

What we have learnt so far...

- Obliquity of the Ecliptic (Earth's tilt) means variation in seasons and daylight times
- Equator, poles, polar circles, tropics, solstices, equinoxes, zeniths ...
- Equation relating the sun-facing component of this tilt to its maximum and the time of year?
- Equation linking the above to length of the day for a given latitude?
- Can you re-derive this equation by considering the angle between the sun and the zenith?

- GeoGebra...

5

What is the relevance of this new angle?

- What does it tell us if we set it to 90° ?
- What use is this angle in making a sundial? Is there a more useful angle to find?
- What *bearing* should the gnomon have and how should it be angled to the horizontal?
 - Open the GeoGebra applet *Transforming Between 3D Cartesian Coordinate Systems on the Surface of the Earth* in the online *Frames of Reference* folder...

6