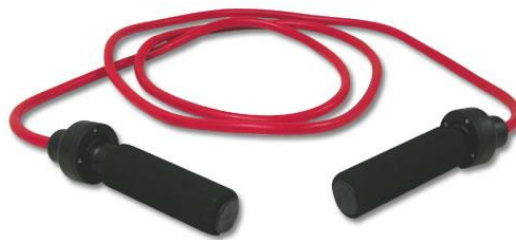


Jump Rope Geometry



Presented by:

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Questions and Activities

Also listed at <http://jumpropegeometry.blogspot.com>

1. Ask students to create line AB using the materials given (jump rope, arrows, letters).
2. Ask: "Does it matter in what order the letters appear?"
3. Ask students to put three letters on the line and then name the line.
4. Have students write the appropriate ways to name to the line.
5. Ask: "How many points are on a line?"
6. Place a point off the line. Ask: "Is this point on the line?"
7. Place a point along the path of the line but not on the jump rope. Ask: "Is this point on the line?"
8. Ask: "Is a line as thick as a jump rope?"
9. Ask: "How many points are on a line?"
10. Ask students to provide their own definitions of a line.
11. Have a student create a ray.
12. Ask: "How many points are on a ray?"
13. Have students write the appropriate way(s) to name the ray.
14. Ask students to give their own definitions of a ray.
15. Draw an angled ray on the board and have the students write the appropriate way to name it. (Students often think the arrow above the ray must go in the direction the ray points on the paper.)
16. Ask: "Are there rays inside of lines?"
17. Have the students create a line segment.
18. Have the students write appropriate ways to name the line segment.
19. Ask students to give their own definitions of a line segment.
20. Ask: "How many points are on a segment?"
21. Ask: "Are there segments inside of lines?"
22. Ask: "Are there segments inside of segments?"
23. Ask: "Are there segments inside of rays?"

For the following, place the letters A, B, and C (in that order) on the line and ask the students to give the appropriate set of points for the following situations. They must state whether their answer is a line, a segment, or a ray. They must also name the specific line, segment, or ray.

24. I contain the point A and all of the points to the right of A. Who am I?
25. I contain the points B and A as well as all of the points between B and A. Who am I?
26. I contain the point B and all of the points to both the left and right of B. Who am I?
27. I contain the point C and all of the points to the left of C. Who am I?

For the following, place the letters A, B, C, and D (in that order) on the line and ask the students to give the appropriate set of points for the following situations. They must state whether their answer is a line, a segment, or a ray. They must also name the specific line, segment, or ray.

28. I contain all of the points that are on both ray CA and ray BD. Who am I?
29. I contain all of the points that are on either line segment BC or line segment CD. Who am I?
30. I contain all of the points that are on either line segment AB or ray BD. Who am I?
31. I contain all of the points that are on both ray BD and ray CD. Who am I?

For the following, place two jump ropes so they are parallel. Add a third jump rope as a transversal intersecting the first two ropes. Place the transversal so that it is not perpendicular to the other two lines.

32. Review what makes two lines parallel. Note: Students often think that parallel means that the lines don't intersect. Stress that non-intersecting lines are parallel only if they are on the same plane. The distance between the lines is then the same at every point.
33. Ask a student to stand inside one of the angles. Teach what a vertical angle is by having the student move from his or her angle to the one vertical to it. Repeat this process with different students and different angles until the concept of a vertical angle is understood. Discuss the relationship between vertical angles (*i.e.*, they are congruent).
34. Repeat #33 for corresponding angles.
35. Repeat #33 for adjacent angles. Discuss what supplementary angles are.
36. Repeat #33 for alternate interior angles.
37. Repeat #33 for same-side interior angles.
38. Discuss the relationships among the various types of angles described above.
39. Selected points on these lines (including the intersection point) can be labeled in order to discuss how to name angles.
40. Add another transversal to make this activity more challenging.

Glossary of terms: <http://library.thinkquest.org/2647/geometry/glossary.htm>

Additional Resources:

Dynamic Paper: <http://illuminations.nctm.org/ActivityDetail.aspx?id=205>

Folding Circles: <http://foldingcircles.com>

Free Online Graph Paper: <http://incompetech.com/graphpaper>

GeoGebra: <http://www.geogebra.org/cms>

The Geometry Center: <http://www.geom.uiuc.edu>

Northern Kentucky University PK-12 Math Resources: <http://www.nku.edu/~mathed/p12sr.html>

The Pi-Search Page: <http://www.angio.net/pi/piquery.html>

Setting the Stage for Geometry: <http://www2.scholastic.com/browse/collection.jsp?id=678>

The Simpsons Math: <http://www.mathsci.appstate.edu/~sjg/simpsonsmath/index.html>