

Exercises 15–19 refer to figures in space. In each exercise tell what the locus is. You need not draw the locus or describe it precisely.

Example Given two parallel planes and a point A , what is the locus of points equidistant from the planes and 3 cm from A ?

Solution The locus is a circle, a point, or no points.

15. Given plane Z and point B outside Z , what is the locus of points in Z that are 3 cm from B ?
16. Given plane Y and point P outside Y , what is the locus of points 2 cm from P and 2 cm from Y ?
17. Given $\overleftrightarrow{AB} \perp$ plane Q , what is the locus of points 2 cm from \overleftrightarrow{AB} and 2 cm from Q ?
18. Given square $ABCD$, what is the locus of points equidistant from the vertices of the square?
19. Given point A in plane Z , what is the locus of points 5 cm from A and d cm from Z ? (More than 1 possibility)
20. Given three points, each 2 cm from the other two, draw a diagram to show the locus of points that are in the plane of the given points and are not more than 2 cm away from any of them.
21. Points R , S , T , and W are not coplanar and no three of them are collinear.
 - a. The locus of points equidistant from R and S is $\underline{\hspace{1cm}}$.
 - b. The locus of points equidistant from R and T is $\underline{\hspace{1cm}}$.
 - c. The loci found in parts (a) and (b) intersect in a $\underline{\hspace{1cm}}$, and all points in this $\underline{\hspace{1cm}}$ are equidistant from points R , S , and T .
 - d. The locus of points equidistant from R and W is $\underline{\hspace{1cm}}$.
 - e. The intersection of the figures found in (c) and (d) is a $\underline{\hspace{1cm}}$. This $\underline{\hspace{1cm}}$ is equidistant from the four given points.

- C** 22. Can you locate four points J , K , L , and M so that the locus of points equidistant from J , K , L , and M is named below? If the answer is *yes*, describe the location of the points J , K , L , and M .
- a. a point
 - b. a line
 - c. a plane
 - d. no points
23. Assume that the Earth is a sphere. How many points are there on the Earth's surface that are equidistant from
- a. Houston and Toronto?
 - b. Houston, Toronto, and Los Angeles?
 - c. Houston, Toronto, Los Angeles, and Mexico City?

