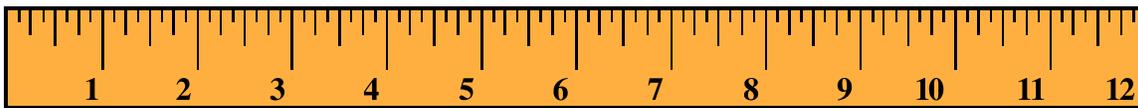


Does Your Playground Measure Up?

During Playground Safety Week this year (April 22-26), the National Program for Playground Safety is providing a Kid Checker Checklist (see the website) for children. We are asking children to check the safety of their playgrounds. We believe that the playground is also an important outdoor classroom. To demonstrate this we offer the following fun examples to show how checking for safety can also teach math concepts.



Safety Measures:

1. HEAD ENTRAPMENTS: We know that one of the most serious problems occur when openings on playground equipment are greater than $3\frac{1}{2}$ " and less than 9 inches. This size of opening can allow the head to be entrapped and lead to strangulation and death.

How to Measure: To avoid head entrapments, spaces need to be less than $3\frac{1}{2}$ " or greater than nine inches. You can measure openings with a ruler or a dollar bill.



Dollar bill method: You will need 3-dollar bills for this. Each dollar bill is 6" in length. Fold one-dollar bill in half. Fold one-dollar bill so that it is $3\frac{1}{2}$ inches long. Now you are ready to begin. Take the dollar bill that is $3\frac{1}{2}$ " in length. Try to fit it through small spaces on the playground equipment. If it does not go through, you do not have an entrapment. If it goes through then take the 6" bill and place it next to the $3\frac{1}{2}$ " bill. That makes 9 inches. See if that 9" length will fit through the space you measured with the $3\frac{1}{2}$ " bill. If the 9" dollar bills fit through the opening, the space is not an entrapment problem. If the 9" dollar bills do not fit through the opening, the space is an entrapment problem. (Try spaces like guard rails).

2. FALLS TO THE SURFACE: Falls to the surface are the leading cause of injury to children on playgrounds. The concern is that the higher the equipment children fall from, the harder they fall and the more severe the injury is. NPPS recommends that the equipment for preschoolers (ages 2 – 5) not be higher than 6 feet and that equipment for school age children not be any higher than 8 feet.

How to Measure: To avoid severe injuries by falls to the surface, you can measure the height of the equipment with a tape ruler or by using a body measurement called the overhead reach.



Overhead reach method: Measure the height of a child plus the overhead reach of the hands. Use that height to measure the height of the equipment.

3. DEPTH OF SURFACING: Another way that children are severely injured is by falling to the surface that is not appropriate or not deep enough. Surfacing that should never be found under and around playground equipment includes asphalt, cement, dirt and grass. They do not have the ability to cushion a fall adequately. Loose-fill surfacing materials that are acceptable, if they are deep enough include sand, pea gravel, wood products and shredded rubber products. Other poured in place products are also acceptable.

How to Measure: To prevent children from being injured severely from a fall, NPPS recommends that you have 12” of loose-fill surfacing. You can use a ruler to measure the depth of loose-fill surfacing or a sipping straw.



Straw method: You can measure the depth of the surfacing by using a straw. Straws from fast food restaurants come in 6”, 7”, or 8” lengths. Measure the length of the straw before you use it. Insert the straw in the ground as far as it will go to measure the depth of material.

4. USE ZONE PLACEMENT: We also know that surfacing needs to be in a use zone – the place where children are likely to fall. If the surfacing is not in the use zone, children are likely to be hurt when they hit the ground. For stationary equipment (equipment that does not move) this use zone extends six feet in all directions. For swings the use zone is twice the height of the swing beam in front and back.

How to Measure: Use a tape measure or body measurement called span reach or use your stride to measure the six feet surfacing around equipment. What is the distance? _____.



Stride Method: Measure your stride. Use that length of stride to measure the distance the use zone: the distance on the ground that extends from the equipment. Distance: _____ **Span Reach:** Measure the reach of the child from finger tip to finger tip. Use that distance to measure the distance out from the equipment on the surface. Distance: _____ Again, the distance should be 6 feet.

In #3 you measured the depth of the surfacing materials. Now, measure the depth of the surfacing in 1 foot increments away from the equipment:

1 foot _____ 2 feet _____ 3 feet _____ 4 feet _____ 5 feet: _____ 6 feet: _____
How deep is the surfacing in each of those places? We recommend 12” of loose-fill surfacing

5. OPEN S-HOOKS: We know that children’s clothing and strings on jackets can get caught in openings of s-hooks on swings where swing seats are connected to chains. That can cause strangulation. The openings should be closed.

How to Measure: To avoid the openings from being too big, space should not be greater than 0.04 inches. In order to check that space, use ruler (marked in hundredths), a 0.04 inch feeler gauge (borrow one from your Dad-like those used for spark plugs), a credit card or a dime.



Feeler gauge method: Use a 0.04 “ feeler gauge to measure the opening.

Credit card, plastic card or dime method: Use a credit card or a dime to measure openings in s-hooks. The spaces for those openings should not allow a credit card or dime to pass through.

NPPS has created more examples that help children apply the math concepts of counting, angles, fractions/ratios and percents. [Click here for an extended version.](#)