

AR Remediation Plan – Area, Perimeter, and Circumference

Discover Pi

STRAND: Measurement and Geometry

STRAND CONCEPT: Area, Perimeter and Circumference

SOL: 6.7a, b

Remediation Plan Summary

Students define the relationships among circumference, diameter, and pi through a measuring activity.

Common Errors and Misconceptions

Student often confuse area and circumference formulas.

Students memorize Pi numerically but do not understand what it means.

Materials

- Circular objects of varying sizes (lids, cans)
- Measuring tapes, or string and rulers
- “Exploring Circles” handouts
- Scientific calculators
- “Reflection” handouts

Introductory Activity

Ask half of the class to define in writing: radius, diameter, and circumference. Ask the other half to draw a circle showing the radius, diameter and circumference. When they complete the task, have students pair up (written definitions with a diagram). However, students need to check that the person they are matching has the correct definition/drawing. If they find a student with something incorrect, they should help each other to change the error to the correct definition/picture.

Plan for Instruction

1. Pass out three or four circular objects to each group of students, along with a copy of the “Exploring Circles” handouts for each student.
2. Have students measure to the nearest tenth of a centimeter the circumference and diameter of each object and fill in the first three columns of the table in Part I.
3. Have students fill in the last column of the table by dividing the circumference by the diameter for each circular object. Ask them what they notice. (Regardless of the size of the circle, the circumference divided by the diameter is a little more than 3.)
4. Have students find the mean of the data in the last column, using calculators if they wish. The mean should be close to 3.14. You may want to establish a class mean by having the students find the mean of the all the groups’ means.

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5. Explain to students that they have just discovered the value of pi, which is used for many calculations having to do with circles. Have students write the symbol for pi (π), the numerical value of pi, and a definition of pi.
6. Ask student groups to come up with a formula that would allow them to calculate the circumference of a circle if they knew only the diameter of the circle and the value of pi. Tell them that they must be prepared to prove that their formula works.
7. Students agree that the formula for circumference is $C = \pi d$, have them calculate the circumference of each of their objects. Check on the students as they work, providing assistance as needed.
8. Discuss how closely their calculated results match their measurements listed in the table.
9. Share with students that another formula for circumference is $C = 2\pi r$, and ask them to explain why this is an equivalent formula. (Because $2r$ is the same as d)
10. Have students complete Part II of the “Exploring Circles” handout

Pulling It All Together (Reflection)

Use the following prompt on an exit slip: Explain what you learned today about circles that you did not know before you came to class.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Virginia Department of Education 2018

Name:

Exploring Circles Part I

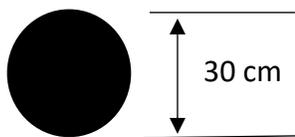
- Carefully measure to the nearest tenth of a centimeter the circumference and diameter of several circular objects and fill in the first three columns of the table below.

Object	Circumference (cm)	Diameter (cm)	Circumference ÷ Diameter
Mean			

- Use your calculator to divide each object’s circumference by its diameter and round to the nearest hundredth. Use the values to fill in the last column.
- Find the mean of the data in the last column.
- Write the symbol for pi, the numerical value of pi, and a definition of pi.

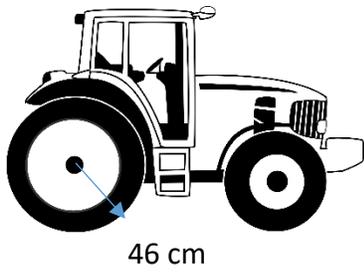
Part II

- What is the formula for calculating the circumference, C , of a circle, if you know pi and the diameter, d ? _____
- What is the formula for calculating the circumference, C , of a circle, if you know pi and the radius, r ? _____
- Use a formula to find the circumference for each circle. Show your work!
 - A pizza with a diameter of 10 inches: $C =$ _____
 - A pipe with a radius of 2 feet: $C =$ _____



c. $C =$ _____

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C = _____