A 5-Minute Tour of Beamer’s Simplest Features

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October 31, 2006
Outline
A Question from Grade School

(Illustrating BEAMER’s \pause command.)

A couple of years ago, a fifth-grade teacher asked me to explain to her the reasoning behind the “invert and multiply” rule for dividing fractions, e.g.
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Let’s try to find answers understandable by fifth graders (at least the more patient ones).
Cookie Approach

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Here let’s just use intuition, understandable by fifth graders. If we give 1/3 of a cookie to each person, how many people can we feed with 1 cookie? Obviously, the answer is 3. So we’ve derived the “invert and multiply” rule in a special case:

\[
1 \div \frac{1}{3} = 3
\]
But what if we give 2/3 of a cookie, not 1/3, to each person? We’re giving \(2 \times \) as much per person. So we can feed only 1/2 as many people. So we feed \(\frac{1}{2} \times 3 = \frac{3}{2}.\)

So we’ve derived the “invert and multiply” rule in another case:

\[
1 \div \frac{2}{3} = \frac{3}{2}
\]

\(^1\)One person gets only a half share.
Now, suppose we have only \( \frac{4}{5} \) of a cookie. Then we can feed only \( \frac{4}{5} \) as many people, i.e.

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So we’ve derived the “invert and multiply” rule in the general case:

$$\frac{4}{5} \div \frac{2}{3} = \frac{4}{5} \times \frac{3}{2}$$
A Geometry Proof

(Illustrating BEAMER’s \uncover command.)

Theorem

The angles in a triangle sum to 180°.
Theorem
The angles in a triangle sum to $180^\circ$.

Plan: Extend AC past C to D. Draw CE parallel to AB.
Proof.
1. $u = y$
2. $v = x$
3. $z + u + v = 180\degree$
4. $z + y + x = 180\degree$
   Substitution from Steps 1 and 2.
Proof.
1. \( u = y \)  
   Alternate angles of a transversal.

2. \( v = x \)

3. \( z + u + v = 180^\circ \)
   ACD is a straight line.

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Consecutive interior angles of a transversal.
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□
More Advanced Features of BEAMER

- This tour just scratches the surface.
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