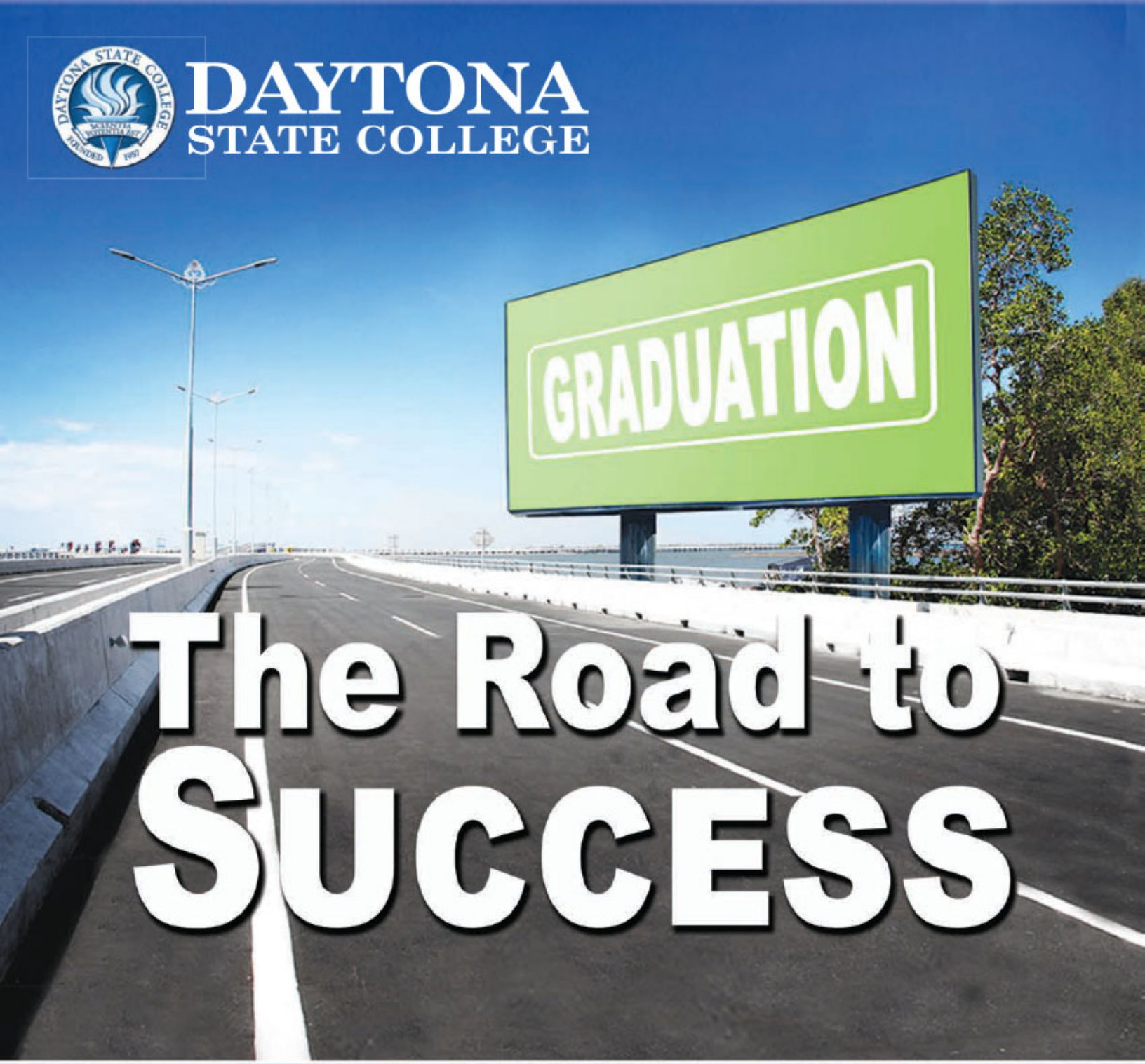
DAYTONA STATE COLLEGE



The Road to SUCCESS

SCHOOL OF MATHEMATICS

Math Pathway Guide

Use this guide to help you choose the correct math courses for your major.

Math Pathway Video

What is a Mathematics Pathway Guide?

The Math Pathway Guide encourage students to enroll in and complete gateway, college-level courses in their first academic year by providing options that are relevant to a student's program of study. Too many of our students are guided into College Algebra – a course that is inappropriate for non-STEM students. Conversely, effective Math Pathways enroll students in courses such as Survey in Mathematics or Liberal Arts Mathematics which satisfy program requirements of the chosen program of study. Undecided students should be guided into a gateway math course associated with a meta-major like business, social sciences or STEM in order to keep them on track.

The research is clear; simply increasing the number and percent of students who complete a college-level math course in their first year adds needed momentum and improves students' chances of graduating. Our goal is this Math Pathway Guide will enable students to enroll in mathematics courses that are aligned and relevant to their chosen program of study.

Who is the Pathway Guide for?

The mathematics pathway is a collection or sequence of mathematics courses offered in the School of Mathematics at Daytona State College. It offers clear direction from the program or Meta major to courses that are needed to meet the general education requirements.

This booklet will help you guide students through the mathematics pathways that are available to them at Daytona State. They can save time and money when students choose the right pathway. The School of Mathematics is eagerly waiting to assist them in their educational endeavors.

The Pathway Guide for...

Students:
Entering college and planning the future is an overwhelming task. It is even more important that you take the appropriate courses in Mathematics that lead you to the path of graduation. The School of Mathematics provides you with the courses that are needed to complete the first two years in college, and it provides the prerequisites for all the programs of study offered here at DSC. Use this Math Pathway Guide to help you select the right math courses.

Advisors:
Seeing students graduating that you have guided and advised throughout college is most rewarding. Helping them to find the right path for their math courses is a big part of a student completing a program. The Math Pathway Guide is designed to help students enroll into math pathway courses that are based on the student future goals and career choices.

Parents:
Each parent wants to see their children succeed in college. To ensure that your children are taking the appropriate courses, use the Math Pathway Guide as a roadmap for your students to register for the correct math courses.

Program Managers:
As a program manager for the DSC programs, you use the Math Pathway Guide as a tool to choose the most appropriate course for the student's chosen program. The guide ensures to assist in all the stages of this process by selecting the appropriate course to complete the program requirements for graduation.

Jobs for Math Majors that Offer Awesome Opportunities

Contrary to popular belief, math careers are not limited to teaching, research, and accounting. Most people don't realize math is involved in just about every job imaginable. Mathematics equips students with logic, problem solving skills, and critical thinking skills that are necessary for many jobs.

The list below is not comprehensive, but it covers mathematical occupations with their level of education, median salaries, and job outlook. What is not shown in the list below, is the many more jobs that don't specifically mention mathematics degrees that are available to graduates with specific mathematics skills.

This list is meant to help and inspire students to see what their career pathway could look like.

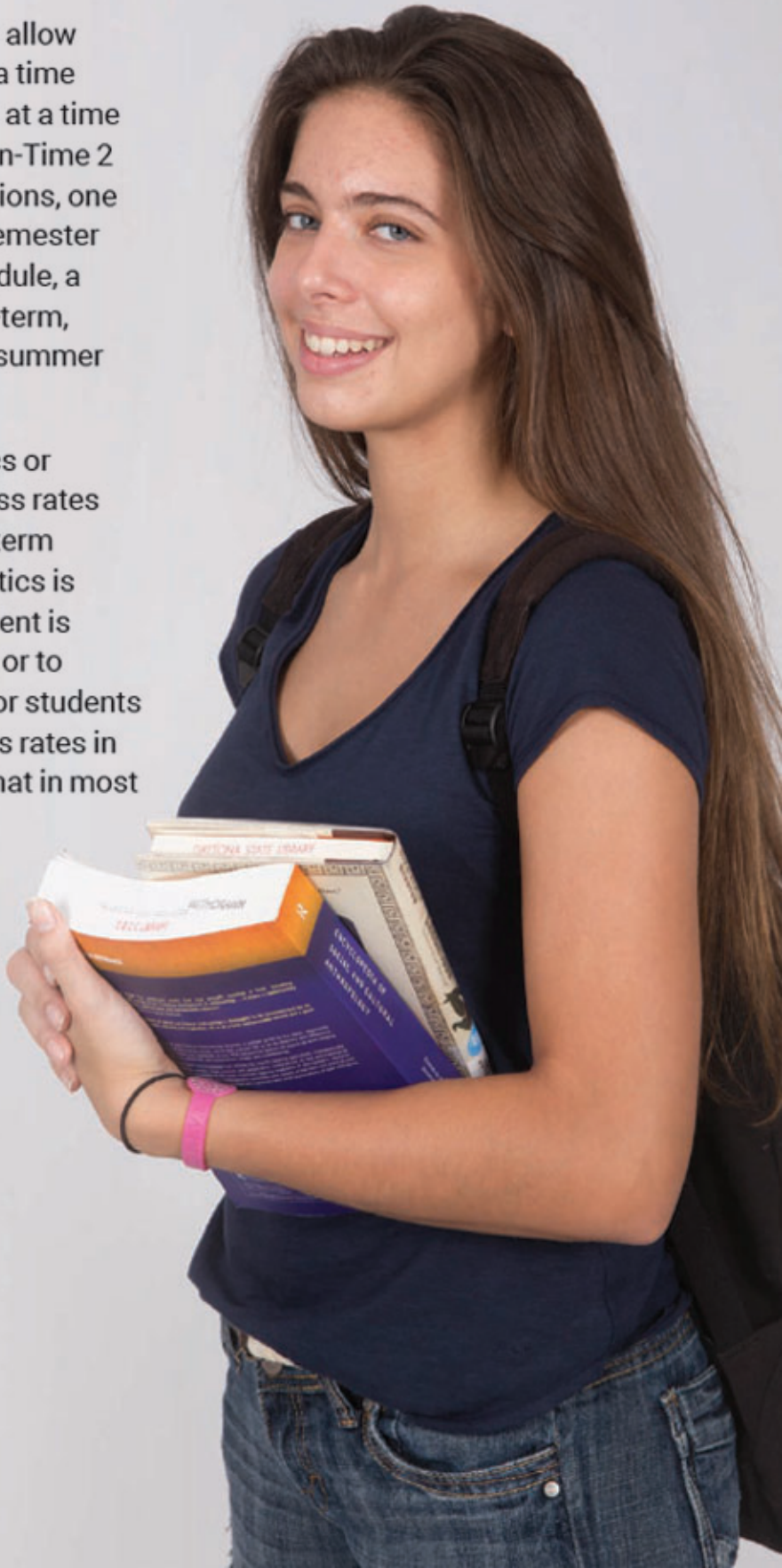
Math Occupations	Level Education	Median Pay	Job Outlook (2019–2029)
Accountant	Bachelor's	$71,550	4%
Aerospace Engineer	Bachelor's	$116,500	3%
Biomedical Engineer	Bachelor's	$91,410	5%
Chemical Engineer	Bachelor's	$108,770	4%
Civil Engineer	Bachelor's	$87,060	2%
Computer Programmer	Bachelor's	$86,550	-9%
Enviornmental Engineer	Bachelor's	$88,860	3%
Petroleum Engineers	Bachelor's	$137,720	3%
Epidemiologists	Master's	$70,990	5%
Mathematicians and Statisticians	Master's	$92,030	33%
Registered Nurse	Bachelor's	$73,300	7%
EMTs and Paramedics	Postsecondary nondegree award	$35,400	6%
Police and Detectives	High Schoo Diploma – College degree	$65,170	5%
Elementary School Teachers	Bachelor's	$59,420	4%
High School Teachers	Bachelor's	$61,660	4%
Middle School Teachers	Bachelor's	$59,660	4%
Health Information Technicians	Postsecondary nondegree award	$42,630	8%
Occupational Therapy Assistants	Associate Degree	$59,200	32%
Physical Therapist Assistant	Associate Degree	$48,990	29%
Radiologic & MRI Technologists	Associate Degree	$62,280	7%
Respiratory Therapist	Associate Degree	$61,330	19%
Surgical Technologists	Postsecondary nondegree award	$48,300	7%
Medical Assitants	Postsecondary nondegree award	$34,800	19%
Phlebotomists	Postsecondary nondegree award	$35,510	17%
Industrial Engineering Technicians	Associate Degree	$56,550	1%

On-Time 2 & On-Time 3 Classes Work (7-Week Sections)

The On-Time 2 and On-Time 3 graduation plans allow full-time students to focus on three courses at a time and part-time students to focus on two classes at a time and graduate within two or three years. In the On-Time 2 schedule, a student completes two A-term sections, one full-term section, and 2 B-term sections each semester to graduate in two years. In the On-Time 3 schedule, a student completes one course in A-term, in full-term, and in B-term each semester (plus one in each summer semester) to graduate in three years.

Short-term sections, particularly in mathematics or foreign language, frequently have higher success rates than those completed over the course of a full-term semester. We believe this is because mathematics is like a language where it is best learned if a student is immersed in the subject. To do math every day, or to speak a language every day, is the surest way for students to learn the material. In fact, data about success rates in short-term versus full-term semesters shows that in most cases students succeed at higher rates in short-term courses.

During the 2019-20 academic year, for example, students completing a full-term MGF2106 were successful 69% of the time during fall semester and 70% of the time during spring semester. But during the A-term semester, students were successful 90% of the time during fall semester and 75% of the time during the spring semester. The college also has data that breaks this down by students' PERT score, which shows that on 14 measures, students did better in 10 of those instances. We encourage you to get them into these short-term courses to better help them succeed in their math courses!



On-Time 2 & 3

GET THERE FASTER!

At DSC, we know a thing or two about how to help our students stay on track. Our On-Time Finish plans give you a clear path to get the right classes and graduate on time with your associate of arts university transfer degree.

You decide whether you want to complete your degree in **TWO** years or **THREE**, depending on your life circumstances, and we'll help you make sure it happens.

ASK AN ACADEMIC ADVISOR TODAY!

Want to finish your degree in 2 years? 3 years? We've created guaranteed schedules to help make it happen.

DAYTONA STATE COLLEGE

On-Time 2

YEAR ONE - Fall	
Full Term ENC1101	
A Term	B Term
SLS1122	MGF2106
Elective	Elective

YEAR ONE - Spring	
Full Term ENC1102	
A Term	B Term
STA2023	SPC2608
Elective	Elective

YEAR TWO - Fall	
Full Term Natural Science	
A Term	B Term
AMH2020/ POS2041	ARH1000/ MUL1010
Elective or Language 1	Elective or Language 2

YEAR TWO - Spring	
Full Term Natural Science	
A Term	B Term
Social Science Core	LIT2000
Elective or Cultural/ Global course	Elective

On-Time 3

YEAR ONE - Fall	
Full Term ENC1101	
A Term	B Term
SLS1122	MGF2106

YEAR ONE - Spring	
Full Term ENC1102	
A Term	B Term
STA2023	SPC2608

YEAR ONE - Summer	Elective

YEAR TWO - Fall	
Full Term Natural Science	
A Term	B Term
AMH2020/ POS2041	ARH1000/ MUL1010

YEAR TWO - Spring	
Full Term Natural Science	
A Term	B Term
Social Science Core	LIT2000

YEAR TWO - Summer	Elective

YEAR THREE - Fall	
Full Term Elective	
A Term	B Term
Elective or Language 1	Elective or Language 2

YEAR THREE - Spring	
Full Term Elective	
A Term	B Term
Elective or Cultural/ Global course	Elective

DaytonaState.edu/OnTime

Why Students Should Take Face-To-Face Classes

Though students often take courses online because of the convenience, data shows that they do better in face-to-face courses. This is particularly true of math courses because of the assistance students get from their professors, in which explanations, proofs, and equations make more sense with the professor working out a problem with the student right there. When communicating through email or in a discussion forum, this help is watered down because of the time between a professor answering a question and when a student asks for further clarification. Professors can't read non-verbal clues indicating a lack of understanding through email or through online discussions.

Students also benefit from face-to-face courses because they are required to work through problems without using the book or other materials as a crutch. This helps build their critical thinking skills, which will help them be more successful in later courses.

To help our students better succeed in math, often by 10% or more, your help is needed to get them into face-to-face sections. Consider these statistics comparing the difference in success between face-to-face and online courses:

Face-to-Face Completion Rates By Course (2019-20)

- **71%** of students taking MAT1033 Intermediate Algebra
- **71%** of students taking MGF2106 Survey in Mathematics
- **80%** of students taking MGF2107 Liberal Arts Mathematics
- **74%** of students taking MAC1105 College Algebra
- **81%** of students taking STA2023 Elementary Statistics

Hybrid Completion Rates By Course (2019-20)

- **67%** of students taking MGF2106 Survey in Mathematics
- **80%** of students taking MGF2107 Liberal Arts Mathematics
- **84%** of students taking MAC1105 College Algebra
- **81%** of students taking STA2023 Elementary Statistics

Online Completion Rates By Course (2019-20)

- **73%** of students taking MAT1033 Intermediate Algebra
- **74%** of students taking MGF2106 Survey in Mathematics
- **76%** of students taking MGF2107 Liberal Arts Mathematics
- **69%** of students taking MAC1105 College Algebra
- **72%** of students taking STA2023 Elementary Statistics

We Are Here to Help!

The School of Mathematics is here to help. The Math Pathway Guide makes it easy to pick the correct math course by giving you all the resources DSC has available and help when needed.

Advising

Academic advisors are ready to help you to register for the correct math sequence from the first day on. They are here to ensure you choose the math courses that are most appropriate for your intended major and future career choice. Advisors stay with you throughout each semester and provide you with all the resources necessary to be successful.

Math Faculty

The School of Mathematics faculty is here to support students by holding 10 office hours face-to-face or virtually each week. In addition, faculty answer questions from students through email or by phone. Math faculty are also providing additional study sessions for students and instructor led supplemental instruction sessions.

Academic Support Center

The Academic Support Center, ASC, provides support to all DSC students on all campuses, offering tutoring, workshops, learning sessions, virtual study session, supplemental instructions, computers, and printers. Tutors assist with answering content questions, explaining assignments, finding resources, and offering study suggestions.

Counseling & Accessibility Services (CAS):

Counseling & Accessibility services provide students with disabilities access not just to Mathematics courses, but all courses and all other educational programs. CAS advisors work with students individually to determine appropriate adjustments and they support the services each student is eligible to receive. Contact CAS prior to enrollment to arrange for any accommodations in your mathematics class.

Career Services

The Career Services Department helps current students with career path selections, which is an important part in taking the appropriate math class. The department also helps with resume writing, interview preparation, and on campus job fairs.

Center for Women and Men

The Center for Women and Men is located on all campuses. It offers support for students facing hardships. You may be eligible to receive financial assistance with tuition books, uniforms, childcare, and emergency bus passes. A career ready clothes closet our textbook lending library and many services for homeless and hungry students are also available.

Guided Pathways Are the Avenue to Higher Graduation Rates

Guided pathways are a set of ideas, connections, and relationships that we should use to make sure that our students are guided down the right avenue. Having knowledge of what the student wants to accomplish, we can support them to navigate their goals and ensure success. We can establish this by involving students in the process by asking those pertinent questions, setting them up for success by getting them into the right class, the first time. We should let them know; they are not alone as they travel the pathway to success.

- Clarify paths to student end goals
- Help students choose and enter a path
- Help students stay on their path
- Ensure student learning

Get on the right path, the first time!

Our Pathway Model

The benefits of the pathway model are multifaceted. We work with students to discover end goals and specialized curricular paths. We then work to ensure students stay on path to the journey to academic success while increasing learning retention, matriculation and graduation.

Four Pillars of Guided Pathways

Create clear curricular pathways to employment and further education.

Help students stay on target to choose and enter their pathway.

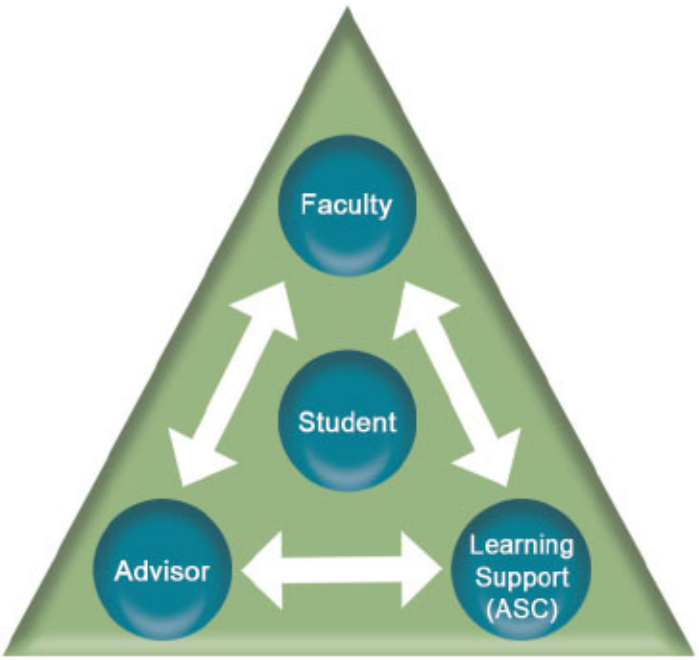
Help students stay on their path.

Ensure that learning is happening with intentional outcomes

How to Keep Students on a Path

Our Triad Leadership Model is designed to surround students with the necessary checks and balances to ensure clear direction and institutional support in remaining on the right path to success.

Triad Leadership Model



Frequently Asked Questions

about courses in the School of Mathematics

Do I receive college credit for MAT1033?

Yes. These classes both count as elective credit toward an Associate of Arts degree. Although they do not satisfy the general education math requirements for associate's degree programs, they provide a solid foundation for students who need to take MAC1105 - College Algebra for their majors. Please consult an academic advisor to determine how MAT1033 might apply to your program of study.

What is a prerequisite course?

A prerequisite course is a course that you are required to take (and successfully complete) before moving to the next level of classes. (Example: MAT1033 with a grade of C or better is a prerequisite of MAC1105 unless the student tests directly into MAC1105).

Can I take College Algebra MAC1105 after I have taken MAT0028?

No. If you want to take MAC1105, you'll either need to earn a high enough score on the PERT mathematics test or complete the prerequisite course MAT1033 with a grade of "C" or better.

If I take MGF2106, what Math class should I take next?

If you receive a C or better in MGF2106, you are eligible to take either MGF2107 or STA2023, but not MAC1105.

Which course is easier, MAT1033 or MGF2106?

Easy is subjective. MGF2106 deals with more "real world" applications of mathematics and is appropriate for students entering many fields. The class is a computer-based course that includes some basic algebra, logic, reasoning, geometry, stats, and finance. MAT1033 is an algebra course which prepares students with the mathematics skills needed to move on to MAC1105, MAC1140, MAC1114, and MAC2311, which are required for many science, technology, and engineering programs.

What happens if I take MGF2106 but my program requires MAC1105 College Algebra?

You will need to take MAC1105. To take MAC1105, you have to be eligible based off placement score or take the prerequisite course MAT1033 and receive a grade of "C" or better prior to taking MAC1105.

Do I have computer work in MGF2106?

Yes. The course is based on projects and computer-based homework.

Do I have computer work in MAT1033?

Yes. The depth of computer work is based on whether you are taking an online, hybrid, or face-to-face. Regardless of the modality, falcon online is used in all math classes. For specifics, you should contact your instructor.

I am taking MAT1033 now, but my program does not require MAC1105, which course should I take next?

If your program does not require MAC1105, you take either or both MGF2106 and/or MGF2107.

Can I take STA2023 after MGF2107?

No. To be eligible to take STA2023, you must earn a "C" or better in either the prerequisite courses MGF2106 or MAC1105.

Can I repeat a course to improve my GPA?

If you earn a grade of "C" or better in any course, that grade is permanent. You are not allowed to repeat a course with a "C" grade to try to improve their GPA. You may audit a course where you have earned a "C" or better if you just want a refresher on the course content.

Frequently Asked Questions
about courses in the School of Mathematics (continued...)

What can I do if I earn a D in a course in which I need to have a C or better?
DSC will allow you to retake the course a second time to earn a better grade. Note that both courses do appear on your transcript.

Is there a particular order in which to take MAC1140 and MAC1114?
You are allowed to take MAC1140 and MAC1114 in either order, or concurrently for that matter, as both carry a prerequisite of MAC1105. However, if you plan to take the two courses sequentially (in two different semesters), then it is recommended that MAC1140 be taken before MAC1114.

Can I take MAC1140 and MAC2233 concurrently?
No, such a plan is highly unadvisable; MAC1140 is a prerequisite for MAC2233, as the material in MAC2233 depends on the material in MAC1140.

I need to take a certain math course, but all the sections are full. What can I do?
The best recommendation for this is a two-step process:

a) Periodically there is a purge of students from classes when they have not paid their fees. The class capacities can be checked online to see if the number of students has been reduced.

b) If the class is still at capacity you may contact the School of Mathematics Chairperson, Marc Campbell, Building 500, room 135, ext. 3520.

What math courses can I take to fulfill my general education math requirements at DSC?
MAC1105, MGF2106, MGF2107, STA2023 are the most frequently taken; However, other courses such as, but not limited to MAC1114, MAC1140, MAC2233, MAC2311, MAC2312, MAC2313, MAP2302 do fulfill general education requirements for math at DSC.

Is there any math course I cannot use to fulfill my general education math requirement at DSC?
MAT1033 – Intermediate Algebra, MAT0018 – Pre-Algebra, MAT0028 – Elementary Algebra and MTB1348 – Applied Technical Math I.

What courses require me to register for a lab?
MAT0018 Pre-Algebra, MAT0028 Elementary Algebra, MAC2311 Calculus I, MAC2312 Calculus II, MAC2313 III and MAP2302 Differential Equations.

Who do I see about getting an override into a full class or skipping a prerequisite course?
The School of Mathematics Chairperson, Marc Campbell, Building 500, room 134, ext. 3520. Note, documentation will be required.

If I am struggling with my math class, where can I get help?
The Academic Support Center:

Daytona Beach Campus
Building 500, room 124
386-506-3673

Deland Campus
Building 6, room 215
386-785-2087

Flagler-Palm Coast Campus
Building 2, room 119
386-246-4835

Deltona Campus
Building 1, room 209
386-789-7306

New Smyrna-Edgewater Campus
Building 2, room 104
386-423-6345

Should you take MAT1033, MGF2106 or MGF2107

Does your major require MAC1105?

Yes–take MAT1033

No–take MGF2106 or MGF2107

How are these courses different?

MAT1033 Intermediate Algebra	MGF2106 Survey in Mathematics	MGF2107 Mathematics for Liberal Arts
MAT1033 does not fulfill the general education mathematics requirement, but counts as an elective.	MGF2106 does fulfill the general education mathematics requirement.	MGF2107 does fulfill the general education mathematics requirement.
MAT1033 prepares you for the next course in the STEM sequence.	MGF2106 prepares you for the next course in the non-STEM sequence.	MGF2107 does not prepare you for the next course in the non-STEM sequence. It is a terminal course.
MAT1033 is the prerequisite for MAC1105 College Algebra.	MGF2106 is a prerequisite for STA2023 Statistics.	MGF2107 is not a prerequisite for STA2023 Elementary Statistics
MAT1033 course grade is based on quizzes, projects, homework and tests.	MGF2106 grades are based on attendance,projects and computer-work.	MGF2107 grades are based on attendance, projects and computer-work.
Delivery modalities include face-to-face and online.	Delivery modalities include face-to-face, hybrid and online.	Delivery modalities include face-to-face, hybrid and online.

How are these courses the same?

Both are prerequisities for taking other college-level mathematics courses.

What is the students major?

Use this guide to determine which mathematics courses are required for their major

NON-STEM PATHWAY

Crossing between STEM and Non-STEM is possible but needs to be done with caution. Please speak to your advisor or a math faculty before crossing.

- Nursing
- Child Care
- Humanities
- Photographic Design
- Accounting Technology
- Bachelor of Applied Science (BAS)
- Broadcast TV Production
- Business Administration
- Elementary/Exceptional Education
- Healthcare & Health Services
- Hospitality & Culinary Management
- Social & Behavioral Sciences
- Industrial Management Technology
- Human Services
- Interactive Media
- Interior Design
- Music Production
- Public Safety

MGF2106* Survey in Mathematics

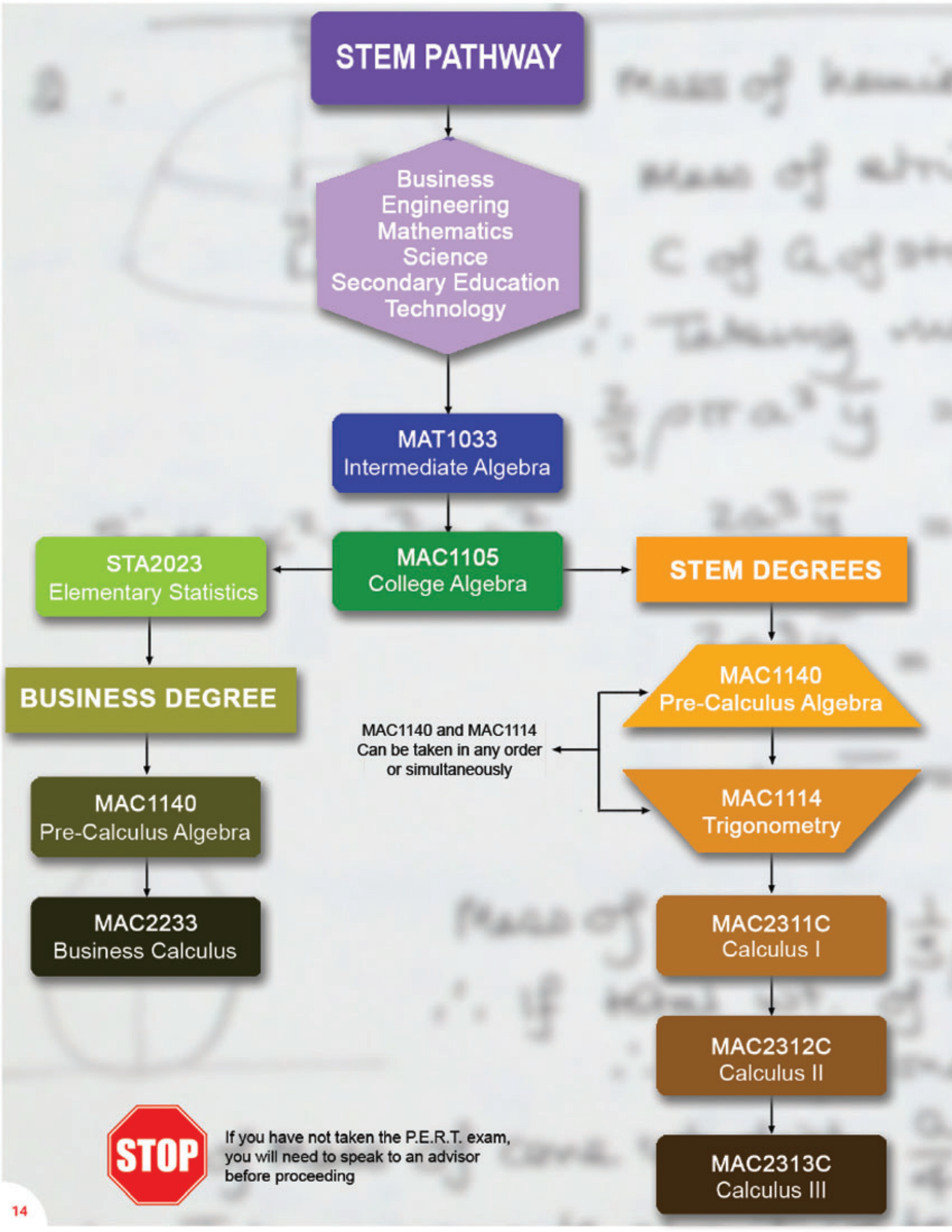
STA2023 Elementary Statistics

(Required for some Majors)

MGF2106* Survey in Mathematics

MGF2107* Liberal Arts Mathematics

* MGF2106 and MGF2107 can be taken in any order


STEM PATHWAY
Business
Engineering
Mathematics
Science
Secondary Education
Technology
MAT1033
Intermediate Algebra
MAC1105
College Algebra
STA2023
Elementary Statistics
BUSINESS DEGREE
MAC1140
Pre-Calculus Algebra
MAC2233
Business Calculus
STEM DEGREES
MAC1140 and MAC1114
Can be taken in any order
or simultaneously
MAC1140
Pre-Calculus Algebra
MAC1114
Trigonometry
MAC2311C
Calculus I
MAC2312C
Calculus II
MAC2313C
Calculus III
STOP
If you have not taken the P.E.R.T. exam,
you will need to speak to an advisor
before proceeding

Academic Support Center: We Are Here to Help!

The staff and resources located at the Academic Support Center (ASC), offer extra academic support to help you succeed. While the DSC tutors are assisting you online or in person, it is extremely important that you have been consistently following the direction of the faculty member who is teaching your course(s). That means completing or attempting to complete your assignments, participating in class, and following whatever your instructor, lecturer, or professor has outlined as the expectations for your success in the course(s).

Our DSC tutors will not do your work for you. We can offer assistance, but students must be the ones doing the coursework. If you have questions about a homework problem, a mathematical concept, or class assignment, we expect you to have tried to complete these things on your own. Having struggled with the material before you schedule an appointment with us will actually help us do our job. You will not learn mathematics without some effort on your part as the student, so please keep that in mind while you are working with our tutors. Bring your specific questions to your appointment so that you can let the tutor know exactly where you are getting frustrated, confused, or lost. We don't always know all of the answers, but we can help you work through a challenging problem so you can hopefully complete the next one on your own.

Services and Resources

- Tutoring available both in lab and online (use the chat to connect with a virtual tutor)
- Computer labs with study spaces and science models on all campuses
- Helpful handouts and videos covering math, science, study skills, and more, can be found on our ASC Infoguide
- Review sessions covering course and subject specific content for Math Classes, Math Exams, MGF2106 Projects, Photoshop, etc
- Workshops for GKT, TEAS, Nursing, and others
- Test prep resources for various standardized tests including TEAS, GKT, TABE, etc.

Locations

The ASC is here to help you at any of our six campus locations and online:

- Daytona Campus
- DeLand Campus
- Deltona Campus
- Flagler/Palm Coast Campus
- New Smyrna Beach/Edgewater Campus
- Virtual (via ASC chat)

ONLINE PLATFORMS FOR MAT1033, MGF2106 & MGF2107

Online Platforms	Pearson MyLab	ALEKS
Courses	MAT1033 Intermdiate Algebra	MGF2106 & MGF2107 Survey in Mathematics & Liberal Arts Mathematics
Access Code	YES, students need to purchase an access code	YES, students need to purchase an access code
Cost	Varies by course. Students can select a purchasing option and length of access	Varies by course. Students can select a purchasing option and length of access
Textbook	No book is required	No book is required
Assignments	All class work is completed online. See instructor of record for more details	Aleks creates a personalized study plan. Students are required to complete a certain number of topics
Discussions	Additional assignments may be located in Falcon Online	Additional assignments may be located in Falcon Online

Math Pathway Video

NEED HELP?
If you need help or have a questions, speak to an advisor or someone in the School of Mathematics before processing.

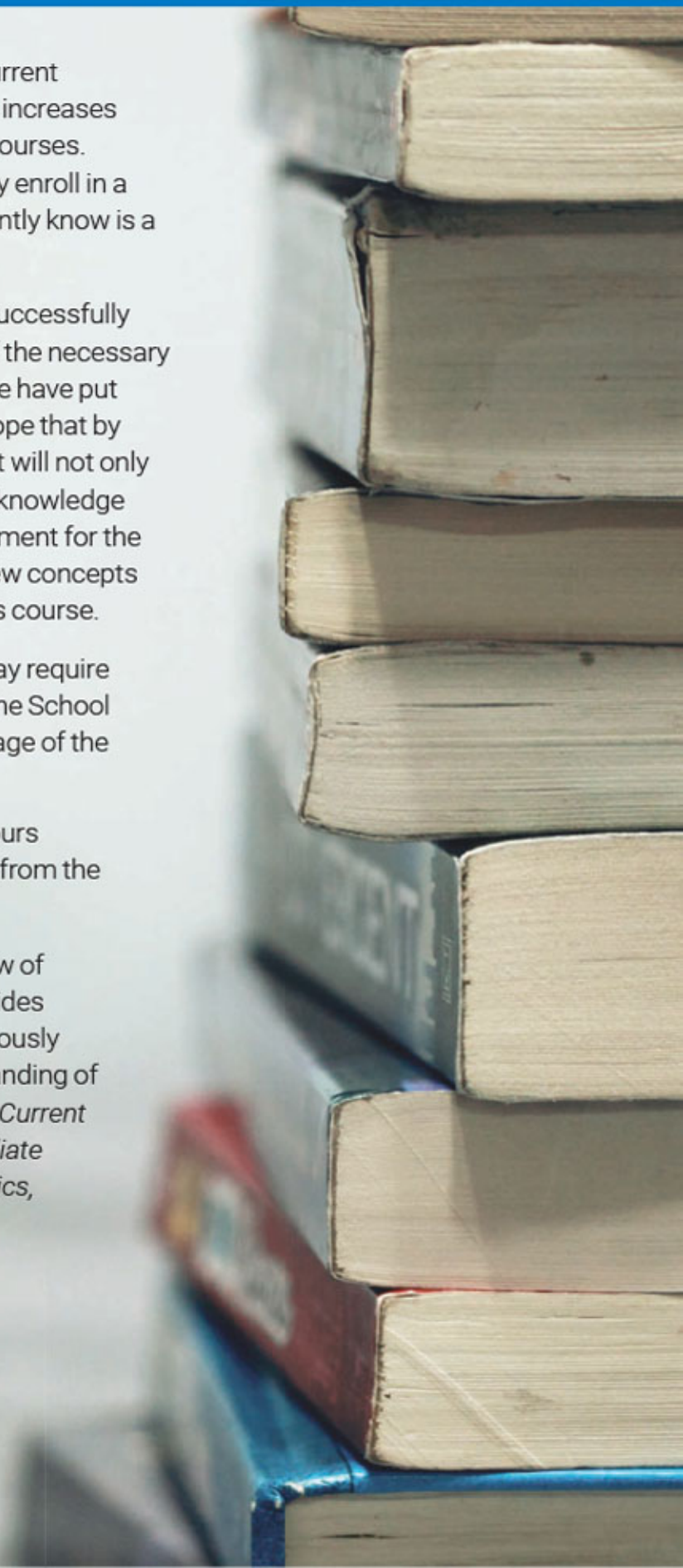
Study Guide Introduction

Because of the cumulative nature of mathematics, current knowledge of prerequisite skills and concepts greatly increases a student's opportunity for success in mathematics courses. Our goal is to help students succeed the first time they enroll in a mathematics course. Assessment of what they currently know is a very important part of helping students succeed.

We also understand that while students might have successfully completed a particular mathematics course, some of the necessary skills and concepts needed might be a bit rusty. So, we have put together a sample study guide for each course. We hope that by completing these 5 to 7 problems in the study guide, it will not only give the student a true picture of their current level of knowledge of a course, but also help us determine the best placement for the student. This will help the student be ready to learn new concepts when the student does enroll in the right mathematics course.

Student success matters from start to finish. They may require additional assistance outside of the classroom, and the School of Mathematics is here to help. They can take advantage of the following services:

- **Faculty Office Hours** – Instructors hold 10 office hours every week. Instructors often answer the questions from the students through email, phone and in person.
- **Supplemental Instruction (SI)** – Looking for a review of the class material covered during the week? SI provides a weekly review session led by a peer who has previously taken the course and can provide a deeper understanding of the course material as well as effective study skills. *Current courses supported by SI include: MAT1033 Intermediate Algebra, MAC1105 College Algebra, STA2023 Statistics, MAC1114 Trigonometry and MAC2311C Calculus I.*
- **Tutoring** – One-on-one tutoring is provided through the Academic Support Center on all campuses. Students can simply walk in and ask a question. Tutors will assist in finding resources, clarifying class content, explaining assignments and offereing study suggestions.



Guided Pathways Checklist

This tool will help you ensuring that students are on the correct pathway.

Mapping Pathways to Student End Goals

- ☐ Each program is well designed to guide and prepare students to enter an academic and career path
- ☐ Detailed information is provided on college's website on career choices and further education opportunities
- ☐ Programs are clearly mapped out for each student
- ☐ Students know which courses they should take and in which sequence
- ☐ Courses needed for the success in each program are clearly identified

Helping Students Choose and Enter a Pathway

- ☐ Every new student is helped to explore career/college options, choose a program of study, and develop a full-program plan.
- ☐ Special support is provided to help unprepared students to succeed in the gateway courses
- ☐ Determine entry-level positions, salary scales, and industry qualifications
- ☐ Required courses are aligned with student's fields of study
- ☐ The College works with high schools and other feeder areas to motivate and prepare students to enter college-level coursework when they enroll in college

Keeping Students on the Path

- ☐ Advisors monitor which program every student is in and how far along the student is toward completing the program requirements
- ☐ Students can easily monitor their progress and what they need to complete the program.
- ☐ Advisors and students are alerted when students are at risk of not completing their program and have policies in place to get students back on track.
- ☐ The college schedules courses to ensure that students can take the courses they need when they need them

Ensuring that Students are Learning

- ☐ Students have plenty opportunities to apply and deepen knowledge and skills through projects, internships, clinicals, group projects, service learning, and other active learning activities
- ☐ Results of learning outcome assessments are used to improve teaching and learning through program review, professional development, and other campus efforts.

MAT0028 Study Guide

(Solutions on pg. 24–25)

If you can answer these questions correctly, you are prepared to take MAT0028.

1. Add or subtract as indicated: $\frac{8}{15} + \frac{3}{20} - \frac{4}{45}$

2. Add the mixed numbers by using improper fractions. $7\frac{5}{6} + 3\frac{3}{5}$

3. Alexa won a legal settlement for $418,500. Her lawyer received $\frac{1}{3}$ of the settlement.
   a. How much money did the lawyer get?
   b. How much money did Alexa get?

4. Solve the proportion. $\frac{0.8}{3.1} = \frac{4}{p}$

5. Suppose a professional golfer who is ranked 10th in the world on the PGA Tour earns $2,183,000 per year. He pays his coach $185,000 per year. What percent of his income goes toward his coach? Round your answer to the nearest tenth of a percent.

MAT1033 Study Guide

(Solutions on pg. 26–27)

If you can answer these questions correctly, you are prepared to take MAT1033.

1. Simplify $(2a + 3b - 7) - 4(-5a - 6b + 12)$

2. Which of the ordered pairs is a solution to the equation $2x - 3y = 7$
   - **a.** (2, 1)
   - **b.** (-1, -3)

3. Find the slope of a line passing through the points (-4, -2) and (6, -9)

4. Convert 282,000 to scientific notation.

5. Simplify $\dfrac{-5(6)}{-3(-6) - 8}$

6. Solve $3t - 6 + 12t = 12 + 24t - 3$

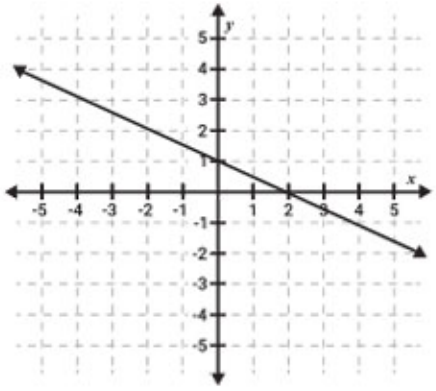
MAC1105 Study Guide

(Solutions on pg. 28–29)

If you can answer these questions correctly, you are prepared to take MAC1105.

1. Find the domain of $f(x) = \sqrt{x-5}$

2. Write the equation of the line below:



3. Factor $3x^2 - 14x - 24$

4. Solve the following system and state the value of x

$$x = -3y + 1$$
$$2x + 4y = 12$$

5. Solve $x^2 + 6x + 5 = 0$

6. Solve $\frac{10}{x+1} - 4 = \frac{3}{x+1}$

7. Solve $-2x + 5 \geq 11$ and write your answer in interval notation.

MAC1140 Study Guide

(Solutions on pg. 30–33)

If you can answer these questions correctly, you are prepared to take MAC1140.

1. Use the quadratic formula to solve $9x^2 - 6x - 4 = 0$.

2. Find the difference quotient for the function $f(x) = -x^2 + x - 2$ and then simplify.

3. The cost of a plastic sewer pipe varies jointly as its diameter and length. If a 20 foot pipe with a diameter of 6 inches costs $18.60, then what is the cost of a 16 foot pipe with a diameter of 8 inches?

4. Find the vertex of the quadratic function $f(x) = 3x^2 - 12x + 1$

5. The sum of the three numbers is 40. The difference between the largest and smallest is 12, and the largest is equal to the sum of the two smaller numbers. Find the numbers.

MGF2106 Study Guide

(Solutions on pg. 34–36)

If you can answer these questions correctly, you are prepared to take MGF2106.

1. Add and write your answer as a mixed number in simplest form. $\frac{3}{4} + 5\frac{5}{6}$

2. Solve for v. Simplify your answer as much as possible.

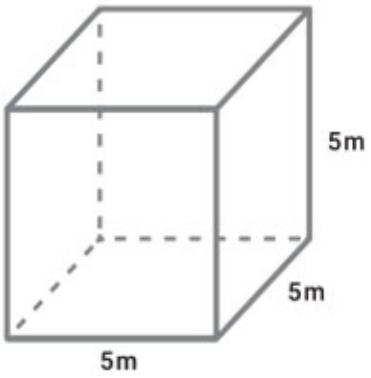
$$2(v + 5) = -2(8v - 3) + 4v$$

3. Use substitution to solve the system

$$-5x + 3y = -35$$
$$3y + 19 = x$$

4. A TV has a listed price of $636.99 before tax. If the sales tax rate is 9.75%, find the total cost of the TV with sales tax included. Round your answer to the nearest cent, as necessary.

5. Find the volume of the rectangular prism.



6. Consider the equation $y = -\frac{1}{3}x + 3$

   a. Is (3, 2) a solution to the above equation.

   b. Graph the above equation.

MGF2107 Study Guide

(Solutions on pg. 37–39)

If you can answer these questions correctly, you are prepared to take MGF2107.

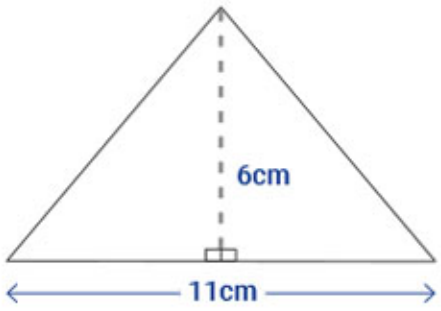
1. Perform the indicated operations: $5\frac{5}{6} - \frac{3}{4}$

2. Given $4(x + 5) = 3(x - 4) + 2x$, solve for x.

3. Solve the system $2X + 3y = 9, 3x + 2y = 11$ and find y.

4. A TV has a listed price of $636.99 before tax. If the sales tax rate is 9.75%, find the total cost of the TV with sales tax included. Round your answer to the nearest cent, as necessary.

5. Find the area of the triangle below.



6. Consider $3x + 4y = -12$. Is $(2, -4\frac{1}{2})$ a solution to the equation?

7. Graph $3x + 4y = -12$

MAT0028 Study Guide Solutions

1. First, we find the least common denominator (LCD) by factoring each denominator:

$$15 = 3 * 5$$
$$20 = 2 * 2 * 5$$
$$45 = 3 * 3 * 5$$

The LCD is $2 * 2 * 3 * 3 * 5 = 180$. We convert each fraction to an equivalent fraction having a denominator of $2 * 2 * 3 * 3 * 5$. We accomplish this by multiplying the numerator and the denominator of each original fraction by the factors missing from the denominator:

$$\frac{8 * 2 * 2 * 3}{3 * 5 * 2 * 2 * 3} - \frac{3 * 3 * 3}{2 * 2 * 5 * 3 * 3} + \frac{4 * 2 * 2}{3 * 3 * 5 * 2 * 2}$$

We now combine the numerators and then simplify our answer to lowest terms.

$$\frac{96 - 27 + 16}{180} = \frac{85}{180} = \frac{5 * 17}{36 * 5} = \frac{17}{36}$$

Thus the final answer is $\frac{17}{36}$

2. We write each mixed number as an improper fraction:

$$7\frac{5}{6} + 3\frac{3}{5} = \frac{47}{6} + \frac{18}{5}$$

Note that the LCD is 30.

$$\frac{47}{6} + \frac{18}{5} = \frac{47 * 5}{6 * 5} + \frac{18 * 6}{5 * 6} = \frac{235}{30} + \frac{108}{30} = \frac{343}{30}$$

We will now use division to convert the improper fraction to a mixed number

$$343 \div 30 = 11 + \frac{13}{30}$$

The result is $11\frac{13}{30}$

3. (a) We need to find what is $\frac{1}{3}$ of \$418,500. We have,

$$\frac{1}{3} * \$418{,}500 = \frac{418{,}500}{3} = \frac{(3 * 139{,}500)}{3} = 139{,}500$$

(b) Alexa will get what remains of the \$418,500 after the lawyer gets his cut:

$$\$418,500 - \$139,500 = \$279,000.$$

Alexa gets \$279,000.

4. Set cross products equal to one another

$$0.8p = 3.1 * 4$$

Simplifying the RHS, we get

$$0.8p = 12.4$$

Dividing both sides by 0.8, we have

$$p = 15.5$$

5. We want to find what percent of 2,183, 000 is \$185, 000. Let p be the percent of the golfers earnings that goes to his coach. We have,

$$\frac{185{,}000}{2{,}183{,}000} = \frac{p}{100}$$

The ratio on the right hand side (RHS) can be simplified by a factor of 1000. Strike through three zeros in the numerator and the denominator.

$$\frac{185}{2{,}183} = \frac{p}{100}$$

Set the cross products to equal one another

$$185 * 100 = 2{,}183p$$

Simplifying the RHS, we get

$$18{,}500 = 2{,}183p$$

Divide both sides by 2,183

$$\frac{18{,}500}{2{,}183} = \frac{2{,}183p}{2{,}183}$$

Simplifying the RHS we get

$$\frac{18{,}500}{2{,}183} = p$$

Simplifying the LHS, we get

$$8.47 = p$$

The golf pro spends about 8.5% of his earnings on his coach.

MAT1033 Study Guide Solutions

1. Removing parentheses and changing signs, we get

$2a + 3b - 7 + 20a + 24b - 48$

Now we combine all like terms, we get

$2a + 20a + 3b + 24b - 7 + 48 = 22a + 27b - 55$

2. We are going to substitute the values of x and y into the equation:

a. For (2, -1) we have $2(2) - 3(-1) = 4 + 3 = 7$, so that makes the equation true.

b. For (-1, -3) we have $2(-1) - 3(-3) = -2 + 9 = 7$, so that makes the equation true.

3. For the slope

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

$$= \frac{-9 - (-2)}{6 - (-4)}$$

$$= \frac{-9 + 2}{6 + 4}$$

$$= -\frac{7}{10}$$

4. We have $2.82 * 10^5$

5. In simplifying, we have

$$\frac{-5(6)}{-3(-6) - 8} = \frac{-30}{18 - 8}$$

$$= \frac{-30}{10}$$

$$= -3$$

6. Combining like terms, we get

$3t + 12t - 6 = 24t + 12 - 3$

$15t - 6 = 24t + 9$. Subtracting 9 on both sides

$15t - 9 - 6 = 24t + 9 - 9$

$15t - 15 = 24t$. Subtracting $15t$ on both sides

$15t - 15 - 15t = 24t - 15t$. Upon simplifying the RHS and LHS, we get

$-15 = 9t$. Dividing both sides by 9

$$-\frac{15}{9} = t$$. Simplifying the RHS we get

$$-\frac{5}{3} = t$$

MAC1105 Study Guide Solutions

1. Since you cannot take the square root of a negative number because the result would yield an imaginary number, the domain is restricted to taking the square root of a positive number. So set the portion inside the square root $x - 5 \geq 0$. Add 5 to both sides, we get $x \geq 5$. The solution set is $[5, \infty)$.

2. Looking at the graph the y-intercept is (0, 1) and the x-intercept is (2, 0). Using the slope formula

$$= \frac{y_2 - y_1}{x_2 - x_1} = \frac{1 - 0}{0 - 2} = -\frac{1}{2}$$

Now, the slope intercept form of the line is $y = \quad x +$. So $y = -\frac{1}{2}x + 1$, and the y intercept is (0, 1).

3. Using the trial and error method, use factors of 3 and -24 that will sum to -14. We will have 2 binomials $(3x\ )(x\ )$, we have no choice with the factors of 3, so we are looking at the factors of 24. With repeated attempts we get $(3x + 4)(x - 6)$. Notice the middle term, $4x - 18x$, sums to $-14x$.

4. Set up the equations in standard form of a line

(1) $x + 3y = 1,$

(2) $2x + 4y = 12,$

We are going to solve the equation for x by eliminating y. Multiply (1) by -4 and (2) by 3. So you have

$$-4x - 12y = -4$$
$$6x + 12y = 36$$

Notice the ys are eliminated when adding the resulting equations. So you have

$2x = 32$. Dividing both sides by 2, we get

$\frac{2x}{2} = \frac{32}{2}$. Upon simplification, we get

$x = 16$

5. We are going to solve the quadratic equation by factoring. We have 2 binomials (using trial and error): $(x+5)(x+1) = 0$. Notice the sum of the factors of 5 and 1 add to 6, which is the middle factor of the quadratic equation. Set $x+5 = 0$ and set $x+1 = 0$, which yields $x = -5$ and $x = -1$.

6. The LCD is $x+1$ for the equation. Notice x cannot be equal to -1, since that results in dividing by zero. Multiplying each term of the equation by $x+1$, we get

$10 - 4(x+1) = 3$. Distributing 4, we get

$10 - 4x - 4 = 3$. Combining like terms, we get

$-4x + 6 = 3$. Subtracting 6 on both sides, we get

$-4x = -3$. Dividing both sides by -4, we get

$$x = \frac{3}{4}.$$

7. Solving for x, we first subtract 5 from each side

$-2x \geq 11 - 5$. Upon simplifying the RHS, we get

$-2x \geq 6$. Dividing both sides by -2

$x \leq -3$

We switch the inequality because we divide by a negative number. In interval notation it is $(-\infty, -3]$.

MAC1140 Study Guide Solutions

1. We want to solve

$$9x^2 - 6x - 4 = 0$$

Notice that this quadratic equation is already in standard form: $x^{\ 2} + x\ \ + \ \ = 0$ and we can identify , , and :

$$= 9, \quad = -6, \quad = -4$$

Recalling the quadratic formula

$$x = \frac{-\ \pm\sqrt{\ ^2 - 4}}{2}$$

We will substitute for , , and :

$$x = \frac{-(-6) \pm \sqrt{(-6)^2 - 4(9)(-4)}}{2(9)}$$

Upon simplifying, we have,

$$x = \frac{6 \pm \sqrt{36 + 144}}{18} = \frac{6 \pm \sqrt{180}}{18} = \frac{6 \pm \sqrt{36 * 5}}{18} = \frac{6 \pm 6\sqrt{5}}{18} = \frac{1 \pm \sqrt{5}}{3}$$

Thus the solution set is

$$\frac{1 + \sqrt{5}}{3}, \frac{1 - \sqrt{5}}{3}$$

2. Recall that the difference quotient is given by

$$\frac{f(x + \ ) - f(x)}{\ }$$

In the expression above we replace $f(x + \ )$ with the quantity

$$-(x + \ )^2 + (x + \ ) - 2$$

and then subtract the function $f(x) = -x^2 + x - 2$:

$$\frac{-(x + \ )^2 + (x + \ ) - 2 - (-x^2 + x - 2)}{\ }$$

If we expand the quantity $(x+\ \ )^2$ we obtain $x^2+2x\ +\ ^2$:

$$-(x^2+2x\ +\ ^2)+(x+\ \ )-2-(-x^2+x-2)$$

Using the distributive property yields

$$-x^2-2x\ -\ ^2+x+\ \ -2+x^2-x+2$$

We will now combine like terms

$$-2x\ -\ ^2+$$

Upon dividing both the numerator and the denominator by we obtain

$$-2x-\ \ +1.$$

3. There is a direct variation problem, which means that the equation we will be using is

$$=$$

where is the cost of the sewer pipe, is the constant variation, is the diameter of the pipe, and is the length of the pipe.

We will first use the information in the problem to find the constant of variation

$$\$18.60 =\ (6)(20)$$

Solving for yields $=0.155$.
We now substitute for :

$$=0.155$$

So, the cost of a 16-foot pipe with a diameter of 8 inches is

$$=0.155(8)(16)=19.84$$

The cost of the pipe is \$19.84.

4. Recall that the vertex form of a quadratic function is

$$f(x) = a(x - h)^2 + k,$$

where the vertex is given by (h, k). In the given problem $a = 3$, $b = -12$ and $c = 1$. The value of h is computed as demonstrated below.

$$h = -\frac{b}{2a}$$

$$= -\frac{-12}{2 * 3}. \text{ Simplifying the numerator and denominator, we get}$$

$$= \frac{12}{6}. \text{ Simplifying the fraction, we get}$$

$$= 2.$$

The value of k is computed as demonstrated below.

$$k = \frac{4ac - b^2}{4ac}$$

$$= \frac{(4 * 3 * 1) - (-12)^2}{4 * 3}. \text{ Simplifying the numerator and denominator, we get}$$

$$= \frac{12 - 144}{12}. \text{ Simplifying the numerator again, we get}$$

$$= \frac{-132}{12}. \text{ Simplifying the fraction, we get}$$

$$= -11$$

Thus the vertex is (2, -11)

5. Let x be the smallest of the three numbers and let z be the largest of the three numbers and let y be the middle number. Since the sum of the three numbers is 40, we have the equation:

$$x + y + z = 40$$

Since the difference between the largest and smallest is 12, we have the equation

$$z - x = 12$$

Since the largest is equal to the sum of the two smaller numbers, we have the equation

$$z = x + y$$

Thus we have the system

$$\begin{aligned} x + y + z &= 40 \\ z - x &= 12 \\ z &= x + y \end{aligned}$$

Substituting $x + y = z$ in the first equation, we get $2z = 40$. Dividing both sides by 2, we get $z = 20$. Substituting $z = 20$, in the second equation to obtain the value of x:

$20 - x = 12$. Subtracting 20 on both sides, we get

$-x = -8$. Dividing both sides of the equation by -1, we get

$x = 8$

Substituting $z = 20$ and $x = 8$, to obtain the value of y:

$20 = 8 + y$. Subtracting 8 on both sides

$12 = y$.

Thus, $x = 8$, $y = 12$, and $z = 20$. The three numbers are 8, 12, and 20.

MGF2106 Study Guide Solutions

1. We first rewrite $\frac{3}{4}$ and $5\frac{5}{6}$ so they have a common denominator. We will use the LCD, 12.

$$\frac{3}{4} = \frac{9}{12}$$

$$5\frac{5}{6} = 5\frac{10}{12}$$

Now we can do the addition.

$$\frac{9}{12} + 5\frac{10}{12} = 5\frac{19}{12}$$

Then we rename this answer.

$$5\frac{19}{12} = 5 + \frac{19}{12} = 5 + 1\frac{7}{12} = 6\frac{7}{12}$$

2. We can solve the equation as follows:

$2(v + 5) = -2(8v - 3) + 4v$. Using the distributive property to remove parentheses

$2v + 10 = -16v + 6 + 4v$. Combining like terms on each side

$2v + 10 = -12v + 6$. Subtracting 10 from each side

$2v = -12v - 4$. Adding $12v$ to each side

$14v = -4$, Dividing each side by 14

$v = -\frac{4}{14}$. Upon simplification, we get

$v = -\frac{2}{7}$.

3. Substituting $3y + 19 = x$ in $-5x + 3y = -35$ we get

$-5(3y + 19) + 3y = -35$. Distributing -5 on the LHS, we get

$-15y - 95 + 3y = -35$. Combining the like terms on the LHS, we get

$-12y - 95 = -35$. Subtracting 95 on both sides, we get

$-12y = 60$. Dividing both sides by -5, we get

$y = -5$

To find x, we substitute $y = -5$ in $3y + 19 = x$ and get

$3(-5) + 19 = x$. Multiplying 3 with -5, we get

$-15 + 19 = x$. Simplifying the terms on RHS, we get

$4 = x$

4. The sales tax is 9.75% of $636.99, and we calculate it as follows. First, we change 9.75% to a decimal by dividing 9.75 by 100.

$$9.75\% = \frac{9.75}{100} = 0.0975$$

Then, we multiply

$$9.75\% \text{ of } 636.99 = 0.0975 * 636.99$$
$$= 62.106525$$

Rounding to the nearest cent, we get that the sales tax is $62.11. To find the total cost, we add the listed price and the sales tax.

$$636.992 + 62.11 = 699.10$$

So, the total cost is $699.10

5. The volume of a rectangular prism with length , width and height is computed as follows.

$$= * *$$

In this problem, = 5m, = 5m, and = 5m. So we get the following.

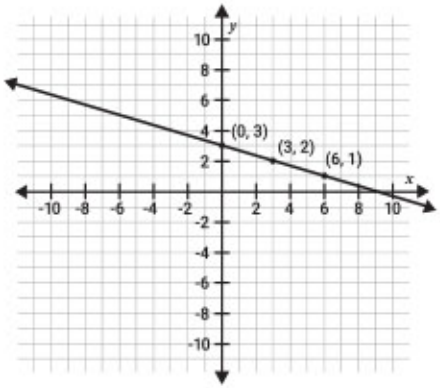
$= 5 * 5 * 5 = 125\text{m}^3$. For volume, the unit must be a 3rd power.

6. Consider the equation $y = -\frac{1}{3}x + 3$.

a. We are going to substitute the values of x and y into the equation. For (3, 2) we have $-\frac{1}{3} * 3 + 3 = -1 + 3 = 2$, so that makes the equation true.

b. We need at least two points to graph the line. First, we choose some x values. Then, we evaluate $y = -\frac{1}{3}x + 3$ for each of the x values.

x	$y = -\frac{1}{3}x + 3$	(x, y)
0	$y = -\frac{1}{3} * 0 + 3 = 3$	(0, 3)
3	$y = -\frac{1}{3} * 3 + 3 = 2$	(3, 2)
6	$y = -\frac{1}{3} * 6 + 3 = 1$	(6, 1)



MGF2107 Study Guide Solutions

1. We first rewrite $5\frac{5}{6}$ and $\frac{3}{4}$ so they have a common denominator. We will use LCD= 12

$$\frac{3}{4} = \frac{9}{12} \text{ and } 5\frac{5}{6} = 5\frac{10}{12}$$

Upon subtraction we get

$$5\frac{10}{12} - \frac{9}{12} = 5\frac{1}{12}$$

2. Using distributive property to clear parantheses, we get

$$4x + 20 = 3x - 12 + 2x.$$

Combining like terms on each side, we get

$$4x + 20 = 5x - 12.$$

Subtracting $4x$ on each side, we get

$$20 = x - 12.$$

Adding 12 on each side, we get

$$x = 32.$$

3. Multiplying the top equation by 3 and bottom equation by -2, we get

$$3(2x + 3y = 9)$$
$$-2(3x + 2y = 11)$$

Upon clearing the parantheses, we get

$$6x + 9y = 27$$
$$-6x - 4y = -22$$

Now adding the left and right hand sides, we get

$$5y = 5.$$

Dividing both sides by 5, we get $y = 5$.

4. Let the original price of the computer be c dollars.

A 8% decrease in the price is $-0.08c$.

The price of the computer after applying the discount is

$$c - 0.08c = 2162$$

in math. Simplifying the left hand side, we get

$$0.92c = 2162.$$

Dividing both sides by 0.92, we get

$$c = \$2350.$$

So, the original price of this computer is \$2350.

5. Let the base of the triangle be b cm

Let the height of the triangle be h cm.

Area of the triangle is $\frac{1}{2} \times b \times h$. Substituting $b = 11$ and $h = 6$, we get

Area $= \frac{1}{2} \times 11 \times 6 = 33 cm^2$.

6. Substituting $x = 2$ and $y = -4\frac{1}{2} = -\frac{9}{2}$ in the above equation, we get

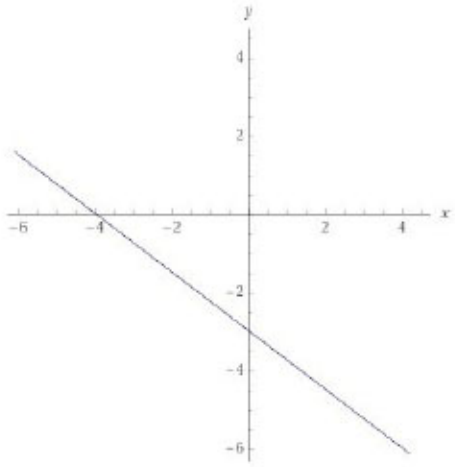
$$3(2) + 2(-\tfrac{9}{2}) = 6 - 18 = -12.$$

Hence, $(2, -4\frac{1}{2})$ is a solution to the equation.

7. To find x-intercept, substitute $y = 0$. This gives $x = -4$. Hence, the x-intercept is $(-4, 0)$.

To find y-intercept, substitute $x = 0$. This gives $y = -3$. Hence, the y-intercept is $(0, -3)$.

Hence, the graph of the equation is



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