

Exercises

1. If two inscribed angles intercept the same arc, show that they must be equal.

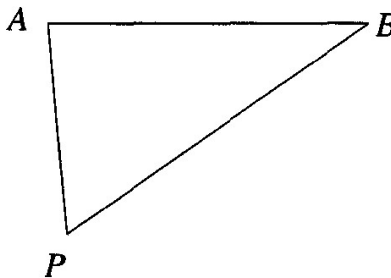
2. Find the degree-measure of an angle of a regular pentagon.

Hint: Any regular pentagon can be inscribed in a circle.

3. If a quadrilateral is inscribed in a circle, show that its opposite angles must be supplementary.

III. . . . and conversely

If we have a particular object, which we will represent as a line segment, we are sometimes not so much interested in how big it *is*, but how big it *looks*. We can measure this by seeing how much of our field of vision the object takes up. If we think of standing in one place and looking all around, our field of vision is 2π . The object (AB in the diagram below) is *seen* at the angle APB if you are standing at point P . We often say that AB *subtends* angle APB at point P .



For example, viewed from the earth, the angle subtended by a star is very, very small, although we know that the star is actually very large. And the angle subtended by the sun is much greater, although we know that the sun, itself a star, is not the largest one.

Suppose the angle subtended by object AB at P measures 60° . Can we find other points at which AB subtends the same angle? From what positions does it subtend a larger angle? From what positions a smaller angle?

The answer is interesting and important. If we draw a circle through points A , B and P , then AB will subtend a 60° angle at any point on the circle, to one side of line AB :