



Beauty in the Beast

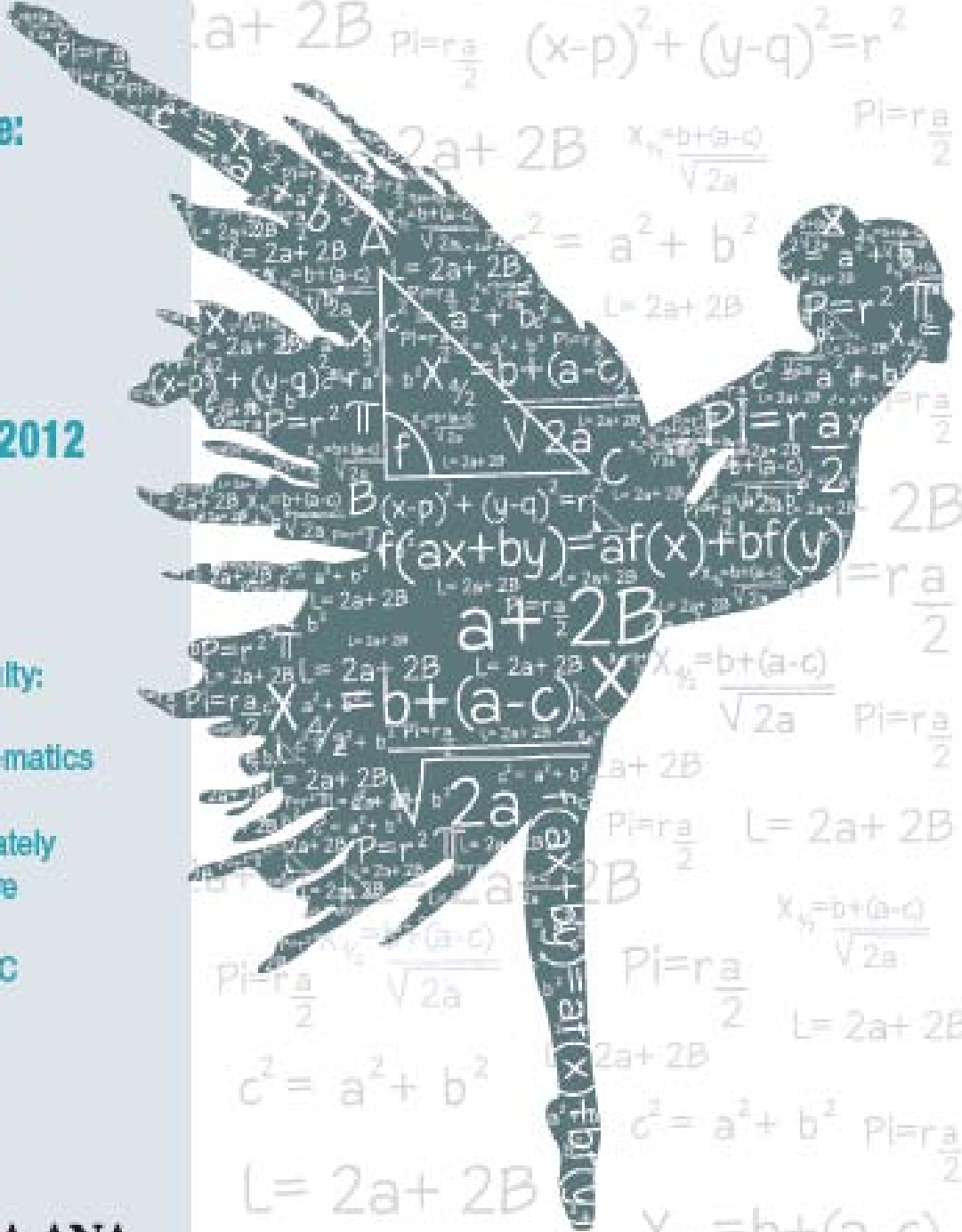
Distinguished Faculty Lecture:
The Hidden Beauty in Math

Tuesday,
November 27, 2012
3:00 pm
Phillips Hall

Distinguished Faculty:
Lynn Marecek,
Professor of Mathematics

Reception Immediately following the lecture

Hosted by: The SAC Academic Senate



SANTA ANA
COLLEGE

Santa Ana College

Distinguished Faculty Lecture

Beauty in the Beast

Presented by: Lynn Marecek
November 27, 2012

Lynn Marecek has focused her career on meeting the needs of developmental math students during her tenure as a professor at Santa Ana College since 1995 and prior to that as a high school teacher. Lynn has worked on a variety of projects focusing on improving student learning in the developmental math courses, receiving the Santa Ana College Curriculum Development Award four times.

She is the coordinator of the Freshman Experience Program, Student Success Committee, serves as the Math Department Co-chair in charge of hiring and scheduling adjunct faculty, serves on the Basic Skills Initiative Task Force and is the department facilitator for Course Redesign.

She is a member of the American Mathematical Association of Two Year Colleges' (AMATYC) Developmental Math Committee and is a frequent presenter at local and national conferences

Lynn holds a bachelor's degree from Valparaiso University and master's degrees from Purdue University and National University. She has also completed work in a doctoral program in Instructional Leadership in Curriculum and Instruction in Higher Education.

She has recently published *Strategies for Success: Study Skills for the College Mathematics Student*, Pearson Education, 2012 and is now under contract with Pearson Education to write a *Prealgebra with Study Skills* text.

No matter what she is involved in, Lynn's passion is her students-especially those who have historically struggled with math.



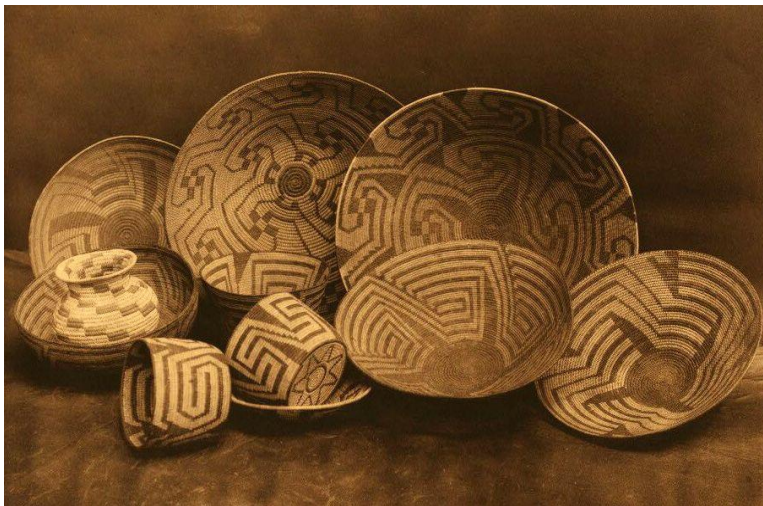
Distinguished Faculty Lecture
Santa Ana College
Lynn Marecek
November 27, 2012

Welcome!

Wow! What a great day! I want to thank Dr. Martinez and the Academic Senate for this amazing opportunity. I also want to welcome each of you to this talk. I appreciate your coming.

I hope you enjoyed the pictures that were being shown as you entered the Hall. When I was a child, every year my parents took the family camping in the national parks-- primarily those in the western states. Through our travels, I was exposed to many cultures and I became fascinated by the crafts of the different groups-- especially those of the women. I loved the patterns and designs evident in the crafts and later came to realize that those patterns and designs were the mathematics in the piece.

This afternoon, I'd like to start by talking about some of my favorite crafts--baskets, pottery and quilts.



Imagine living in the desert or prairie when there were no stores to buy the items you use in daily life. All that is available to you is what you find in your environment. How would you carry supplies or gather, prepare and store your food?

Over 8000 years ago, people began to create baskets to meet these needs. Now they could carry more food than they could

eat at one time and so bring some home to share. Baskets allowed them to carry and store enough acorns so they could pound them into flour. They could prepare, cook and serve food.

But how did this come about? How did a woman see grasses and roots and then create a basket? Was she inspired by a bird nest or a beaver dam? Women spent a lot of time gathering and specially preparing the materials for weaving baskets. They patiently wove baskets from the plants, roots, and grasses they found nearby.

If we carefully look at a basket, it is hard not to appreciate everything that went into making it. We can see the creativity and originality of the basket-maker. Imagine the woman gathering the grasses and roots and preparing them. Imagine her thinking of the desired shape, form and design of the basket. Her ability to visualize the whole basket design as she weaves it is amazing. How many failures came before success? I think her patience to complete the basket is inspiring.

What fascinates me, though, is that the baskets did not need decorations to be useful -- the basket-makers could have left them plain. Yet beautiful geometric designs were often woven into the baskets. The designs are fascinating and technically challenging. These patterns also exhibit mathematical ideas - showing that math is within us!



Imagine a life when water did not flow by merely turning on a tap. All water used by your family to drink and cook had to be collected and carried from a water source. With no stores and only what is available in your environment to use, what

would you do???

In North America, the Native American groups developed pottery. There is evidence of pottery from as early as 20,000 B.C. Pots were created for needs of daily life and were used as containers, for ceremonies, and eventually, to meet the needs of the tourist trade.

Pots were used to gather water, store grains as well as the seeds for the next year's planting. Special shapes were designed for various uses. Cooking pots were shaped to sit on rocks in the fire, water jugs were designed to sit on the head of the person carrying the water, and seed jars came in the size and shape best suited for each type of seed.

Pots were used as part of religious and ceremonial rituals and helped carry on the traditions of the ancestors. Once the railroads brought tourists west, the pottery was created to meet the demands of the visitors. While the pottery may have first been developed to create useful objects, eventually it evolved into art.

Given the thousands of years invested in the craft of pottery it is hard not to be moved by the process of making a pot. The difficult process requires the potter to first know where to find the best clays that she will often taste to insure the correct properties.

Then the potter must dig, grind and prepare the clay. Next comes the making of the long snakes of clay, coiling them and then pinching the pot into shape. Wood must be gathered for the fire that must be attended for many hours. Finally the decorating processes are completed.

It is amazing that pots made freehand have been measured to be perfectly round within 1/100th of an inch. Great skill, practice and patience are required. A pot reflects bonds with both the land and the past. The culture of the potter is built into each pot—it determines its composition, form, and decoration.

As with basketry, pottery did not need decorations to be useful, but the everyday work of the potters became art. They created items of amazing beauty when a plain object would have sufficed. Each potter has the remarkable ability to give each pot a life and spirit of its own. Imagine the potter taking a complex design, drawing it on the pot making sure it comes out even row after row. These designs also exhibit mathematical ideas - showing again that math is within us!



Let's think about quilts—Imagine that you had to make all your own fabrics using a spinning wheel and loom and dye them using roots, berries or leaves. Most of us today would have no idea how to even begin that process! In colonial America this was reality and as a result fabrics were scarce, treasured, saved and reused. Once a dress was worn out, it was cut apart and the fabric reused to make another household item—often a quilt. Quilters were the ultimate recyclers!

Quilts were usually made from blocks that were sewn individually. Each block was made from many small pieces of fabric sewn into a pattern. Once many blocks were finished, they were assembled into the quilt. Imagine how many small fabric pieces must be cut for each block and then for each quilt! How precisely must they be cut in order for the pieces to form a pattern? Imagine the woman looking at her basket of fabric scraps and visualizing a finished quilt. Will she have enough fabric? How do the colors go together? What will the overall effect of the quilt be once the blocks are put together?

If we look at a quilt we see that it as an expression of everyday life in a very artistic way. Every quilt has a story and reflects both the personality and passion of its creator. The quilt preserves the personal and family history of the maker. Quilts connect an

individual's imagination to family, friends, and their community. They demonstrate the extraordinary creativity of generations of women. Each quilt becomes a record of American life—a heritage in cloth.

Once again, quilts did not need interesting patterns and designs to be useful. Yet, quilters often put great effort into sewing pieces of fabric into intricate designs. Quilts were commonly made in only a few basic patterns. What made each quilt unique was the choice of fabrics used in the pattern blocks and the arrangement of the blocks in the quilts. How the virtually identical quilt blocks are positioned in the final quilt creates the overall design. It could be transformed by merely changing the positions of the blocks.

I could go on about this for hours, but I have to stay focused here. I do want to quickly show what I am referring to when I talk about how merely changing the position of the blocks can change the overall design.

Each quilt here is made with only blocks identical to the one at the top. Yet look how the overall pattern is different in each quilt.

These patterns exhibit mathematical ideas—showing yet again that math is within us!

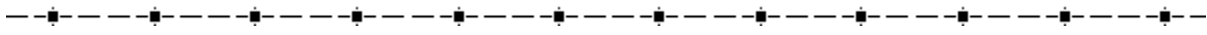
The crafters of baskets, pottery and quilts—as well as many other crafts—took the materials they had available and made something they needed. The designs and craftsmanship are not only functional, but also full of the beauty of mathematics. Many traditional designs use elaborate geometric patterns. Pigments were measured and mixed in specific ratios to make colorful dyes. Stitches and rows were counted carefully to create intricate patterns. The crafters never had formal education in math the way we know it—they certainly never had the computers and calculators we have today to do the math. They just did it.

I invite you to take a moment to reflect on your own personal culture and heritage and think of a craft of your culture—perhaps a craft that your grandmother made—and share with a person sitting near you now.

This table runner was created by my husband's grandmother. The technique is called tating. I just love the patterns and how the stitches are so even and small.

When I ask my students do this exercise, I am always amazed at the different crafts suggested and also how excited they are to share their culture. Usually they are surprised when I talk about the mathematics in crafts.

I hope you will come to not only appreciate the beauty of objects such as these, but also begin to appreciate the mathematical beauty within.



So then I can't help but wonder, how did mathematics— so beautiful and natural — become such a cause of anxiety???

Math Anxiety seems pervasive: Why is it socially acceptable to say “I hate math” or “Tee hee, I can't balance my checkbook?” I have yet to see anyone proudly announce that they can't read.

If I am at an event and someone asks me what I do, I usually say, “I am a teacher.” Of course, the next question is, “What do you teach?” As soon as I say “math,” it is not uncommon for the person to take a step back. It's like math teachers have cooties and are contagious.

The other common reaction is for them to tell me their story with math—

I always love our Awards of Excellence assembly each Spring. I feel it is a time for all my amazing and talented colleagues, both faculty and staff, to gather and reflect on all that we do for students and the college. Each of us is an integral and unique piece of the puzzle that is Santa Ana College and we should celebrate all that we together accomplish. After the ceremony this Spring, when I was named Distinguished Faculty, three colleagues came up to me and expressed their math anxiety in one way or another.

I knew then what I would talk about today—Math Anxiety

My goal today is to give you some tools that you may find useful in situations of anxiety in your own life or to review some techniques you may already know. I also, then want you think how you might adapt and apply them to what you do here at Santa Ana College.

I will be talking about math and about teaching—because that is what I do. Perhaps this will be more meaningful to you personally if you think in terms of what is important to you. You, especially those of you who are students, may relate this to another discipline; faculty, you may apply it to the anxiety of students in your discipline. Or maybe you will reflect on your anxiety in our current budget situation! In any case, please put all this in a context of your choosing.

The first day of my developmental math classes each semester I ask my students to rank themselves on a scale of 1-10 on how they feel about math.

10 -- I love math and want to be a math teacher like Mrs. Marecek

1– I hate math and if she turns her back one more time I am out the door

Take a moment and place yourself on that scale. Please write your number on the back of your worksheet packet.

In my developmental math classes, I know what the results will be: maybe 1-2 students are in the 8-10 range, 2-3 in the 6-7 range and the rest of the class is in the 1-5 range.

I have my work cut out for me!!!!

My goal is to take these students who have historically struggled with math, have weak math skills, have poor study skills, obviously suffer with math anxiety and have no confidence in their own abilities and convince them they can and will succeed in math.

I need to address their anxiety and empower my students by giving them the tools they need to take charge and move forward.

So, what exactly is anxiety?

In her book, “Managing the Mean Math Blues,” our colleague Cheryl Ooten states:

Anxiety results when you are **required** to stay in an uncomfortable situation where you **believe** you have no **control**.

Three words are key:

Required

Believe

Control

When I was in college, I chose the path to become a high school math teacher. To get my credential I was required to take US History and World History. I hated history and the thought of taking it caused me great anxiety. Once it was pointed out to me that I chose those courses by choosing to become a teacher, my thoughts changed. I took charge and decided to get it over with by finding a professor whose teaching style worked with my learning style—(though I don’t believe I knew those words back then.)

Professor Engelder taught the classes in outline form and actually wrote the notes on the board in outline form. I could understand that structure and so the two required

courses were not so bad. I did what I had to do and completed both courses with a grade of B. Amen!

By changing from “I have to take this class,” to “Actually, I chose to take this class” was the first step in removing the anxiety.

I relay this experience to my students and help them see that by choosing to get a degree, they have chosen to take a math class. They may never love math, but they can finish the required courses.

The next step is to help students challenge their belief system. If they truly believe “I cannot pass math” or that “I always fail my math test,” their journey will be difficult. If I can give them the tools to reframe their negative thoughts, they can move forward.

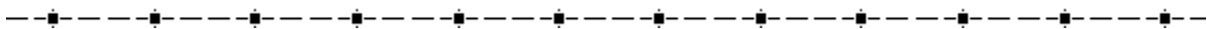
So, first, I help them understand how their thoughts influence their emotions, body sensations and behaviors. A positive thought leads to positive behaviors. Then I help them identify their negative thoughts and reframe them as more neutral or positive thoughts. Lastly I give them intervention strategies to change their negative thoughts.

We are going to look at this process today.

MaryAnne Anthony and I have created three worksheets that together give the students the skills they need to identify and neutralize negative thoughts. The worksheets are based on the work of Cheryl Ooten.

We will look at these worksheets here today. They are the ones you received as you came in!

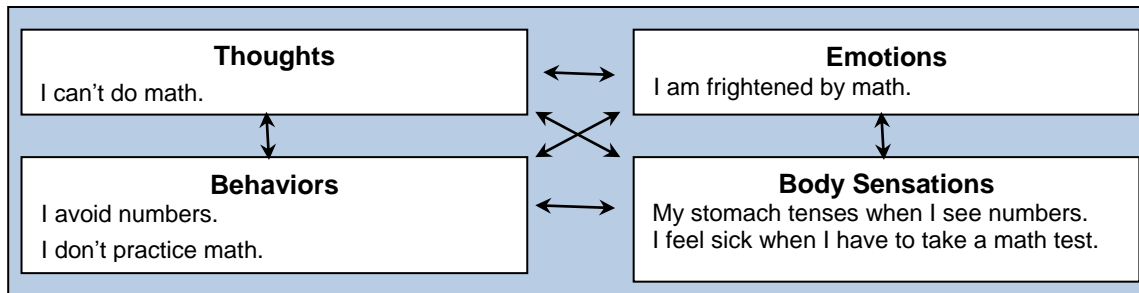
Thoughts in Charge
Recognize and Neutralize Negative Thoughts
Intervention Strategies for Negative Thoughts



Let's start with the worksheet “Thoughts in Charge.” It should be the first one in your packet.

Again, I do this in terms of math—you can change it to whatever situation works best for you.

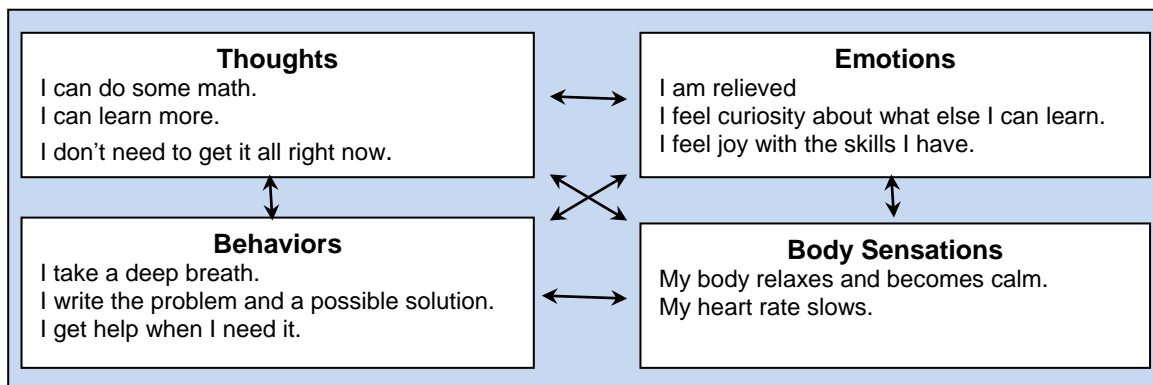
These “interrelationship” charts use arrows to show how thoughts, emotions, body sensations and behaviors are all related to each other. Let's read the first interrelationship chart, starting at the top left with the “Thoughts.”



Notice the effects of a negative thought on your emotions, body sensations and behaviors.

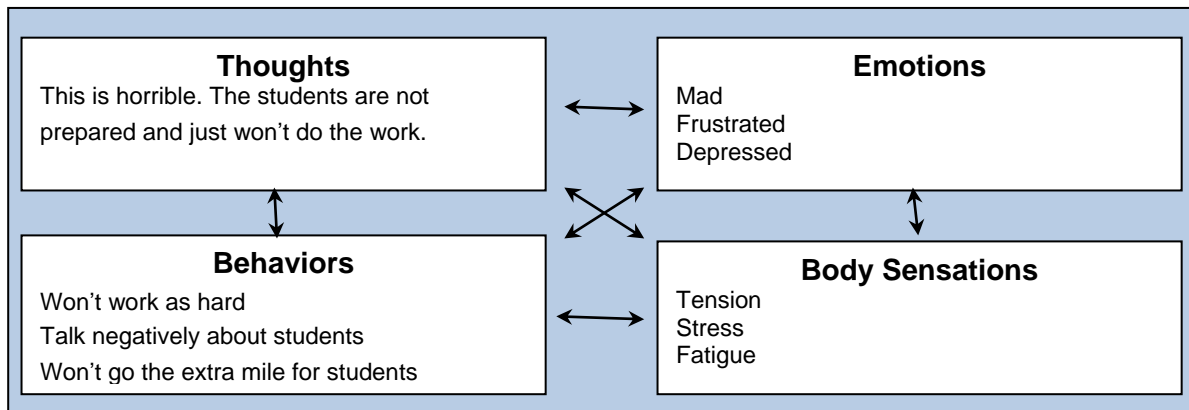
Can you identify?

As we read the next chart, notice the effects of neutral thoughts.

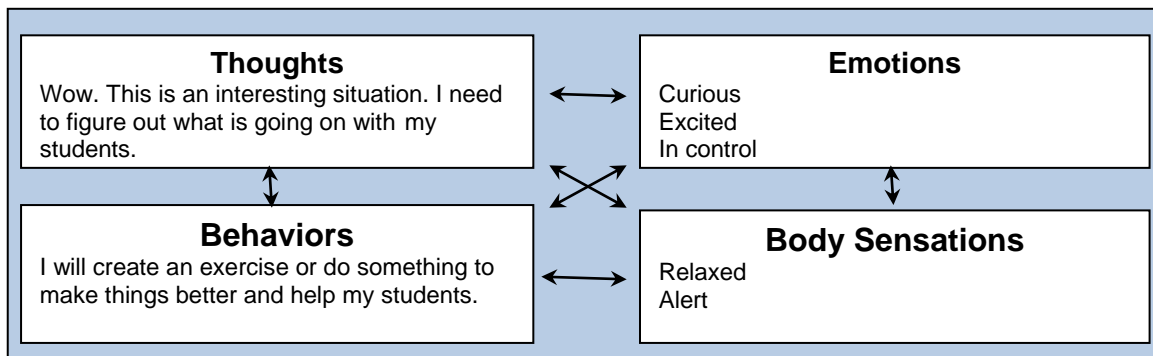


What is your reaction to the two charts? Do you feel differently after reading the second chart?

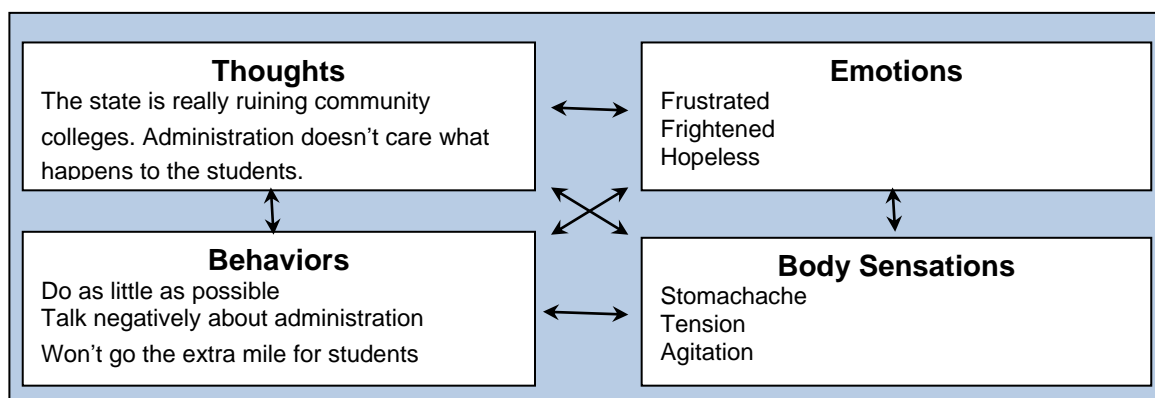
Let's think about this with an example that maybe all the teachers here today can identify with. Suppose you just finished grading a bad set of tests. Look at the behaviors that result from the negative thoughts you are having.



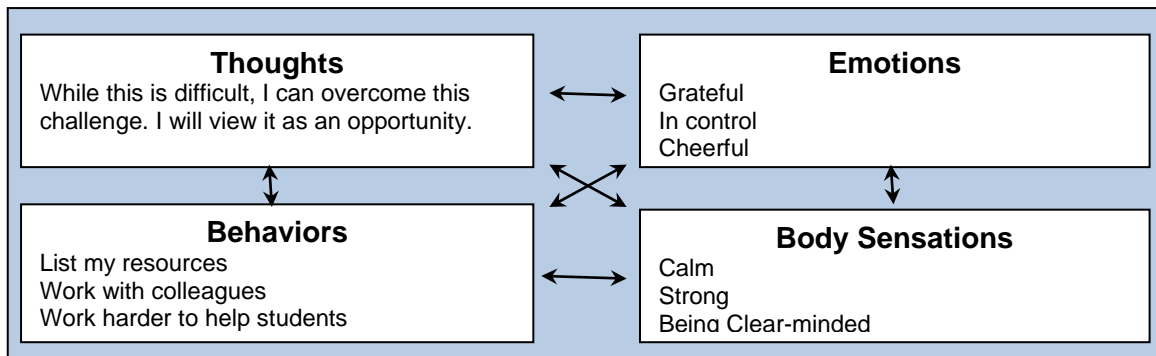
What if we reframe that thought -



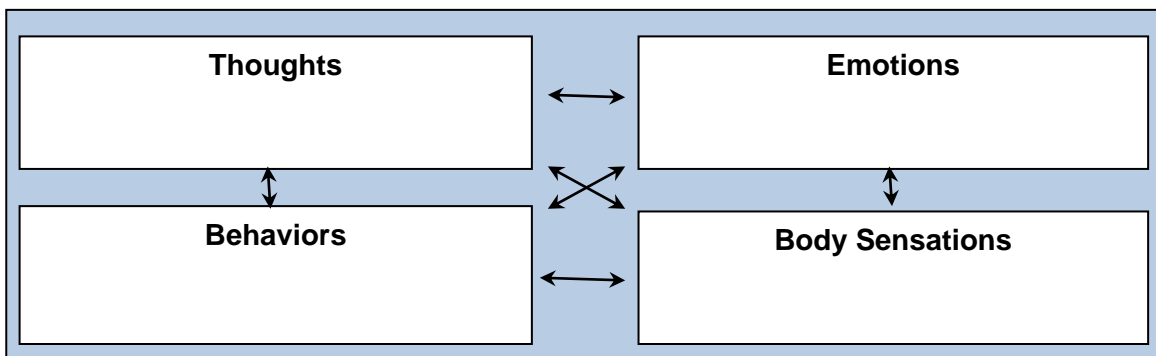
In this very difficult time of budget cuts and no money, it would be easy to create a cycle like this:



But what if we change the first thought to a more neutral and productive thought?

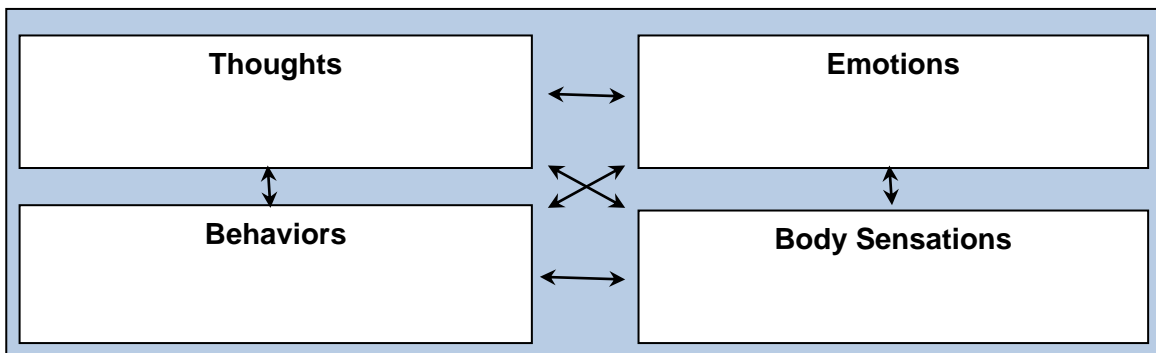


Look at question 2 on the back of your worksheet. Take a few minutes to create the interrelationship chart. If you want to use the suggestions for Thoughts, Emotions, Behaviors, and Body Sensations you may, or you may create your own.



When you are done, compare with your neighbor. Talk about what you wrote.

Now look at question 3 on the back of your worksheet. Take a few minutes to create the interrelationship chart. Again, if you want to use the suggestions for Thoughts, Emotions, Behaviors, and Body Sensations you may, or you may create your own.



When you are done, compare with your neighbor. Talk about what you wrote. Did you feel any differently when you wrote the chart this time?

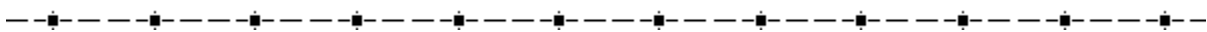
Let's take a few comments from the group.

Every time I do this in class, I am surprised at how powerful the students find it. This is very eye-opening to most of them. Think about how you may use this strategy in your classes, job or life.

The strategy we have been using is called reframing. A classic example of reframing is "the glass is half-empty vs the glass is half-full."

Reframing is a skill everyone needs to know. Every really good teacher knows how to reframe and does it automatically. We want to work with positive people—they automatically reframe.

We have just had a situation in the math department where some of our math classes were abruptly put on hiatus. The students who would have taken our courses will now take them in the CEC program. At first I was very upset that we were not given much time to process the change and create a smooth transition plan for the students. I was stressed and anxious. Then when we began to work with CEC one of their team members said—"Let's view this as an opportunity." That comment just made all the difference as we moved forward.



Once my students see the connection between thoughts and behaviors, I need to help them identify their negative thoughts. I find that this is very difficult for them. They say negative things about math and their abilities in math so routinely that they do not see the statements as negative.

I always blank out during a test.

I can't do word problems.

I've never understood fractions.

Even my teachers have told me I am bad in math.

Recognizing and acknowledging the negative thoughts is the first step towards changing the negative emotions, body sensations and behaviors. Once you recognize negative thoughts, you can begin to consciously intervene with the negativity they create.

So let's take a few minutes here to look at Worksheet titled "Neutralize Negative Thoughts."

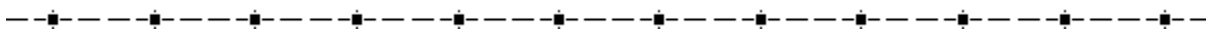
Take a few minutes to check whether each statement is negative or neutral. Again, if you want to substitute another word for math—please do.

When you are done, compare with your neighbor. Did you agree which statements are neutral? Talk about any statement that you may have disagreed on!

By the way statements d, g, j, l, m, o, p, q, s, t are neutral.

Now look at question 2 on the back of the worksheet. Take a minute to choose one negative thought and rewrite it as a more neutral and useful statement.

OK, so now we know the effect of negative thoughts on our emotions, body sensations and behaviors. We also now know how to identify our negative thoughts. I usually ask my students to write down every negative thought they identify having for a week. It takes a little practice to recognize those negative thoughts. But now they need some intervention strategies on how to neutralize those negative thoughts.



Let's look at the third worksheet called "Intervention Strategies for Negative Thoughts."

When you catch yourself making a negative thought—try an intervention strategy. With practice, you will be able to change the negative thoughts into alternative thoughts that will lead to more productive emotions, body sensations and behaviors. We will look at the 5 strategies that are included in the worksheet.

Our first strategy is "Examine the Evidence."

So often I hear a student make a very dramatic statement that she is convinced is true—but it may not be. For example: "OMG -- I am failing math!" This thought is of course inducing all sorts of negative emotions, body sensations and behaviors. But what if we calm down, take a realistic look at the evidence and then go from there.

Answer Question# 1 on the worksheet. Please, discuss it with your neighbor when you are both finished.

Strategy #1: Examine the Evidence.

What is the evidence that your negative thought is really true?
What would you do differently if this thought were false?

- 1) Suppose your negative thought is "I'm sure I will fail this class."
 - (a) What evidence could you check to see if you really will fail the class?
 - (b) If you are not failing the class, how might your behavior change?

Again, while this question was about math, start to think about how it might apply in your classroom or life.

Strategy #2 is "Get a Different Perspective." So often we are our worst critics and the things we say to ourselves are just plain mean, negative and unproductive. Suppose we take the negative thought and think about how we would answer our best friend or family member who has had the thought.

Answer Question# 2 on the worksheet. Please, discuss it with your neighbor when you are both finished.

Strategy #2: Get a Different Perspective.

Tell yourself what you would tell a close friend who has this thought.

- 2) Suppose your brother said, "I am too stupid to do math." What would you tell him to convince him he is not too stupid to do math?

Move on to Strategy #3. When learning math, just like when learning sports, music, or a foreign language, if you don't practice -- by doing homework-- you can't expect to become proficient. Not doing homework is a behavior that contributes to not being able to do math. If we recognize an unproductive behavior and change it—the results may be different.

Answer Question# 3 on the worksheet. Please, discuss it with your neighbor when you are both finished.

Strategy #3: Do Something Differently.

Identify a behavior that contributes to your negative math thought.

Behave

in a new way to get a different result.

- 3) When learning math, just like when learning sports, music, a foreign language,
etc. if you don't practice -- by doing homework-- you can't expect to become proficient. Not doing homework is a behavior that contributes to not being able to do math.
- (a) How can you change this behavior to get a better result?
 - (b) Name one of your behaviors that contributes to your negative thoughts about math.
 - (c) How can you change that behavior to get a better result?

Actually, while I was waiting for you to finish, I thought of one of my personal behaviors that is not leading to the desired result. I think I will try to do something differently. I hope you also have an application for this strategy.

Strategy #4 is "Changing the Wording." It always amazes me how adding the word "yet" can make such a difference. The statement "I can't do this math problem" leads to a stressful reaction filled with fear, etc. But if I change it to, "I can' do this math problem yet," there is hope and willingness to try.

Answer Question# 4 on the worksheet now, but let's just write down one negative thought and then change the wording. Please, discuss it with your neighbor when you are both finished.

Strategy #4: Change the Wording.

Restate a negative thought in a way that it becomes neutral or positive.

Add the words “right now,” or “yet.”

For example:

Change “I can’t do math” to “Right now I am unable to do these math problems.”

Change “I don’t understand” to “I don’t understand yet.”

Change “I’m not prepared” to “I am not prepared yet.”

Our last Strategy is Act “As If.” Remember the idea of “Dress for Success?”—it’s kind of the same thing. Try on success!

Answer Question# 5 on the worksheet now, and you do not have to do it in terms of math. What negative personal trait do you wish to change? Please, discuss it with your neighbor when you are both finished.

Strategy #5: Act “As If.”

Act as if you have the trait you lack or already are the kind of person you would like to become.

5) If you want to be a successful math student, think about how good math students act. What behaviors could you do to act “as if” you were a successful math student?

Now we have a way to challenge negative thoughts and beliefs. We can give ourselves and our students strategies to change these thoughts into alternative thoughts that will lead to more productive emotions, body sensations and behaviors.

Today, I hope you saw how our students can challenge their negative beliefs and think about college requirements as choices, and so take charge of their lives. This allows the anxiety level to diminish.

But even more importantly I hope you walk away with some tools that you may find useful in situations of anxiety in your own life and job. I hope this starts a thought

process where you think how you might adapt and then apply it to what you do in the classroom or job here at Santa Ana College.

I hope too, you will perhaps see some beauty in the beast!

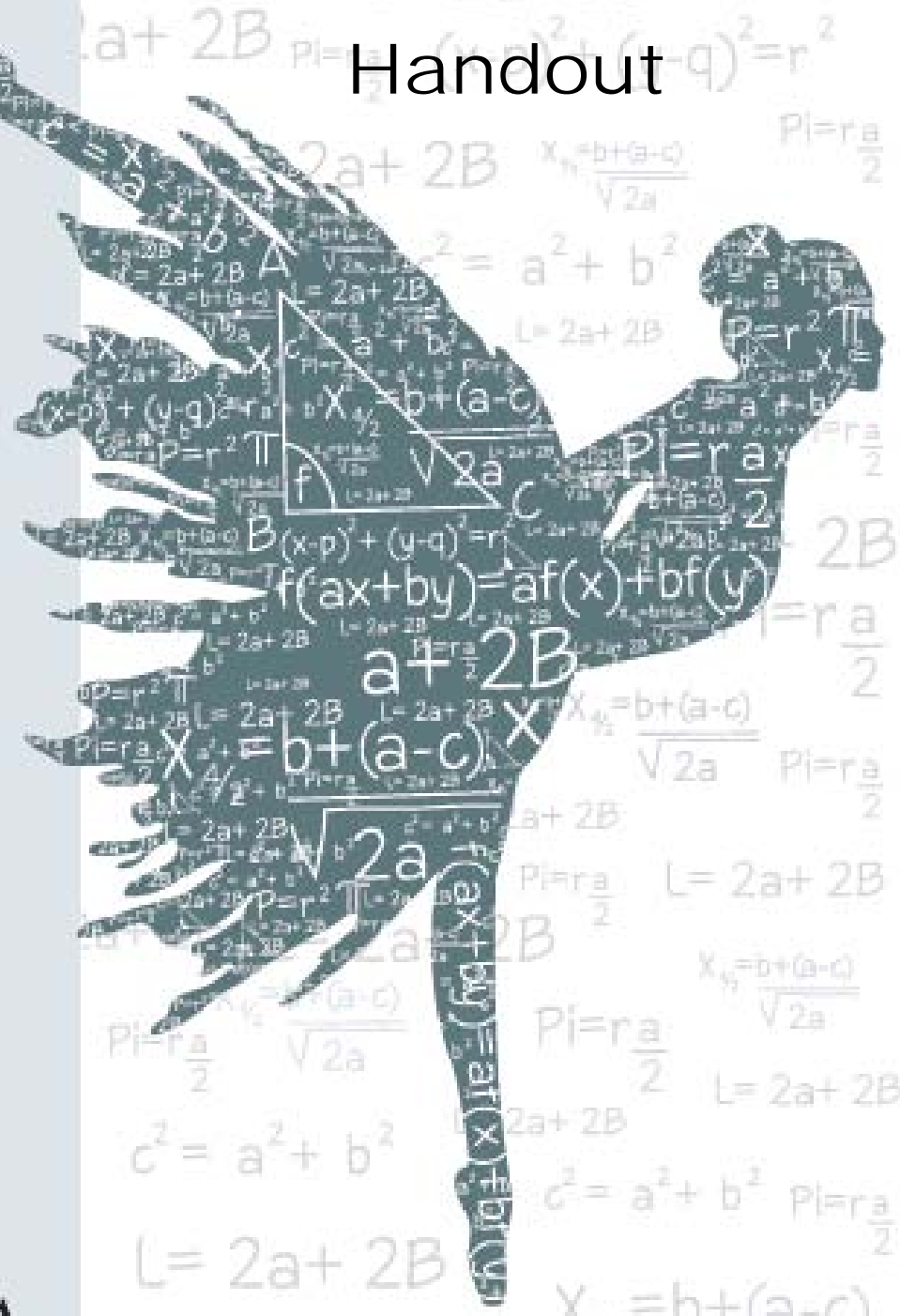
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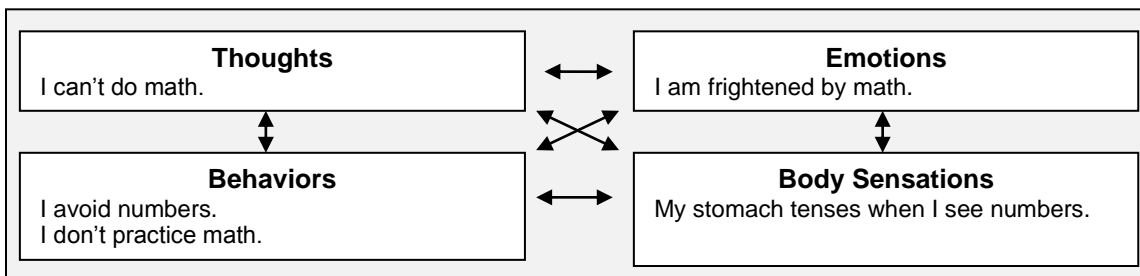
Handout

Strategies for Success
Thoughts in Charge!

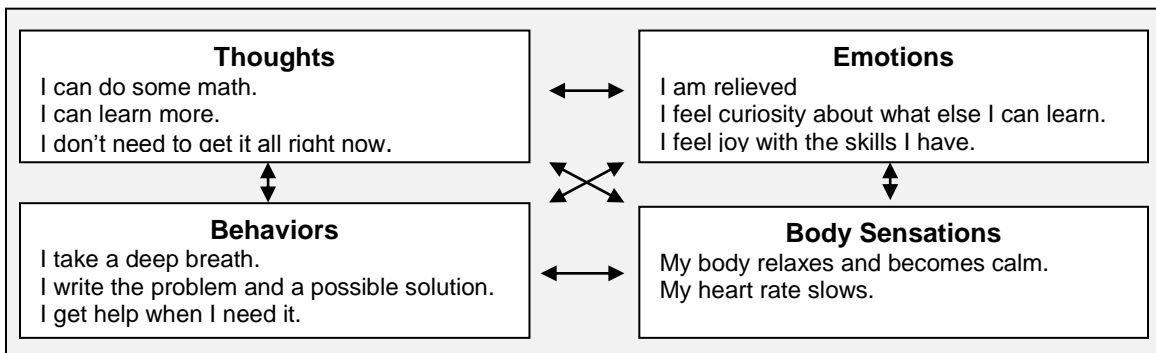
Name _____

Do you know that your thoughts can affect your emotions, body sensations and behaviors? Thoughts, emotions, body sensations, and behaviors are interrelated. Each one of them influences the other three. (Adapted from Ooten, C. (2003). *Managing the Mean Math Blues*. Upper Saddle River, NJ: Pearson Education, Inc.)

These “interrelationship” charts use arrows to show how thoughts, emotions, body sensations and behaviors are all related to each other. Read these two interrelationship charts, starting at the top left with the “Thoughts.” Notice the effects of a negative thought on your emotions, body sensations and behaviors.



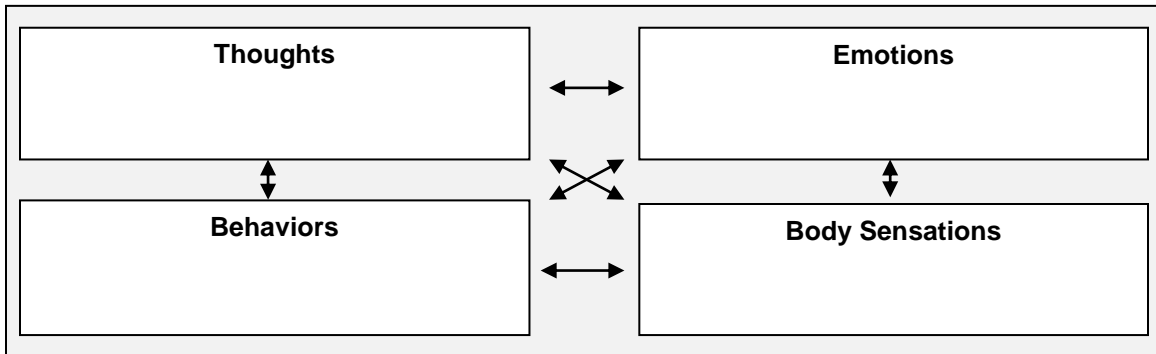
As you read the next chart, notice the effects of neutral thoughts.



1) What is your reaction to the two charts above?

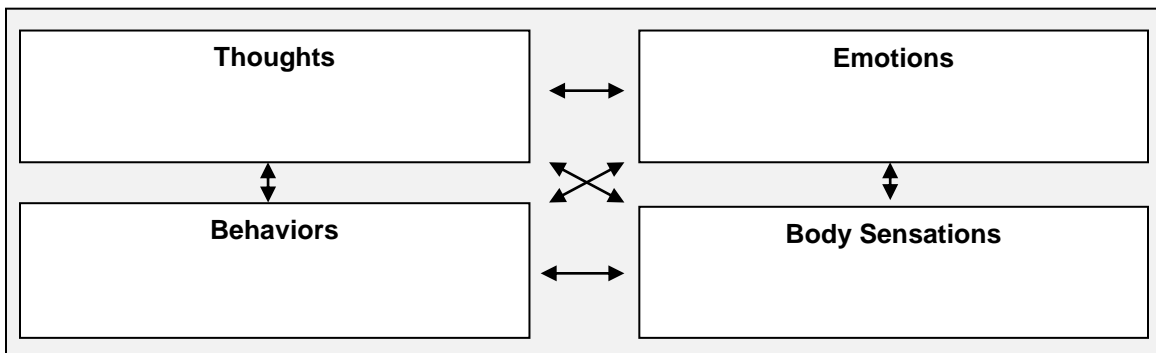
2) In the lists below, circle the thoughts, emotions, body sensations and behaviors that you have experienced. Then use them to create an “interrelationship” chart.

Thoughts	Emotions	Behaviors	Body Sensations
I will fail.	Frustrated	Avoid math	Palpitations
I will never do well.	Embarrassed	Blame the teacher	Sweating
I am incompetent.	Helpless	Tune out in class	Stomach ache
Math teachers hate me.	Anxious	Waste time	Hives
I am helpless.	Panicky	Avoid homework	Crying



3) In the lists below, the thoughts, emotions, body sensations and behaviors that you would like to experience. Then use them to create an “interrelationship” chart.

Thoughts	Emotions	Behaviors	Body Sensations
Practice helps.	Excited	Come to class prepared	Relaxation
I can get support.	In control	Consult teacher	Calmness
I have learned before.	Capable	Do my homework	Peace
I intend to understand.	Proud	Ask questions	Steady heartbeat
Understanding takes time.	Calm	Form a study group	Strength



*Strategies for Success***Neutralize Negative Thoughts**

Name _____

Recognizing and acknowledging your negative thoughts about mathematics is the first step towards changing your negative emotions, body sensations and behaviors. Once you recognize negative math thoughts, you can begin to consciously intervene to neutralize the negativity they create. The Strategy for Success *Intervention Strategies* will show you some interventions strategies you can use. (Adapted from Ooten, C. (2003). *Managing the Mean Math Blues*. Upper Saddle River, NJ: Pearson Education, Inc.)

1) Read each thought below and identify whether it is a negative statement or a neutral statement.

Negative Neutral

- | | | |
|-------|-------|--|
| _____ | _____ | a) I will never understand math. |
| _____ | _____ | b) I feel dumb and stupid. |
| _____ | _____ | c) Math is out to get me. |
| _____ | _____ | d) This has happened to me before. I have worked through it. |
| _____ | _____ | e) Math problems contain tricks meant to stump me. |
| _____ | _____ | f) I cannot do math. |
| _____ | _____ | g) Maybe I need to ask some questions, or do some examples again. |
| _____ | _____ | h) Everyone understands what to do except for me. |
| _____ | _____ | i) Because I don't understand this, I will never be able to do math. |
| _____ | _____ | j) The learning process is challenging. There must be something I don't quite understand here. |
| _____ | _____ | k) I feel like an idiot. |
| _____ | _____ | l) I have many resources to assist me—the book, notes, examples, the instructor, friends and tutors. |
| _____ | _____ | m) Just because these few problems are difficult doesn't mean all the rest will be difficult too. This is an opportunity for me to figure out what I misunderstood and correct it! |
| _____ | _____ | n) I should understand this |
| _____ | _____ | o) I will take notes or ask a question so I can clarify this concept. |
| _____ | _____ | p) Math is a process and it has a way of being harder, then easier, then harder, then easier. |
| _____ | _____ | q) The material is new to me. I am not expected to understand it all immediately. I have many resources to help me understand this. |

Negative Neutral

- _____ _____ r) The teacher will be upset with me if I ask questions about this.
- _____ _____ s) Establishing a relationship with my teacher might make asking questions during, or after, class easier.
- _____ _____ t) I can act positively by taking a deep breath and congratulating myself for being courageous enough to put myself in this class.

2) Choose two of the statements that you identified as negative thoughts above and rewrite each of them as a more neutral and useful, but still true, statement. For example:

Negative thought: "I hate fractions!"

More neutral and useful statement: "I don't completely understand fractions, but I can learn to work with them."

1. Negative thought: _____

More neutral and useful statement: _____

2. Negative thought: _____

More neutral and useful statement: _____

Strategies for Success

Intervention Strategies for Negative Thoughts Name _____

Here are some intervention strategies for negative math thoughts. When you catch your brain forming one of these negative thoughts, try an intervention strategy. With practice, you will be able to change the negative thoughts into alternative thoughts that will lead to more productive emotions, body sensations and behaviors. (Adapted from Ooten, C. (2003). *Managing the Mean Math Blues*. Upper Saddle River, NJ: Pearson Education, Inc.)

Strategy #1: Examine the Evidence.

- What is the evidence that your negative thought is really true?
- What would you do differently if this thought were false?

1) Suppose your negative thought is "I'm sure I will fail this class."

(a) What evidence could you check to see if you really will fail the class?

(b) If you are not failing the class, how might your behavior change?

Strategy #2: Get a Different Perspective.

- Tell yourself what you would tell a close friend who has this thought.

2) Suppose your brother said, "I am too stupid to do math." What would you tell him to convince him he is not too stupid to do math?

Strategy #3: Do Something Differently.

- Identify a behavior that contributes to your negative math thought. Behave in a new way to get a different result.

3) When learning math, just like when learning sports, music, a foreign language, etc. if you don't practice -- by doing homework-- you can't expect to become proficient. Not doing homework is a behavior that contributes to not being able to do math.

(a) How can you change this behavior to get a better result?

(b) Name one of your behaviors that contributes to your negative thoughts about math.

(c) How can you change that behavior to get a better result?

Strategy #4: Change the Wording.

- Restate a negative thought in a way that it becomes neutral or positive. Add the words “right now,” or “yet.”

For example:

- Change “I can’t do math” to “Right now I am unable to do these math problems.”
- Change “I don’t understand” to “I don’t understand yet.”
- Change “I’m not prepared” to “I am not prepared yet.”

4) Change the wording of two of your negative thoughts.

1. Change _____

to _____

2. Change _____

to _____

Strategy #5: Act “As If.”

- Act as if you have the trait you lack or already are the kind of person you would like to become.

5) If you want to be a successful math student, think about how good math students act. What behaviors could you do to act “as if” you were a successful math student?