

You Can... Use an interactive whiteboard to demonstrate angles

Measuring and calculating angles can be especially difficult for children to grasp, more so than units of measurement for capacity, length and weight, which involve tangible amounts. That is why it is important to demonstrate angles in a variety of very visual ways. The whiteboard is an ideal medium for this, providing a platform for modelling, practice and refinement of techniques. It enables you to introduce the idea of scales, using the protractor on the whiteboard, and to model measuring angles. You can also use digital photos of angles in the environment, to place problem-solving in context.

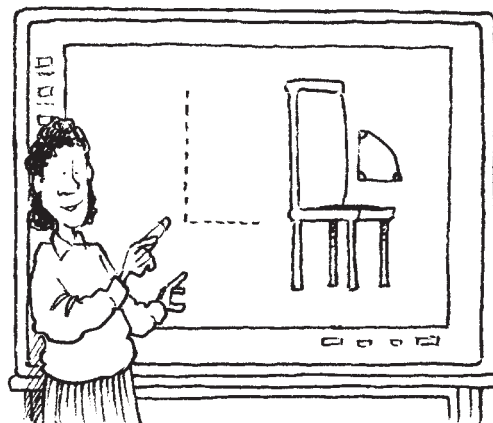
Thinking points

- Introduce children to scales on the protractor on the whiteboard. Several programs are available with large angle measures, for example, *What's My Angle?*, from the DfES's Using ICT to Support Primary Mathematics pack. If you don't have a suitable program, scan a plastic protractor and paste the image into Microsoft Word. Use the Pen tool to draw attention to scales and intervals.
- Think about how you will verbalise every step of the procedure when you use the whiteboard to model a technique or problem-solving method. Spell out what you are doing to help children develop the language of angles and reinforce the procedural steps involved.
- Reflect on the interests of the class when making resources for the whiteboard, as children become proficient in measuring and calculating angles, present problems set in context to develop children's problem-solving skills. For example, angles for measurement could represent the path of a ball kicked from the sideline.

Tips, ideas and activities

- Model how to measure and estimate angles using 'Calculating Angles', one of the free NNS Interactive Teaching Programs (www.standards.dfes.gov.uk/primary/publications/mathematics/itps/). With this program you can: measure angles up to 90° , 180° , or 360° ; calculate angles within triangles and quadrilaterals; or solve problems. It also contains a transparent protractor, which can be lifted and rotated around the board.

- When children can confidently name angles of different sizes, ask them to take digital photographs of angles in the school environment. Display the photos on the whiteboard for discussion. Use the Pen or Highlighter tools to draw on the angles to illustrate them.



- Import digital photographs of angles into Microsoft Word and ask volunteers to estimate the angle and then label it as acute, obtuse or a right angle.
- Develop problem-solving skills by investigating angles within shapes. Remind the children that angles in triangles have a sum of 180° . In Microsoft Word, use the AutoShapes tool to paste triangles on to the page. Write in two angles and ask the children to calculate the third angle. Use the same idea for quadrilaterals or other polygons.