



TIPS FOR PARENTS

Is there a simple household construction project in your future? Here are some tips from CYBERCHASE, the action adventure cartoon series on PBS KIDS GO! (check local listings) for how to engage your child in the fun while reinforcing important math concepts.

1. Common household tools are math tools! When kids see Mom using a screwdriver, or Dad using a tape measure, they are immediately primed to imitate. Let them practice using simple construction tools – in a safe way – so you can reinforce the basic math they are using with encouragement and explanation. For example, next time you use a tape measure, invite your child to help you. Make your measurement together, and count aloud the whole numbers starting with zero at the hook end. When you're done, ask, "How long is it?" or "How wide?" With older kids, you can talk about the strange way that halves, quarters, eighths and sixteenths are marked, and have them help you measure using fractions of an inch.

2. Righty Tightly, Lefty Loosey! The next time you use a Phillips screwdriver, set up some screws for your child to screw part way into a scrap board. (You may want to start the screws into the board first.) Stand back and allow the discovery of the difference between clockwise and counterclockwise rotation. To help your child remember which way tightens or loosens a screw, share this: "Righty-tightly, lefty-loosey!" By giving your child early experience with rotation and direction, you are laying an important foundation in geometry. You might also pick up from the hardware store a few easily grasped bolts, nuts and washers for younger kids to assemble and disassemble just for fun.

3. It's All In the Folds. Without a thought we crease and tear paper to make shopping lists or jot down notes, but there is so much math here to explore with your child! And paper folding is useful in construction projects that require paper templates for careful placement of cut marks, or marks for where to drill holes.

For example: Do you know how to fold a rectangular sheet of paper to make a perfect square? Have your child help you carefully fold over the bottom edge of an 8 ½" by 11" sheet of paper diagonally until it lines up with the vertical right edge of the sheet. When the two edges are lined up, smooth the fold to form a sharp crease. Invite your child to show you the triangle you've just formed (it's a *right triangle* with one 90° angle and two 45° angles), and the rectangle you see at the top of the page. To make the square, simply

cut or tear off the rectangle and open out the diagonal fold. What makes it a square? (All four sides are the same length and all four angles are right angles.) Use this activity to review the geometric properties of a square, a rectangle, and diagonal, horizontal and vertical lines.

4. Is There Enough Room Here? Even without construction and sawdust in your house or apartment, you can involve your child in building and builders' math. The next time you want to move a bookcase, bed, or sofa, measure it together before moving it. Then measure the space it (you hope!) fits into. If your measurements show it will fit, problem solved! If not, using measurement to save all that time and effort will make a big impression, and your child will learn why a math tool like a tape measure can sure come in handy.

5. Lever It! The next time you need to lift an object that is too heavy to lift by yourself, invite your child to help as you 'lever it'! Use a *lever* – a simple tool such as a sturdy board or iron bar resting on a *fulcrum* – and follow a surprising rule: When you multiply the length of your lever, you will similarly multiply the weight you can lift!

How does a lever work? Put one end of your board or bar under a section of the object you want to lift (a heavy rock or log, for example, or sofa). Position the fulcrum under the board or bar as close to the object as possible. Now push down on the other end to lift the object. If the object is still too heavy to lift, try a longer lever. The longer the lever you use, the more weight you can lift. In fact, if you multiply the length of your lever 2, 3 or even 4 times, you will multiply the weight you can lift the same 2, 3, or 4 times! Your child may want to try using the lever as well, so make time to choose some objects you can experiment with together (furniture, box of books ... or you!).