

THE CASE OF MS. O'S MISSING BADGE



YOUR MISSION:

Calling Odd Squad! The Shape Shifter has stolen Ms. O's badge and transformed it into something else entirely. With only a balance scale and a single clue from Ms. O, agents will need to use their knowledge of balance and weight to identify the missing badge and return it to Ms. O before she loses her job as head of Odd Squad forever.

LEARNING GOALS:

- Explore the concept of balance.
- Practice using a balance scale.
- Understand the concepts of *heavier/lighter/the same weight*.

MATERIALS:

For the balance scale:

- One ruler
- Two identical plastic spoons
- One regular-sized marker (not thin)
- Tape
- Two rubber bands (optional)

Items to weigh:

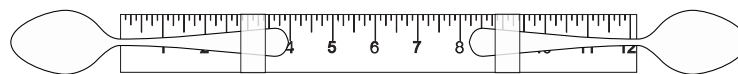
- Two pennies
- One nickel
- Several small items heavier or lighter than the penny, for example: a marble, a pebble, a paper clip, an eraser, a dry bean

Other:

- An empty plastic sandwich bag
- A plain manila folder to use as the case file. You can attach the [Odd Squad Seal](#) (included in this packet) to the front and put the activity pages inside.

PREPARATION:

- Find the Odd Squad episode **The Briefcase** (approx. 11 minutes) online at pbskids.org/learn/oddsquad/afterschool.
- Prepare the balance scale. Use tape or rubber bands to secure a plastic spoon to each end of the ruler, making sure that the bowl of each spoon hangs off the end of the ruler and that each handle is attached evenly. (See graphic).
- Prepare your case file.



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IMPLEMENTING THE ACTIVITY:

- Help the children settle down by completing a fun, focusing task that explores balance. You might challenge them to try to balance on one foot for 30 seconds or balance a pen on their nose or a notebook on their head.
- Once the children are focused, view **The Briefcase** with the group. Before you begin, ask them to pay attention to the ways that Odd Squad measures weight. After you watch, ask: *What did Olive and Otto use to measure weight? How could they tell which item was heavier and which item was lighter? How could they tell when two items weighed the same amount? How did measuring weight help Olive and Otto to crack the case?*
- Tell the children that you've received a letter from the head of Odd Squad, Ms. O. Explain: *Odd Squad needs our help. Are you ready to help crack a math case?* Read the **letter from Ms. O** aloud (below).
- Engage the children in **Training** and **Casework**, then celebrate with a **Case Closed** learning recap (following pages).

Letter from Ms. O

Agents! There you are! Something very odd has happened and it may just be the biggest problem EVER: my badge is missing! The Shape Shifter stole it and she's turned it into something else altogether. She's hiding it from me in plain sight and you need to find it. The good news is that even though she changed the way my badge looks, she can't change how much it weighs — and I happen to know that my badge weighs the same as two pennies. Don't ask how I know, I just do. Find the object that weighs the same as two pennies and send it back to me at Headquarters so Oscar can turn it back into my badge and I can continue saving the world from all sorts of odd happenings. Are you ready to crack the case? Then hurry, because I need you!



TRAINING:

1. Tell the children that in order to crack **The Case of Ms. O's Missing Badge**, they will need to weigh different objects and find one that weighs the same as two pennies. Ask: *What are some ways that we can measure weight?* List children's ideas on the board (e.g., using a scale, using a pan balance, using a seesaw).
2. Remind children about the seesaw that Olive and Otto used, and discuss how a seesaw works. Have the children stand up and pretend that they are seesaws with different items on each side — just like a scale. Say: *How would you show me that the item on the left is heavier?* (Children should dip their left side down lower than the right.) Now ask the children to show you that the item on the right side is heavier. Then ask them to show you what the balance scale/seesaw would look like if both items were the same weight.

continued

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TRAINING CONTINUED:

3. Now play a game of “weight charades.” Choose a child to pick two items from somewhere in the room. Have the child hold an item in each hand. Then, pretending he is a scale, have him show the group which item is heavier. Challenge the group to watch and call out which item is heavier or lighter. Ask: *How did you know?* Encourage children to use weight vocabulary, such as *lighter* and *heavier*, as they discuss their thinking.
4. Choose a new child to be the scale and continue playing. As you play, you can also steer some children towards choosing items that are *the same weight*, such as two copies of the same book.

CASEWORK:

1. Tell the children that it's time to crack **The Case of Ms. O's Missing Badge**. Help the children to recall the clue that Ms. O gave in the letter: the shape-shifted badge weighs the same as two pennies. Let children know that together, you will use a tiny scale that will help everyone find out which item weighs the same as two pennies.
2. Take out the balance scale (ruler and spoons) you prepared earlier. Tape a marker to the desk or table so that it cannot roll around; then place the balance scale across the marker. The point of balance should be at the middle of the ruler. When balanced, the spoons should be level and not touch the table or desk. Ask: *Do both spoons weigh the same? How do you know?*
3. Set out your preselected items: the nickel and the others. Say: *One of these things is actually Ms. O's badge in disguise. How will we know which one it is?* (It will weigh the same as two pennies. It will balance the scale.)
4. Now place the pennies in one of the spoons and let the scale fall to that side. Give a child one of the other items. Ask: *Do you predict this will be heavier or lighter than the penny?* Have the child place the item in the other spoon and have the class observe and describe what happens. Ask: *Which item is heavier/lighter? Is this Ms. O's badge?*
5. Continue giving children items to weigh against the pennies. As your last item, give children the nickel, which weighs the same as two pennies, and have them place it in the spoon. Ask: *Is this Ms. O's badge? How do you know?* (The scale is balanced).
6. Bag the nickel so that it can be sent back to Odd Squad.

CASE CLOSED:

Gather the children back into a group.

Say: *Great work, agents! Looks like we found Ms. O's missing badge. As part of our training, we like to review what we learned from the case and enter it in the case file so that future agents-in-training can learn from it.*

Ask: *What did we learn about weight? What are some different tools we can use to weigh things? When we use a pan balance, how can we tell which item weighs more? How can we tell when two items weigh the same amount?*

Write down the learnings/findings that the children share, close your case file and write **CASE CLOSED** across the front. Congratulate your agents on a case well-solved.

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ODD SQUAD SEAL



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