Lesson

4

Powerful Bones. Powerful Exercise



**Objective:** Learn that weight-bearing exercise strengthens bone density.

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**Keywords:** Weight-bearing, osteoporosis, Dietary Guidelines for Americans

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**Games:** Heavy Duty Words, Wizard Mat, Discovery Chain – Weight-Bearing Clone

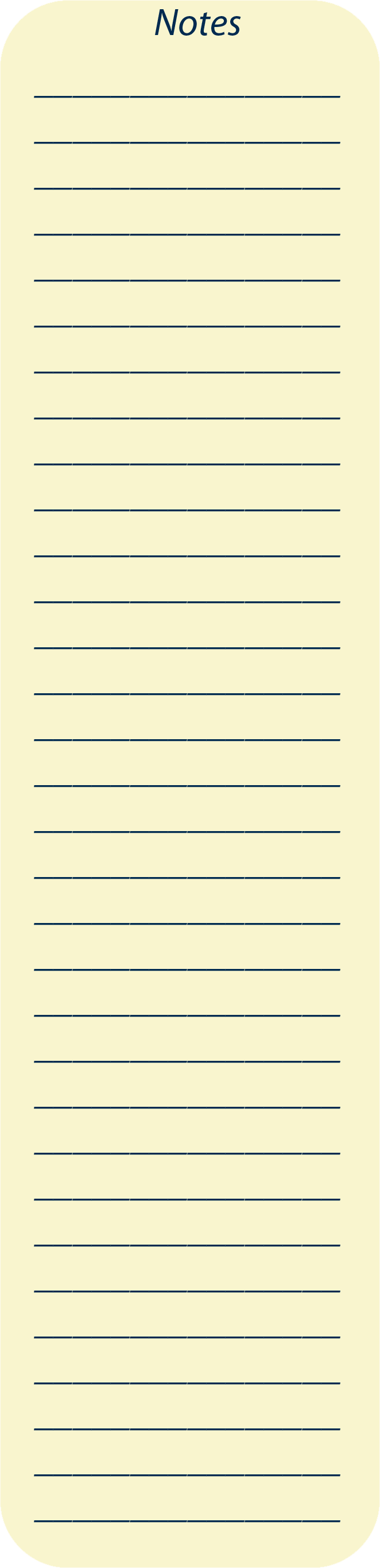
**Utah State Office of Education Objective**

*Food and Nutrition II.* STANDARD 20.0118-03.

Objective 20.0118-0302. Classify common food and nutrition related health concerns.

National Standard 14.2.3 (The emphasis is on understanding the relationship of diet in the prevention, control and maintenance of these health concerns. A doctor should always be consulted regarding any of these concerns)

Discuss specific health concerns and risk factors for: anemia, colon and rectal cancer and osteoporosis.

****Lesson Plan

1. Give Pre-test (Folders)
2. Teach
3. Games (pick and choose game(s) that will fit duration of class)
4. Give Post-test (Folders)

**A. Weight Concern**

1. Some youth avoid eating dairy food because they are concerned about unhealthy weight gain. The good news is, low-fat and fat-free dairy foods are not only lower in calories, and high in calcium but they also help to effectively lose weight.
2. To build strong bones, we also need to include weight-bearing activities.

**B. Weight-Bearing Activity**

**Ask: What are weight-bearing activities?**

1. Weight-bearing activities are movements that get us up on our feet and moving around so our legs are carrying our body weight.

Some examples of weight-bearing activities include:

* + Walking, running, dancing, climbing stairs, jumping rope, weight-lifting, playing basketball, soccer, volley ball, or football.

1. The more weight-bearing exercise you do, the stronger your bones will be, and therefore help to prevent or delay osteoporosis.

**Ask: Is swimming a weight-bearing activity?**

No, it isn’t because our body weight is supported by the water and there is no weight-bearing.

**C. Daily Exercise**

1. The 2005 Dietary Guidelines for Americans recommends that youth in your age group exercise for 60 minutes every day, at least 5 days a week, to be healthy.

Let’s learn more while we play some fun games together

Visuals in power point form and other documents available online at <http://extension.usu.edu/nic>

**Handout**

**Bone Building Chart**

|  |  |  |
| --- | --- | --- |
| **Beginner ★** | **Amateur ★★**  **⇧*load, intensity, time*** | **Advanced ★★★**  **⇧⇧⇧*load, intensity, time*** |
| * Aerobics, low impact * Baseball * Bowling * Carrying Groceries * Dance * Elastic Band Exercises * Gardening * Golf, Carrying Clubs * Golf, Pulling Clubs * House Cleaning * Softball * Square Dancing * Stair Climbing * Tai Chi * Walking * Weight Lifting * Yoga | ★★ Basketball  ★★ Cross Country Skiing  ★★ Dance  ★★ Downhill Skiing  ★★ Hiking  ★★ Jogging  ★★ Race Walking  ★★ Racquetball  ★★ Soccer  ★★ Step Aerobics  ★★ Tennis  ★★ Volleyball  ★★ Walking Uphill  ★★ Weight Lifting | ★★★ Backpacking  ★★★ Basketball  ★★★ Gymnastics  ★★★ High Impact Aerobics  ★★★ Hiking  ★★★ Jogging  ★★★ Jumping Rope  ★★★ Race Walking  ★★★ Running  ★★★ Soccer  ★★★ Stair Climbing with Weighted Vest  ★★★ Walking with Backpack  ★★★ Walking with Weighted Vest  ★★★ Weight Lifting |

Source: Adapted from University of Arizona Cooperative Extension’s “Bone Building Activities for the Prevention of Osteoporosis”.



Restroom Sign.pngRestroom Sign.png**Players:** 2 or more (individually or team of 3).

craft_Scissors.jpg

**Materials:** Game mat, foam dice, question and answer set, Mystery Moves and Treats cards.



**Duration:** 15-30 minutes. *Modification:* Use two dice if you have less time to play this game.



**Goal:** Be the first player or team to move forward one round and return to the starting point.

**How to Play**

1. Each team rolls a die. The team with the highest number starts moving first.

2. Each team assigns a member to move as a game piece by standing in the box where the team lands.

1. The first team rolls two dice. The sum represents the number of steps the team can move forward in that turn.

Your team must correctly answer a question. If you fail to answer the question, you will lose the next turn and attempt to answer a question. If you fail to answer the second time, you will go to TIMEOUT CORNER.

\*\*You must stay in the TIMEOUT CORNER until you answer two questions correctly in the same turn. After answering correctly, roll the die (dice) to move immediately.

Immediately draw a MYSTERY MOVES CARD and follow the directions.

Immediately draw a TREATS CARD and follow the directions.

Safe zone. No action is needed.

The player must give a big smile to all other players.

1. The first team to make it around once (or more depending on time) wins.

Wizard Mat Question Set

**Easy**

1. True or false: Swimming is a good weight-bearing activity?
   1. False.(Swimming is good for cardiovascular health but is not beneficial for weight bearing)
2. Running, walking, dancing, and playing soccer are good example of what?
   1. Weight-bearing activities
3. If you are playing basketball, what type of activity which promotes bone health are you participating in?
   1. Weight-bearing activity
4. How long should you exercise every day to be healthy?
   1. 60 minutes
5. Is it okay to break up your exercise so you do it at different times during the day?
   1. Yes
6. Is standing considered to be a weight-bearing action?
   1. Yes

**Medium**

1. What is a weight bearing activity?
   1. Movements that get us up on our feet moving around so our legs are carrying our body weight
2. What is one reason why teens avoid drinking milk?
   1. They think milk or dairy products are fattening
3. What is a healthier activity for your bones: jumping rope or swimming?
   1. Jumping rope
4. From what we learn in all 4 lessons, what is the best combination to keep our bones healthy and strong?
   1. Get enough calcium and participate in weight-bearing activities.
5. Name one weight-bearing exercise.
   1. Walking, climbing stairs, standing up, carrying a backpack, running, jogging, dancing, playing a musical instrument, soccer, basketball, football, etc.

**Difficult**

1. Why is low-fat and fat free milk a healthy food choice?
   1. They are higher in calcium but not high in fat or calories
2. Which is a better weight bearing activity: sitting down and playing the piano or playing the tuba in a marching band?
   1. Playing the tuba in marching band
3. If you played basketball for 15 minutes, would that be beneficial to your bones?
   1. Yes because that is a weight bearing exercise
4. Are other activities bad if they are not weight-bearing activities?
   1. No, they won’t help with bone strength but they are important for your overall health



… Need a little weight-bearing? ...

Restroom Sign.pngRestroom Sign.png

**Players:** 2 players or more.

**craft_Scissors.jpg**

**Materials:** Keyword cards, keyword bag, bean bags.

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**Duration:** 5-10 minutes.

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**Goal:** Be the first one to spell a keyword correctly without dropping any bean bags.

**How to Play**

1. Place one bean bag on the back of each speller’s hands. Each player will spell with their arms straight.
2. The judge will announce a keyword drawn from the ‘keyword bag’.
3. All spellers will stand in one line facing the judge. The size of each letter spelt with hand movements must not be smaller than a letter-sized paper.
4. Starting together, every speller will act out each alphabet of the keyword in right order without dropping any bean bags.
5. If any bean bag falls before a word is completely spelled out, the speller has to start over.
6. The fastest speller who spells out the whole word without dropping any bean bags wins.

TIPS: To make the game more advanced, double the number of bean bags in Round 2.

**Keyword Examples**

* Weight Control
* Weight Bearing
* Calcium
* Bean bags
* Osteoporosis
* Exercise
* Strong bones
* 1300 mg
* 60 minute

Restroom Sign.pngRestroom Sign.png

**Players:** 10 players or more.

**craft_Scissors.jpg**

**Materials:** Paper, pen or pencil, 1 pair of scissors, a bag.

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**Duration:** 10 minutes.

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**Goal:** Find your other clone through a charade.

**How to Play**

1. Cut each letter-sized paper into 2 even columns x 4 even rows. Distribute 1 piece of paper to each player.
2. Ask each player to fold the paper in half. Then write down a weight-bearing exercise on each side. For example,

|  |  |
| --- | --- |
| **Playing a drum** | **Playing a drum** |

1. You collect all papers. Count and put aside half the papers. Cut the selected papers into halves and mix them in a bag.
2. Let each player pick a halved piece of paper from the bag. Ask them to think about a charade that represents the weight-bearing exercise written on their papers. No words can be used. When you say ‘start’, they will begin the charade until they find their ‘clone’.
3. When a player finds his or her clone, they will stand side-by-side.
4. At the end, ask each pair what charade they did to find their ‘clone’.
5. Repeat game with the other half of papers you put aside.

Answer Key (Student copy in folders) Time:First 5 minutes

1. Low-fat and fat-free dairy products are healthy food choices that are not high in fat or calories.

**a. True**

b. False

2. Weight-bearing exercise does NOT include

**a. swimming**

b. climbing stairs

c. weight lifting

3. How much exercise should you get every day to be healthy and promote good bone health?

**a. 60 minutes**

b. 30 minutes

c. 15 minutes

4. Is standing up considered to be a weight-bearing action?

**a. Yes**

b. No

5. What is the best combination to help keep your bones healthy and strong?

a. Eat plenty of calcium rich foods

b. Do weight-bearing activities

**c. a and b**

Score: \_\_\_\_\_\_\_ Points

Answer Key (Student copy in folder) Time:Last 5 minutes

1. If you are concerned about weight, you can still have dairy foods. Why? Because\_\_\_\_

* 1. All dairy products can help me lose weight.
  2. **I can still choose low-fat or fat free version to get calcium. Calcium is very important for my bone and teeth health and I don’t want to have osteoporosis.**
  3. It does not affect my weight.

2. Name two weight-bearing exercises.

**Walking, running, dancing, climbing stairs, jumping rope, basketball, soccer, volley ball, football, etc.**

3. Is it okay to break up your exercise so you do it at different times during the day? **Yes** / No

4. Which is a better weight-bearing activity?

a. sitting down and playing the piano

**b. playing the tuba in a marching band**

5. Which food and exercise pair is most helpful for your bones to stay healthy and strong?

a. Calcium-fortified orange juice and swimming

**b. Low-fat yogurt and running**

c. Peanuts and weight lifting

Score: \_\_\_\_\_\_\_ points

Calcium Countdown

Circle the food picture (or 🗸) if you ate that food yesterday.

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**What I Know Now**

Compare yourself about what you learn and do before you come to this program and after you finish this program. Please circle your answer.

|  |  |  |  |
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| **#** | **Objectives** | **Before** | **Now** |
| 1 | Understand the functions of calcium to health. | Yes / No | Yes / No |
| 2 | Understand peak bone mass period (Ages 15-20). | Yes / No | Yes / No |
| 3 | Understand osteoporosis and how to prevent it. | Yes / No | Yes / No |
| 4 | Know how much calcium I need daily. | Yes / No | Yes / No |
| 5 | Know what foods are dairy and nondairy. | Yes / No | Yes / No |
| 6 | Know about how to choose calcium supplements. | Yes / No | Yes / No |
| 7 | Know about lactose intolerance. | Yes / No | Yes / No |
| 8 | Know what foods I eat are high in calcium. | Yes / No | Yes / No |
| 9 | Know what other ethnic foods are high in calcium. | Yes / No | Yes / No |
| 10 | Know what weight-bearing exercise means. | Yes / No | Yes / No |
| 11 | Eat food high in calcium. | a. 5-7 days a week  b. 3-4 days a week  c. 1-2 days a week  d. Never | a. 5-7 days a week  b. 3-4 days a week  c. 1-2 days a week  d. Never |
| 12 | Do weight-bearing exercise for 60 minutes a day. | a. 5-7 days a week  b. 3-4 days a week  c. 1-2 days a week  d. Never | a. 5-7 days a week  b. 3-4 days a week  c. 1-2 days a week  d. Never |

To be completed at the end of Lesson 4 if all four lessons are taught. If not, have your students complete this survey at the end of this lesson.

Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ School: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Date: \_\_\_\_\_\_\_\_ Age: \_\_\_\_\_\_ Gender: 🞏 Boy 🞏 Girl

Ethnicity: 🞏 White 🞏 Hispanic 🞏 Asian 🞏 Native American

🞏 African American 🞏 Other: ­\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Things I like about this class:

🞏 Short Lesson

🞏 Games

🞏 Handouts

🞏 Treats

🞏 Something else: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. Things I don’t like about this class are:



Teacher’s Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_\_\_\_

Age group taught: \_\_\_\_\_\_\_ years old Years of Teaching:\_\_\_\_\_

**Grading Scale**:

A+ = Excellent A = Very Good B = Good C = Average D = Poor F = Fail

Reading and Comprehension Level

|  |  |  |
| --- | --- | --- |
| **Aspects** | **Grade** | **Comments** |
| Reading Level |  |  |
| Clear Purpose |  |  |
| Appropriate word usage |  |  |
| Appropriate sentence and paragraph structures |  |  |
| Overall organization |  |  |
| Appropriate tone |  |  |

Content

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| **Aspects** | **Grade** | **Comments** |
| Accurate, credible information |  |  |
| Age Appropriate information |  |  |
| Practical information |  |  |
| Appropriate recipes |  |  |

Design and Quality

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| **Aspects** | **Grade** | **Comments** |
| Appropriate use of color |  |  |
| Readable type size and style |  |  |
| Appropriate illustration |  |  |
| Appropriate tables, charts, and graphs |  |  |
| Organized, balanced layout |  |  |

Which game(s) did you use to teach this lesson?

Which is the best game that you consider most effective in helping your students learn and apply?

Overall grade = \_\_\_\_\_\_\_\_

Additional comments:

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Tracking Sheet** Teacher’s Initial: \_\_\_\_\_

Start Date: \_\_\_\_\_\_\_\_\_\_ End Date: \_\_\_\_\_\_\_\_\_\_

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| # | Full Name | Consent Submitted | Pre-Test Score | Calcium Countdown Score | Post-Test Score | Feedback Submitted |
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Extra Notes

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