

Info Sheet



WHAT ARE VARIABLES?

In coding, variables are things that store information. Often thought of as 'containers', variables hold information like numbers, letters, and whether something is true or false. A variable is given a unique name so it can be referred to at any time. This name won't change but the value of what is inside the variable can change! 'The score' of a basketball game is a great example of a variable. During the game, the numbers of 'the score' will change, but we always call those numbers 'the score'!



THE VARIABLES VIDEO

The video introduces variables and goes through the three main types.



(0:40) a variable is like a bucket with a name. This bucket's name is 'bucketThing'. So whatever is in the bucket is now called 'bucketThing'. This means that 'bucketThing' could be a frog, a bear, or even underwear! Note: This example is meant to

show how variables work in a fun and visual way. In reality, variables can hold information but not actual animals!

"A bird has feathers."

(1:06) **Strings** - A string is a fancy name for something that has letters. Like your name or the sentence "A bird has feathers"! v

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16-3

(1:50) **Numbers** - Number variables hold numbers!

(2:27) **Booleans** - Booleans can only be two things: true or false.

true
false



TAKE AWAYS:

- Variables hold information (sometimes referred to as 'data' or 'values') that can change.
- Variables have three main types: strings, numbers, and booleans.
- You give variables a name then refer to them by that name when programming

Activities

Booleans

In this activity, begin by asking learners to think of their favourite meal, book, or animal (or another item you would know). Remind learners that when they've chosen their favourite thing they **can not** change it. Tell learners that you are going to ask them true or false questions so you can try to guess their answer, and they can only answer with either 'true' or 'false'. Continue asking your questions until you guess the learners favourite item. This is a good time to remind learners of the Hardware Software lesson. The guesses are the input and learners provide the output in the form of their answer, which is either true or false.

Strings

Remind learners that strings can hold things made up of characters, like your name or the sentence "A bird has feathers"! This activity will have learners practice using strings to fill in blanks in a sentence. You may use our examples or create your own! Present the following variables and have learners add 'data' (characters) to each one.

<Name>:
<Place>:
<Action>:
<Feeling>:

Next, show learners the following sentence and have them 'plug' in their variables. What do their sentences say? Have them share with you or a peer.

<Name> had a really <Feeling> time at <Place> because they were <Action>.

Extension: Have learners create their own sentences and/or categories for variables to be filled out by others.

Numbers

Learners are going to play a simple game to help them better understand number variables! All you need is a pair of dice. This activity can either be done individually or in groups. First, have learners create a column with the variable name "Score" at the top.

Ask a learner to roll a die. When the die lands on a number, they get the option of either taking the number's face value or multiplying it by 10. The goal is to reach the number "101" without exceeding it. Have learners record their score underneath the variable name "Score", changing the value each time they roll the die. Remind learners the numbers of 'the score' will change, but we always call those numbers 'the score'!

Song Lyrics

Variables: they have a name

And variables: have values that can change

Variables: a part of coding foundation

Because variables: store important information!

So, just like this box can hold this ring
A variable is something that can hold another thing
Like a name, or a date, or a high score
Or a place, your favorite food, and so much more!

You might be confused, have no fear
We can try a little example here
Say this bucket is a variable, we'll give it a name
So whatever is in the bucket we will call 'bucketThing'!

bucketThing is a frog |
bucketThing is a bear
bucketThing is a pizza
bucketThing is underwear!

Now variables can have a type, are you listening?
They can have a type, and here's the main three:
The variable types, when you are talking to machines
are strings, numbers, and booleans!

A string is not a number it's actually made of letters
Like your name or the words: "I really like sweaters"
A string is text, you know characters and letters
Just like the sentence "A bird has feathers."

Here's a string variable about what day it is
We will name this variable 'dayOfTheWeek'

dayOfTheWeek is Monday
dayOfTheWeek is Tuesday
dayOfTheWeek is Wednesday
dayOfTheWeek is Thursday!

Chorus

So string variables, what are they good for?
When there are words and text to store
What if you have numbers, like numbers and math?
A number variable is up to the task

Numbers are numbers and nothing more
No letters, or pictures, just a number, like a score!
Numbers are numbers and nothing more
No letters, or pictures, just a number, like a score!

Here's a number variable to remember the score
we will name this variable 'myPointScore'

myPointScore is 2!
myPointScore is 4!
myPointScore is 8!
myPointScore is 1,000,000!

So number variables, what are they good for?
When there are numbers and numbers to store
But there's a simpler one, it can be one of two things
It's called boolean variable, it's not a number or a string

Boolean, there's a funny name
It just means true or false! No in-betweens!
Boolean, it can only be two things
Either true or false! No in-betweens!

Here's a boolean variable to check if you're asleep
we will name this variable 'areYouAsleep'

areYouAsleep is true!
areYouAsleep is false!
areYouAsleep is true!
areYouAsleep is false!

Chorus