

2.9

A Picture is Worth a Thousand Words

Objectives:
Using diagrams to help solve problems

LOCUS (LOCI)

Definition:

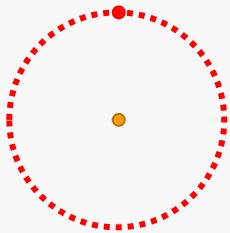
the set of all points that satisfy a given condition or a set of given conditions. (What is the figure formed from the points from the condition?)

Plural – Loci

Pronounced: “low-sigh”

Example 1

On a plane, what is the locus of points that are 12 inches from a fix point?



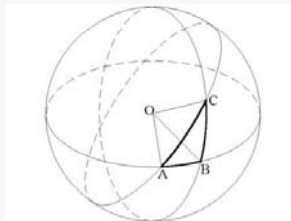
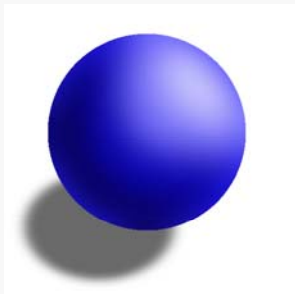
Example 2

What is the locus of points that a dog makes when it fully extends its 15 foot leash around a fixed point?



Example 3

In space, what is the locus of points that are 12 inches from a fix point?



Example 4

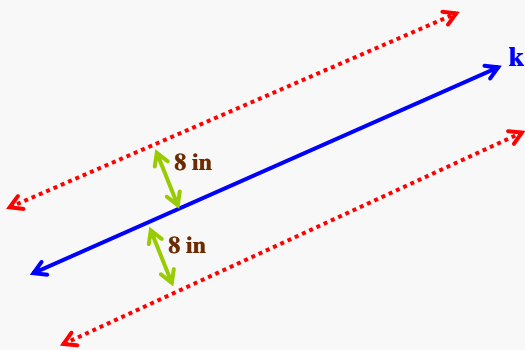
What is the locus of points that the end of the second hand on a clock forms?

A circle



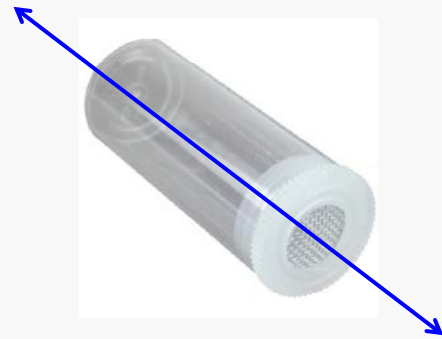
Example 5

On a plane, what is the locus of points 8 inches from a line?



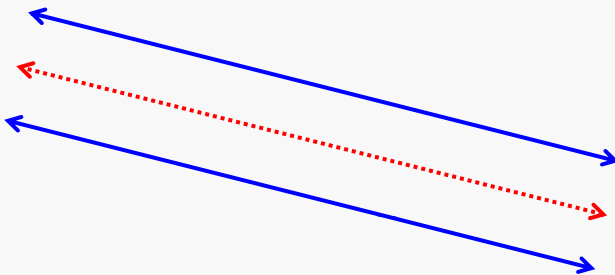
Example 6

In space, what is the locus of points 8 inches from a line?



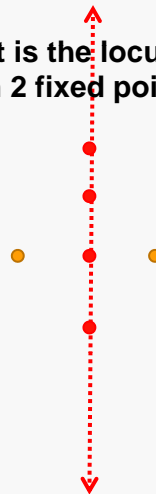
Example 7

On a plane, what is the locus of points equidistant from two lines?



Example 8

On a plane, what is the locus of points equidistant from 2 fixed points.



4 steps to finding a locus

1. Draw any figures that are given.
2. Locate several pts that satisfy the condition.
3. Continue until a pattern is recognized.
4. Draw the locus & describe it in words.

Finding locus for 2 or more conditions

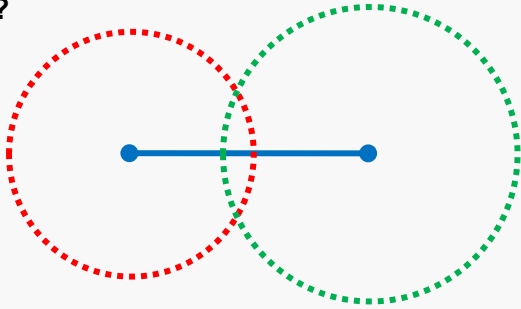
Find the locus for each individual condition 1st.

Then, find the intersection of the conditions.

This intersection is the solution.

Example 11

Joe and Bob are 8 feet apart. What is the locus of points 4 feet from Joe and 5 feet from Bob?



Definitions

Epicenter – the pt. on the surface of the earth directly above an earthquake's origin.

Seismograph – tool that measures distance to the epicenter, but not the direction to the epicenter.

To locate an epicenter, 3 locations for seismographs are needed.

The place where all 3 circles intersect is the epicenter.

Ex: 3 readings from seismographs are as follows: at A(2,4) – epicenter is 2 miles away, at B(2,-5) – epicenter is 2.5 miles away, & at C(-1,2) – epicenter is 3 miles away. Where is the epicenter?

