



# Pumpkin Estimation



Grades: Pre-K- 2<sup>nd</sup> Grade

*GPS Standard:*

*MD 5. Children will learn how to use a variety of non-standard and standard means of measurement (Pre K)*

*MKM1. Students will group objects according to common properties such as longer/shorter, more/less, taller/shorter, and heavier/lighter (K)*

*M1M1. Students will compare and/or order the length, height, weight, or capacity of two or more objects by using direct comparison or a nonstandard unit (Grade 1)*

*M2M1b. Estimate lengths, and then measure to determine if estimations were reasonable (Grade 2)*

**Materials: 4-5 pumpkins of varying size, 4-5 clumps of yarn, 4-5 pairs of kid-friendly scissors, 1 meter stick, 1 bathroom scale**

**Introduction/Hook (4 min):** Show the students 4-5 pumpkins of varying size (line them up in front of the kids) and say, "Who knows what these are called (pumpkins). What do you know about pumpkins (we carve them at Halloween, they grow on vines, you can roast the seeds, etc...). Do all the pumpkins look exactly the same or are there some differences?"

Ask for volunteers to name some things that are the same (they're all orange) and some things that are different (that one has a long stem, but the other ones have a short stem). If the children don't come up with it, point out that one big difference is that they are all different sizes.

Explain to the students that we could measure these pumpkins in all different ways. Say, "For example, we could measure how much they weigh (put one of the pumpkins on a scale), how many inches tall they are (pretend to measure the height of one pumpkin using the meter stick), or we could measure the diameter of the pumpkins and that's what we're going to do today! We're going to make a guess about the diameter of our pumpkins! When mathematicians make a guess, they call it *estimating*!"

**Lesson (4 min):** Say, "Today we're going to practice estimating. Does anyone know what that word means?" Show the students a piece of yarn and demonstrate how to make a guess (estimate) about the diameter of the pumpkin. To do this, direct the students' attention to one pumpkin. Cut a piece of yarn that you think will fit around the fattest part of the pumpkin (think aloud...for example, you might first pull a really long piece and say, "I know this is way too long because that pumpkin is small, so I should make it a little shorter"). Cut the yarn and wrap it around the fattest part of a pumpkin. Talk about your estimate. Was it too long? Too short? Hold up the string of yarn and explain that when we estimate, we are making a guess. Sometimes our guess is correct and sometimes it's a little off.

Point to a different pumpkin and ask, "Do you think I will need a longer string or a shorter string for this one? Why?" Now....it's your turn! You get to make a guess about the diameter of a pumpkin! I'm going to put you into a group and I'm going to give your group a pumpkin. Next, I will give your group a clump of yarn (show the clump of yarn) and a pair of scissors (show them). When it's your turn, you get to cut a piece of yarn that you think will fit around your pumpkin. Remember, if your

pumpkin is really fat, then you'll need a long string and if it's a smaller pumpkin then you'll need a shorter string. Are you ready?"

**Activity (5 min):** Put the students into groups so that there are 4-5 kids sitting in a circle together. Place one pumpkin in the middle of each circle of children. Say, "You can each feel the pumpkin and the stem, but don't move the pumpkin." Next, give one student in each group the clump of yarn and a pair of scissors. Say, "You will go first. Quickly think, then cut a string and put it into your lap. Pass on the yarn and scissors to the person next to you (point to that person)."

As the students work, walk around and encourage them to be thinking while they wait for their turn. Keep the students moving along. When everyone is finished (or almost finished depending on time), tell students to take turns testing their yarn. Show them again how to wrap the yarn around the pumpkin (using the yarn you cut earlier in the lesson). Tell the same person who went first before (the first one to cut their yarn) to go first again and "test" their yarn. While students do this, encourage them to use vocabulary such as *estimate*, *longer* and *shorter*. For example, you might say, "Your estimate was too long" or "Was your estimate too long or too short?"

**Closure/ Real World Connection (2 min):** Quickly point to a few volunteers to let them share if their estimate was too long or too short. Ask the students, "Why do you think we need to know how to estimate?" Let them think for a second and call on one or two volunteers. Say, "We need to know how to estimate so we can quickly measure things. For example, when you go to a pumpkin patch to buy a pumpkin, they charge you money depending on the size of the pumpkin. The farmers need to quickly estimate the size so they know how much to charge you. They don't have time to actually measure your pumpkin because that would cause everyone to wait! So, they *estimate!* Remember, when we estimate, we're making a guess!"