A basic worksheet

A simple Ximera activity.

I MADE A CHANGE

Here's another

Perhaps the most natural setting for Ximera content is that of a *worksheet*. This is some document that may contain discussion as well as questions that check understanding.

Ximera comes pre-equipped with many environments. If you are ever curious about the source code, you can visit this source at

$$\texttt{https://github.com/ximeraProject/ximeraFirstOverleafSteps}$$

or by appending `.tex` to the URL of this page online.

1 A basic use case

We use `\begin{definition}` for definitions and `\begin{question}` for questions. Since Ximera provides immediate feedback, we suggest following definitions like this one by a quick question. Here's an example:

Definition 1. The **absolute value** of a real number a, denoted by $|a|$, is

$$|a| = \begin{cases} a & \text{if } a \geq 0 \\ -a & \text{if } a < 0. \end{cases}$$

Now students can check their understanding:

Question 1 *Evaluate the following:*

(a) $|2 - 5| = 3$

(b) $|5 - 2| = 3$

(c) $|5 - \sqrt{2}| = 5 - \sqrt{2}$

(d) $|5 - \sqrt{2}| = 3.58578643763$

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If $x > 3$ then:

(a) $|x - 3| = x - 3$

(b) $|3 - x| = x - 3$

(c) $|\sin(x) - 3| = 3 - \sin(x)$

To see why there are two versions of the $|5 - \sqrt{2}|$ question, view the source code for this question by appending `.tex` to the end of the URL.

2 A paradox

Here's something fun

Paradox 1 $(0 = 1)$**.** Let $x = y$ and write

$$x^2 = xy \tag{1}$$
$$x^2 - y^2 = xy - y^2 \tag{2}$$
$$(x - y)(x + y) = (x - y)y \tag{3}$$
$$(x + y) = y \tag{4}$$
$$2y = y \tag{5}$$
$$2 = 1. \tag{6}$$

Where is the mistake in the work above?

Between line 3 and line 4.

3 Basic exercises

After that, you might want to have some exercises. You will not find any inspiration in the above definition of the absolute value.

Exercise 2 *Let x be the number of people out of* 100 *that LOVE Ximera.*

Find the value of x.

$$x = 100$$

Maybe you want a problem with one or more parts,

Exercise   3 *Ximera is so awesome because it feels like:*

Multiple Choice:

(a) *Doing taxes*

(b) *Writing a book by hand*

(c) *A walk in the park with free ice cream* ✓

(d) *Solving a puzzle blindfolded*

Exercise   3.1 *Why is Ximera the best thing since the chalkboard?*

Select All Correct Answers:

(a) *It turns LaTeX into online materials* ✓

(b) *It boosts student engagement* ✓

(c) *It makes coffee and hugs you*

(d) *It's open-source and free* ✓

Finally we can include pictures using `includegraphics`. Here's an example of a question with a picture.

Question   4 *Here is a picture of the Ximera Octolion:*

What's their name?

$$\text{Name} = \textcolor{blue}{Xarlie}$$

hint: *Their name begins with an "X."*

hint: *It ends with an "arlie."*

hint: *It's almost Karlie!*

We include JPGs and PDFs in exactly the same way.