

Discover double angles (AASL 3.6)

Intuition Pump for Understanding Double Angles in Trigonometry:

1. **Mirror Reflection:** Imagine standing between two mirrors angled so that when you raise one hand, you see its reflection twice. Your actual hand and its reflections form a visual representation of an angle and its double.
2. **Folding Paper:** Take a piece of paper and fold it in half, then open it back up. The crease represents the original angle, and when you fold it again along the same crease, you're effectively doubling that angle.
3. **Clock Hands:** Look at a clock when the hour hand and minute hand are on top of each other. Wait for the minute hand to move to the next hour mark — it has traveled a double angle relative to its starting position.
4. **Swinging Door:** Visualize a door that swings open. If you open the door halfway and then open it again by the same angle, the door's new position is at a double angle from where it started.
5. **Protractor Doubling:** Using a protractor, draw an angle. Then, without changing the protractor's position, draw the same angle starting from the first angle's other ray. The resulting angle is the double of the original.
6. **Path Traveled:** Think about walking a certain direction and then turning to walk at the same angle again from the new position. The direction you're now heading represents a double angle from where you originally started.
7. **Stretching Shadows:** In the morning, observe how a shadow stretches as the sun rises. The angle between the object and its shadow decreases. If you could measure that angle at sunrise and then later when the sun is at the same distance from the horizon on the opposite side, you'd have a double angle.
8. **Drawing with a Compass:** Use a compass to draw an arc for an angle from a point on a line. Without changing the compass width, draw another arc starting from where the first arc ended. The angle you've now swept out is double the original angle.

By associating double angles with these tangible experiences, students can better visualize how doubling an angle changes its position and measurement, which lays the groundwork for understanding double angle formulas in trigonometry.