

Pat Quinn's

BootCamp!

Math Intervention

Bootcamp Intervention Guide

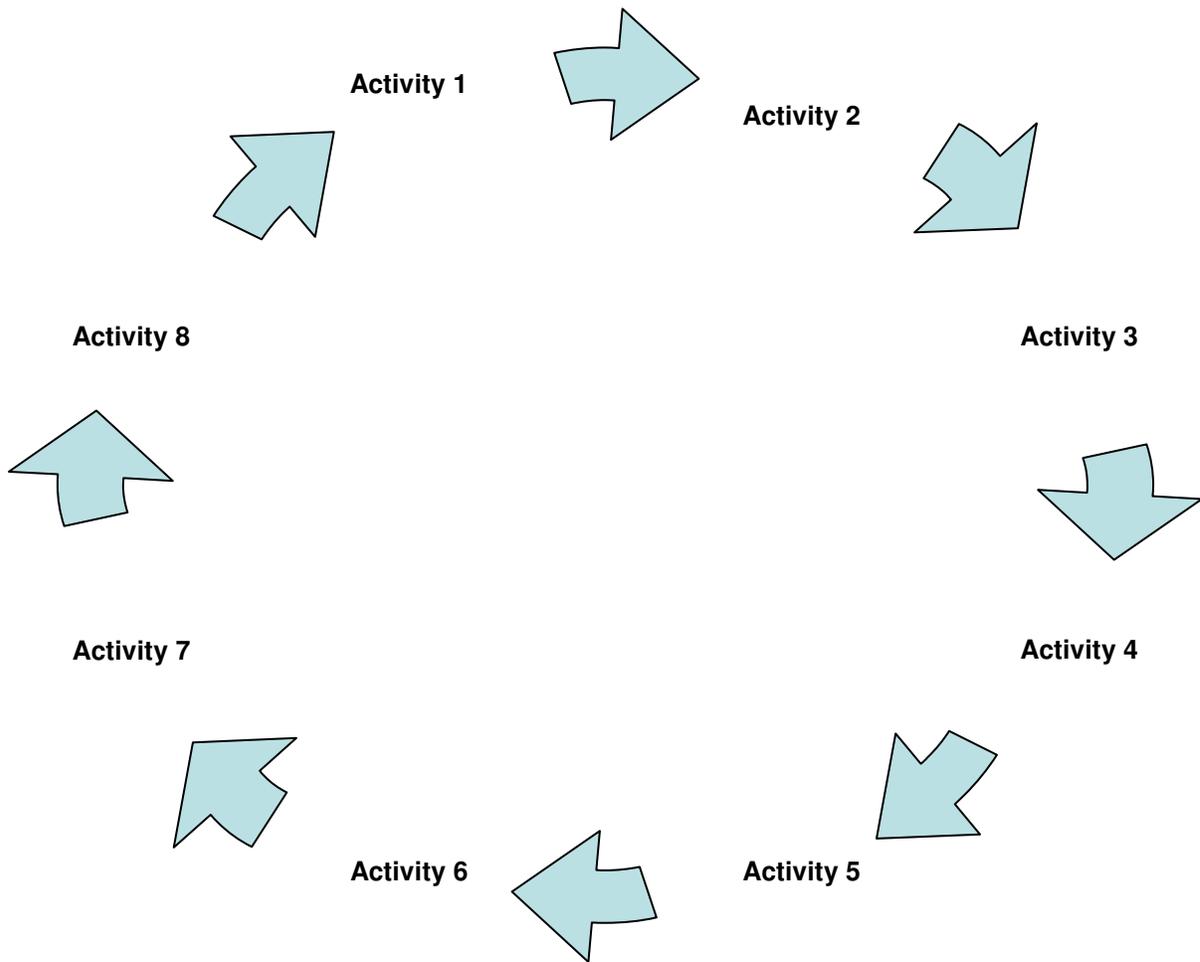
This “Bootcamp” Math Intervention Guide describes 8 different activities you can do with your students to help them master the Math learning standards and perform well on the new assessments. Be sure to watch the DVD Training Guide that accompanies this intervention.

There are a number of ways these activities can be used. In some schools the teachers will use the activities right in their classrooms with all of their students. This is a great way to teach all of your students the vocabulary necessary to master the state standards. Other schools will use these activities during “RTI Time” with their students who are struggling.

Please note that these activities are not intended to replace grade level math instruction. Instead, they are meant to accompany your math instruction. Each of these 8 activities will teach and reinforce a key skill from the standards using as little grade level math content as possible. This is by design so that even your students with knowledge and skill gaps can acquire these essential skills. The good news is that your students will have each of these 8 skills to use when they tackle grade level content moving forward.

The DVD training explains more about the use of these activities in your classroom and in your school.

One option available to all schools is to hold a “Bootcamp” during school, after school, or on a Saturday morning. Many schools use a Bootcamp model to help their struggling learners prior to school starting in the fall. This Bootcamp would move the students through learning stations doing the recommended activities. The Bootcamp could focus on Math, Language Arts, or both.



Bootcamp Timing Chart for 8 Activities

Minutes Per Station	Minutes Between Stations	Total Time for Bootcamp
5	3	61 Minutes A one-hour Bootcamp!
8	4	92 Minutes
10	5	115 Minutes A two-hour Bootcamp!
12	5	131 Minutes
15	5	155 Minutes
18	5	179 Minutes A three-hour Bootcamp!

Math Intervention Activities

MATH #1: Non-Routine Problems

- Problems with NO set algorithm.

Teaching tips:

- ✓ Always ask “What questions could we ask?”
- ✓ Don’t always provide questions.
- ✓ Allow multiple solutions

MATH Activity #1

What’s the Question?

Instructions:

Students have become trained to simply respond to the questions given in a math textbook, and choose an algorithm that solves each problem.

Break through that training by showing picture prompts to your students and instead of asking the obvious questions instead ask them to brainstorm what the questions might be.

If you are doing this in a classroom setting, you might come up with a weekly schedule such as:

Monday – Brainstorm Questions
Tuesday – Choose Questions to Answer
Wednesday and Thursday – Answer Questions
Friday – Present Answers to Class

In a shorter “bootcamp” setting you might just brainstorm questions and choose one to describe “how you would solve it” if you were going to answer the question.

MATH #2: Visual Representations

- Converting between visual pictures and math notation
- Converting between written text and pictures

Sample Question Stems:

Which of these pictures represents _____?

Draw a picture to represent _____.

Teaching tips:

- ✓ Model, Teach Practice
- ✓ Think out loud while you draw pictures
- ✓ Go in both directions

MATH Activity #2

Transformation Station

Instructions:

To help students become more comfortable moving between different types of notation, we should practice all six of the transformations used on the assessments:

Transforming Text to Math Notation
Transforming Text to Pictures
Transforming Pictures to Math Notation
Transforming Pictures to Text
Transforming Math Notation to Text
Transforming Math Notation to Pictures

Create a variety of examples of each of these transformations using grade level and below grade level material from your class.

Start the inflatable globe with one student who answers the transformation question you pose, then show the next question. Students can request the globe, but the student holding the globe can pass it to any student. The student who catches the globe answers the question and the game continues like this.

For safety/esteem purposes consider giving each student one “pass” they can use to skip answering one time they get the globe.

For a twist, have the students answer in the accent of the country their right thumb landed on when they catch the ball!

MATH #3: Comparison

- Greater than, less than or equal
- Close or far apart
- Leads to domain, range and estimation

Sample Question Stems:

Which of these expressions are equivalent?

Which answer is the best estimate?

Estimate the time it would take to complete this task.

Teaching tips:

- ✓ Resist the temptation to think this is “too easy”
- ✓ This is an essential test taking skill for both multiple choice and checking

MATH Activity #3

Which is Bigger?

Instructions:

The best way to begin this game is with weights using a balance. Weigh one object and record its weight. Select a second object and ask “Which is heavier?” Set the two items on the balance.

At this point the students can set limits on what the weight of the new object could be. Note that “Setting Limits” is a very important test-taking skill that should not be overlooked. It allows students to quickly eliminate one or more incorrect answers in a multiple choice format.

Continue choosing objects around the room, and give students choices of which previous objects they would like to see it put on the balance with. Encourage them to use creative combinations of objects, tightening the limits each time.

As the game moves on, students have recorded data from a number of objects, learned how to set and tighten limits, and compare quantities.

Students can be shown any two quantities and are asked “Which is bigger?”

Geometry students can do this with perimeter, area, volume, or length.

Algebra students can do this with expressions covering any grade level material.

MATH #4: Ratios in All Formats

- Ratios, Fractions, Decimals, Percents, Scale
- Understand the relationship between whole and part
- Understand the differences and similarities between systems
- Includes PLACE VALUE

Sample Question Stems:

Which fraction is represented by this picture?
What is the ratio of ducks to chickens?
What percent is closest?
Place this point on the number line.

Teaching tips:

- ✓ Start with halves, quarters and thirds in multiple formats.
- ✓ Use two dimensions (pictures) and three dimensions (coins and measuring cups)
- ✓ Teach it all day.
- ✓ Adjust the number of items on formative assessments to teach this.

MATH Activity #4

Flexible Number Line

Instructions:

Use a clothesline to create a number line in the front of the classroom. Use clothespins to label each end of the number line, and ask students to place their markers (pipe cleaners) at certain locations.

You can use the flexible number line to teach place value.

You can use the flexible number line to teach fractions, decimals and percent.

You can use the flexible number line to teach ratios.

Different colored clothespins allow you to ask multiple questions on one number line. Place the clothespins and ask students to estimate what number is red, yellow or green.

MATH #5: Graphing

- Number line relationships
- Ordered Pairs
- Two-Coordinate Graphing System

Sample Question Stems:

Place the point (4,2) on the graph.

Which of the following ordered pairs represents Point A on the graph?

Teaching tips:

- ✓ Teach both horizontally and vertically
- ✓ Use visible scales and invisible scales
- ✓ Start with number line... work your way up to two coordinates

MATH Activity #5

Full Sized Graphing

Instructions:

This activity extends the flexible number line from Activity #4 in a second direction forming a two-coordinate graphing system.

Start on the front wall with a full wall graph. Use the clothespins to label the axis. Select objects on the wall and have students give the coordinates as an ordered pair.

Change the horizontal axis to categories rather than numbers to teach bar graphs. Change the horizontal axis to time to teach line graphs.

Don't forget to lay the graph out on the floor as well. Some students will see the logic of the graph in that direction easier, since that is how it looks on a piece of paper on their desk.

MATH #6: Working Memory

- Short-Term Storage
- 1-8 Items
- Important in Life... Extra-Important on Computer Assessments

Sample Question Stems:

$$6 \times 13 =$$

Which sentence in the second paragraph contains a series of items?

Teaching tips:

- ✓ Research is clear: You can train to increase your working memory.
- ✓ This will affect students with attention deficit the most.

MATH Activity #6

Working Memory Practice

Instructions:

Working Memory is essential for almost every item on the assessment. The ability to store and remember a few items will increase speed and accuracy, allowing students to show all that they know.

Research is clear: You can increase your working memory with training in a rather short period of time.

Start by showing students two numbers. After taking the numbers away, wait 60 seconds and ask the students to repeat the numbers back.

Show the students two objects. After taking the objects away, wait 60 seconds and ask the students to repeat the numbers back.

Work your way up through three, four, five and six numbers or items.

Note: You do not need to do this on a computer with websites, but if you choose to do this here are two websites you can use:

www.memorise.org/memoryGym.htm

www.easysurf.us/menu.htm

MATH #7: Answer Logic

- Know what each answer means
- Learn how to eliminate answers

Sample Question Stems:

Tell whether each given statement is:

- A. True for all cases
- B. True for some cases
- C. Not true for any cases

Teaching tips:

- ✓ Practice this all day in all subjects
- ✓ Give evidence and counter examples
- ✓ Teach how to eliminate specific answers

MATH Activity #7

Always, Sometimes, Never

Instructions:

Students need practice thinking about different types of answer choices. Playing this activity will help them think of the logic behind each answer choice.

One student says a statement. The other students determine whether each given statement is:

- A. True for all cases
- B. True for some cases
- C. Not true for any cases

The teacher should give the first few examples, and explain the correct answers.

Hand motions for each of the possibilities (Always, Sometimes, or Never) make the game great for kinesthetic learners.

MATH #8: Technology

- **Mouse Skills**
- **Navigation**
- **Drag and Drop**
- **Keyboarding**

Sample Question Stems:

Type your answer below and highlight the sentence in the paragraph that is your evidence.

Place the point in the correct location on the number line.

Teaching tips:

- ✓ iPad and tablet use can hurt this skill
- ✓ Don't forget the built-in calculator!

MATH Activity #8

Multiple Websites

Instructions:

For students to show you everything they know on the assessment, they will need to have four essential skills: mouse usage, navigation, drag & drop, and keyboarding.

This activity needs to be done on a computer. Ideally, students would do the activity on the same computer in the same location under the same conditions as the actual assessment.

A complete list of the technology websites is included in the back of this document.

Essential Technology Skills

Mouse Skills

Starfall Pattern Maze allows students to practice using the mouse while they practice identifying shapes. (K-2)

<http://more2.starfall.com/m/math/geometry-content/play.htm?f&n=geo-maze&y=1&d=demo>

Birthday Candle Counting gives students the opportunity to practice using the mouse while they practice one-to-one counting. (K-2)

http://www.abcya.com/kindergarten_counting.htm

Color, Draw & Paint gives students the opportunity drawing lines, circles and navigating buttons with their mouse. (1-4)

http://www.abcya.com/abcya_paint.htm

Balloon Pop Subtraction allows students the opportunity to practice subtraction while practicing their mouse skills. (1-4)

http://www.abcya.com/subtraction_game.htm

Math Mavens: Students can practice multiple mouse skills, including scrolling, using drop down menus, radio buttons, and accessing links to build their navigation skills. (3-11)

<http://teacher.scholastic.com/maven/index.htm>

Mouse Practice Bubble Activity: Students can practice multiple mouse skills, including scrolling, using drop down menus, radio buttons, and accessing links to build their navigation skills. (3-11)

<http://www.letsgolearn.com/bubble.html>

Spelling Bees: Students can practice multiple mouse skills, including scrolling, using drop down menus, radio buttons, and accessing links to build their navigation skills. (3-11)

http://www.abcya.com/spelling_practice.htm

Check out the upcoming technology seminars in your area:

IdeasUnlimitedSeminars.com

Essential Technology Skills

Navigation

Word Machine allows students to practice their short vowel sounds while learning how to look for 'Hot Spots' when navigating websites. (K-2)

<http://more2.starfall.com/m/word-machines/short-a/load.htm?f&d=demo&n=main&y=1>

Marvin Makes Music is a read aloud that allows students to practice navigation, while listening to reading. (K-2)

http://www.abcya.com/marvin_makes_music.htm

In the Number Chart Game students will place numbers in the appropriate location on the number chart while choosing between levels and finding hot spots. (Math 1-4)

http://www.abcya.com/one_hundred_number_chart_game.htm

Dinosaurs Read Aloud is a read aloud that allows students to practice navigation, while listening to reading. Use hot spots (pause, arrow) and volume sliders. (ELA 1-4)

<http://more2.starfall.com/m/talking-library/dinosaurs/load.htm?f&d=demo&filter=first>

In Study Jams, students can watch videos and play supplemental games on as variety of topics tied to CCSS Math standards. Play a video, use navigation tools, and learn! (Math 1-4)

<http://studyjams.scholastic.com/studyjams/index.htm>

In Math Word Problems, have students choose a grade level, and practice typing in a constructed response box. (Math 1-4)

<http://www.mathplayground.com/wpdatabase/wpindex.html>

Comic Strip: Students will learn to navigate a webpage by reading instructions, clicking items, dragging items, viewing videos, and entering text into fields. (3-11)

<http://www.makebeliefscomix.com/>

Friendly Letter: Students will learn to navigate a webpage by reading instructions, clicking items, dragging items, viewing videos, and entering text into fields. (3-11)

http://www.abcya.com/friendly_letter_maker.htm

Word Clouds: Students will learn to navigate a webpage by reading instructions, clicking items, dragging items, viewing videos, and entering text into fields. (3-11)

http://www.abcya.com/word_clouds.htm

Essential Technology Skills

Drag and Drop

Starfall 2D & 3D Shapes will allow students to identify 2D & 3D shapes while they practice how to 'drag and drop'. (K-2)

<http://more2.starfall.com/m/math/geometry-content/load.htm?f&d=demo&n=enviro-shapes&y=1>

Zac and the Hat allows students to practice short vowel sounds while they practice how to 'drag and drop'. (K-2)

<http://more2.starfall.com/m/decodable/zac-hat/load.htm?f&d=demo>

In Base Ten Fun students will practice their 'drag & drop' skills by constructing numbers using base ten blocks.(1-4)

http://www.abcya.com/base_ten_fun.htm

Practice spelling site words by dragging and dropping letters to spell the word.(1-4)

http://www.abcya.com/dolch_sight_word_spelling.htm

In Math Journey, students will practice their 'drag and drop' skills by choosing which numbers are greater or less than by traveling through the journey.(1-4)

<http://more2.starfall.com/m/math/math-journey/load.htm?f&d=demo&filter=first>

Thinking Blocks: Students will practice following instructions by dragging and dropping items thus reinforcing the skills of dragging and dropping within a field. (3-11)

<http://www.mathplayground.com/thinkingblocks.html>

Clean-Up Your Grammar: Students will practice following instructions by dragging and dropping items thus reinforcing the skills of dragging and dropping within a field. (3-11)

http://www.missmaggie.org/scholastic/cleanup_eng_launcher.html

Essential Technology Skills

Keyboarding

Monkey Paws: Students will type keys using left and right hands. (K-4)

<http://annrymer.com/keyseeker/>

Keyboarding Zoo: Students will practice finding the keys on the keyboard. (K-4)

http://www.abcya.com/keyboarding_practice.htm

Keyboard Climber: Students will navigate the website to begin and type keys that appear. (K-4)

<http://www.tvokids.com/games/keyboardclimber>

Practice keyboarding skills with Keyboard Invasion. (3-11)

http://www.abcya.com/keyboard_invasion.htm

Practice keyboarding skills with Sky Chase. (3-11)

<http://www.arcademicskillbuilders.com/games/sky-chase/sky-chase.html>

Practice keyboarding skills with Dance Mat Typing. (3-11)

<http://www.bbc.co.uk/guides/z3c6tfr>

Working Memory

A student's "working memory" can affect their ability to focus, remember instructions, and learn both mathematics and vocabulary. The good news is that studies show you can increase your working memory with training. Here are two recommended sites:

www.memorise.org/memoryGym.htm

www.easysurf.us/menu.htm