**Self-Assessment of Your Skills**

We hear two common complaints:

 From students: “I was sure I knew the material but couldn’t do it on the test.”

 From instructors: “The students think they know more than they really do.”

An honest and continual self-assessment of your skills and understanding of concepts is a vital part of a study plan. We find that many students don’t really know how to assess themselves. We believe that learning this one skill can have a huge impact on your success, not just in math and not just in school, but in your whole life. Some students are over-confident and some are under-confident. Both situations can be a problem. Self-assessment will tell you if you need help when you have not fully learned the material, and it will give you confidence when you do.

***Something to Think About***

*Can you imagine a musician who never listened to herself play? How would she know what she needed to work on? She might just assume she was playing her best. Would she ever improve? Or she might assume that she needed to practice everything. She might work on one piece over and over. She would probably get a little better, but she would never really know what to work on. She wouldn’t know that the tempo was a little slow in this section, or her notes too choppy in another. So perhaps she could rely on her teacher to tell what to work on. She could go to lessons three times a week, and her teacher could tell her what to work on. But when she practiced alone, she would be back to just playing the same music over and over without knowing if she was improving or even getting worse. So she would have to wait until the next lesson and have the teacher tell her. Can the musician who never listens to herself ever reach her full potential?*

*Can a learner who never assesses his or her own learning be as successful as possible?*

All good assessment is a cycle.

Step 1: Identify what you need to know and at what level.

Earlier in this course, you discussed that you cannot expect to completely master material the first time you see it. The researchers Haring and Eaton identified four levels of learning (Arem, 2003, p. 127) described below. Do not view these levels as a series of steps in which you need to accomplish one before moving to the next. Your learning is much more fluid than that. You will move back and forth between the levels. However, they are helpful for you to identify where you are in your learning and the strategies you can use to improve. The types of studying discussed earlier in this reading correspond to these levels as shown with some overlap between Levels 2 and 3. Self-assessment should take place through each level.

*Understanding and Practicing New Concepts and Skills:*

1. **Acquisition**: The goal of this stage is to be highly accurate when using newly learned math skills.

🡪Strategies to use: Check work immediately when possible, if incorrect, correct problem and do another similar problem; Review textbook, notes and vocabulary; Make notes of questions you need to ask

*Review Previous Material*

1. **Fluency:** The goal of this stage is to learn math skills well enough to respond accurately, quickly, and effortlessly, particularly when these skills must be combined with other math skills.

🡪Strategies to use: Practice a skill until you can do it quickly, accurately and without hesitancy

Summary Review to Deepen Understanding

1. **Generalization:** The goal of this stage is to use the learned math skills in a variety of similar situations and to be able to distinguish when to use these skills as opposed to other similar skills.

🡪Strategies to use: Try different types of problems and challenge yourself to work on them without asking for help; If you do get help, pay attention to the strategies that are used and ask for an explanation of how the person knows how to get started; Test your understanding by explaining why steps are used; Make sure you understand vocabulary, notation and concepts

1. **Adaption:** The goal of this stage is to adapt or modify relevant elements of previously learned math skills to solving new, challenging, and different types of math problems.

🡪 Strategies to use: Explain how the material connects to previous learning, look for applications in other areas

[Note: Descriptions of levels used above are quoted from *Conquering Math Anxiety*, Cynthia Arem, 2003, p.127.]

The levels identified by Haring and Eaton focus on how the learner is able to use the mathematics. We would add that the levels of *Generalization* and *Adaptation* require an understanding of the concept. Without an understanding of the principles behind a mathematical skill, you cannot generalize or adapt it correctly.

There are two reasons that good assessment follows a cycle that begins and ends with “identify what you need to know and at what level”.  First, the level of expectation and of your understanding may have changed during the cycle.  Your first assessment of your skills in adding fractions may have been at the acquisition level.  As you work on the skill, you should move up to the level of fluency.  Second, as you work with a concept, you may have a different understanding of what you need to know.

Your best source for identifying the important concepts and skills is your instructor. What does s/he emphasize in class and in assignments? The second source is your textbook. What concepts are highlighted and covered most thoroughly? It’s a good idea to identify the “big ideas” of each lesson. This can also be an excellent way to review your notes after class. At the end of your notes, write a short summary. You might do this as a paragraph or a list. Here is one approach.

|  |
| --- |
| Topic of lesson: Adding and Subtracting Fractions |
| Vocabulary:* Common denominator
 | Concepts/Skills:* Like/Unlike denominators
* Finding a common denominator
* Why you need a common denominator
* Adding/Subtracting fractions: simple and mixed
* Estimating sums and differences
 | Connection to past material:* Factors and multiples
* Simplifying fractions
* Equivalent fractions
 |

 If you do this as a part of your first stage of studying (New Concept), it will give you an easy reference when you go back to Review or for the Summary Review.

Step 2: Assess your understanding and skills.

This is where you prove to yourself whether you know the material or not. If you have an assignment on new material, you have specific problems to do and probably have the opportunity to check some of your work. If you are reviewing however, you may not have a specific assignment. Here are some things you can do to assess your skills. Whenever possible, select problems that you can check or get them checked in the Algebra Alcove or by your instructor.

* Do a problem from a previous assignment or exam without looking at your previous work.
* Do a similar problem that wasn’t assigned.
* Make sure you review different types of problems – for example, addition of both simple and mixed fractions.
* For *Fluency*, try to do 5 problems in a set amount of time.
* For *Generalization* or *Adaptation*, try to explain concepts or write an explanation. Ask someone if it makes sense and is complete and accurate.
* For *Generalization* or *Adaptation*, try some application problems that are different from what is assigned. Often, there will be extra problems in your book. There are also many math text books in the Algebra Alcove or you can ask your instructor for sources.

The conditions in which you do the problems are also important and should be appropriate for the stage of learning. At the *Acquisition* stage, needing to refer to your book or notes or needing to get help is appropriate. However, you should then be able to move on to performing the skill without help and with high accuracy. You need to try to do the work under the appropriate conditions.

Step 3: How did you do?

Check your work and reflect upon the results. Make a list of anything that you need to work on. There are several things you should consider in light of learning stage you are in:

* Accuracy
* Time it took to complete
* Support needed (reference textbook or notes, get help)

Note that time should decrease as you go from *Acquisition* to *Fluency*, but then it will increase as you move to the two highest stages of learning. We do not want students to think that being fast is always a measure learning. Again, as with all assessment, you have to consider whether the time you took is appropriate to the stage and to the type of task.

Self-assessment requires honesty. It is easy and tempting to fool ourselves into thinking we know more than we do. Here are some common ways we “cop out” in self-assessment. Do any of these statements sound familiar?

**The “Sure, I Really Know it” Cop-Outs**

* *“I got the answer wrong, but it was just a little mistake. I really know what I am doing.”*
* *“I looked at the example and understood it. I don’t need to actually do the problem.”*
* *“I understood it when my instructor/tutor/friend explained it. So I know it now.”*
* *“I did really well with it when we did it in class a couple of weeks ago so I don’t need to review it.”*
* *“I got the right answer. It doesn’t matter if I don’t really understand it.”*
* *“I did most of it myself. I just needed a little help in the [beginning, middle, end].”*

***Something to Think About***

*Saying you can do something and demonstrating you can do it consistently and accurately are two different things. Consider this scenario.*

*A basketball player on that famous pro team, the Algebra All-Stars, has the following conversation with his coach:*

*Player: You should give me a $5-million bonus because I can make a shot from the half-court line.*

*Coach: What makes you think you can do that?*

*Player: I did it in practice last week.*

*Coach: But you only did it once, and it was in practice. It wasn’t even in a game.*

*Player: But it proves I* ***can*** *do it.*

*Coach: So why couldn’t you do it in practice today?*

*Player: When I took that first shot, another player distracted me just as I was shooting. I know what I did wrong the second time. And I came really close in that third shot. It spun around the rim and just barely fell out. But I still know I can do it.*

*If you were the coach, would you give him the bonus?*

If you were depending on someone else to do something for you, you would expect them to prove they could really do it. You have to demand the same thing from yourself. Here are some ideas to help you avoid the “cop-outs” trap.

* Just looking at a problem is never enough. Always do it yourself from start to finish.
* If you had to ask for help or look something up, do a similar problem from start to finish. Make a note of the problem and do another one in the next few days.
* If someone explains something to you, explain it back to them in your own words.

As you self-assess on major concepts and skills, you should also be aware of any “bad habits” that are affecting your performance. Here are some common mistakes we see students make:

* Not reading instructions carefully
* Misreading notation; example: reading (4x + 5) – (2x -1) as (4x + 5)(2x – 1)
* “Losing” negative signs
* Errors from misreading own handwriting
* Arithmetic errors
* Unable to follow the steps in own work, usually due to messiness or skipping steps
* Not recognizing errors even when the answer is clearly not reasonable
* Not completing the problem

If you have to add a quart of oil to your car every week, it won’t take long for you to realize that there is a problem that needs to be fixed. If you are making the same types of errors over and over, you need to fix that problem too. It will save you time and effort in the long run. Talk to your instructor if you need help addressing the problem.

Step 4: What do you need to do? Now you know what you understand well and what you don’t. You need to decide what to do next. Your plan will depend on how much work you think you need. Some of your options are: do additional problems, review the text, notes or other resources, ask for help.

***Something to Think About***

*Some students resent the suggestion that they should do “extra” work. They feel that the class assignments should be enough to ensure a good grade. This gets at the purpose of the course. If you are taking a literature course, do you feel that the purpose is to read a certain number of words and once you have read that number, you should be done? The purpose of such a course is to understand the meaning of the literature, to see how it influenced culture, to understand its place in history. To do this, you might need to reread passages or even the entire book. You might need to discuss it with others and read analysis from other writers. You might have to look up words that are unfamiliar or learn about a country or historical period. It would all depend on your background and previous knowledge. What you would need to do to understand the book might be very different from what someone else would have to do.*

*Your math course is the same way. The purpose of a math course is for you to understand the mathematics and be proficient in the skills taught in the course. The purpose is not to have you complete a certain number of problems. Instructors typically assign what they consider the* ***minimum*** *amount of work that students need to do to fully practice and understand the material. Instructors assume that students will do more if needed. It isn’t “extra” work – it’s whatever work you need to do to learn the material.*

![C:\Documents and Settings\getz_a\Local Settings\Temporary Internet Files\Content.IE5\QZLK14US\MCj03043590000[1].wmf]()**How will I ever have time for this?!?**

Are you thinking, “How can I ever find time to do all of this?” We understand it sounds daunting, but actually, it’s not as time consuming as you might think. Remember, in the reading on studying math, we talked about making your study time more effective and efficient which should allow you to add in on-going review work. This is the part of studying that most students neglect. The self-assessment is more about an awareness than about something that will take a lot of extra time. As you do your homework and review previous work, you should be thinking about the stage of learning you are in and be checking your progress. This should become an automatic process.

If you are having trouble with a concept, it is going to take more time and effort to learn the material. But what’s more work – doing it right this term and being really prepared for your next course or having to repeat this course because you didn’t learn the material? The investment now can have a big pay-off later.