

sin cos tan max exp ceil  $x^2$  x!  $x^y$  rad

asin acos atan min ln floor sqrt round 1/x deg

7 8 9 / del

n

4 5 6 \* E

min

1 2 3 - pop

max

0 . - + push

total

new

new

+n

-n

-x

random

pi

e

dup

exit

info

new

+m

-m

mem

grow

# The Calculator

This calculator is stack based, which means that one enters values and invokes an action that acts on the value(s) last entered. Subtracting 10 from 20 using (−) for instance comes down to clicking:

```
10 in 20 −
```

while calculating a sinus (sin) results from entering:

```
.89 sin
```

The left column of fields (numbers) shows the Stack. One uses **push** to push a value on the stack and **pop** to remove a value. Clicking **new** removes them all and the **del** button can be used to undo the last entered digit. When a dyadic operation is applied, the top value is used as *y*. The **grow** key toggles between two different visualizations of the stack.

The stack is considerably larger than the screen representation suggests. In the rare occasion that one encounters the message **exhausted**, the amount of stack entries already has totaled far beyond 50 and one probably already has forgotten what the values first entered represent.

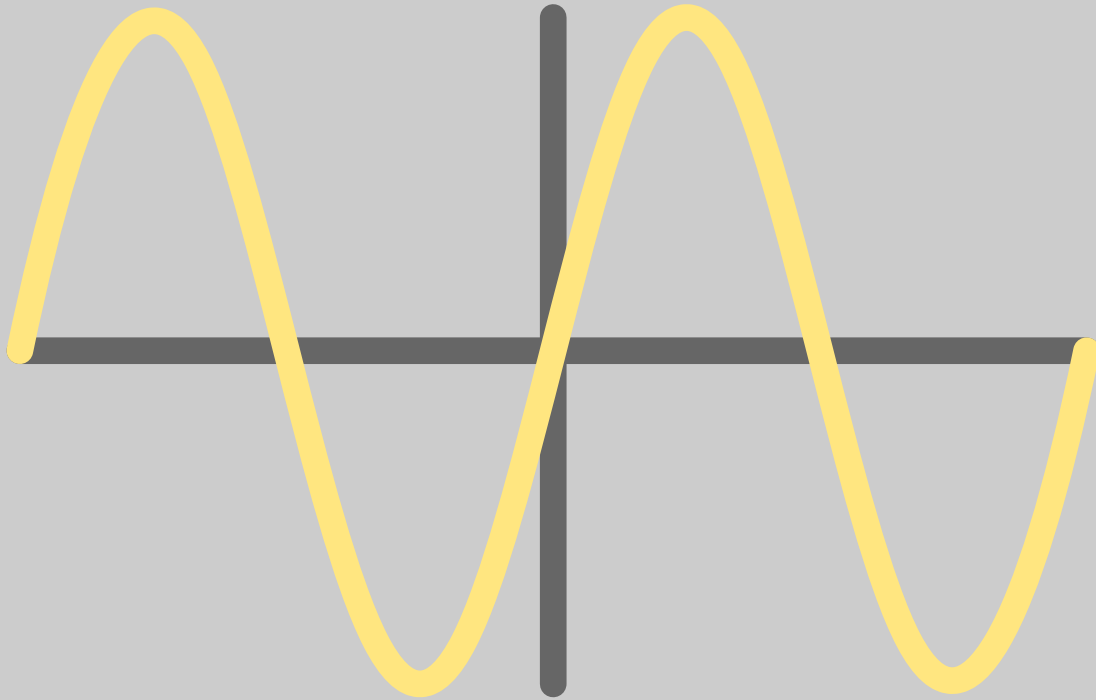
The right column of fields reports the statistic calculations. By clicking on the tag, one pushes the value on the Stack. The lower buttons are used to reset (**new**), enter (**+**) and remove (**−**) values to be taken into account when calculating those statistics.

This document is produced by CON<sub>T</sub>E<sub>X</sub>T, a macro package based on T<sub>E</sub>X. METAPOST graphics, PDF objects and form fields as well as JavaScript code were generated and inserted at run time. I owe many thanks to Philip Taylor for his testing and suggestions.

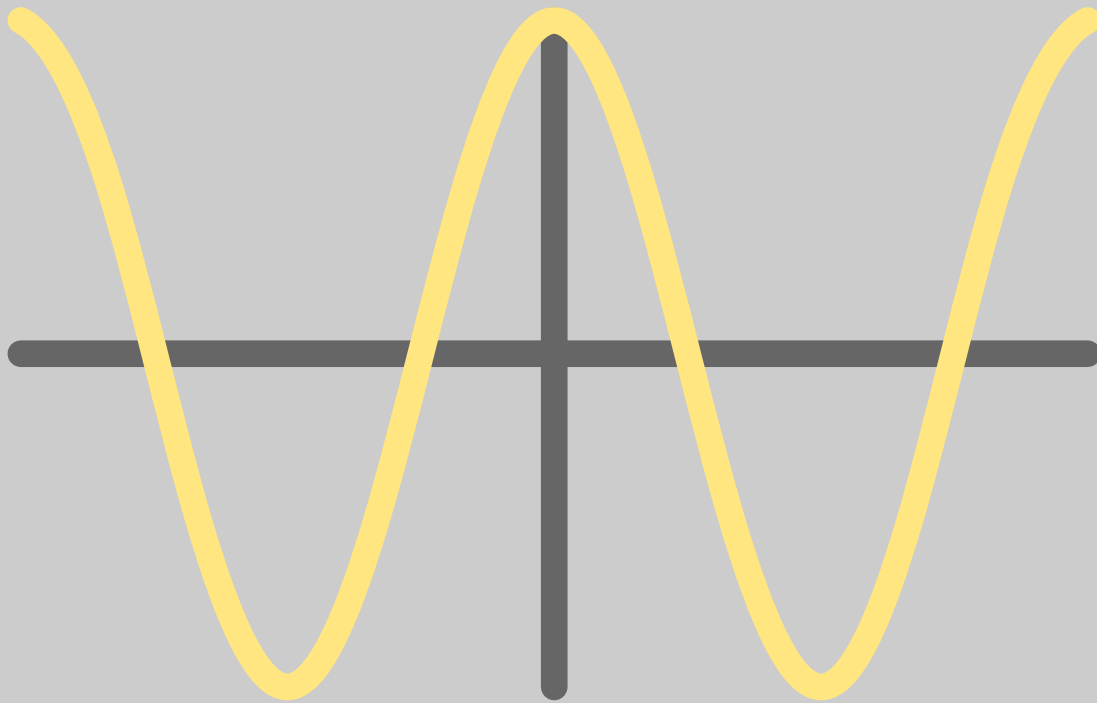


Hans Hagen, PRAGMA ADE, CON<sub>T</sub>E<sub>X</sub>T 18/2/1998

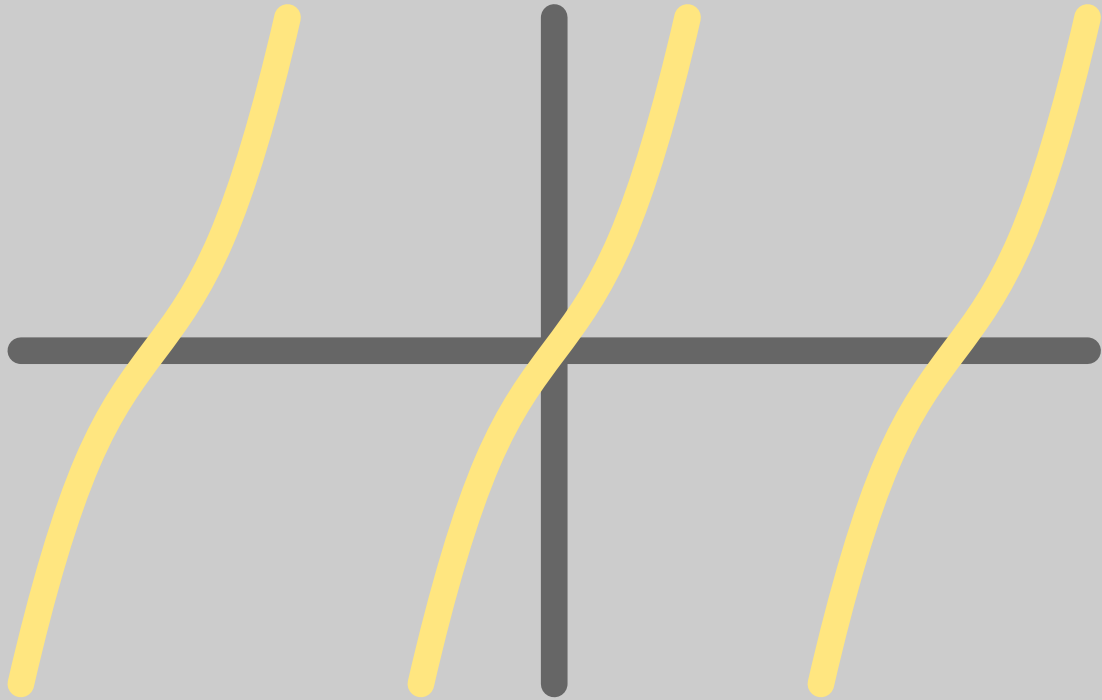
[pragma@pi.net](mailto:pragma@pi.net)



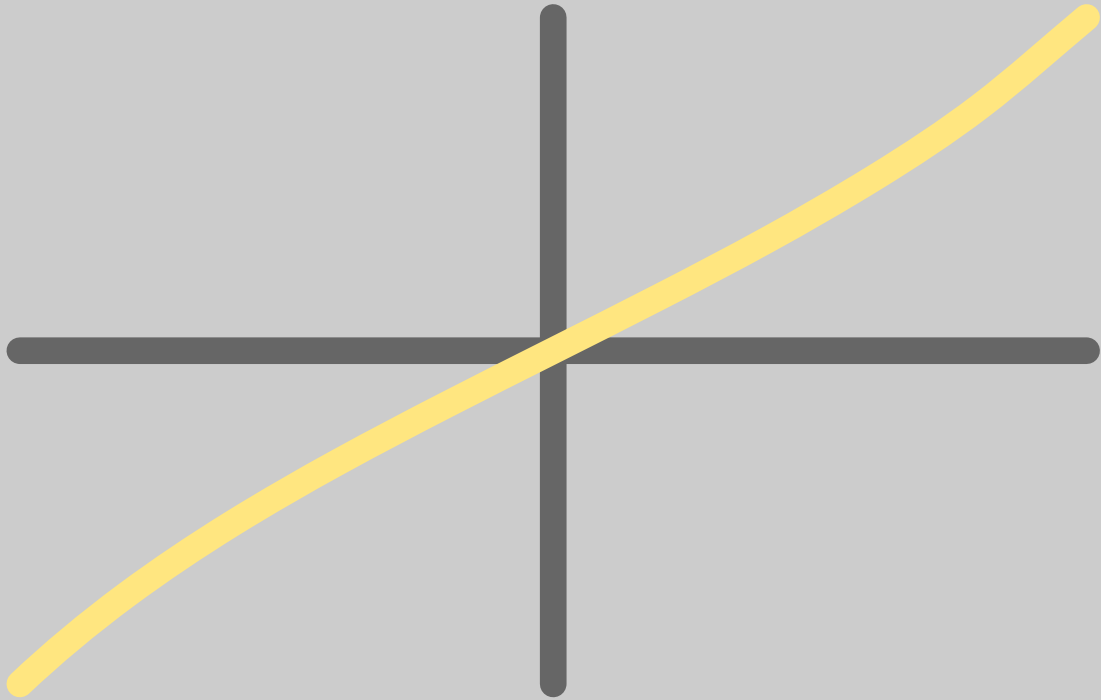
Calculate the sine of the topmost stack entry.



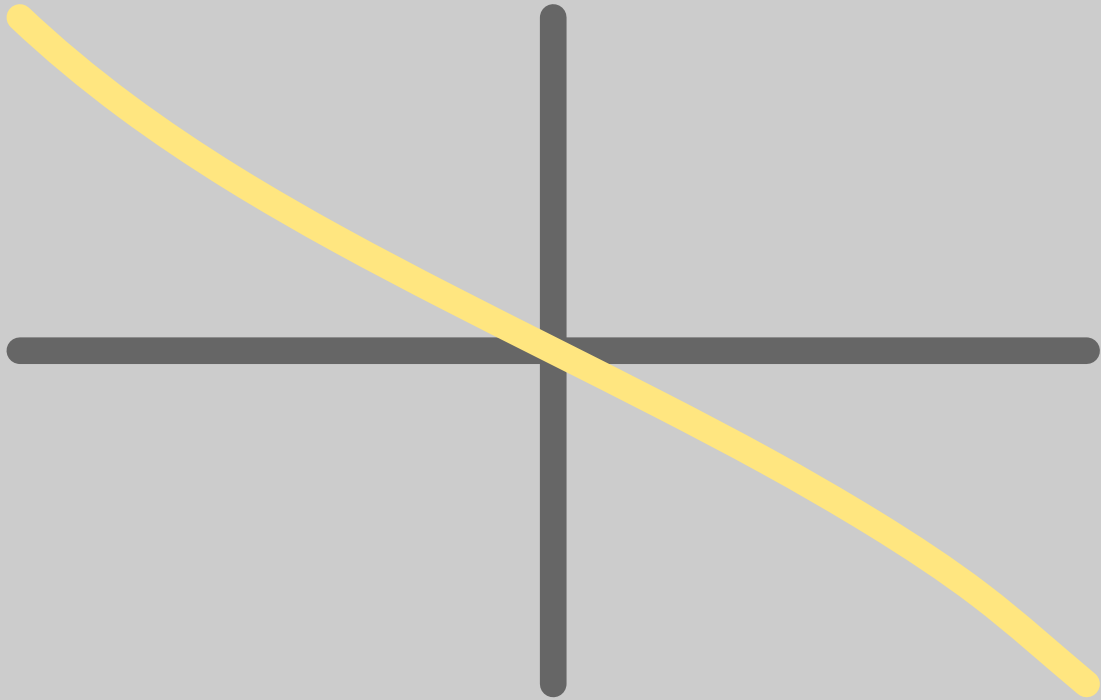
Calculate the cosine of the topmost stack entry.



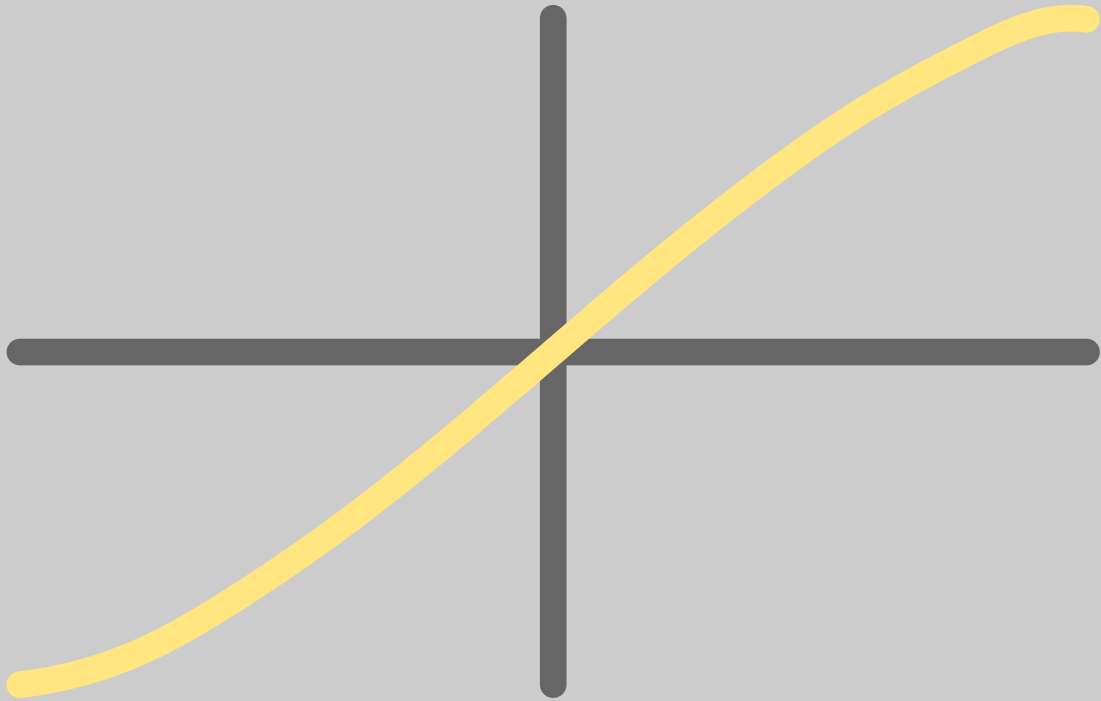
Calculate the tangent of the topmost stack entry.



Calculate the arcsine of the topmost stack entry.

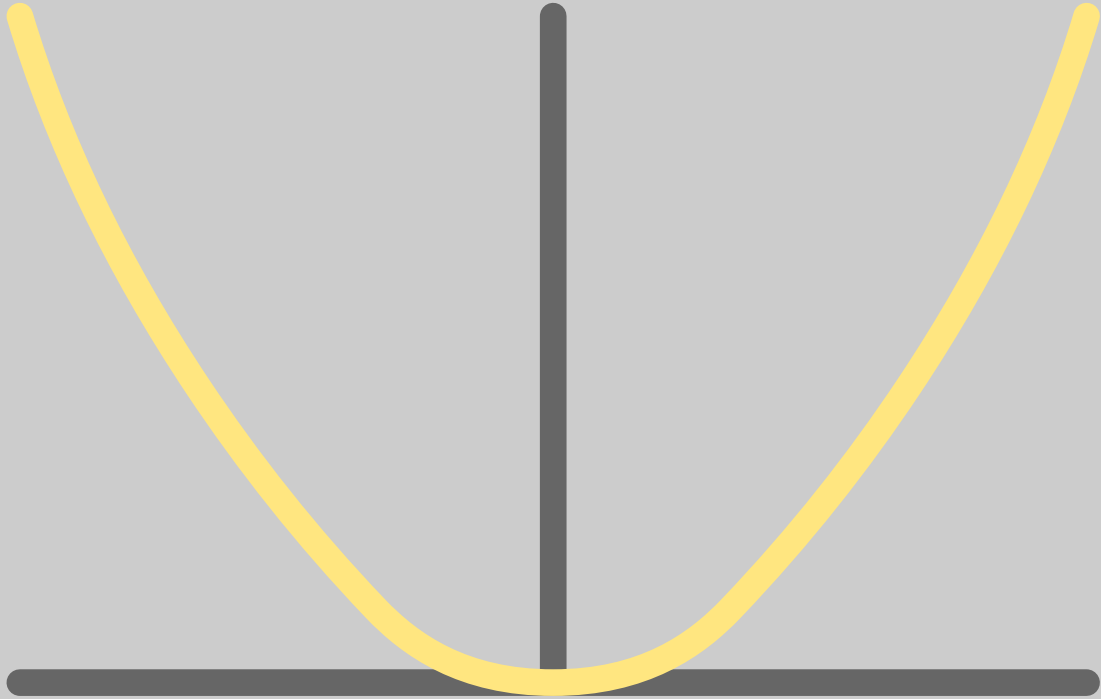


Calculate the arccosine of the topmost stack entry.



Calculate the arctangent of the topmost stack entry.

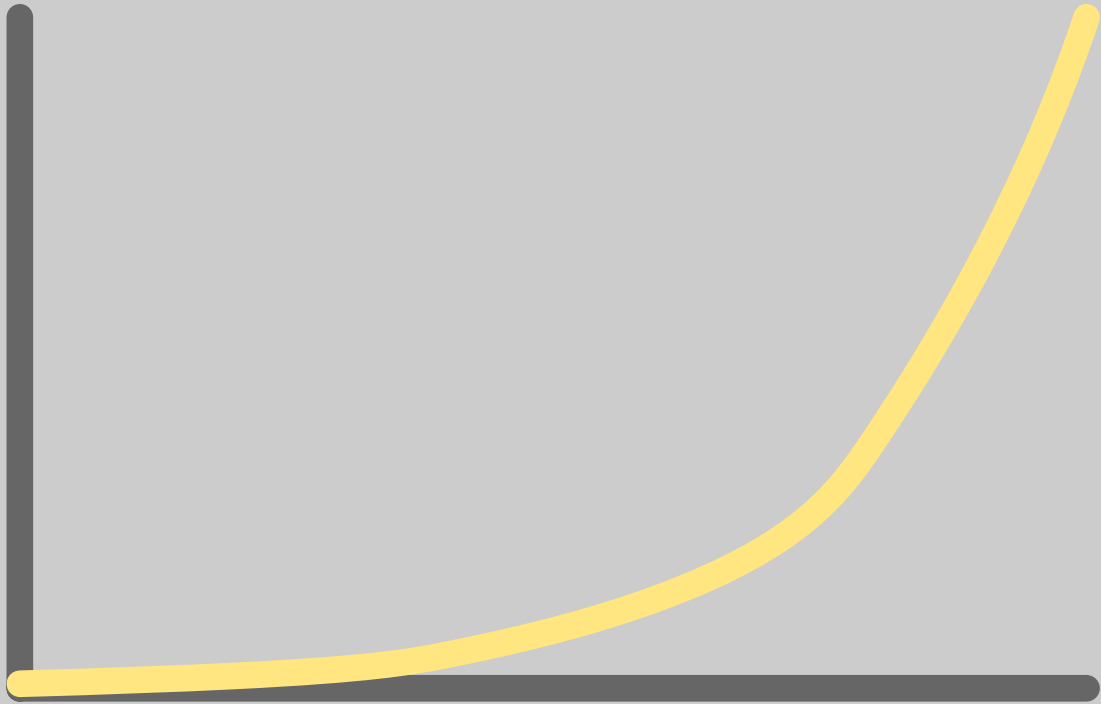




Calculate the square of the topmost stack entry.



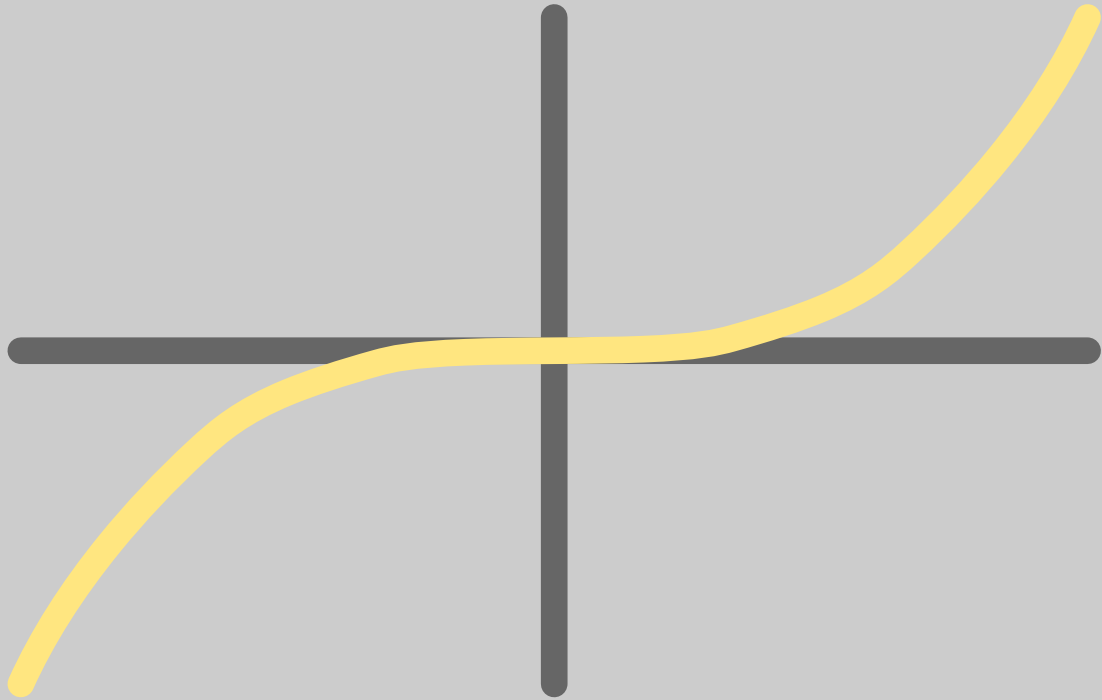
Calculate the square root of the topmost stack entry.



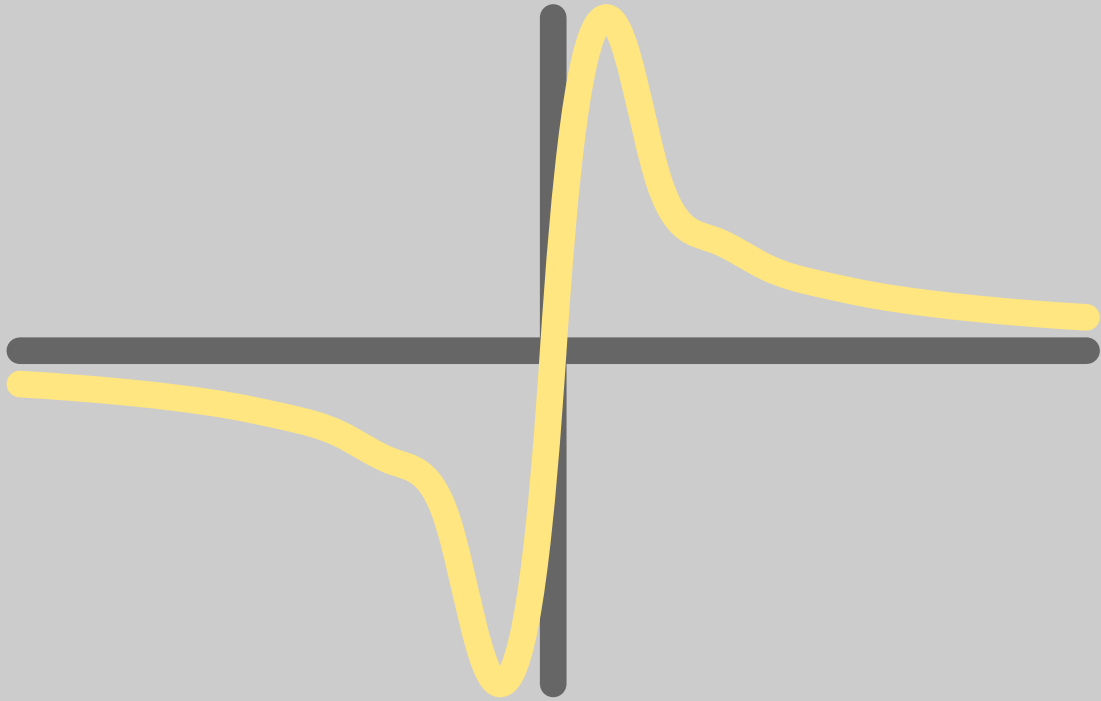
Calculate the exponential function of the topmost stack entry.



Calculate the natural logarithm of the topmost stack entry.



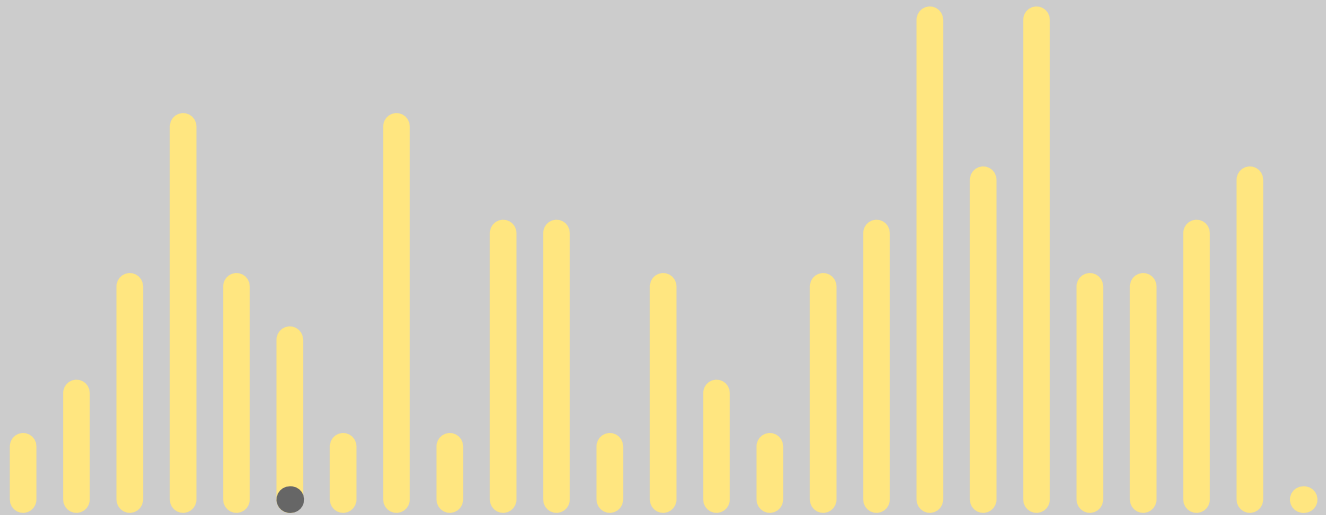
Calculate  $x^y$  where  $y$  is the topmost stack entry.



Calculate  $1/x$  using the topmost stack entry.



Add an observation to the statistics.

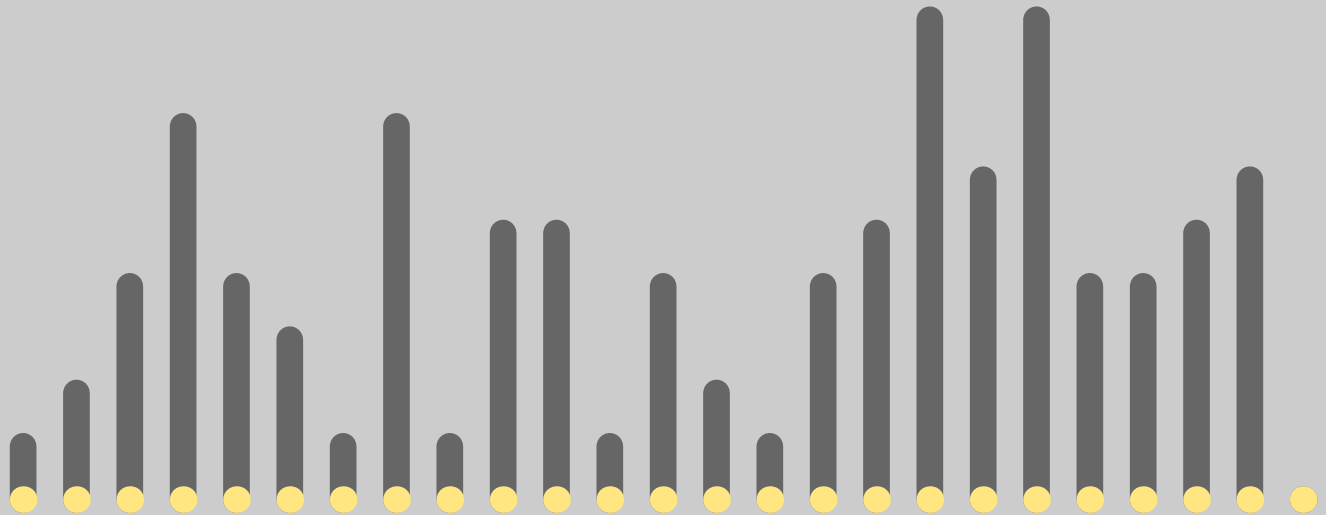


Remove an observation from the statistics.

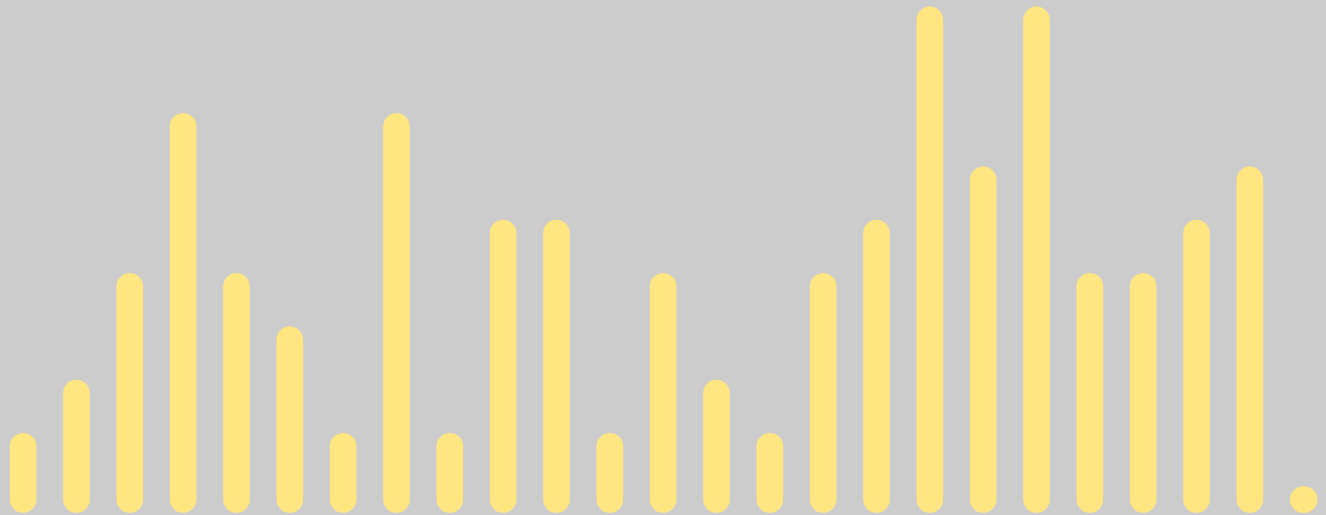




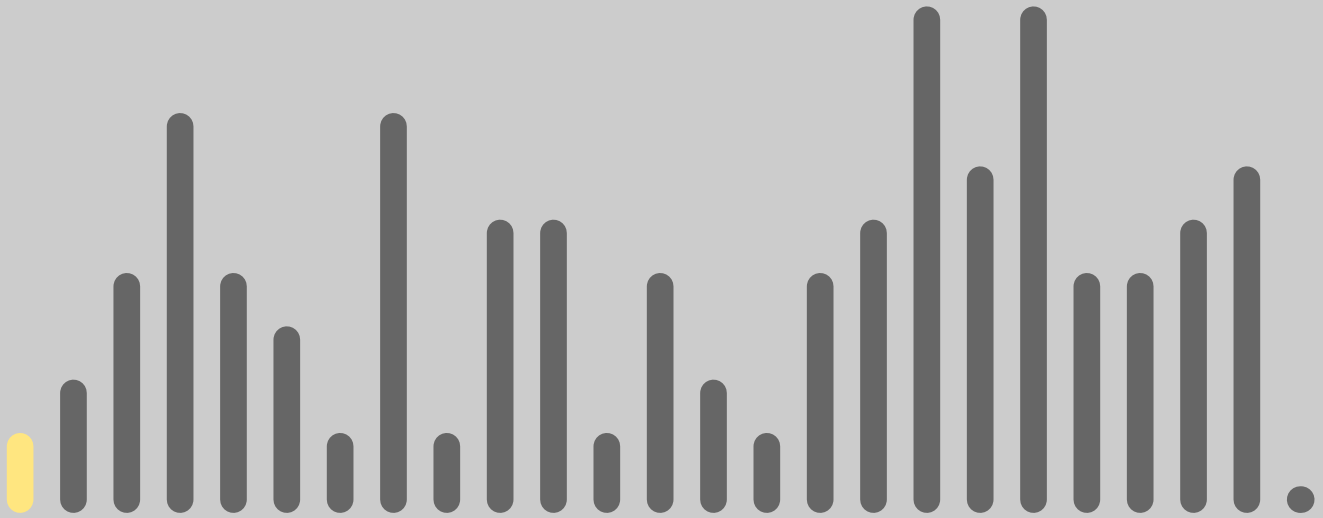
Reset the statistics.



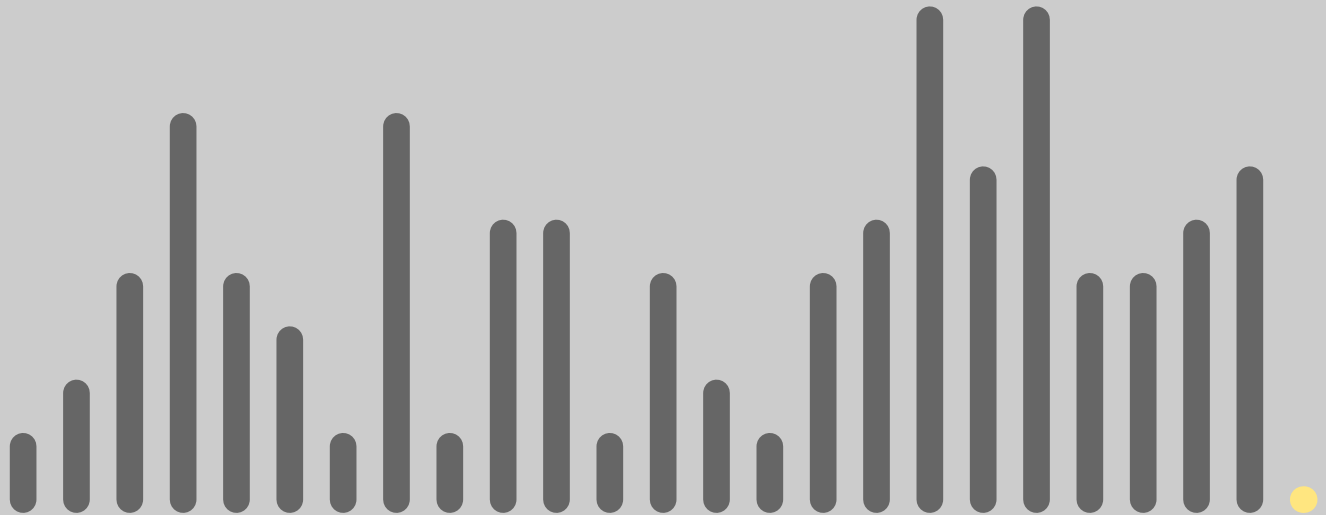
Push the number of observations to the stack.



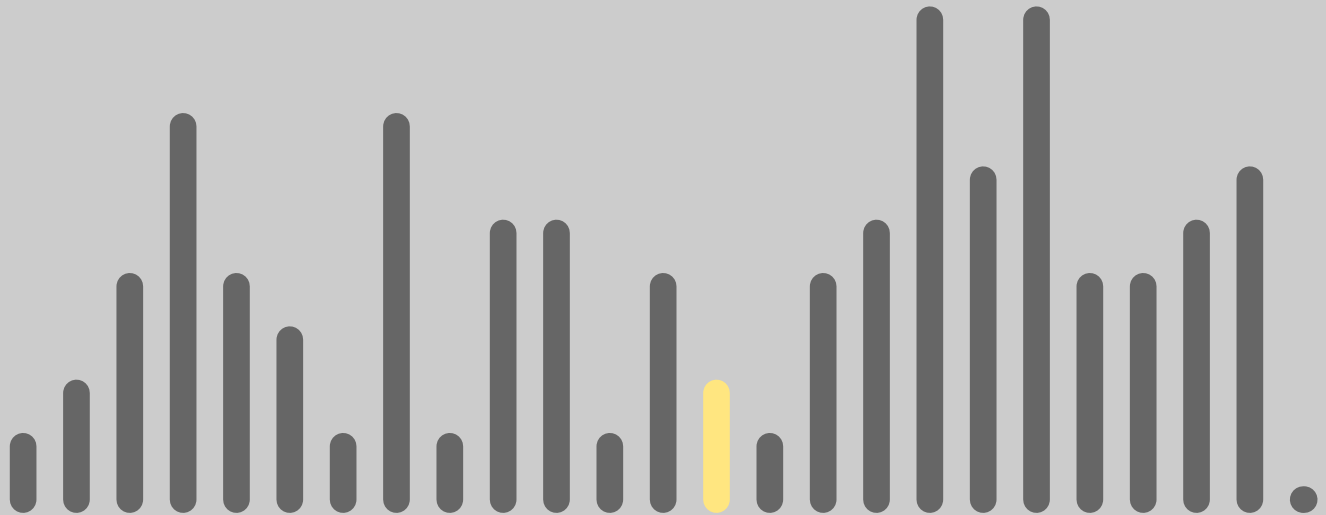
Push the sum of encountered values to the stack.



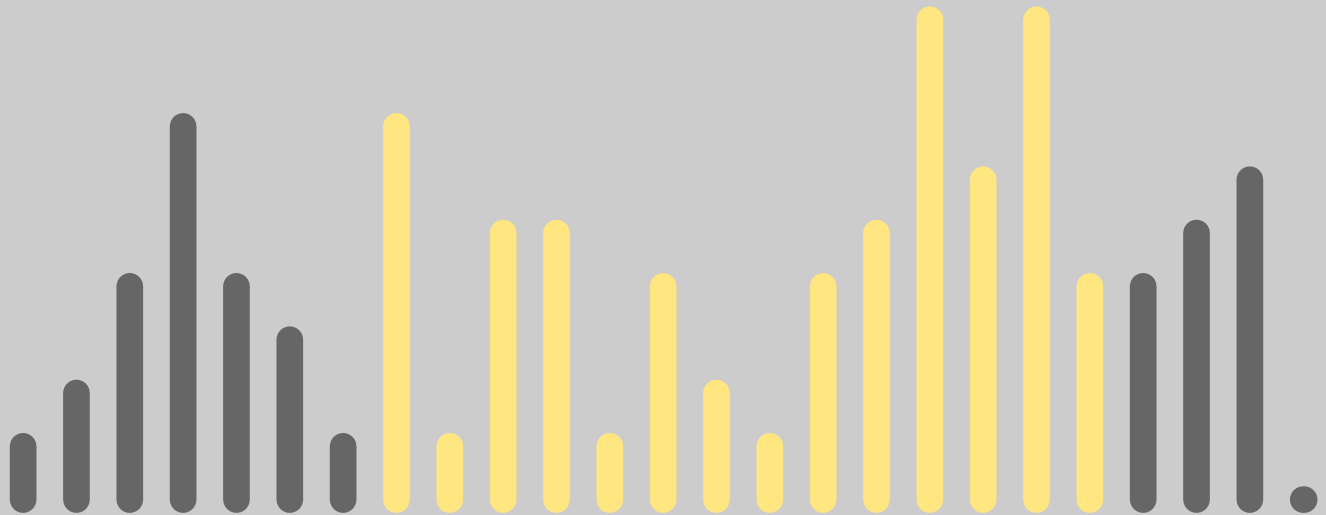
Push the lowest encountered value to the stack.



Push the highest encountered value to the stack.



Push the mean value to the stack.



Push the standard deviation to the stack.



Negate the topmost stack entry.





Set the topmost stack entry to the next integer.



Set the topmost stack entry to the previous integer.



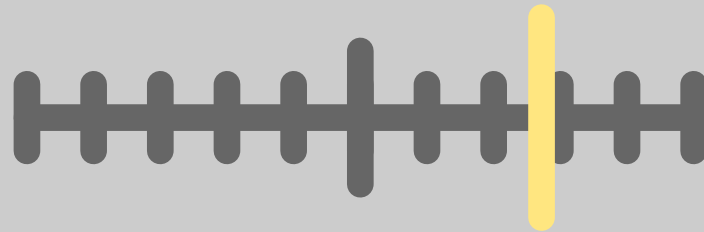
Set the topmost stack entry to the nearest integer.



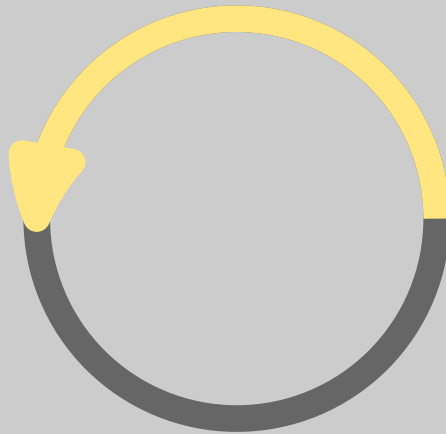
Take the minimum of the two topmost stack entries.



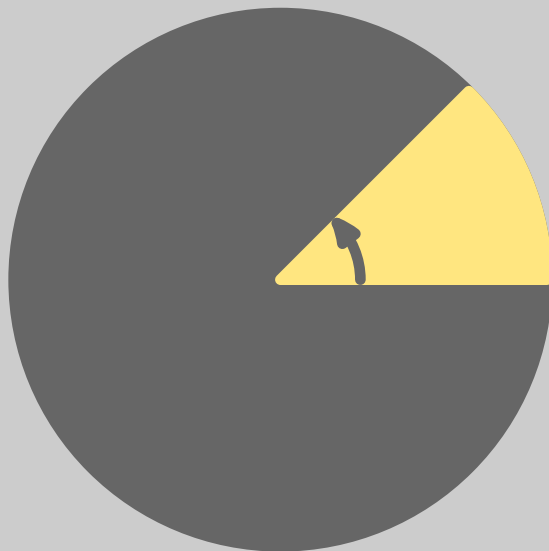
Take the maximum of the two topmost stack entries.



Push 2.71828182845905 onto the stack.

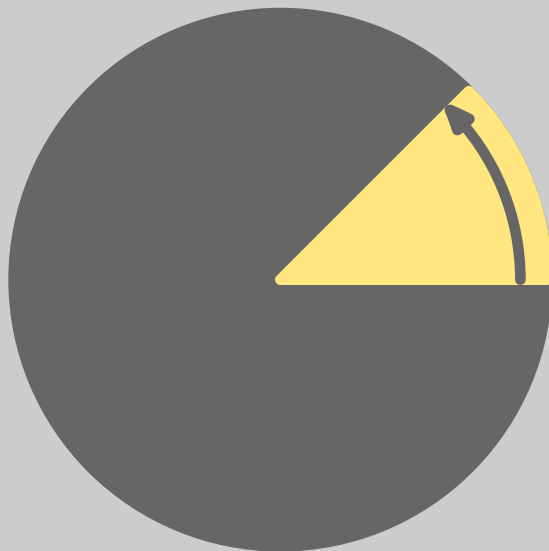


Push 3.14159265358979 onto the stack.

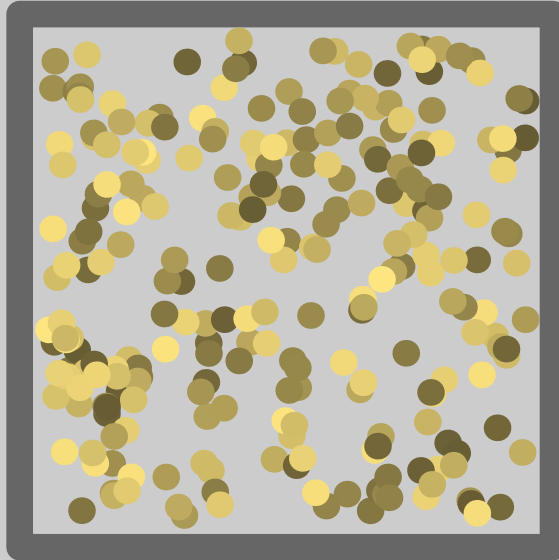


Convert radians into degrees.

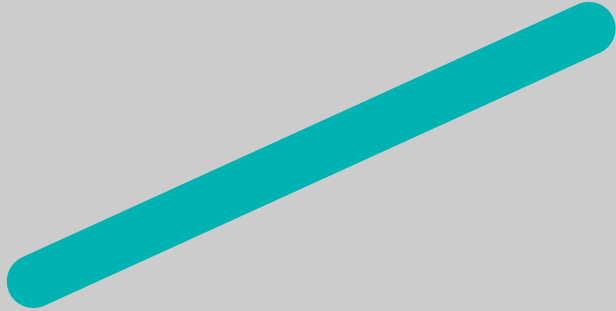




Convert degrees into radians.



Generate a random number in the range 0-1.



Add a digit 0 to the current stack entry.



Add a digit 1 to the current stack entry.



Add a digit 2 to the current stack entry.



Add a digit 3 to the current stack entry.



Add a digit 4 to the current stack entry.



Add a digit 5 to the current stack entry.





Add a digit 6 to the current stack entry.



Add a digit 7 to the current stack entry.



Add a digit 8 to the current stack entry.



Add a digit 9 to the current stack entry.





Add a sign to the current stack entry.



Add a period to the current stack entry.



Start setting the exponent part of the current stack entry.





Delete the last entered digit of the current stack entry.



Erase the memory buffer.



Add to the memory buffer.



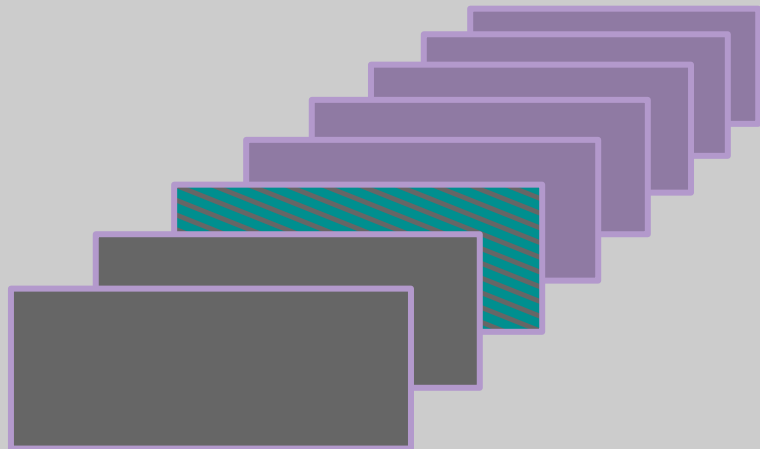
Subtract from the memory buffer.



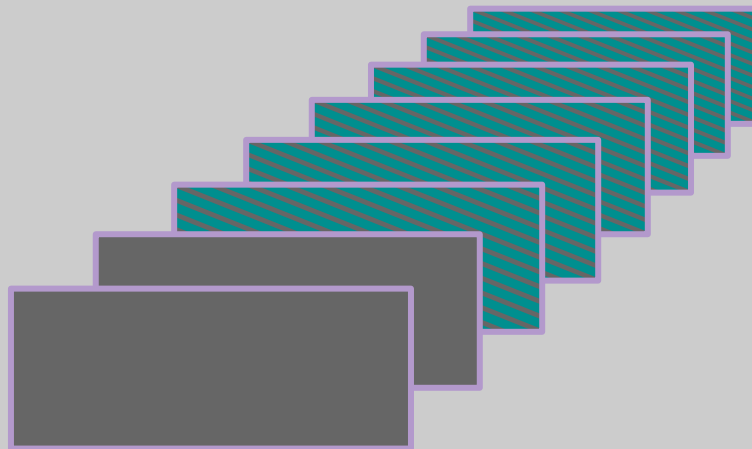
Copy the memory buffer to the stack.



Push a new entry to the stack.

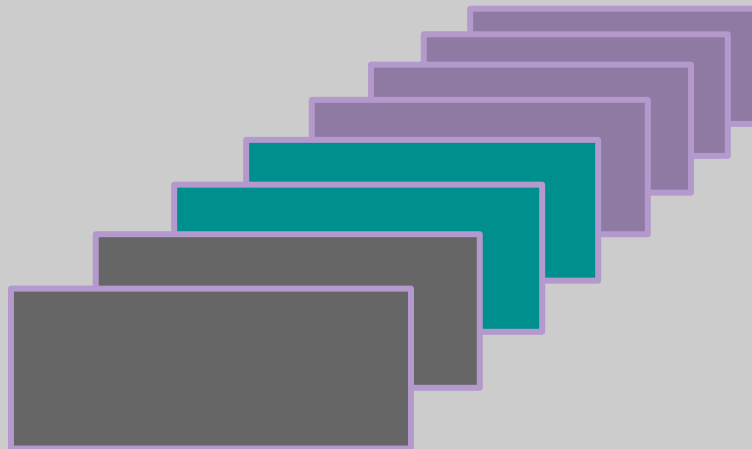


Remove the topmost entry from the stack.

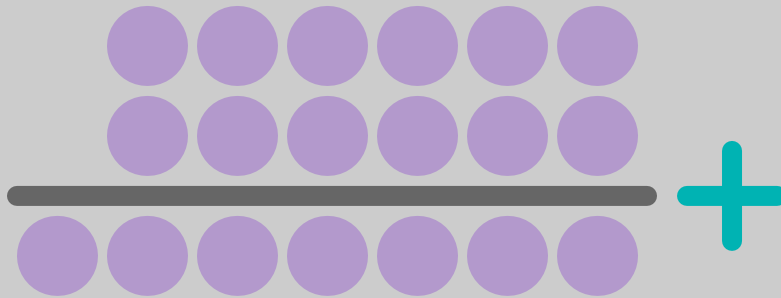


Erase the whole stack.

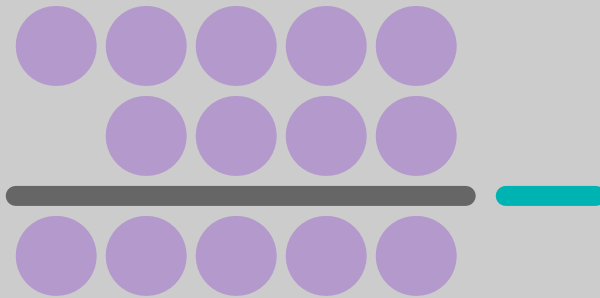




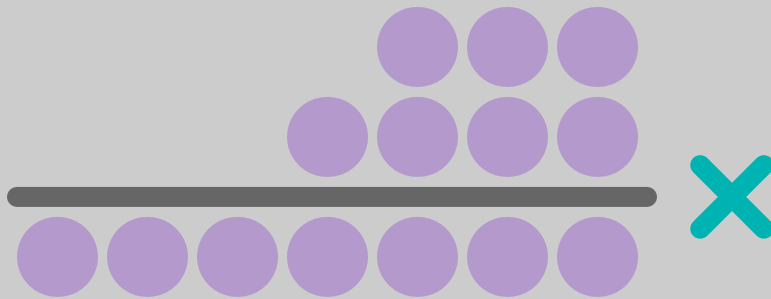
Duplicate the topmost stack entry.



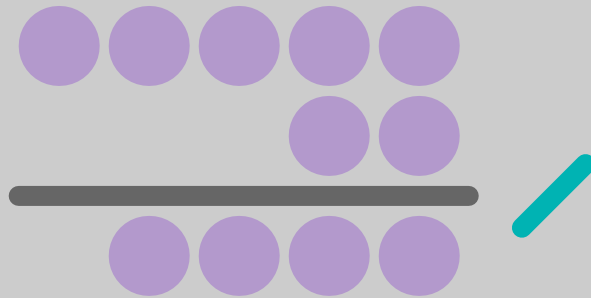
Add the two topmost stack entries.



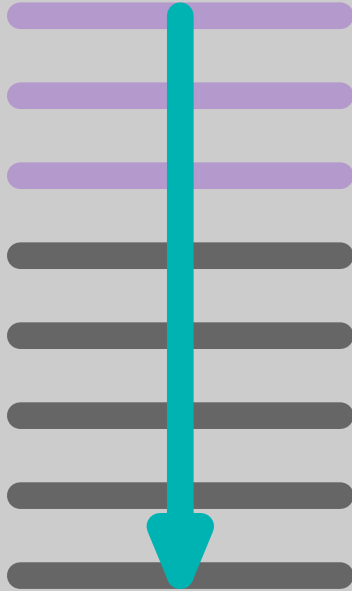
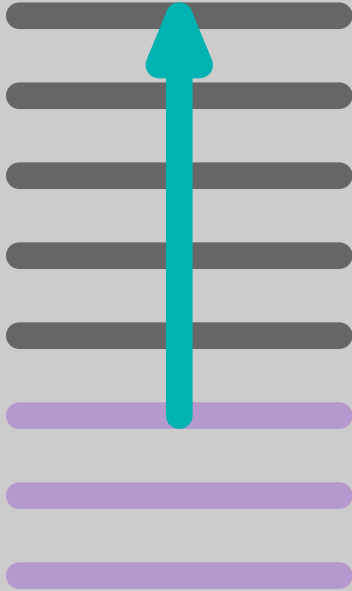
Subtract the topmost stack entry from the one below.



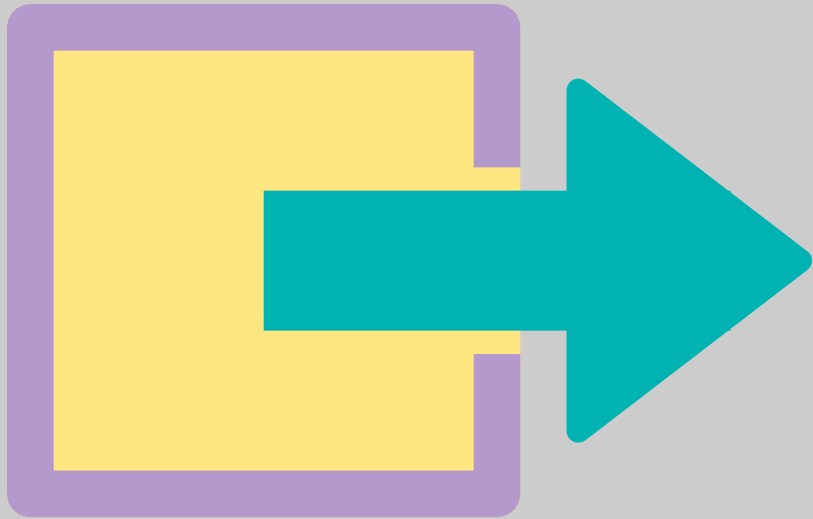
Multiply the two topmost stack entries.



Divide the pre-last stack entry by the topmost one.



Toggle grow mode, another way of stacking.



Close this document.