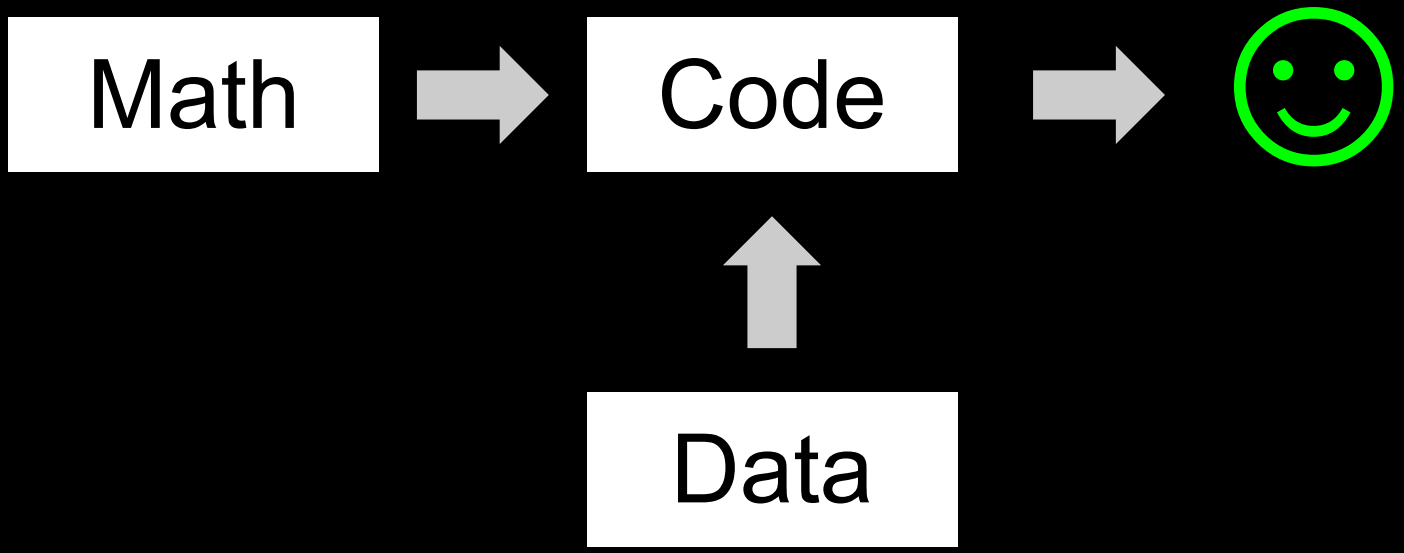
What the Float?

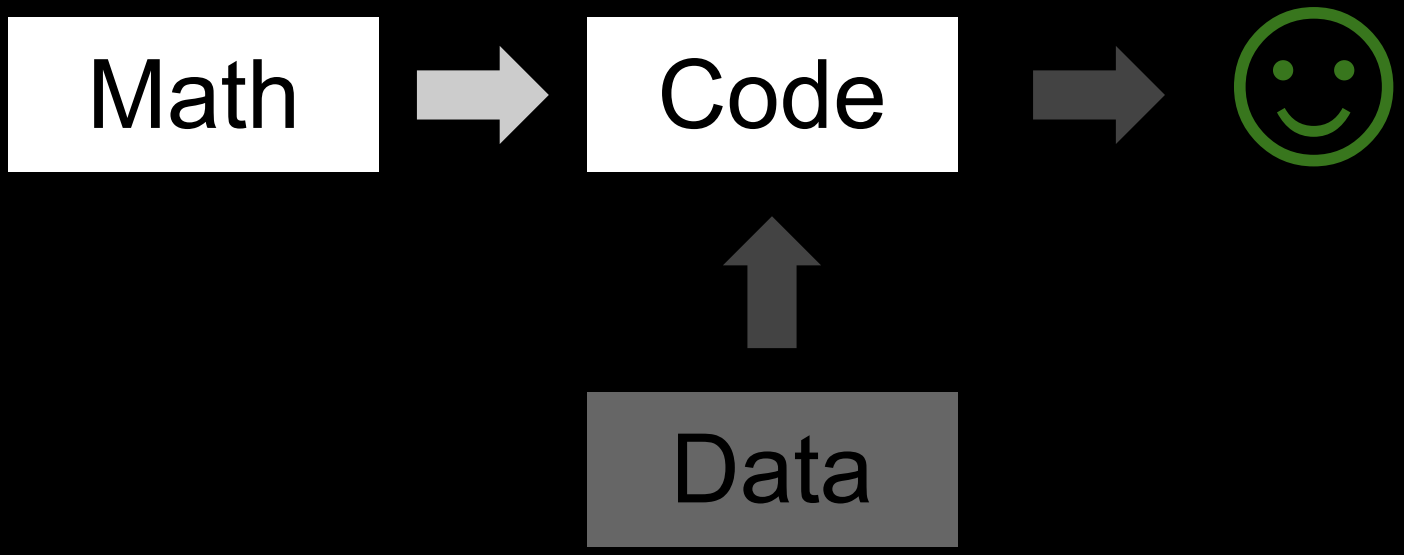
And what are we planning to do about it?

Science (High-level Summary)



CaSo

Science (High-level Summary)



Math versus Computers

$$f(x) = \sqrt{x+1} - \sqrt{x}$$

CaSo

Math versus Computers

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f (x) ≔ sqrt(x + 1) - sqrt(x)

CaSo

Math versus Computers

$$f(x) = \sqrt{x+1} - \sqrt{x}$$

```
f(x) := sqrt(x + 1) - sqrt(x)
```

$$f(3141592653589793) \approx 8.921 \cdot 10^{-9}$$

```
f(3141592653589793) == 7.451e-9
```

CaSo

Math versus Computers

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CaSo

$$\sqrt{x+1}-\sqrt{x}=(\sqrt{x+1}-\sqrt{x})\frac{\sqrt{x+1}+\sqrt{x}}{\sqrt{x+1}+\sqrt{x}}$$

$$=\frac{\sqrt{x+1}^2-\sqrt{x}^2}{\sqrt{x+1}+\sqrt{x}}$$

$$=\frac{x+1-x}{\sqrt{x+1}+\sqrt{x}}$$

$$=\frac{1}{\sqrt{x+1}+\sqrt{x}}$$

Caso

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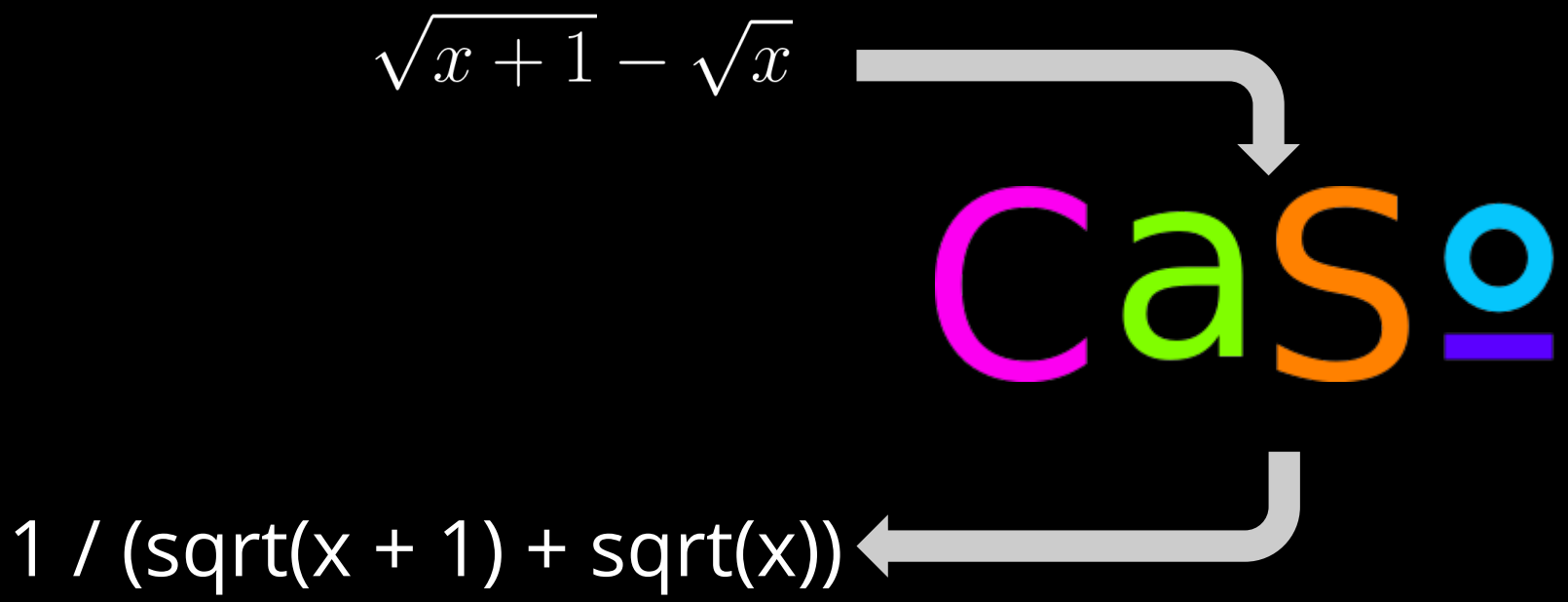
Caso

CaSo


$\sqrt{x+1} - \sqrt{x}$
CaSo
1 / (sqrt(x + 1) + sqrt(x))

$$\frac{e^x - 1}{x}$$

```
if (-3.81e-17 < x < 1.5e-16
      or x < -.88)
    exp(x) / x - 1 / x
else
    (exp(x) - 1) / log(exp(x))
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