Lesson 14: Decimal Expansion of $\pi$

Classwork

Opening Exercise

a. Write an equation for the area, $A$, of the circle shown.

![Circle with radius 3 cm]

b. Write an equation for the circumference, $C$, of the circle shown.

![Circle with radius 9.7 mm]

c. Each of the squares in the grid on the following page has an area of 1 unit$^2$.

i. Estimate the area of the circle shown by counting squares.

ii. Calculate the area of the circle using a radius of 5 units. Use 3.14 as an approximation for $\pi$. 

![Grid with a circle]
Exercises 1–4

1. Gerald and Sarah are building a wheel with a radius of 6.5 cm and are trying to determine the circumference. Gerald says, “Because $6.5 \times 2 \times 3.14 = 40.82$, the circumference is 40.82 cm.” Sarah says, “Because $6.5 \times 2 \times 3.10 = 40.3$ and $6.5 \times 2 \times 3.21 = 41.73$, the circumference is somewhere between 40.3 and 41.73.” Explain the thinking of each student.

2. Estimate the value of the number $(6.12486...)^2$.

3. Estimate the value of the number $(9.204107...)^2$.

4. Estimate the value of the number $(4.014325...)^2$. 