



brain weights

Note Taking and Summarizing System



The Positive Engagement Project

THE POSITIVE ENGAGEMENT PROJECT

Making a difference...not a dollar.



Research shows that note taking and summarizing skills are linked to student achievement across all content areas and across all grade levels. In the book *Classroom Instruction That Works* by Robert Marzano, Debra Pickering, and Jane Pollock, the authors state that "Note taking and summarizing skills promote greater comprehension by asking students to analyze a subject and to expose what's essential and put it in their own words."

It is the final phrase of the aforementioned sentence that The Positive Engagement Project wants to focus on with our note taking system, **Brain Weights**.

Our system of note taking is structured in a simple format with defined areas for students to demonstrate four note taking skills. First, students state the concept in the form of a question. Second, they must provide a visual or sketch of the question. Third, the student lists examples or steps to the answer of the question. Finally, they answer the question in their own words.

Brain Weights also incorporate a linguistic and non linguistic piece. The more students use both forms in the classroom, the more opportunity they have to achieve. Recently, use of nonlinguistic representation has proven to not only stimulate but also increase brain activity!

Research shows that taking more notes is better than fewer notes, though verbatim note taking is ineffective because it does not allow time to process the information. **Brain Weights** are set up to let students show their thinking in a way that may be beneficial to them later as a study guide. After all, isn't that the purpose of taking notes in the first place? Students should be able to look at their own notes and understand why they wrote what they did.

At the end of this packet, we have provided you with multiple versions of **Brain Weights**. We understand that some students may need more room to write than others, hence the multiple versions at your disposal. We will also show you how **Brain Weights** are perfect for Common Core State Standards!

Marzano also lists some criteria for note taking and summarizing. He states that it is important to provide a set of rules for creating a summary and to stick to a consistent format for notes, although students can refine the notes as necessary. As you will find out, **Brain Weights** fit both of these pieces of criteria perfectly.

Let's start with a simple diagram of the actual Brain Weight and explain each of the four sections and their purpose.



Why do you call them Brain Weights?

The name Brain Weights is derived from the way we designed our note taking graphic organizer...it looks like a dumbbell! Let's take a look.

This is where your students write down a question using the concept of study.

QUESTION

Place to draw a visual representation.

Place to list examples or steps.

This is where your students summarize the concept by answering the question.

ANSWER

Notice how the QUESTION and ANSWER icons look like the pieces of a dumbbell that hold the weights in place!



What are some examples of how to use Brain Weights?

We will give you an example of each of the four parts of the Brain Weights note taking system in language arts, mathematics, and CCSS. Let's use synonyms for ELA, find the mean for math, and a Smarter Balanced released question.

Let's start with the concept of synonyms. The first thing we want the students to do is come up with a question asking about synonyms. The simplest version of this is listed below.

QUESTION

What are synonyms?

The question, "What are synonyms?" is also the same question from our Concept Learning Bricks.

Before a student can identify synonyms in text, they must first be proficient with what they are. This question is a good place to start.

ANSWER

Let's move on to the second part of Brain Weights....the visual!



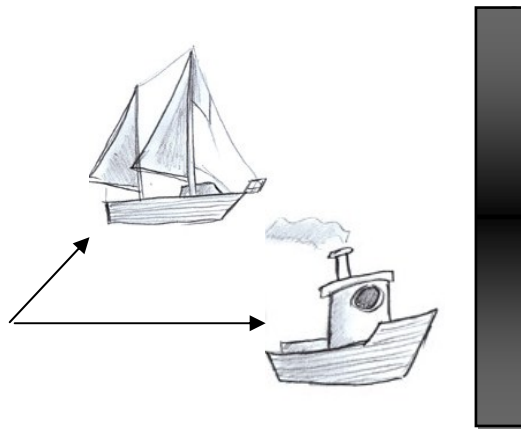
The area designated for visuals provides the students with an area to create a visual cue that will help them answer their Brain Weight question. Drawing pictures or constructing a mental image of knowledge has been acknowledged by Marzano as one of the nine essential comprehension skills for success.

QUESTION

What are synonyms?

For language arts, students are encouraged to draw pictures to show their thinking.

In this example, we are using drawings of a boat and a ship to show how both are similar to one another, but are not exactly the same.



ANSWER

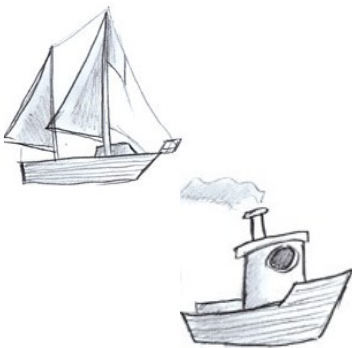
Now, let's move on to the examples section of Brain Weights.



The space on the right of the Brain Weight is intended for students to write down examples to help them answer their question. For mathematics, this space would be used to display the steps needed to answer the questions, but for language arts, we encourage examples.

QUESTION

What are synonyms?



big - huge

pretty - lovely

quick - fast

boat - ship

← A student created list of examples is a good way for students to demonstrate their understanding of a concept.

ANSWER

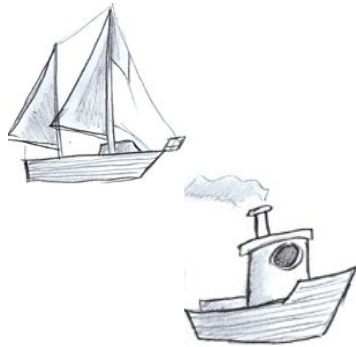
The final piece to the Brain Weights note taking graphic organizer is to answer the question. Let's take a look at a completed Brain Weights on the next page.



The answer to the question should be a summary of what the student knows about the concept. We suggest that students use part of the question in their answer-summary.

QUESTION

What are synonyms?



big - huge

pretty - lovely

quick - fast

boat - ship

Synonyms are words with almost the same meaning.

ANSWER

The answer contains a portion of the question within it and is a student created summary of what synonyms are. It is important you let students come up with their answer entirely on their own.

As you can see, Brain Weights are simple, yet incorporate multiple strategies identified by Marzano as being highly successful for student achievement. Let's take a look at how mathematics would work.



How do Brain Weights work with math note taking?

Let's start with the concept of mean. The first thing we want the students to do is come up with a question asking about mean. A more difficult version of this is listed below.

QUESTION

How do you find the mean in a set of data?

→ This question is more about the process of how to find mean rather than the definition.

Many of mathematics notes will be based on the process of mathematical concepts, not just defining terms. Making the question more complex is one way to add more "weight" to Brain Weights!

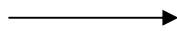
ANSWER

Let's move on to the second part of Brain Weights....the visual!



The area designated for visuals provides the students with an area to create a visual cue that will help them answer their Brain Weight question. For mathematics, this is where a visual of the problem will occur, not necessarily an image to represent the concept. See the example below.

This is a simple representation of the set of data and the two math symbols needed to perform the process.




Notice that it's not really an image to represent the concept, but the actual problem with some visual cues. For most math concepts, the visual of the problem will be placed in this area.

QUESTION

How do you find the mean in a set of data?

2 5 5 5 6 7

+ ÷



ANSWER

The next step in Brain Weights deals with listing the steps need to solve this problem.

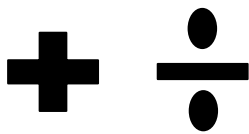


The space on the right of the Brain Weight is intended for students to write down examples to help them answer the question. For mathematics, this space would be used to display the steps needed to answer the question.

QUESTION

How do you find the mean in a set of data?

2 5 5 5 6 7



-add all of the numbers
 $2+5+5+5+6+7 = 30$

-divide sum by how many numbers in the data (6)
30 divided by 6

-mean of the data is 5

Listing the steps needed to solve the problem is a good indicator of a student's knowledge of the process and an even better study tool for later in the year.

ANSWER

As you can see, the steps of the process are short and simple, but still provide the mathematical thinking to solve the question. Now all the student has to do is sum up the process for the last part.



The answer to the question should be a summary of what the student knows about the concept. We suggest that students use part of the question in their answer-summary.

QUESTION

How do you find the mean in a set of data?

$2 \quad 5 \quad 5 \quad 5 \quad 6 \quad 7$	$+$	\div	<p>-add all of the numbers $2+5+5+5+6+7 = 30$</p> <p>-divide sum by how many numbers in the data (6) 30 divided by 6</p> <p>-mean of the data is 5</p>
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To find the mean, you have to add all of the numbers and then divide by how many.

ANSWER

↑

The answer contains a portion of the question within it and is a student created summary of how to find the mean in a set of data.

As you can see, Brain Weights are simple, yet incorporate multiple strategies identified by Marzano as being highly successful for student achievement. Now let's see how we can add more weight to Brain Weights with the Common Core State Standards.



How do you adapt Brain Weights to CCSS?

We know that the Common Core State Standards stress the importance that kids know how to truly apply their knowledge, not just regurgitate facts. With that in mind, you can use Brain Weights exactly the same, with one minor (yet really pretty major) tweak.

Brain Weights in the CCSS model still incorporate the same four parts, but it will be important that we add more weight, or in this case, rigor to the question.

Instead of letting students come up with on the surface type questions, it will be the teacher's job to provide a rigorous question that will make the other three parts of Brain Weights more challenging. Much like the Smarter Balanced Consortium, the question must ask students to research and analyze information, weigh evidence, and solve problems relevant to the real world, allowing students to demonstrate their knowledge and skills in an authentic way.

Let's take a look at an example using our Brain Weights.



For this example we pulled a sample question directly from the Smarter Balanced Consortium. Notice that it is open ended and requires the student to be able to explain their thinking.

This Brain Weight is a lot heavier than the previous examples.

Students need to know what perimeter is, the formula to find perimeter, and analyze the information from the question to come up with an answer!

Harder question equals heavier Brain Weight!

This question gives the student just enough information to draw an illustration. Let's see what that looks like in the next step.



QUESTION

A rectangle is 6 feet long and has a perimeter of 20 feet. What is the width of the rectangle?



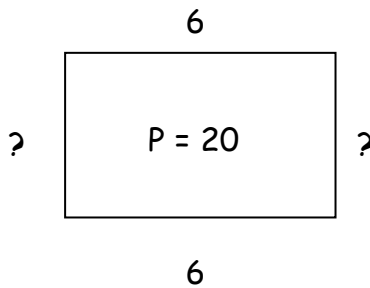
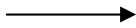
ANSWER

The area designated for visuals provides the students with an area to create a visual cue that will help them answer their Brain Weight question. This is where our students can make a visual model of the question. The use of nonlinguistic representation has proven to not only stimulate but also increase brain activity!

QUESTION

A rectangle is 6 feet long and has a perimeter of 20 feet. What is the width of the rectangle?

This drawing is a non linguistic representation of the question.



Notice that the answer is not written, but rather question marks are placed for the unknown width of the rectangle.

Four horizontal lines for writing an answer: a solid top line, a dashed middle line, a solid bottom line, and a dashed bottom-most line.

ANSWER

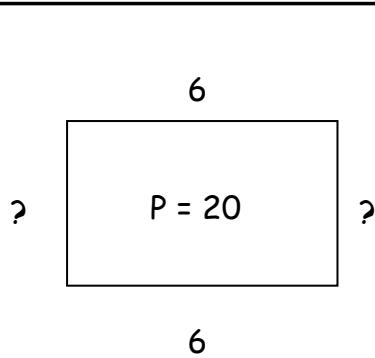
Now that the question has a visual representation attached to it, the student can move onto the area of the Brain Weights to show the steps to find the answer.



When dealing with a question as difficult as our example, this space becomes a critical piece for students to show their understanding of the multiple levels of understanding needed. As previously stated, students need to know what perimeter is, the formula to find perimeter, and analyze the information from the question to come up with an answer!

QUESTION

A rectangle is 6 feet long and has a perimeter of 20 feet. What is the width of the rectangle?



- Perimeter = $s+s+s+s$

- $6+6 = 12$

- $20 - 12 = 8$

- 8 divided by $2 = 4$

- width is 4

Listing the steps needed to solve the problem is a good indicator of a student's knowledge of the process and an even better study tool for later in the year.

ANSWER

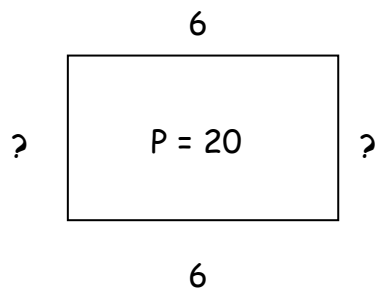
The final piece to the Brain Weights graphic organizer is to answer the question. Let's take a look at a completed Brain Weights on the next page.



Even with a complex example, the answer to the question should be a summary of what the student knows about the concept. Notice that parts of the question still show up in the answer.

QUESTION

A rectangle is 6 feet long and has a perimeter of 20 feet. What is the width of the rectangle?



-Perimeter = $s+s+s+s$

- $6+6 = 12$

- $20 - 12 = 8$

-8 divided by 2 = 4

-width is 4

The width of a rectangle with a perimeter of 20 feet and a length of 8 feet is 4 feet.

ANSWER

The answer contains a portion of the question within it and is a student created summary of finding the unknown width of the rectangle.

On the following pages you find multiple sizes and versions of Brain Weights. Choose the one that will work best for your students.

Remember, you can decide the level of complexity just by how you ask the question.





QUESTION



ANSWER

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QUESTION



ANSWER

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QUESTION

Handwriting practice lines for the question section, consisting of four sets of three horizontal lines (top solid, middle dashed, bottom solid).



Handwriting practice lines for the answer section, consisting of four sets of three horizontal lines (top solid, middle dashed, bottom solid).

ANSWER

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QUESTION

Handwriting practice lines for the question section, consisting of four sets of three horizontal lines (top solid, middle dashed, bottom solid).



Handwriting practice lines for the answer section, consisting of four sets of three horizontal lines (top solid, middle dashed, bottom solid).

ANSWER

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QUESTION



ANSWER