

Why π ?

Introduction:

Formulas are not just recipes for arithmetic. They describe mathematical relationships. The formulas $C = \pi d$ and $A = \pi r^2$ are two formulas where students can benefit from understanding their mathematical relationships instead of just using the formulas to do arithmetic. Too often we teach students only the arithmetic of formulas.

Both of the formulas, $C = \pi d$ and $A = \pi r^2$, ask the question why π ? Why not 3, $\sqrt{10}$, $\frac{22}{7}$? The

following unit of instruction looks at the nature of mathematics and invites students to think mathematically and participate in the discovery of mathematics. The unit promotes the development of the students' mathematical communication and reasoning skills.

Objectives of the unit:

Power of Formulas – More than just recipes.

- to be able to describe relationships in formulas

Natural patterns

Summarizing and Describing and Communicating Mathematical ideas

Irrational numbers

Introduction into the History of Math

Where does π come from?

Unit Overview:

Day 1: Tennis Ball Challenge

Day 2 & 3: Understanding Circumference Part 1 – Why π as a good estimation?

Day 4: Understanding Area: Radius Squares – Why π as a good estimation?

Day 5: Understanding Circumference Part 2 – Archimedes and why π ?

Day 6: Understanding Area Part 2: Why π ? a) Area placemats

Day 7: Understanding Area Part 2: Why π ? b) Archimedes Area Spirals

Day 8: Conclusions