

Personal Beast Coach's Notes

Our fact fluency program in Power Math is called "Personal Beast." It's a play on the phrase "Personal Best." The basic idea behind it is that the scholar is competing with him/herself to be the best he/she can be at learning the basic addition, subtraction, multiplication, and division math facts.

One of the two main goals of Power Math is to help students improve their fluency (accuracy, flexibility, speed) with the basic math fact. (The other is to help the scholars get comfortable with the kinds of problems they will likely see on the STAAR test.)

For the first weeks of Power Math, practice with fact fluency may be the main way you spend your Power Math time. As the students get better with the facts, fluency time will become more of a warm-up, and you will use most of Power Math time to work on STAAR based math.

Many of our scholars can figure out the facts when they need to, but they use very inefficient strategies such as counting on their fingers. This makes it hard for them to do more complicated computations such as multiplying and dividing numbers with multiple digits.

Most of our scholars know some of their facts, but like most of the rest of us, there are a few that are hard for them to remember. Hopefully the strategies you will help them learn with Personal Beast will help them master even those tough to remember facts.

Getting "automatic" with the facts makes the rest of elementary school math much easier!

Since this is such a foundational skill, we try to practice the facts at least a little bit just about every day during Power Math.

An important benefit to practicing math facts every day is for our scholars to learn that one of the best ways to develop a skill is to practice it a little bit every day. Even (choose your favorite basketball player) practices free throws, lay-ups and other key skills every day. Learning about the importance of regular practice is a valuable life lesson.

Basic instructional points

1. Give the scholar as much control as possible over which fact he/she wants to work on as long as they are making progress. Help them take control of their own learning by helping them identify for themselves where they need extra help/practice and strategies learning their math facts.
2. Many of our scholars are visual/tactile learners. It may help to start with concrete objects: Beans, counters, blocks, etc. to help them get the "feel" of the math facts.
3. The most basic way to figure out a math fact when you don't know it is often counting/skip-counting. That is fine in a pinch, but it takes a long time and makes it hard to move on to more complicated problems. A bridging step between counting and knowing the facts "automatically" is to learn some basic strategies. This program is built around helping our scholars use a strategy when they need one.
4. Practice facts mainly in focused groupings – for example: just the 2X facts, then the 5X facts - not everything all at once.
5. Emphasize the commutative property ($2 + 3$ is the same as $3 + 2$. 2×3 is the same as 3×2 .)
6. Emphasize the "fact family" connection between Addition/Subtraction and Multiplication/Division.
7. Most scholars learn some facts relatively easily and have a tough time remembering others. That's where the strategies come in. If a scholar is having a tough time remembering a fact or set of facts, help him/her choose and learn a strategy to use to find the answer as efficiently as possible. You will find information about strategies in the Strategy Packets you will be using.
8. Practice facts a little bit every day.

9. Study the facts in the recommended order or close to it (See “Path to your Personal Beast” charts) – don’t just march through in numerical order. This will give the scholars some “anchor” facts they can build on.

Note: If your scholar is already automatic on all of the facts, talk to Ms. Thornton about switching to Number Sense/Mental Math during fact practice time.

Personal Beast

The basic pieces of the Personal Beast program are:

- Personal Beast Folder – Each scholar has a Personal Beast Folder for the facts he/she is working on (addition, subtraction, multiplication/division)
- Coaches Folder – This folder is where you will keep the information, worksheets and other materials needed to help the scholar with Personal Beast.
- Strategy Packets – These are packets of practice activities for each of the facts or sometimes groups of facts. For example, there is a Strategy Packet for multiplying & dividing 2s, one for multiplying & dividing 3s and so on.

You can keep all these pieces in the scholar’s math bag and swap out the Strategy Packets as you progress through the facts.

Getting Started with Personal Beast

1. Work through the fact inventories in order: Addition, Subtraction, Multiplication, Division. Stop when your scholar bogs down. – On the first day of Power Math, after you have had a chance to get to know each other a little bit, have the scholar work on the Fact Inventories in your Coach’s folder. Try to make it as stress free as possible. Tell the scholar it is not a test, there will not be a grade, it is just a way to figure out what they already know and what they want to work on. If they don’t know an answer to a problem, they can just skip it. Tell them as they work on the inventory to think about which problems are super easy for them – automatic, which problems take them a little longer to figure out, and which problems they don’t know how to figure out.

Start with addition and stop when/if the scholar bogs down or runs into facts that he/she either gets wrong or seems to take a long time to figure out. If the scholar flies through addition, move on to subtraction, then multiplication, then division. If the scholar gets stuck or slows down along the way, you do not need to complete the inventories (unless they just want to), the point where the student began to struggle a bit tells you where to start with your fluency work.

2. Have the student analyze their results. Have the student go over their answers without using the key first. Have them “code” the problems by putting a check by the ones that were super-easy, that they could answer automatically without even really having to think about it. Next have them look for the ones that they did not know at all – the ones that they just guessed or the ones that they left blank. The hardest ones. Have them put an asterisk by those. Then have them circle the ones that were kind of in the middle. The ones they figured out, but it took them a little time to think about it. After they have finished analyzing they can check their answers with the key.

3. Have the student select 1 set of facts they want to work on – Each row of questions in the fact inventory is tied to one of the milestones on the “Path to Your Personal Beast” chart in the coach’s/scholar’s folders. Each Milestone is tied to a Strategy Packet. Based on how the scholar did on the Fact Inventory, help the student decide if they want to work on addition, subtraction or multiplication/division and grab one of the scholar folders for that operation. The folders

each contain a complete set of flash cards for the operation(s) being studied. Work with the scholar to sort the flashcard into the three envelopes provided.

- “Automatic” - This is for the facts the scholar already knows automatically – they don’t even have to think about them.
- Working on it – Select one set of flashcards based on the “milestone” on the journey that the scholar wants to work on first. Put these flashcards in the “Working on it” envelope.
- Coming soon – Leave the rest of the flashcards in the appropriate “Coming Soon” envelope.

The ultimate goal is that eventually all the flashcards will make it into the “automatic” envelope.

Please try to keep this low stress for the scholar. Some scholars master the facts quickly – others may take until middle school to truly be automatic. Everyone can improve some with practice. That is our goal. They are not competing with other scholars: they are competing with themselves for a “personal best.”

3. Set a baseline - Do a timed test on the scholars “working on it” facts and record the time on their personal beast tracker. Ideally the scholars will eventually get to 1 or 2 seconds per fact – but that may be too challenging of a goal at first for some. Help your scholar figure out a reasonable goal based on their baseline time.

4. Set a goal – Help the scholar set a reasonable goal related to their “working on it” facts. For example, if the scholar is working on 6’s, the goal might be to get them all correct on one try, to get them all correct in 1 minute, 30 seconds or whatever. Have the scholar write his/her goal on his/her Personal Beast tracker. You will be checking in on this goal and setting a new goal each week.

That’s probably enough “Personal Beast” for the first day.

Daily Routine with Personal Beast

Daily Warm-up Routine – I find it very helpful to have a daily warm-up routine so the scholar knows exactly what he/she is supposed to do first thing when they get to Power Math. I explain to the scholar that warm-ups help you get started on the right foot and use your time wisely. If you have ever been to a basketball game (or whatever example you want to use) you see the athletes warming up before the game. They do the same exercises every time to stretch out and get warmed up. That’s what we are doing.

My warm-up is:

1. Have the students shuffle the cards in their “automatic” envelope (if there are any) and deal out 10 or 15 to run through quickly.
2. Have the students practice their “working on it” facts a couple of times in order. For example, you can have them write them out on their whiteboards, recite them from memory out loud. ($6 \times 1 = 6$, $6 \times 2 = 12$, $6 \times 3 = 18$, etc.), or fill them in on the laminated Times Table.
3. Have the scholars practice with their “working on it” flash cards. Run through them once and make two stacks: 1 – cards that are already fairly automatic. 2 – cards that they either miss or take a long time to answer. Practice the cards in stack 2 a couple more times.

You can usually do all this in about 5 minutes if the scholar gets right down to business.

After a quick warm up you can start doing your practice activity for the day. You can use any of the practice activities in the Strategy Packet. Use the same one or two every day or try something new every day. It’s up to you and the scholar.

If you don’t feel like using the activities in the Strategy Packet, you can always pull out your deck of cards and remove the face cards. (Ace = 1.) Flip a card and have the student add/multiply each card flipped with the target number they

are working on. For example: If you are working on X6's – Flip an 8, 8×6 . Flip a 10, 10×6 . Etc. To practice subtraction or division choose a target number, then draw a card, but don't show it to the scholar. Tell the scholar the sum of the card and the target number (if you are practicing subtraction) or the product of the card and the target number (if you are practicing division). The scholar must guess the number on the card. For example, if your target number is 6 and you draw a 4, you would say, "The sum is 10." The scholar should tell you the card is a 4.

Goal Day

Have a goal check in day at least once a week. You and the scholar can decide which day or if you want to do it more than once a week. Have you met your goal? Celebrate with a sticker! Then set a new goal. Do you want to work on your current goal a little more? That's great – being able to tell when you need a little more work is the sign of a self-directed learner!

Finishing up and Moving On

Certificate Day

Once the scholar has completed the strategy packets for a given operation, it's time for certificate day! Each different operation has its own "Personal Beast" certificate. The scholar has worked hard! Make it a celebration. Let Ms. Thornton know when you are getting close to needing a certificate. She will want to be in on the celebration if at all possible and take a picture of the scholar with his/her certificate!

Once the scholar has received his/her certificate for one set of facts (addition, subtraction, multiplication, division) it's time to move on to the next. Once the scholar has finished with all of the basic facts, please see Ms. Thornton about additional fluency practice or moving on to Number Sense/Mental Math during fluency practice time.

Scholars do not need to be super-fast with their facts to get a certificate, but they should be able to figure out the facts correctly given a little time and an appropriate strategy. Once they have a basic strategy for figuring out the facts, you and your scholar can start moving on to the STAAR-based math. You can work on improving speed throughout the rest of the school year during warm-up time.

Next Steps

Once the scholar has earned his/her "Personal Beast" certificates, Fact Fluency time will become more of a warm-up activity during Power Math, and you and your scholar will start focusing more of your time on STAAR-based math.

Summary of Personal Beast materials

Personal Beast Scholar Folder (a different folder for each operation)

- "Path to Your Personal Beast" poster(s) of milestones
- Personal Beast tracker – the place for the scholar to write his/her weekly goal
- List of facts being studied (for example a Times Table for multiplication.)
- A complete set of flashcards for the operation (s) being studied
- Three Personal Beast envelopes
 - Automatic – for flashcards the scholar has mastered
 - Working on it – for the target flashcards the scholar is currently working to master
 - Coming Soon – for the flashcards the scholar will be working on eventually

Personal Beast Coach's Folder (One folder for all the operations)

- Coach's notes
- "Path to Your Personal Beast" poster(s) of milestones

- Fact Inventories/keys
- Reward stickers

Strategy Packets

- Strategy hints and other instructional materials
- Tools (such as flashcards specific to the facts being studied in that packet)
- Activities & Games for practicing the facts covered in the packet

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Personal Beast Addition Fact Inventory

$4 + 1 =$

$6 + 2 =$

$1 + 8 =$

$3 + 7 =$

$5 + 3 =$

$2 + 3 =$

$5 + 0 =$

$1 + 4 =$

$3 + 2 =$

$4 + 1 =$

$6 + 4 =$

$8 + 2 =$

$3 + 7 =$

$1 + 9 =$

$5 + 5 =$

$7 + 10 =$

$10 + 5 =$

$10 + 8 =$

$4 + 10 =$

$10 + 9 =$

$2 + 2 =$

$8 + 8 =$

$9 + 9 =$

$4 + 4 =$

$7 + 7 =$

$4 + 3 =$

$4 + 5 =$

$7 + 8 =$

$5 + 7 =$

$6 + 8 =$

$5 + 6 =$

$7 + 6 =$

$8 + 7 =$

$9 + 8 =$

$7 + 9 =$

Personal Beast Addition Fact Inventory

Check Yourself

<u>Counting on: Adding 1, 2, & 3 (Addition: Part 1)</u>				
$4 + 1 = 5$	$6 + 2 = 8$	$1 + 8 = 9$	$3 + 7 = 10$	$5 + 3 = 8$
<u>Adding to 5 (Addition: Part 1)</u>				
$2 + 3 = 5$	$5 + 0 = 5$	$1 + 4 = 5$	$3 + 2 = 5$	$4 + 1 = 5$
<u>Adding to 10 (Addition: Part 1)</u>				
$6 + 4 = 10$	$8 + 2 = 10$	$3 + 7 = 10$	$1 + 9 = 10$	$5 + 5 = 10$
<u>Adding 10 (Addition: Part 1)</u>				
$7 + 10 = 17$	$10 + 5 = 15$	$10 + 8 = 18$	$4 + 10 = 14$	$10 + 9 = 19$
<u>Doubles (Addition: Part 2)</u>				
$2 + 2 = 4$	$8 + 8 = 16$	$9 + 9 = 18$	$4 + 4 = 8$	$7 + 7 = 14$
<u>Doubles +1 or -1 (Addition: Part 2)</u>				
$4 + 3 = 7$	$4 + 5 = 9$	$7 + 8 = 15$	$5 + 7 = 12$	$6 + 8 = 14$
<u>Make 10 First (Addition: Part 2)</u>				
$5 + 6 = 11$	$7 + 6 = 13$	$8 + 7 = 15$	$9 + 8 = 17$	$7 + 9 = 16$

Personal Beast Subtraction Fact Inventory

$5 - 0 =$

$4 - 1 =$

$2 - 0 =$

$6 - 1 =$

$8 - 1 =$

$6 - 6 =$

$4 - 4 =$

$7 - 7 =$

$9 - 9 =$

$8 - 8 =$

$9 - 1 =$

$5 - 2 =$

$6 - 4 =$

$8 - 2 =$

$7 - 3 =$

$18 - 4 =$

$17 - 2 =$

$15 - 3 =$

$19 - 7 =$

$16 - 5 =$

$20 - 4 =$

$20 - 5 =$

$20 - 8 =$

$20 - 9 =$

$20 - 3 =$

$13 - 10 =$

$17 - 9 =$

$15 - 9 =$

$14 - 9 =$

$18 - 10 =$

$14 - 7 =$

$12 - 6 =$

$18 - 9 =$

$16 - 8 =$

$20 - 10 =$

$13 - 5 =$

$12 - 7 =$

$15 - 8 =$

$16 - 9 =$

$14 - 6 =$

Personal Beast Subtraction Fact Inventory

Check Yourself

Minus 0 & Minus 1 (Subtraction 10 & within – Learn the easiest facts first)				
$5 - 0 = 5$	$4 - 1 = 3$	$2 - 0 = 2$	$6 - 1 = 5$	$8 - 1 = 7$
A number minus itself (Subtraction 10 & within – Learn the easiest facts first)				
$6 - 6 = 0$	$4 - 4 = 0$	$7 - 7 = 0$	$9 - 9 = 0$	$8 - 8 = 0$
Subtracting within 10 (Subtraction 10 & within – Think addition to subtract)				
$9 - 1 = 8$	$5 - 2 = 3$	$6 - 4 = 2$	$8 - 2 = 6$	$7 - 3 = 4$
Subtracting within 20 – easier (Subtraction strategies 10 to 20 – Remember the 10 & within facts...)				
$18 - 4 = 14$	$17 - 2 = 15$	$15 - 3 = 12$	$19 - 7 = 12$	$16 - 5 = 11$
Subtracting within 20 – easier (Subtraction strategies 10 to 20 – Subtracting from 20 works a lot like subtracting from 10)				
$20 - 4 = 16$	$20 - 5 = 15$	$20 - 8 = 12$	$20 - 9 = 11$	$20 - 3 = 17$
Subtracting 10 & 9 from a teen (Subtraction strategies 10 to 20 – Subtracting 10 from a teen can help you subtract 9 from a teen)				
$13 - 10 = 3$	$17 - 9 = 8$	$15 - 9 = 6$	$14 - 9 = 5$	$18 - 10 = 8$
Halves (Subtraction strategies 10 to 20 – Learn the Doubles & Halves)				
$14 - 7 = 7$	$12 - 6 = 6$	$18 - 9 = 9$	$16 - 8 = 8$	$20 - 10 = 10$
Subtracting within 20 – Harder Facts (Subtraction strategies 10 to 20 – Break to make 10 & Subtract from 10 and then add)				
$13 - 5 = 8$	$12 - 7 = 5$	$15 - 8 = 7$	$16 - 9 = 7$	$14 - 6 = 8$

Personal Beast Multiplication Fact Inventory

$6 \times 1 =$

$4 \times 0 =$

$5 \times 0 =$

$8 \times 1 =$

$3 \times 1 =$

$9 \times 10 =$

$8 \times 10 =$

$6 \times 10 =$

$3 \times 10 =$

$7 \times 10 =$

$5 \times 4 =$

$3 \times 5 =$

$7 \times 5 =$

$5 \times 2 =$

$5 \times 9 =$

$2 \times 2 =$

$2 \times 6 =$

$2 \times 3 =$

$8 \times 2 =$

$7 \times 2 =$

$4 \times 4 =$

$4 \times 6 =$

$4 \times 3 =$

$9 \times 4 =$

$4 \times 7 =$

$8 \times 6 =$

$8 \times 5 =$

$3 \times 8 =$

$8 \times 10 =$

$8 \times 9 =$

$3 \times 4 =$

$3 \times 5 =$

$7 \times 3 =$

$3 \times 6 =$

$10 \times 3 =$

$6 \times 2 =$

$6 \times 4 =$

$6 \times 6 =$

$6 \times 7 =$

$6 \times 9 =$

$9 \times 3 =$

$9 \times 7 =$

$9 \times 4 =$

$9 \times 8 =$

$9 \times 2 =$

$7 \times 4 =$

$7 \times 6 =$

$7 \times 8 =$

$7 \times 5 =$

$7 \times 3 =$

Personal Beast Multiplication Fact Inventory

Check Yourself

<u>0 & 1X</u> $6 \times 1 = 6$	$4 \times 0 = 0$	$5 \times 0 = 0$	$8 \times 1 = 8$	$3 \times 1 = 3$
<u>10X</u> $9 \times 10 = 90$	$8 \times 10 = 80$	$6 \times 10 = 60$	$3 \times 10 = 30$	$7 \times 10 = 70$
<u>5X</u> $5 \times 4 = 20$	$3 \times 5 = 15$	$7 \times 5 = 35$	$5 \times 2 = 10$	$5 \times 9 = 45$
<u>2X</u> $2 \times 2 = 4$	$2 \times 6 = 12$	$2 \times 3 = 6$	$8 \times 2 = 16$	$7 \times 2 = 14$
<u>4X</u> $4 \times 4 = 16$	$4 \times 6 = 24$	$4 \times 3 = 12$	$9 \times 4 = 36$	$4 \times 7 = 28$
<u>8X</u> $8 \times 6 = 48$	$8 \times 5 = 40$	$3 \times 8 = 24$	$8 \times 10 = 80$	$8 \times 9 = 72$
<u>3X</u> $3 \times 4 = 12$	$3 \times 5 = 15$	$7 \times 3 = 21$	$3 \times 6 = 18$	$10 \times 3 = 30$
<u>6X</u> $6 \times 2 = 12$	$6 \times 4 = 24$	$6 \times 6 = 36$	$6 \times 7 = 42$	$6 \times 9 = 54$
<u>9X</u> $9 \times 3 = 27$	$9 \times 7 = 63$	$9 \times 4 = 36$	$9 \times 8 = 72$	$9 \times 2 = 18$
<u>7X</u> $7 \times 4 = 28$	$7 \times 6 = 42$	$7 \times 8 = 56$	$7 \times 5 = 35$	$7 \times 3 = 21$

Personal Beast Division Fact Inventory

$0 \div 5 =$

$6 \div 6 =$

$8 \div 1 =$

$0 \div 9 =$

$4 \div 4 =$

$30 \div 10 =$

$60 \div 10 =$

$80 \div 8 =$

$20 \div 2 =$

$40 \div 10 =$

$35 \div 5 =$

$40 \div 5 =$

$20 \div 4 =$

$25 \div 5 =$

$30 \div 6 =$

$18 \div 2 =$

$8 \div 2 =$

$14 \div 2 =$

$16 \div 8 =$

$12 \div 6 =$

$16 \div 4 =$

$36 \div 4 =$

$32 \div 8 =$

$28 \div 4 =$

$12 \div 3 =$

$48 \div 8 =$

$24 \div 8 =$

$32 \div 8 =$

$40 \div 8 =$

$56 \div 8 =$

$18 \div 6 =$

$24 \div 3 =$

$27 \div 9 =$

$21 \div 3 =$

$15 \div 5 =$

$24 \div 6 =$

$30 \div 6 =$

$42 \div 6 =$

$54 \div 6 =$

$12 \div 2 =$

$81 \div 9 =$

$18 \div 9 =$

$36 \div 9 =$

$54 \div 9 =$

$63 \div 9 =$

$49 \div 7 =$

$21 \div 7 =$

$70 \div 7 =$

$42 \div 7 =$

$63 \div 7 =$

Personal Beast Division Fact Inventory

Check Yourself

<u>0 & 1</u>	$0 \div 5 = 0$	$6 \div 6 = 1$	$8 \div 1 = 8$	$0 \div 9 = 0$	$4 \div 4 = 1$
<u>$\div 10$</u>	$30 \div 10 = 3$	$60 \div 10 = 6$	$80 \div 8 = 10$	$20 \div 2 = 10$	$40 \div 10 = 4$
<u>$\div 5$</u>	$35 \div 5 = 7$	$40 \div 5 = 8$	$20 \div 4 = 5$	$25 \div 5 = 5$	$30 \div 6 = 5$
<u>$\div 2$</u>	$18 \div 2 = 9$	$8 \div 2 = 4$	$14 \div 2 = 7$	$16 \div 8 = 2$	$12 \div 6 = 2$
<u>$\div 4$</u>	$16 \div 4 = 4$	$36 \div 4 = 9$	$32 \div 8 = 4$	$28 \div 4 = 7$	$12 \div 3 = 4$
<u>$\div 8$</u>	$48 \div 8 = 6$	$24 \div 8 = 3$	$32 \div 8 = 4$	$40 \div 8 = 5$	$56 \div 8 = 7$
<u>$\div 3$</u>	$18 \div 6 = 3$	$24 \div 3 = 8$	$27 \div 9 = 3$	$21 \div 3 = 7$	$15 \div 5 = 3$
<u>$\div 6$</u>	$24 \div 6 = 4$	$30 \div 6 = 5$	$42 \div 6 = 7$	$54 \div 6 = 9$	$12 \div 2 = 6$
<u>$\div 9$</u>	$81 \div 9 = 9$	$18 \div 9 = 2$	$36 \div 9 = 4$	$54 \div 9 = 6$	$63 \div 9 = 7$
<u>$\div 7$</u>	$49 \div 7 = 7$	$21 \div 7 = 3$	$70 \div 7 = 10$	$42 \div 7 = 6$	$63 \div 7 = 9$

PATH TO YOUR PERSONAL BEAST!

Abominable Snow Beast of Addition



Addition
Part 2: Make
10 first

Addition
Part 2:
Doubles
+1 or -1

Addition
Part 2:
Doubles

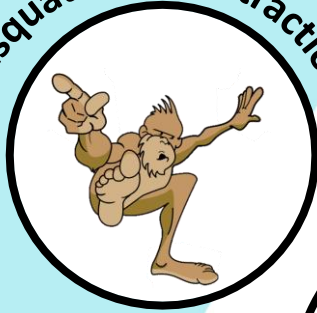
Addition
Part 1:
Adding 10

Addition
Part 1:
Adding to 10

Addition
Part 1:
Counting on
- Adding 1, 2
& 3

Addition
Part 1:
Adding to 5

Sasquatch of Subtraction



PATH TO YOUR PERSONAL BEAST!

Subtraction 10 to 20:
Break to make 10 or Subtract from 10 then add

Subtraction 10 to 20:
Subtracting 10 from a teen can help you subtract 9 from a teen

Subtraction 10 to 20:
Learn the Doubles & Halves

Subtraction 10 to 20:
Subtracting from 20 works a lot like subtracting from 10

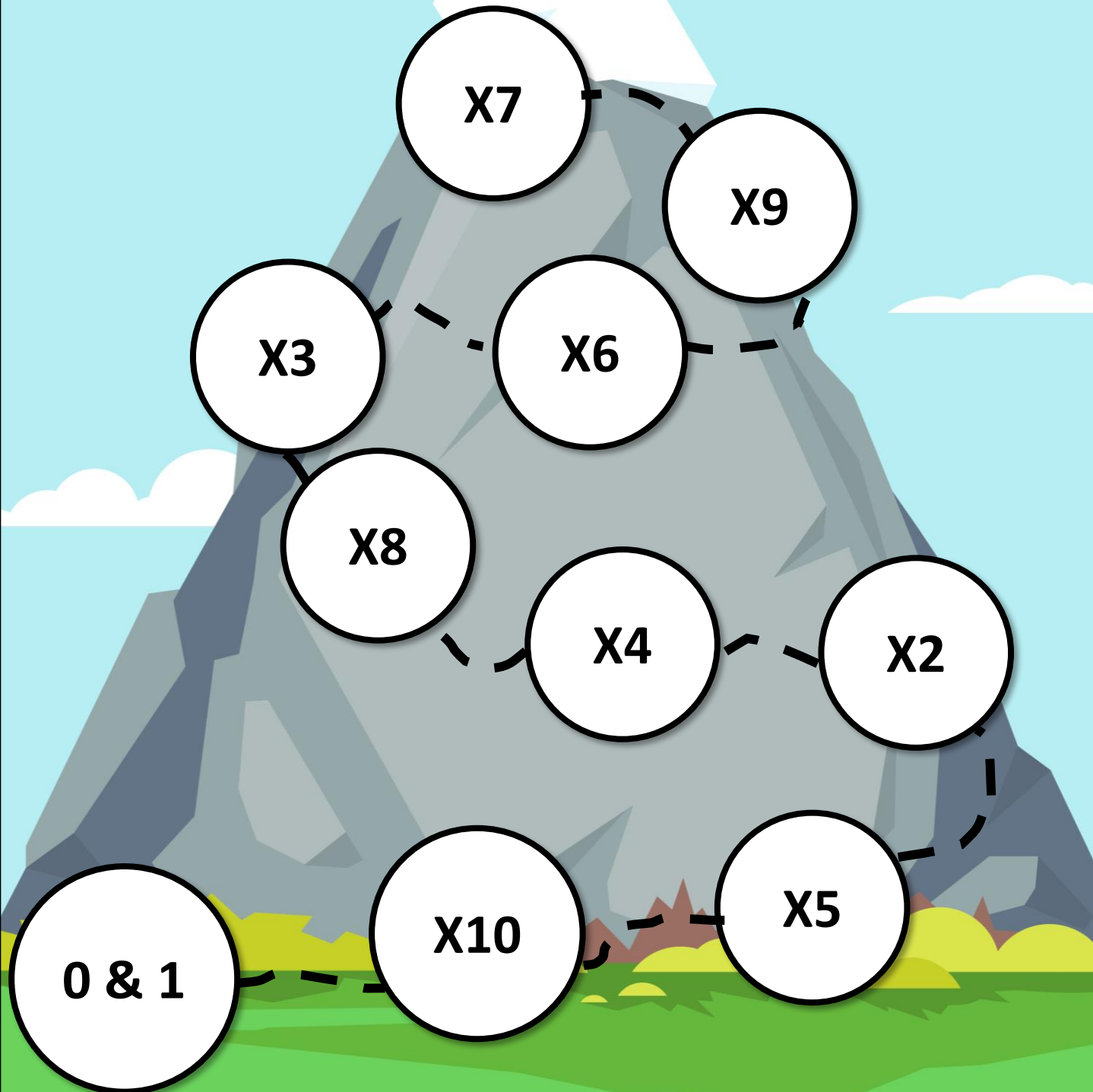
Subtraction 10 to 20:
Remember the "10 within" facts you already learned.

Subtraction 10 & Within:
Think Addition to Subtract

Subtraction 10 & Within:
Learn the Easiest Facts First

PATH TO YOUR PERSONAL BEAST!

Monster of Multiplication



PATH TO YOUR PERSONAL BEAST!

Dinosaur of Division



$\div 7$

$\div 9$

$\div 3$

$\div 6$

$\div 8$

$\div 4$

$\div 2$

0 & 1

$\div 10$

$\div 5$