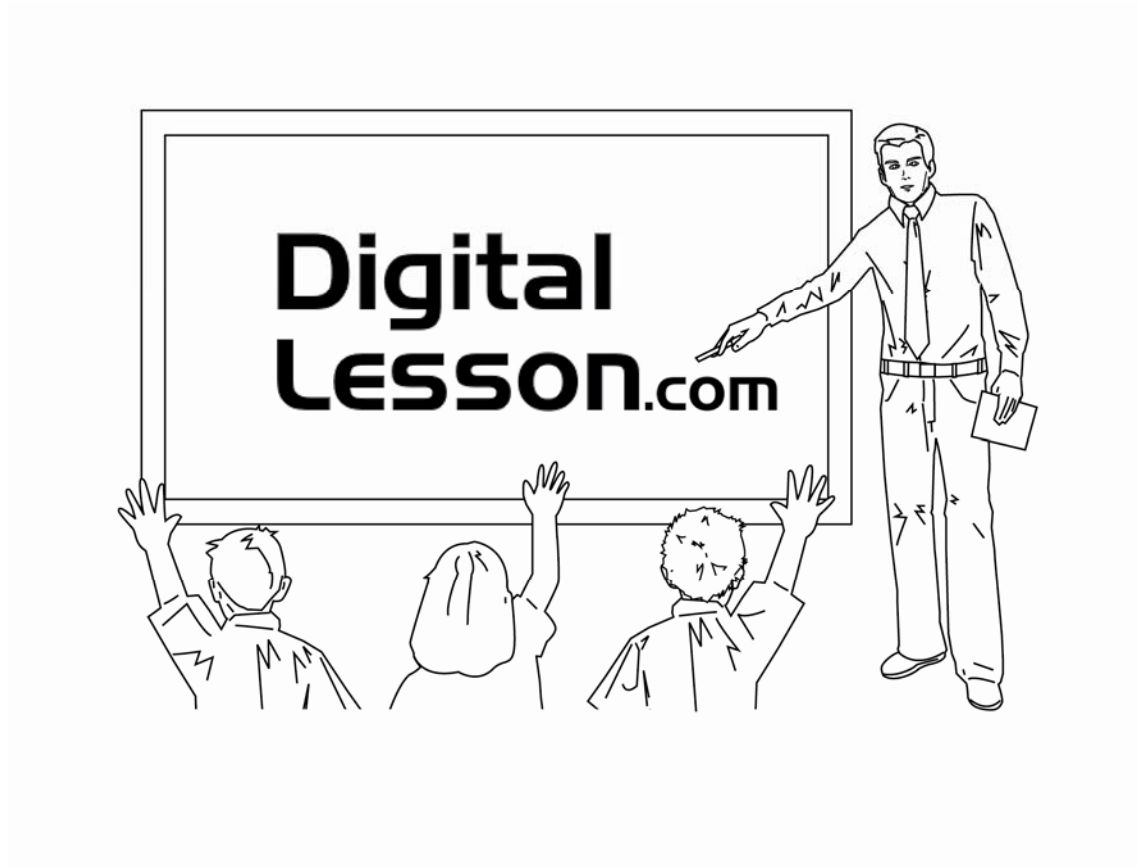
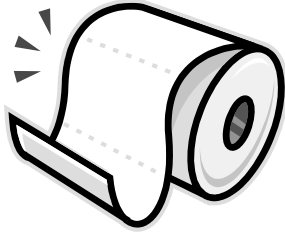


# Toilet Paper



# Geometry



# Toilet Paper Geometry

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## Toilet Paper Trivia

### What did people use before toilet paper?

People of many cultures and social classes have used a number of different things in place of the rolls of toilet paper that we use today. Things they used include newsprint, straw, hay, grass, corn cobs, leaves, sand, pages from books, coconut shells, lace, rocks, a sponge on a stick, snow, and tundra moss.

### Important Dates in Toilet Paper History

- 1391 - First toilet paper invented
- 1857 - First toilet tissue
- 1890 - First toilet paper on a roll
- 1942 - First soft toilet paper; two-ply

### Toilet Paper Facts

Two-ply toilet paper is not twice as thick as one-ply toilet paper. One-ply is made of #13 thickness paper while two-ply is made of two layers of #10 thickness paper.

The size of a sheet of toilet paper can vary but the standard size is 4.5 inches by 4.5 inches. Some manufacturers have come out with “cheater sheets” that are as small as 4 inches by 3.8 inches and use about 15% less paper.

The average person uses 8.6 sheets of toilet paper per trip, 57 sheets per day, and 20,805 sheets per year. (I wonder how these statistics were compiled?)

With over 6 billion people living on earth it is estimated that people need to produce 83,048,116 rolls of toilet paper each and every day, 30,600,000,000 rolls per year and 2.7 rolls per second.

Toilet paper may be quilted or rippled, perfumed, colored or patterned, medicated, include added aloe, and more. There are many different options available in a roll of toilet paper. Some toilet paper includes designs that range from cartoon characters to pictures of unpopular political leaders.

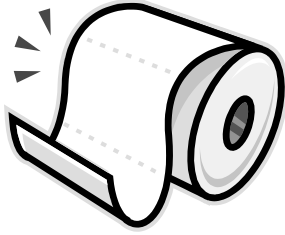
Differences in opinions on how to install a roll of toilet paper (with the toilet paper sheets hanging next to the wall or away from the wall) have caused disagreements in households.

When it comes to using toilet paper some people are “folders” and some are “scrunchers.”

### Resources used to compile this page:

- [www.toiletpaperworld.com](http://www.toiletpaperworld.com)
- <http://komar.cs.stthomas.edu/qm425/01s/Tollefsrud3.htm>
- [http://en.wikipedia.org/wiki/Toilet\\_paper](http://en.wikipedia.org/wiki/Toilet_paper)





# Toilet Paper Geometry

## Teacher Tips

(1 of 2)

**Lesson Description:** Toilet Paper Geometry is a math project that requires students to find the surface area and volume of a roll of toilet paper. Students unwind the roll of toilet paper, place it into the form of one or more rectangles, and calculate the total surface area of the roll. Then they determine how many rolls of toilet paper it would take to cover a basketball court, a football field, and a baseball diamond. Students also calculate the volume of the toilet paper in two different ways (by finding the volume of a cylinder and a rectangular prism) and compare their results.

**Math Content:** Surface Area, Area of Rectangles, Volume of Cylinders and Rectangular Prisms,

**Time Required:** 1-2 Class Periods

**Toilet Paper Geometry includes:**

- \* 2 Toilet Paper Geometry student worksheets
- \* 2 Toilet Paper Geometry student worksheet Answer Keys
- \* 1 Toilet Paper Geometry toilet paper trivia sheet
- \* 2 Toilet Paper Geometry Teacher Tips pages
- \* 1 Toilet Paper Geometry Cover Sheet

**8 pages in all!**

**Materials Needed:** Rolls of toilet paper (with packaging information removed), rulers

**Suggested Grade Level:** 5th - 8th

**Teacher Testimonial:**

Toilet Paper Geometry is a chance for students to take an everyday household object (toilet paper) and have it become the basis for an interesting project involving surface area and volume. Middle school students are always telling stories about whose house got toilet papered over the weekend. Students have an inherent interest in toilet paper. Teachers can also take the opportunity to compare unit prices, number of sheets, etc. between toilet paper brands.

**Teacher Tips:**

- \* Keep the written packaging information in order to verify the accuracy of student area calculations. When I designed this lesson I used a roll of Kirkland Signature Quilted Bath Tissue, 2-ply, 425 sheets, 53.1 sq. ft. (4.9 sq. m.) per roll, with each sheet 4.5 in. x 4.0 in. (11.43 cm x 10.16 cm). The roll (from Costco) was individually wrapped and all of the above information was on the plastic wrap that covers the roll.
- \* Before distributing the rolls of toilet paper to each group be sure to write down which brand each group receives. Copy the vital measurements from the rolls beforehand. Do not pass out the toilet paper rolls with this information still on the packaging. You want the students to see how close they can get to the package information.
- \* Have students work in groups of two to four people on this project.
- \* You may want to have all students working on the exact same brand of toilet paper roll or you can have several different brands being worked on in each class.

