Blue Header Slide

- Simple, clean and consistent design
- If `headercolor` is not set, it defaults to `blue`. (Colors can be tweaked in slides_utils.typ)
- Font family can be changed globally (not per slide) in the `slides` configuration

```
    // Configure the presentation
    #show: slides.with(
      ratio: "16-9", // Default is "16-9" if not set
      main-font: "Calibri",  // Default value is "Calibri" if not set
      code-font: "Consolas", // Default value is "Consolas" if not set
      font-size-headers: 20pt, // 22pt is the default value if not set
      font-size-content: 19pt, // 20pt is the default value if not set
      footer_text: "", // Text to show in the footer. Empty by default if not set.
      equation_numbering_globally: true, // Default set to "false" if not set.
)
```

Note: Example of a gray focusbox with smaller font size to show the global slides configuration. The lightening of the focusbox background color is controlled in `slides_utils.typ` with the variable ‘percent_lighter’

You can include images using the `#figure` command:

```
#figure(
  image("Leonhard_Euler.jpg", width: 15%),
  caption: [Leonhard Euler],
) <img:LeonhardEuler>
```

Figure 1: Leonhard Euler

Arguably the GOAT of mathematics: Figure 1 (referenced with Typst’s @ syntax).

Problem: A ball is thrown upward with initial velocity $v_0 = 15 \text{ m/s}$. Find the maximum height.

Start with the kinematic equation:

$$v^2 = v_0^2 - 2 g h \tag{1}$$

At maximum height, the velocity is zero, so we set $v = 0$:

$$0 = v_0^2 - 2 g h$$

$$h = \frac{v_0^2}{2 g}$$

Substitute $v_0 = 15 \text{ m/s}$ and $g = 9.8 \text{m/s}^2$:

$$h = \frac{15^2}{2 \times 9.8} = 11.5 \text{ m} \tag{2}$$

Only Equation 1 and Equation 2 are numbered.

Red header slide with theorem in focusbox

Here's Taylor's theorem using Typst math syntax (not LaTeX):

Taylor's theorem: Let $k \geq 1$ be an integer and let the function $f : \mathbb{R} \to \mathbb{R}$ be k times differentiable at the point $a \in \mathbb{R}$.

Then there exists a function $h_k : \mathbb{R} \to \mathbb{R}$ such that

$$f(x) = \sum_{i=0}^{k} \frac{f^i(a)}{i!}(x-a)^i + h_k(x)(x-a)^k, \tag{1}$$

and $\lim_{x \to a} h_k(x) = 0$.

Equation numbering is default set to false, but can be turned on by setting `equation_numbering_globally: true` in the `slides` configuration.

Taylor Series Example

Green header slides are recommended for examples and practical applications.

Example: Taylor series for e^x around $a = 0$:

Since $f(x) = e^x$, all derivatives are $f^n(x) = e^x$, and $f^n(0) = 1$ for all n.

Therefore, the Taylor series is:

$$e^x = \sum_{n=0}^{\infty} \frac{x^n}{n!} = 1 + x + \frac{x^2}{2!} + \frac{x^3}{3!} + \frac{x^4}{4!} + \cdots$$

This series converges for all $x \in \mathbb{R}$.

Note: This is a green x-centered focusbox with 90% width, slightly bigger font size and equation numbering is turned off for only this slide using `slide-equation-numbering: false`.

Here's a Python example that approximates e^x using its Taylor series. **Note:** The code is shown in a white focusbox for readability and easy font-size control.

```python
import math
def exp_taylor(x, N=10):
    """Approximate e^x using the Taylor series sum_{n=0}^N x^n/n!."""
    total = 1.0  # n = 0 term
    term = 1.0
    for n in range(1, N + 1):
        term = term * x / n
        total = term + total
    return total
x, N  = 1.0, 10
approx = exp_taylor(x, N)
print(f"N={N}: {approx}")
print("math.exp(1) =", math.exp(1.0))
```

Cyan header slides are recommended for explicit student tasks and exercises.

Task

Compute the integral:

$$\int x e^x \, \mathrm{d}x \tag{1}$$

Hint

Use integration by parts:

$$\int u \, \mathrm{d}v = uv - \int v \, \mathrm{d}u \tag{2}$$

choose $u = x$ and $v' = e^x$, then $u' = 1$ and $v = e^x$.

By default, slides are:

- Left-aligned horizontally
- Centered vertically

This slide **overrides both to center content horizontally and vertically**.

```
#slide(headercolor: purple, title: "Centering Slide Content", center_x: true,
center_y: false)[

]
```

Typst can perform calculations directly in the document:

Output

Basic arithmetic:

- Addition: 5
- Multiplication: 56
- Division: 25

Using variables:

- Mass = 10 kg
- Acceleration = 9.8 m/s^2
- Force = 98 N

Math functions:

- $\sqrt{15} = 3.872983346207417$
- $2^8 = 256$
- $\sin\left(\frac{\pi}{2}\right) = 1$

Code

```
#(2 + 3)
#(7 * 8)
#(100 / 4)

#let mass = 10
#let acceleration = 9.8
#let force = mass * acceleration
#mass
#acceleration
#force

#(calc.sqrt(15))
#(calc.pow(2, 8))
#(calc.sin(calc.pi / 2))
```

Output

Squares of first 10 numbers: 1, 4, 9, 16, 25, 36, 49, 64, 81, 100

Sum of first 100 natural numbers:

$$\sum_{i=1}^{100} i = 5050 \tag{1}$$

Code

```
// Squares
#{
  let squares = ()
  for i in range(1, 11) {
    squares.push(i * i)
  }
  squares.map(str).join(", ")
}

// Sum
#{
  let _sum = 0
  for i in range(1, 101) {
    _sum += i
  }
  [$ sum_(i=1)^100 i = #_sum $]
}
```

Output

Fibonacci sequence (first 12 terms): 0, 1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89

Powers of 2: 1, 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024

Code

```
// Fibonacci
#{
  let fib = (0, 1)
  for i in range(2, 12) {
    fib.push(fib.at(-1) + fib.at(-2))
  }
  fib.map(str).join(", ")
}

// Powers of 2
#{
  let powers = ()
  for i in range(0, 11) {
    powers.push(calc.pow(2, i))
  }
  powers.map(str).join(", ")
}
```

Test 1: Basic Pause

This is the first line.

Test 1: Basic Pause

This is the first line.

This is the second line (appears after pause).

Test 1: Basic Pause

This is the first line.

This is the second line (appears after pause).

This is the third line (appears after second pause).

Test 2: Manual Repeat

Content 1

Test 2: Manual Repeat

Content 1

Content 2

Test 2: Manual Repeat

Content 1

Content 2

Content 3

Test 3: Bullet Lists

Here are the key points:

- First point is always visible

Test 3: Bullet Lists

Here are the key points:

- First point is always visible
- Second point appears after first pause

Test 3: Bullet Lists

Here are the key points:

- First point is always visible
- Second point appears after first pause
- Third point appears after second pause

Test 4: Meanwhile

First section starts here.

Second section starts (appears with first section).

Test 4: Meanwhile

First section starts here.

First section continues.

Second section starts (appears with first section).

Second section continues.

Test 5: Mixed Content

Introduction

Some introductory text.

Introduction

Some introductory text.

Main Content

This is important content in a focusbox.

Test 6: No Pauses

This slide has no pauses.

All content appears at once.

This is the expected behavior for backward compatibility.

Let’s look at some code:

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```
def hello():
    print("Hello, World!")
```