfrac{x + 2}{x} = \dfrac{3}{7}$
6. Solve the system of linear equations:
$$\begin{cases} x + 4y = 18 \\ 3x - y = -24 \end{cases}$$
7. Factor: $3x^2 + 13x + 14$
8. Factor: $8x^2 - 3y + 8xy - 3x$
9. Simplify: $\frac{18x^{-4}(y^3)^2z^5}{6x^3y^0z^2w^{-1}}$
10. Perform the operation and simplify: $\frac{a^2+5a-14}{a+3} \div \frac{a-2}{a^2+2a-3}$
11. $4\sqrt{18} - \sqrt{72} + 3\sqrt{63}$
12. A chemist needs 5 liters of a 12% acid solution. He has a 10% solution and a 20% solution available to form the mixture. How much of each should be used to form the 12% solution.

MATH 090 - Numerical Literacy (4 cr)

Course Topics

- Number systems
- Operations
- Inequalities
- Fractions and decimals
- Percentages and ratios
- Functions and graphs
- Linear equations
- Number sense
- Problem solving skills
- Application problems

Course Grade

You should only take this course if you are sure that you are not going to do any STEM or Business major. Some examples include Engineering, Biology, Chemistry, Accounting, Management, and Marketing. Talk to an advisor extensively before choosing this course.

This course's grade will appear on your transcript, but it will not be calculated into your GPA. It also does not count as college credit and can not satisfy general education, major, or minor requirements.

Course Placement

An ACT math sub-score of 17-20 or an SAT math sub score of 450-510 will place you into this course.

Sample Problems

1. Write the inequality in interval notation $-9 \leq x < 8$
2. Evaluate $\sum_{n=1}^{3} \frac{2}{3} n^3$
3. Write $\frac{7}{5}$ as a decimal and as a percent.
4. Perform the following operation $\frac{3}{4} - \frac{1}{3}$
5. Solve the following equation $5\,(x-3) = 2\,(3x+4)$
6. Find the x and y intercepts of the following line $3x - 5y = 25$
7. Find the equation of the line containing the points $(-1, 3)$ and $(2, 4)$.
8. Write the statement below in math terms

   "30 is the quotient of 4 times a number and 3"
9. 34 is 20% of what number?
10. At a particular university there are 2 math students for every 3 business students. How many math students are enrolled when there are 18 business students enrolled?
11. Matt bought a TV with the purchase price of $213. If the sales tax is $14.91, what is the sales tax rate?
12. Simplify so that your answer only has positive exponents $\left(\frac{x^{-2}y^3}{2}\right)^{-3}$

MATH 103 - Intermediate Algebra (4 cr)

Course Topics

- Solving and applying linear equations and inequalities
- Solving absolute value equations and inequalities
- Graphing and finding the equation of lines
- Solving and applying systems of equations
- Properties and operations with exponents and radicals
- Solving equations with radicals
- Factoring polynomials
- Operations with rational expressions
- Solving rational equations
- Solving quadratic equations by completing the square and the quadratic formula
- Solving rational and polynomial inequalities
- Operations and compositions with functions
- Operations with complex numbers
- Finding the inverse of functions
- Basics of exponential and logarithmic functions

Course Grade

This course's grade will appear on your transcript and it will be calculated into your GPA. It does count as college credit but it does not satisfy general education requirements.

Course Placement

An ACT math sub-score of 21-22 or an SAT math sub score of 520-530 will place you into this course.

Sample Problems

1. Factor: $x^3 - 8$
2. Simplify: $\sqrt[3]{16a^5b^6c^3}$
3. Solve: $|6 - 3x| + 2 = 12$
4. Solve: $\sqrt{1 + 2x} = x - 7$
5. Solve: $\log_4(5x + 2) + 6 = 8$
6. Graph the solution on the real number line: $x^2 + 7x + 12 > 0$
7. Solve the system of equations:

$$\begin{cases} 3x + y + z = 14 \\ 4x - 2y - z = 24 \\ 3x + 5y + z = 2 \end{cases}$$

8. Write the equation of the parabola in standard form: $y = a(x - h)^2 + k$ for $y = 2x^2 - 20x + 7$
9. Given $f(x) = x - 6$ and $g(x) = x^2 - 5$, find and simplify $(g \circ f)(x)$.
10. Sketch the graph of $f(x) = 4^x - 3$. (Be sure to graph the asymptote.)
11. Simplify the complex fraction: $\dfrac{\frac{5}{x-2}}{\frac{2}{x} + \frac{3}{x-2}}$
12. Solve the equation. Give the exact answer and round the solution to 3 decimal places: $e^{3t-1} = 2.5$

MATH 138 - College Algebra (4 cr)

Course Topics

- Equations
- Inequalities
- Functions and their transformations
- Graphs of functions
- Rational and complex zeros of polynomials
- Graphs of polynomials
- Asymptotes and holes of rational functions
- Graphs of rational functions
- Radical functions and their graphs
- Systems of equations and inequalities
- Operations with matrices
- Gauss-Jordan elimination to solve systems of equations
- Find the inverse of matrices

Course Grade

This course's grade will appear on your transcript and it will be calculated into your GPA. It does count as college credit and does satisfy general education requirement.

Course Placement

An ACT math sub-score of 23-25 or an SAT math sub score of 540-600 will place you into this course.

Sample Problems

1. Does $5x^2 + y = 5$ represent x as a function of y?
2. Describe the transformations occurring in $g(x) = -\frac{1}{2}|-(x-5)| + 2$
3. Write an equation of the line parallel to $y = -3x + 3$ and passing through the point $(1, -2)$
4. Sketch a graph of $f(x) = \begin{cases} x + 7; & \text{if } x \leq -3 \\ -\frac{3}{2}x + 4; & \text{if } x > 4 \end{cases}$
5. Solve in interval notation $|-3 - 7x| \geq x + 4$
6. Graph $g(x) = |x^2 + 2x - 8|$.
7. List the possible rational zeros of $f(x) = 2x^3 - x^2 - 3x + 7$.
8. Find a degree 3 polynomial with real coefficients having zeros 3 and 2-2i.
9. Graph the following function $f(x) = \frac{x^2 + 2x - 8}{x - 1}$
10. Solve using interval notation: $\frac{x}{2} \geq \frac{7}{x+1} + 2$.
11. Given $A = \begin{bmatrix} 1 & 2 \\ 3 & 4 \end{bmatrix}$ and $B = \begin{bmatrix} -3 & 2 \\ -5 & 0 \end{bmatrix}$ calculate AB.
12. Solve the following system of equations using Gauss-Jordan elimination with the augmented matrix $\begin{cases} 2x - 3y + z = -1 \\ 4x - 4y + 4z = -13 \\ 6x - 5y + 7z = -25 \end{cases}$

MATH 140 - Precalculus (4 cr)

Course Topics

- Function operations including composition
- Finding inverse functions
- Exponential and logarithmic functions
- Conic sections
- Sequences and series
- The basics of trigonometric functions
- Trigonometric identities
- Solving trigonometry equations
- Inverse trigonometric functions
- Applications of trigonometry
- Vectors
- Polar coordinates and graphs
- Polar form of complex numbers
- Parametric equations

Course Grade

This course's grade will appear on your transcript and it will be calculated into your GPA. It does count as college credit and does satisfy general education requirement.

Course Placement

An ACT math sub-score of 26-27 or an SAT math sub score of 610-650 will place you into this course.

Sample Problems

1. Graph $f(x) = \log_2\left(\frac{1}{4}x + \frac{3}{4}\right) + 1$
2. Show that $f(x) = 5(x+2)^3 - 7$ is one-to-one.
3. Solve using interval notation $\log_3(2x-5) < 0$
4. Put the equation in standard form and graph it $16x^2 + 36y^2 - 32x + 216y - 236 = 0$
5. Find the equation of a hyperbola with vertices of $(12, 0)$ and $(-12, 0)$ and one of it asymptotes is $y = \frac{1}{3}x$.
6. Find an explicit formula for the n^{th} term in the given sequence $1, -\frac{1}{2}, \frac{1}{4}, -\frac{1}{8}, \ldots$
7. If $\cos(\theta) = \frac{1}{8}$ and θ is in quadrant II, find the other five trigonometric functions of θ.
8. Solve: $\sin(t) = \frac{\sqrt{3}}{2}$
9. Graph: $f(x) = -\sin\left(2(x - \frac{\pi}{3})\right)$
10. Verify the identity: $\sec x - \cos x = \tan x \sin x$
11. Find the exact value of $\arccos\left(\cos\left(-\frac{7}{8}\pi\right)\right)$
12. Given $\vec{v} = \langle -2, 1\rangle$ and $\vec{w} = \langle 3, 6\rangle$ compute their dot product and find the angle between them.