Problem Solving Playoffs

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Knots
Divide the group into smaller groups of eight to ten people. Players stand in a circle and place their hands into the center of the circle. Join hands with two different people, neither of whom are standing next to you. A human knot is born! The goal is to untie the knot without letting go of hands. Be sure to be respectful of your neighbors! What you do may not be the best for them, so check it out before you work it out.

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Group singing
Divide class into groups of 6 or 7. Have a few words ready: love, baby, school, mountain, sky, blue, black, birthday, party, fire

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PULSE
Two lines of equal amounts. Everyone closes eyes except front and back. Hold coin. If first sees coin, grasp hand of next person, down line, final person grabs toy. If no coin under hand, that’s a false pulse

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Pile up
Take a piece of cardboard that’s just a bit smaller than it would take to have the amount of kids in each group to fit on easily. Split the teams into groups of 8 to 10. Have them all go at same time. First group to fit on square without falling for a count of three wins.

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Picture draw
Split into groups of at least 5 each. Have them sit in row all facing same way. Show the last person on each team a picture: a smiley face, a dog, a sword, a car, then they have to draw it on the back of the person in front of them, and the final person draws the picture on a paper at the end. the group that gets the closest to reality wins, and the players switch

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Flip a roo
Equipment: small rug or a sheet big enough for your group to stand on comfortably
Description: Have the group stand on the rug. They must flip the rug over without stepping off it. Simple right? Try it and see

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Mathematical/Logical

1. A student needs at least a 95% average to receive a grade of A. On the first three tests the student averaged 92%. What is the minimum a student must average on the last two tests to receive a grade of A?

2. There are four people in a room and each person shakes every other person’s hand exactly one time. How many hand shakes will there be?

3. Four holes are drilled in a straight line in a rectangular steel plate. The distance between hole 1 and 4 is 35 mm. The distance between hole 1 and 2 is 12 mm, while the distance between hole 3 and 4 is 10 mm? What is the distance, in millimeters, between the center of hole 1 and the center of hole 2?
Frank's Puzzle:

Don, Frank, Jenny, and Ken each come from one state, either Alaska, Maine, Montana, or Oklahoma. They each speak one primary language, either English, French, Russian, or Spanish. And they each have one of four pets: a chinchilla, a dog, a hamster, or a turtle.

1. Frank needed a language book to write to the Alaskan.
2. The kid from Oklahoma has a mammal for her pet.
3. The Alaskan found his pet outside his door in a snow bank.
5. The Russian speaking boy wants to write to the kid from Montana, but he doesn't speak his language.
6. Don bought his pet in Peru.
7. Ken does not own a hamster.
8. The dog's owner wrote a letter in Russian to the kid in Oklahoma, but she couldn't understand it.
9. Don had to travel west to meet Jenny.
10. Frank is learning Spanish at school.

Answer Key:  
Ken - Alaska, Russian, dog  
Frank - Montana, Spanish, turtle  
Don - Maine, French, chinchilla  
Jenny - Oklahoma, English, hamster

What am I?

1. My first is in FIRE but not in GRATE  
My second is in EARLY but not in LATE  
My third is in MUSIC and also in TUNE  
My fourth is in DISTINCT but not in SOON  
My last is in FROST and also in SLEET  
When ripe, I am juicy and sweet.  
What am I?  
fruit

2. My first is in LAMP but not in LIGHT  
My second is in MAY but not in MIGHT  
My third is in DART and also in BOARD  
My fourth is in STRING but not in CORD  
My last is in SEE but not in GLANCE  
I am a city renowned for romance.  
Where am I?  
paris

3. My first is in ACT but not in PLAY  
My second is in APRIL but not in MAY  
My third is in NOBLE and also in LORD  
My fourth is in CARD but not in BOARD  
My last is in STACK but not in HAY  
You look at me every single day.  
What am I?  
clock

Mr. T. has a total of $82.00, consisting of an equal number of pennies, nickels, dimes and quarters. How many coins does he have in all?  
Answer: 200
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You / Just / Me
just between you and me

BAN ANA
banana split

Noon Lazy
Lazy afternoon

HIJKLMNO
Water (h to o)

IECECEPT
I before E except after C
ONE
ONE
one on one

PAS
Incomplete pass

WHEATHER
A bad spell of weather
ED
+ ED
added

LAL
all mixed up

ME NT
apartment

TIM E
long time, no see

___ IT

ME QUIT
quit following me

BAN

(HEAD) 1/4s
headquarters

Σer school
summer school (sum er school)

HO
half an hour

ECNALG
backward glance

BJAOCKX
Jack in the box

MCE
Mice without eyes (three blind mice)

NAFISH NAFISH
2 na fish (tuna fish)

ME QUIT
quit following me

THHAENRGE
hang in there

Copi Copy Copyl
copyright

XQQQME
excuse me

≈ ≈
double cross

lean

revo

lean over backwards
It's not what you teach
It's HOW you teach it

A Teacher’s Guide
Taking Time to Learn

Every student learns at their own individual pace. Some kids go through material extremely fast, while other kids need a lot more time. But in most math classes, all students are expected to keep up with the pace of the teacher. They go through a unit. They take a test. Then they move on to the next unit, whether they’re ready or not. Kids that never really mastered the current topic are still expected to do well in the next topic. That’s Albert Einstein’s definition of insanity: doing the same thing over and over and expecting different results. Eventually students become disengaged, and mutter those common words, “I hate math!”

I’ve often pondered this dilemma, and the solution came to me during a community meeting at my school. The after school program was introducing some sports they were offering, and a Judo instructor was answering some questions. A student asked, “How long does it take to become a black belt?” The instructor replied, “It depends on the person. Everyone goes at their own pace.” That’s exactly what I believed about student learning! So I went online to learn more about Judo. I found that the purpose of learning Judo is to develop character, body, and mind, so that one can contribute something of value to the world. I absolutely loved that message for my students. So I decided to frame my math class around these ideals. One of the core principles of Judo is cooperation; working for mutual welfare and benefit. I wanted to create a motivated and disciplined learner, one who respects the craft of mathematics. Judo Math was born!
Why Judo?

Judo is a form of martial arts that dates back to the late 1800s. But technically, it’s translated as “gentle way” and applies to much more than fighting.

“Can this principle be applied to other fields of human activity? Yes...it can also be applied to the improvement of intellectual and moral power, and in this way constitutes mental and moral education.”

Professor Jigoro Kano, the father of Judo

Look at the following core principles of Judo. Wouldn’t you want your students to share these ideals?

Character - to develop character, body and mind so that one can contribute something of value to the world.

Cooperation - working for mutual welfare and benefit

Maximum efficiency - using the least amount of effort to achieve the greatest results.

Judo math models these principles to create a motivated and disciplined learner. One who respects others and the craft.
Why it’s worth it- The Power of Judo Math

“Judo Math makes you feel really good about yourself.” says former student Ben Stein.

“It’s really exciting to see my classmates pass because they did something that maybe they didn’t think they could do before.”

In this model, students gain confidence by finally seeing some success. How many times have you heard someone say “Math is just not my thing.” Wyatt Baquial used to think like that. He considered himself a good student, getting mostly B’s in school. But he never saw himself as being exceptionally smart. After going through Judo Math last year, he came to my class recently to tell me about his current math class in 9th grade. He said, “You should see me Mr. T.! I’m like a math genius now! I’m the one helping everyone else! This stuff is so easy!”

It works for all types of kids, because they’re all going at the pace that’s comfortable for them. Jessica Bustos was a student of mine that always considered herself to be “dumb” at math. Like all kids, she had readily identified who the smart kids were. They always got A’s, and she always got D’s. But once she started Judo Math that changed. Jessica had never been able to retake tests before. She was used to failing her test and then moving onto the next topic. At first she was skeptical. She saw the “smart” kids getting their belts in one week, while it took her three. But she started to understand the math better. Other kids were applauding her for moving up in the belts. Then after everyone became a black belt, I gave a cumulative exam on all the topics from that discipline. Jessica got an A and could hardly believe her eyes. She said, “You must’ve graded it wrong! I’ve never gotten an A on a math test before!” She told me it was the first paper she’s ever been able to put on her refrigerator at home. One of the so called “smart” kids came up to her and congratulated her. Jessica actually had a better score than she did! I pointed this out to Jessica. “See! Who cares how long it took you to master it? The fact is, you know exactly as much about this material as the kids that went fast. The important part is that you understand.”

The hope is that all students will develop this way of thinking throughout the school year, and apply it not only to math, but to other areas of their life as well.
HOW DOES IT WORK?

The goal in Judo Math is to master the necessary skills to become a Black Belt in each discipline. A Black Belt signifies mastery of that discipline. Like the martial art practice, students progress through varying degrees of belts. In Judo Math, students work and practice math topics and prove their mastery of the subject by taking a short ten question test called an Advancement. Passing an advancement earns their belt and they begin work towards the next belt. We use rubber bracelets to signify the belt, called an obi. In ancient times the obi was developed to put the student in the appropriate state of mind. When they put on their obi in class, it signifies that they are ready to learn math.

Students work through each belt level to earn their Black Belt in the Discipline. As an incentive, students have the option to work toward their Sensei Belt, a green belt. The Green Belt signifies a student who has gone above and beyond to not only master their topics but has fulfilled the important role of ‘Sensei’ (teacher) by helping other students earn their belts.

Everyone starts with a white belt and progresses through 4 different levels of belt colors shown below.

Judo Math follows the “depth over breadth” model of Singapore math. So it’s important to break down your curriculum into just the core Units of Study you want every student in your class to learn. Pick three or four main units for the entire year. These are called Disciplines. Then within each discipline, you’ll have four topics that correspond to each belt color- Belt/Topic Level. For example, in an Algebra class I created a discipline called Fundamentals. Then I grouped the topics to match a belt.
Discipline: Fundamentals

Yellow Belt -------> Fractionology- working and manipulating fractions
Orange Belt -------> Ratio & Scale
Blue Belt --------> Percents and Percent Problems
Black Belt -------------> Simplifying and Combining Algebraic Expressions
*Green Belt -------------> Geometry Fundamentals

Each topic area is assigned a belt color. Use the Discipline Poster to chart your specific topics for your students. That way, students understand the progression and necessary topics they must master to earn their Black Belt in a particular discipline. You’ll notice that there is also a green belt. That is, to achieve “sensei” status. Every student becomes a black belt but not everyone becomes a sensei. The Green Belt (Sensei Belt) is an optional belt for students who want to accelerate their math understanding. You’ll have fast learners that zip through your belts so this extra area is for them. Choose a higher level topic that you normally wouldn’t teach to everyone. The fast kids want and need that challenge.

Students can only progress from one belt to the next by taking a test which we call Advancements. The Advancement is a 10 question test in which mastery/passing is set at 8 correct out of ten.

For example, the following list represents the core topics/Disciplines of Algebra that are studied using the Judo Math philosophy in 8th grade. I talked with several 9th grade teachers to find out what they really wanted the kids to know coming into their class. I was able to sum up all of Algebra I into 12 key topics. The following 3 Disciplines (or Topic Areas) represent the scope and sequence of study in Algebra I for the entire year.

I. Discipline I: The Fundamentals
   a. Fractionology (Yellow Belt)
   b. Ratio and Scale (Orange Belt)
   c. Percent Reasoning (Blue Belt)
   d. Combining (Black Belt)
   e. *Fundamentals of Geometry (Green Belt)

II. Discipline II: Problem Solving
    a. Modeling equations (Yellow Belt)
    b. Modeling inequalities (Orange Belt)
    c. Manipulating Variables (Blue Belt)
    d. Distance, rate, and time (Black Belt)
    e. *Trigonometry and Applications (Green Belt)

III. Discipline III: The Meaning of Graphs
     a. The Basics & Slope (Yellow Belt)
     b. Linear Equations (Orange Belt)
     c. Linear Inequalities (Blue Belt)
     d. Solving Systems (Black Belt)
     e. *Polynomials and Quadratics (Green Belt)
* Represents Optional Green Belt
A Typical Judo Math Classroom
Walk into a Judo Math classroom, you will see small groups working together on math. Some students are busy working on a problem sets others are completing a special project or activity all the while, the teacher is floating around giving a small lesson or working with a few students. The beginning of class usually begins with a whole class problem related to the particular discipline and topic. The opening problem is a problem that all students can do and sets the tone for their Judo Training for the day. The teacher should limit the time devoted to this opening problem to 5 to 10 minutes and offers a short overview or lesson about the topic.

Motivation Through Belts
Each topic in Judo Math represents a belt color. So once we start a discipline, the students start training for a belt. The first topic is represented by a yellow belt, followed by orange, blue and then black. Depending on the material of that topic, we’ll spend maybe one or two weeks on activities and lessons, followed by a belt test at the end. If a student gets 80% or better on their test, they have achieved mastery and progress to the next belt. If a student falls short, then they need another week of training to review similar material. No student moves onto the next topic until they’ve mastered the current one. They can take the test as many times as they’d like until they’ve reached mastery. Some students take one week, while others may take three. Since Judo preaches working for mutual welfare, those who have already achieved their yellow belt status then become mentors to the rest of the class, helping them through the concepts. It’s everyone’s job to help the entire class reach black belt. In the meantime, the yellow belts start their quest for an orange belt, and the class is split into two groups, both working at their own pace. Before too long, grades don’t even matter to the kids. It’s all about the belts. So we make a big deal out of it. Moving from one belt to the next is celebrated as a monumental achievement. On the following Monday after a Friday test, I hold a “presentation of belts,” where each student who advanced is called up in front of the class to receive their new belt. I congratulate them in Japanese by saying “O-Medito Kozymos witachi no gak-sei”, loosely translated to “Congratulations my student with honors”

There is a sense of pride when moving from one belt to another. The students’ confidence level increases throughout the year due to the marking of their achievements. The Student Progress Poster showcases everyone’s level and how they
are progressing. Judo Math motivates all students to take responsibility. There are no ability groups, just pacing groups. By the end of each discipline, everyone is a black belt rank, reinforcing the unity of the class. Early finishers can even keep going by preparing for their sensei belt. They go beyond Algebra into Geometry and Trigonometry. The sky’s the limit for what they’ll learn. No student is held back, and no student is left behind. We’re all in it together. Once everyone reaches a black belt in a given discipline, we hold a big class party to celebrate the achievement. Then the process starts over again with the next discipline.

**Putting Judo Math to Work in your Classroom**

The power of the Judo Math structure is the motivational impact it will have on your students. The beauty of the Judo Math is that teachers have incredible flexibility and autonomy in curricular directions and decisions. It’s a win-win situation. Let’s look at the key steps to take in putting Judo Math to work in your classroom.

**Step 1: Defining Your Disciplines and Belts**

No matter what math you teach, be it elementary school or high school math, you can apply the Judo Math system to your curriculum. First, define the Discipline—collective math topics of a unit that are curricularly aligned and sequenced. Typically, a Discipline should consist of four topics or belt levels. For example, if you teach 6th grade math you might define one Discipline as the Measurement Discipline which consists of 4 topic/belt levels: Decimal know-how, Area & Perimeter, Volume, and Measurement of Irregular Objects.

Whatever curriculum you are using, be it a textbook, online learning or teacher directed, you can divide and define your disciplines as you see fit. Use your existing curriculum and define how best it should relate for your students and specific topic areas. Once you have your belt topics, you can begin building your training work...Step 2!

**Step 2: Belt Topics- Training Work**

Using your existing curriculum, define the set of work/exercises students must complete to learn the topic area. A series of worksheets or problem sets from a textbook would serve as suitable training exercises for a Belt Topic Level. Students work cooperatively in small groups on these training exercises allowing you to facilitate and work with small groups and give one on one instruction. As students progress to different belt levels, they can then be grouped by their belt color and can be easily managed for small group instruction or special assignments/projects that you may direct for them. There is great power in this system in that it allows you, the teacher, to be more directed with students in their learning of key concepts and engage in a more personal dialogue with them about what they know or don’t know.
Step 3: Assessment through Advancements
To advance or not to advance, that is the question? After students have completed their training work for a belt topic, they take a 10 question test to measure their understanding and mastery of a particular topic area. In Judo Math, we refer to these tests as Advancements. The Advancement is limited to only 10 questions to force the teacher to carefully construct a test that measures exactly what they expect their student to know and understand. Secondly, mastery is equated to an 8 out of 10 or higher. Therefore, students must be very careful in their problem solving and work. In Judo math, great emphasis is placed on mastery of a particular skill set as it relates to the belt level. Therefore, a student is not allowed to work on a new belt until they have shown mastery. It is common for students to retake advancements several times until they have shown mastery. The Judo Math system honors that, oftentimes, students learn at different rates and need more practice (or more training, as we like to say) to master a topic area. In the end, this may require a little extra work on the teacher’s part in reteaching and reassessing but it is well worth it when student’s finally grasp a concept.

Step 4: Build the Judo Math Culture

Judo Math is all about relationship based learning. The teacher builds relationships with the students, and the students build relationships with each other through collaboration. Everyone can be a mentor in the classroom, and everyone must work together towards a common goal of becoming a black belt. EVERYONE becomes a black belt. Peer mentoring is key in building this culture.

Overall, Judo Math has less to do with math and more about creating a motivated, positive culture in your classroom. From day one, you as the teacher will set the tone, mood and climate of Judo Math in your classroom. Culture is key!

Building culture should and could include:

Team Building & Problem Solving:
Judo Math starts and promotes team building problem solving. Many team games and initiatives can be used, starting on day one and especially through the launch of the program. Any activity where students have to work together to solve a problem successfully and the less it has to do with math the better. Showcase how students must depend on one another to succeed. They learn from each other and become teachers to one another.
**Judo Math Launch- Karate Kid style....**

There is a classic scene in the original 1984 movie Karate Kid, where Danny (Ralph Macchio) is learning Karate from his sensei, Mr. Myagi. After weeks of grueling chores around Mr. Myagi’s house of waxing cars, painting his fence and sanding his floors, Danny’s training becomes all too evident when Mr. Myagi demonstrates that Danny’s development of skill led him to understand the basic principles of the martial arts. As in math class, students must master skill sets as they progress in their math proficiency. This scene shown to students or something similar is a perfect way to grab your student’s attention and set the tone for the launch of Judo Math. In Judo Math, students develop their mathematical skills as they become proficient masters of the math content. Students will understand that practice and skill development takes time, patience, and careful repetition to learn math. A typical launch will hook your student’s interest, instill the philosophy of the program and prepare them for their math mastery. Wax on, Wax off Grasshopper! This is your introduction to your students about what Judo Math is all about including belts and the process.

**Making it Public- The Donning of the Obi**

In Judo, the Obi is the robe that all trainees must wear before practicing the art of Judo. For Judo Math, all students must rise and don their bracelets, the Judo Math Obi, to signal the preparation time and work on math. Students simultaneously raise their wrists in the air and snap their bracelets to commence their Judo Math work while repeating the phrase “With great work comes great rewards.” You choose how to do it but always start your Judo Math time with a short donning of the obi’s.

**The Belt Ceremony-**

The ceremony is a rite of passage that every student looks forward taking part in. This is the time when students receive their belts and is always done with a ceremonial flare where students are called up individually to the front of the class to be recognized for their great work and receive their belt noting their mastery of a certain math topic. The ceremony is marked by a formal presentation of the belt (the bracelet) and a personal message to each
The power of public recognition along student along with the words “O-Medito Kozymos Witachi No Gak-sei”, loosely translated to “Congratulations my student with honors”. But it doesn’t really matter what you say as long as you celebrate this time and make the most of this event in all its glory, goofiness and fun! Bring them to the front of the room and have everyone cheer for them. Whatever you decide to do is entirely up to you, just make it fun and unique.

“O-Medito Kozymos Witachi No Gak-Sei”

Offering a personal praise to each individual will empower your students more than you realize. Having fun and creating a positive learning culture during ceremonies is the centerpiece of the Judo Math system and your students will relish them!

**The Black Belt Ceremony**
The Black Belt is the final belt in a student’s work in a Judo Math Discipline. They have moved from belt to belt, math topic to math topic and finally passed their black belt advancement (test). Therefore, the black belt ceremony should take on a special significance. First of all, when a student receives their black belt, it is theirs to keep. Make the black belt ceremony different and unique from the other ceremonies. I have all students rise in honor of the black belt. While all students rise, I announce to the class all that the individual student completed in their work in order to earn their black belt. Typically, I talk about specific areas and strengths of the student. Then, as if it was an academy award....I call “A black belt is awarded for the hard work and diligence displayed by....” Students applaud and we as a class say the chant “O-Medito Kozymos Witachi No Gak-Sei.” The student comes to the front and I congratulate them and offer a few words of praise and recognition unique to the student and offer them encouragement in pursuit of their next black belt. Lastly, we take a ceremonial photo displaying their Judo Math belt to be displayed in the classroom. There is great pride and a sense of accomplishment in students when they have their black belt. They wear them with pride and honor. Best of all, it is pride and honor in learning Math!!
Step 5: Mentoring to Teach Others...Mutual Welfare

When I first implemented this idea I was extremely excited. I collaborated with the kids to get them to buy in, and they were excited as well. But it all got out of control rather quickly once kids started zipping through belts. By the end of the third week, I had yellow belts and orange belts and blue belts and black belts and even kids that wanted more! All at the same time! I was scrambling around trying to teach 5 different subjects to 5 different groups of kids. It was absolute mayhem! Something had to be done to preserve my sanity, and the answer came from the kids themselves. They came up with the idea of peer mentors. Turning the kids into teachers after they achieve mastery in a topic proved to be the cure-all tonic. It’s the glue that holds Judo Math together. Cooperative learning saved the day by keeping the class in just three different groups at any one time. I kept repeating the Judo mantra of “mutual welfare.” So when one student gets to be two belt levels ahead of anyone else, they are paired up with another student that is slower paced. It becomes their job to get that student to master their belt-topic area. They work with them one-on-one in class and encourage them. They become personally invested in the success of another student. Once they get that student through their belt mastery, they then continue in their own pursuit of their belt designation.

Pairing students up to serve as mentors accomplishes two tasks at once. First, and most apparent, students become teachers of the material which strengthens their own understanding and ability to help others. Secondly, it creates a pacing mechanism where students are not working at too many belt levels at once. Usually, allow no more than a two belt separation before you have students mentoring each other. Once the Judo Math culture is set, mentoring happens quite naturally among students. It is a beautiful facet of Judo Math when students are learning and teaching math together as opposed to in isolation. Peer mentoring happens within each belt, so everyone teaches. I decided to celebrate those who wanted to help others the most and were the most effective for the betterment of the whole class. For the student that helped the most kids get their belt, they get to sit in the “best seat in the house” for a week. It’s a leather recliner that the teachers get to use in their office. Much better than the stiff school
chairs they usually have to sit on. Pretty soon I had a group of “tutors” in my class ready
to teach any topic. Management became much easier.

**Step 6: The Sensei Belt**

So to start any discipline, I would teach some lessons and do some activities with the
entire class, just as you would normally do as a teacher. Then after the first belt test, the
class would be split into two groups. I’d start the next week by giving out more review
material for the kids that didn’t get their belt. Then I’d pull aside my brand new yellow
belts and give them a lesson on the next topic. You end up teaching to smaller groups of
kids, which holds their attention much greater.

For the fast kids that zip through the belts, I developed a Sensei
belt (the Green Belt) in a higher level math topic. The fast kids
tend to be independent learners, so I made web quests for them to
follow at their own pace. If they achieved their Sensei status, then
I would give them a subscription to an online software program
like ALEKS or Explorelearning. They could then learn even more
topics and I could monitor them electronically. In the meantime,
they’re still helping every kid that needs it, and they monitor their
personal mentees’ progress. Before I knew it, the class started to
run itself. I had extra teachers all over the place! The homework
was no longer something they had to do. It was seen as training
material. A new culture had been created. Students are even more empowered
to achieve the rare status of Sensei earning their Green belt. It is important to note that
not all students achieve or even want to earn their Sensei belt; it is just a differentiated
option for faster paced students.

When you set up your Discipline topics, choose extension areas or topics that are more
advanced but related to the unit of topics that you are studying. The Sensei Belt serves
to challenge your advanced students and bring an added differentiation component to
your math curriculum.
FAQ’s

1. **What is the difference between a Discipline and a Belt Level?**
   The Discipline is the unit of study for a particular math curriculum. The Belt Level refers to the topics that make up the Discipline. For example, a Discipline might be graphing with belt/topic areas of slope, graphing linear equations, graphing inequalities and systems. The Discipline composes the belt topics.

2. **What is an advancement?**
   An Advancement is a test which measures mastery at the end of a belt/topic level. Typically, advancements are limited to a 10 question test and require a passing mastery of an 80% or higher. We raise the bar of mastery to 80% as opposed to 70% to ensure a greater understanding and showcase of skills.

3. **Where does the advancement come from?**
   Oftentimes, the teacher creates a ten problem test with multiple variations to account for students needing to retake advancements. Many textbooks have multiple test versions and if necessary, a teacher can modify existing tests to create different versions. Some teachers have even used online assessment platforms to use as their advancements. At the end of a Discipline, it is good to give a cumulative or unit test that measures all the topic areas in the Discipline. The cumulative advancement may be more than 10 questions but no more than 20 questions.

4. **What happens when a student fails an advancement?**
   This happens often and signals to both student and teacher the need for more practice and reteaching- “More Training, Grasshopper!” The first and best course of action is to have students complete test/advancement corrections so that they can learn exactly what their mistakes were. Students must then go back and review material and are often instructed to complete and rework problems to retrain and practice the skill.

5. **What is the role of the sensei belt?**
   The Sensei Belt is an optional belt for students and serves to meet your faster paced students. These students are often self-starters and are able to work/learn independently. They can be given a mini-lesson and are able to understand concepts quickly. Moreover, the Sensei belt requires students to work and mentor with other
students to teach and help others master belt topics. The Sensei belt is a strong motivator and a strong facet of differentiating instruction for all students.

6. **What happens to the student who is the last to earn a belt in a discipline?**
Contrary to what you might think, a student who is struggling is greatly motivated and impacted by the public representation of their progress on the progress tracker. They work harder and pair up with other students to advance to the next belt. It is also helpful to you as the teacher, to specifically identify their struggles and pinpoint their areas of misunderstanding. The teacher is in control of when students pass belt tests. You can make modifications to challenge faster students and to assist slower students. After every discipline there is a final exam. That is the real assessment. The belt tests are like quizzes, used to train kids how to study. So it's important to help the slower kids gain confidence. Give oral tests or informal tests and help those kids move along. The more confident a student is, the more willing they are to learn more. You want them to believe in themselves. Once they do, they learn a lot more.

7. How do you teach to several different belt levels/groups at the same time?

This is the beauty of Judo Math! Commonly referred to as pacing or pacing groups, the teacher has the opportunity to work with small groups. Research has shown that small group instruction has greater benefits because you have their complete attention. Kids within a belt group identify with one another due to their pacing and are more willing and able to collaborate. They all have something to contribute, and since everyone becomes a black belt they don’t feel labeled. They’re empowered. Armed with a small dry erase tablet, the teacher can float among the different belt levels offering mini-lessons or giving instruction of specific problem areas. Teachers can also give special projects or math activities to a group to complete in order to enhance understanding. Teachers have greater flexibility and autonomy within a system. Indeed, it may seem a lot to manage but with some practice it changes the way teachers teach.

More Questions? Please email Dan Thoene [dan@judomath.com](mailto:dan@judomath.com) or Jamie Holmes [jamie@judomath.com](mailto:jamie@judomath.com)