

Construction and Loci

Identify each locus, describe the region, and solve compound problems.



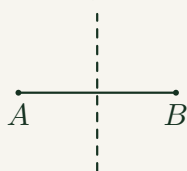
Name _____

Date _____

Show your reasoning

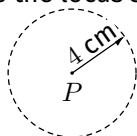
Name the locus (circle, parallel lines, perpendicular bisector, or angle bisector) and state the condition every point on it satisfies. For compound problems, describe both loci before finding the intersection.

Worked example Describe the locus of points equidistant from points A and B .

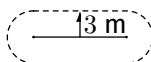


This is the perpendicular bisector of AB .
Every point on this line is the same distance from A as from B .
The line crosses AB at its midpoint, at right angles.

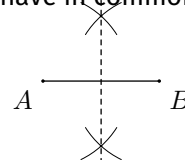
1. Describe the locus shown.



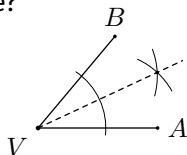
2. Describe the locus shown.



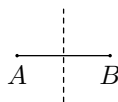
3. Which construction is shown?
What do all points on the resulting line have in common?



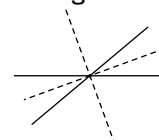
4. Which construction is shown?
If the marked angle is 50° , what two equal angles does the bisector make?



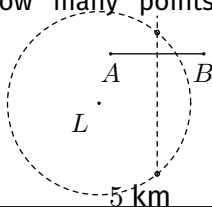
5. What locus is shown, and what condition does every point on it satisfy?



6. What locus is shown for these two intersecting lines?



7. This diagram combines two loci. Describe both conditions, and how many points satisfy them.



8. A goat is tied to a post with a 6 m rope. Describe the locus of points the goat can reach.

9. A cyclist must stay exactly 2 m from a straight fence, on one side only. Is the locus a full pair of lines, or just one line?

Construction and Loci (continued)

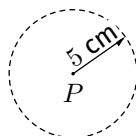


Describe regions, apply the constructions, and reason about compound loci.

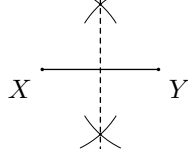
Name _____

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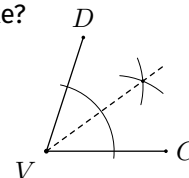
- 10.** The dashed circle is the locus exactly 5 cm from P . Describe the region *within* 5 cm of P instead.



- 11.** A point on this line is 8 cm from X . How far is it from Y ?



- 12.** The marked angle is 72° . What two equal angles does the bisector make?



- 13.** Two straight roads cross at 90° . Describe the locus of points equidistant from both roads.

- 14.** A radio mast covers a circular area of radius 15 km. Describe the region it covers.

- 15.** Treasure is equidistant from tree A and rock B , and exactly 10 m from well W . At most, how many possible locations?

- 16.** Two parallel paths are 6 m apart. Describe the locus of points equidistant from both paths.

- 17.** A dog is tied to post P with a 3 m lead, but a wall blocks the ground directly behind P . Is the locus a full circle, or only part of one?

- 18.** Write one sentence explaining what a locus is.

