

Spotlight On: Windows and Mirrors

Learning mathematics in *Inspiring Connections* provides both a window and a mirror for students. It is a “mirror” because students can see elements of their own identities within lessons, including their personal interests, hobbies, cultures, and languages. It is a “window” because students learn about the identities and interests of others in their classes and communities. Throughout the course, these windows and mirrors are used to help students remain engaged in learning math and to see the relevance of mathematics in their own lives.

The Big Picture

Growing From

Equivalent ratios;
Area and perimeter of special polygons

Working On

Proportional relationships;
Area and circumference of circles

Growing To

Linear relationships;
Volume and surface area of prisms

Need Help?

Methods & Meanings boxes are included in the Mathematician’s Notebook as reference.

4.1.7: Proportional Relationships

4.2.2: Circle Vocabulary

4.2.4: Circumference and Area of Circles

Current Topics

In this chapter, students will graph, write equations, and solve problems with proportional relationships. They will also apply the formulas for the area and circumference of circles to solve problems.

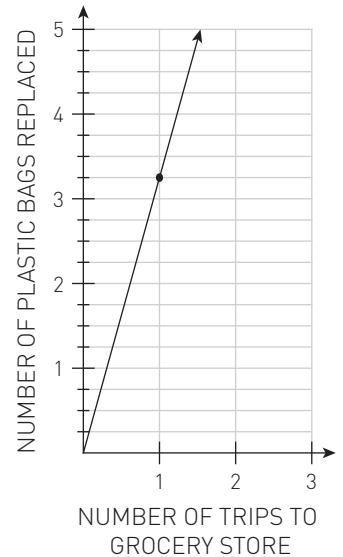
Multiple Representations of Proportional Relationships (Section 4.1)

Proportional relationships have a constant rate of change and include the point $(0, 0)$. There are many representations of proportional relationships: graphs, tables, equations, and written descriptions.

Consider the example:

A reusable bag replaces 3.25 plastic bags for every 1 trip to the grocery store. The graph and table shown represent the same information, as does the equation $y = 3.25x$.

x	1	2	3	4	5
y	3.25	6.5	9.75	13	16.25



Circumference and Area of a Circle (Section 4.2)

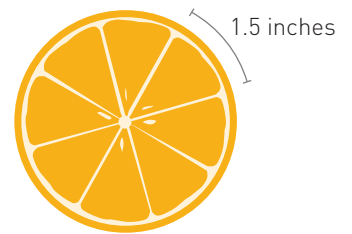
Students learn the formulas for the area and circumference of a circle. If A is the area, C is the circumference, and r is the radius, then $A = \pi \cdot r^2$ and $C = \pi(2r)$.

Consider the example:

What is the area of the cross section of the orange shown?

There are 8 equal segments of the orange, so the total circumference is $8 \cdot 1.5 = 12$ inches. The radius can be calculated by manipulating the circumference formula, resulting in $r = \frac{12}{2\pi} \approx 1.9$ inches.

Then, $A = \pi \cdot (1.9)^2 \approx 11.34$ square inches.



Try This at Home!

Ask your student to think of proportional relationships related to transportation, such as the speed of the bus, how many miles are driven per trip to the store, and more. Ask your student to explain how they know the relationship is or is not proportional.

