

Pokemon DV Calculator

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What is the DV Calculator?

It's a web browser tool that assists you with finding the best Pokemon in the first two generations of Pokemon games (Red / Blue / Yellow and Gold / Silver / Crystal). More specifically, it helps you find the hidden attributes of your Pokemon that would otherwise require you to view the save file or game memory to determine their values.

What is a DV?

Diversification values, sometimes called determinant values, are the generation 1 and 2 equivalent of individual values, which are a random number assigned to each stat of a Pokemon upon your first encounter with it. These values are factored into the stat calculations in game and provide a randomness to Pokemon stats. Without them, every Pokemon of a species you catch would have identical stats to another of that species if they are of the same level and haven't been trained. They are essentially a Pokemon's genetics and determine the strengths and weaknesses of it.

Why do I need this tool?

There is no way to directly find the DVs of a Pokemon unless you edit the save file of your game or view a printout of the game's memory. They must be reverse-calculated from a Pokemon's actual stats. It is time consuming to do this calculation by hand. In addition, the calculation used to determine a Pokemon's stats uses a rounding operation that is non-reversible, so it is possible that a given value for a stat might correspond to more than one DV. This is only an issue for Pokemon below level 50; after this level, every value of DV corresponds to a unique stat value. This tool makes the process of finding the DVs of a Pokemon easier.

There are other DV calculators, what makes this one different?

Most other DV calculators only provide a one-off calculation for a single level and will provide a range of possible DVs for the stats you enter. This works fine for Pokemon over level 50, but otherwise is inadequate for accurately finding your Pokemon's DVs. Newer ones include the ability to track experience and help find the DVs of lower-level Pokemon, but lack some of the functionality of this calculator.

What this DV Calculator does is provide an easy method for determining the DVs of low level Pokemon by allowing you to track its stat experience as it battles, and to calculate its DVs upon each level up. Using some basic math, this calculator will quickly narrow down the actual value range of your Pokemon's DVs for each stat by using the records you create at every level.

It also provides secondary statistics for the purpose of comparing Pokemon and finding the most competitive ones. In addition, it provides a lookup table that maps out the possible DVs for the level and stat experience you provide.

How do I run it?

You need a personal computer (Windows, Linux, or Mac) and either Mozilla Firefox or Google Chrome. Microsoft's browsers are not supported, and Safari has not been tested. Mobile devices will not run this application correctly using their default HTML browsers; however, this application has been tested and works on Chrome for Android.

Download the .zip file from this github page, then extract it anywhere on your computer. Open dvcalculator.html with a supported web browser (Firefox, Chrome) and begin!

<https://github.com/tewky/dvcalculator>

How do I use it?

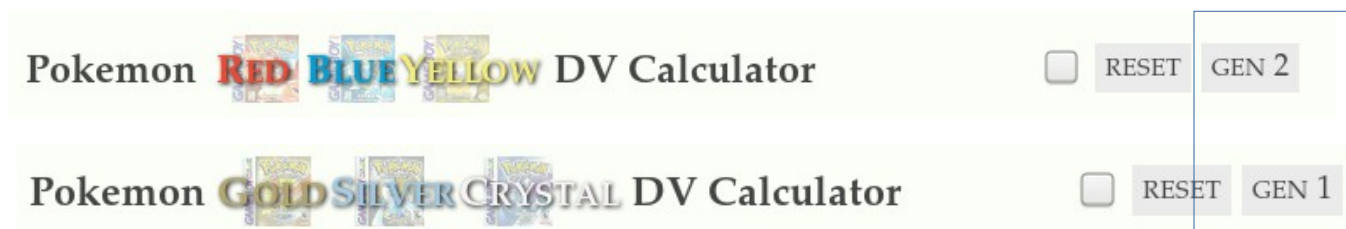
Once you catch a Pokemon that you want to train and before you use it in battle, select it from the dropdown menu, enter its current level and stats, then press calculate. The possible range of DVs will be shown. If you want to know its DVs with more accuracy, battle with this Pokemon and track every knockout it participates in. This is done with the experience tracker, which provides a convenient feature that filters Pokemon found by zone. You must enter every KO it partakes in or your results might be inaccurate. Once the Pokemon levels up, enter its new stats (click the rare candy symbol to clear the stat input fields and automatically enter its new level), and calculate again. The new range of DVs for that level will be shown, and the most-probable DV will be displayed below. Once these show as yellow, which is accurate within a range of 2, or red which is accurate to 1, you can be confident that these are the Pokemon's real DVs provided that you have correctly tracked its stat experience.

If the Pokemon is weak and you need to swap it out during battle, check the "Share" checkbox then switch to another Pokemon and track the knockout. The stat experience will be split between these Pokemon, up to a maximum of 6 Pokemon in your party, as this is how the experience distribution is done in game. If you skip this step your Pokemon might have significantly less stat experience than the calculator shows, and this will affect the correctness of your DVs.




Features

Supports generation 1 (Red, Blue, Yellow) and generation 2 (Gold, Silver, Crystal) games.

To switch between generations, check the confirmation checkbox and press the "Gen 1/2" button. **All saved data will be erased when you change generations!**



1

POKEMON 248		 		Tyranitar_1		
LVL	HP	ATT	DEF	SPD	SP.A	SP.D
35	118	103	91	50	79	82
EXP	-	-	-	-	-	-
LAST	5	6-7	13-14	4	11-12	10-11
DV	5	6	13	4	11	10
BASE	100	134	110	61	95	100
MAX	383	348	314	198	280	288
BEST	403	366	318	220	288	298
HIPO	47					
RARE	1 / 97					

2

3

4

5

1 Pokemon selection. The dropdown menu shows all Pokemon in the currently selected generation. The species and pokedex number is displayed on the left. Its types and a small icon are also shown.



If this is shown next to the Pokemon's types the Pokemon you have found is shiny! This is based on its DVs and if they are not accurate due to improper stat experience tracking the shiny detection feature will be incorrect.

2

Stat entry. This is where you input your Pokemon's current stats. Only do this immediately after each level up and before tracking any knockouts.

3

Derived stats. The “exp” row shows the stat experience your Pokemon has accumulated. This is based on the entries in the experienter tracker. “Last” shows the range of DVs that were calculated for the previous time that you pressed the Calculate button. This is updated every time you calculate.

The “DV” row is the most-probable DV for your current Pokemon. It’s based on the records you have created by calculating at each level. While they show as grey this number is not accurate and should only be considered an estimation. Once a DV shows a yellow, that DV has been narrowed down to a range of 2; this is often all you need to determine whether a Pokemon is worth training further. When a DV shows as red it has been narrowed down to a range of 1, and is the true DV for that stat.

Note that the most-probable DV function is only as accurate as the input you provide: you must correctly track all knockouts in the tracker and ensure that you enter its stats and calculate at each level up correctly.

4

Basic stats. The “base” row is the base stats for the current Pokemon’s species. These are constant across all instances of that Pokemon. The “best” stats are the best-possible stats for that Pokemon, at level 100, with maximum possible DVs (all 15), and full stat experience. The “max” stats are the best possible for the Pokemon you are training, given its calculated DVs and at level 100 with full stat experience. The difference between max and best give you an idea of how much the DVs of the Pokemon you are training influence its final potential.

5

Secondary stats. The HIPO row is the hidden power of your Pokemon – the type and power of the attack that is used when you have your Pokemon use the Hidden Power move.

The “rare” value is a rough estimate of the rarity of the Pokemon you caught. It’s only provided to give you a quick idea of whether a Pokemon is worth keeping. High rarity values means that you are less likely to find a better Pokemon, or rather that it will take a long time to find a better one.

It’s calculated based on the four independent stats (Attack, Defense, Speed, Special) and does not factor in the species of the Pokemon or things like shininess. It’s calculated as follows: for each stat, find the probability of finding any wild Pokemon with an equal or better DV, e.g. DV of 5 gives a probability of 11 / 16, and a DV of 13 gives a probability of 3 / 16. To find the overall rarity these values are multiplied together, which is like saying the probability of finding a Pokemon with a DV of “x” or better for one stat, and of “y” and better for another stat, and so on. The best I’ve found was an Eevee of rarity 1/ 5000 or so – and it had all high DVs with a couple of 15s. When you find a Pokemon with high rarity you should keep it!



The controls row is the primary interaction method with the calculator. “Calculate” will take the stats you have currently entered, and the knockouts tracked in the experience tracker, and perform the main calculation routine to find your Pokemon’s DVs. It will automatically save the Pokemon and add a record for the level at which you calculated.

The rare candy button is a convenience tool – all it does is increment the level by 1 in the stat entry row and clear the other fields, making it a bit easier to enter new values.

The up and down arrowed Pokeballs are the evolution controls. This enables you to continue DV training a Pokemon even after it evolves. Just evolve the Pokemon first then enter its new stats and calculate.

The share button adds the Pokemon to the tracker and is used for Pokemon you have to swap out of battle. If the Pokemon you are training is too weak to battle and you are swapping it out during battle, press the share button, then switch to another Pokemon through the dropdown menu. When you track the KO the stat experience will be split between all Pokemon that are sharing.

LVL		Records				
35	5-6	7-8	8-9	5-6	11-12	11-12
36	5-6	7	8	5-6	11-12	10-11

Every time you calculate your Pokemon’s DVs a record will be made for that level. These indicate the possible range of DVs at a given level. The more records you have the more accurate your most-probable DV will be.

LOOKUP TABLE						
DV	HP	Att	Def	Spd	Spc.A	Spc.D
0	78	40	51	37	40	51
1	79	41	52	38	41	52
2	79	41	53	38	41	53
3	80	42	53	39	42	53
4	81	43	54	40	43	54
5	82	43	55	41	43	55
6	82	44	56	41	44	56

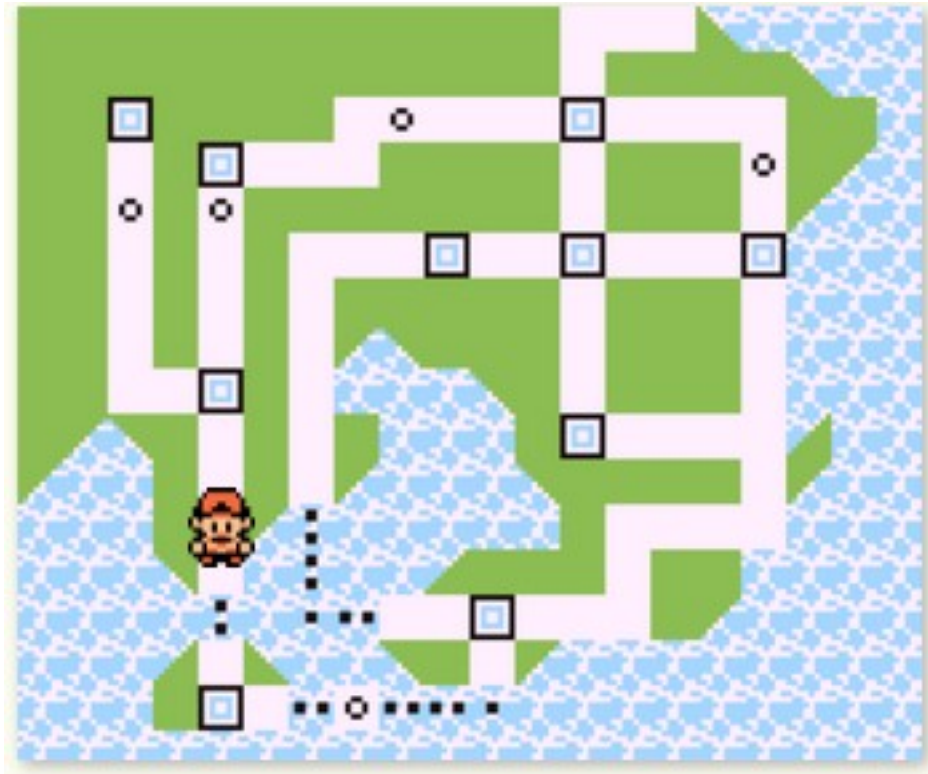
The lookup table shows the full range of DVs (0 – 15) and what final stat they correspond to based on the currently selected Pokemon's species, level, and stat experience. This is a quick way of finding your Pokemon's DVs, and of comparing the stat variance between DVs.

TRACKER

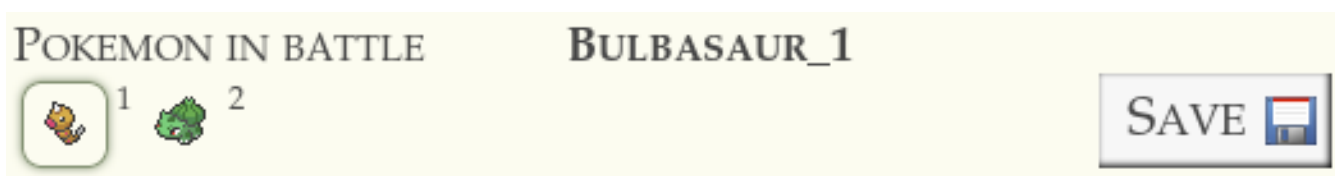
STATS
VETERAN

Pallet Town

The tracker controls allow you to select the current zone from the dropdown menu; this will filter the Pokemon shown in the tracker to show only those found in that zone (either wild or owned by trainers). The stats button will toggle the display of base stats. The veteran button switches the calculator to veteran mode, where you can use the vitamin trick (explained later).



The map feature is an ease of use tool that makes filtering the experience tracker by zone faster: just click the zone that you are currently in and the tracker will show the Pokemon found in that zone.










The party row shows which Pokemon will share experience when you track a KO. It can have up to 6 Pokemon sharing at once. The save button will take input from the experience tracker, calculate the experience distribution, and apply it to all Pokemon that appear in the party.

Ensure that only the Pokemon that participated in a KO are displayed in the party row before you track a KO!

Name	Nº	Type	HP	Att	Def	Spd	Spc	Tot	KO
 Bulbasaur	1	 	45	49	49	45	65	253	0 <input type="button" value="↑"/> <input type="button" value="↓"/>
 Charmander	4		39	52	43	65	50	249	0 <input type="button" value="↑"/> <input type="button" value="↓"/>
 Squirtle	7		44	48	65	43	50	250	0 <input type="button" value="↑"/> <input type="button" value="↓"/>
 Pikachu	25		35	55	30	90	50	260	0 <input type="button" value="↑"/> <input type="button" value="↓"/>

The experience tracker shows all Pokemon (wild or trainer) found in that zone. In its basic form it will show the Pokemon names, icons, types, Pokedex number, and number of KOs tracked for the current Pokemon. It will show the base stats as well on devices with a wide enough screen. You can sort the tracker by any of the headings. In this way you can find which Pokemon are best to stat train with – the stat experience you receive from a KO corresponds to the base stats of the Pokemon that was knocked out. If you filter the tracker by all zones you can also find which Pokemon are best in each stat using the sort function.

Name	Nº	Type	HP	Att	Def	Spd	Sp.A	Sp.D	Tot	KO
 Tentacool	72/162	 	40	40	35	70	50	100	335	0 <input type="button" value="↑"/> <input type="button" value="↓"/>
 Shellder	90/169		30	65	100	40	45	25	305	0 <input type="button" value="↑"/> <input type="button" value="↓"/>
 Magikarp	129/76		20	10	55	80	15	20	200	0 <input type="button" value="↑"/> <input type="button" value="↓"/>

In generation 2 mode the Pokedex column will display two numbers: the first is the normal Pokedex number and the second, displayed in smaller font, is the “new Pokedex” or Johtodex number.

Veteran Mode					MAX EXP <input type="checkbox"/>
HP UP	PROT	IRON	CARB	CALC	
<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="0"/>	

The veteran mode, explained below, allows you to find the DVs (to a lesser degree of accuracy) of Pokemon that have already participated in battles. Checking the “Max Exp” option and pressing save will set the stat exp of your Pokemon to its maximum possible value. The vitamin entry fields are where you enter the number of vitamins used when utilizing the vitamin trick.

What if the Pokemon has already been battled?

Unless the Pokemon is level 100 and has maximum stat experience, which is very unlikely, you have to use the vitamin trick. Click the “Veteran” button in the tracker. Buy 10 of each vitamin and record how many you were able to use on your Pokemon until you received the message “it won’t have any effect”. If you can’t use at least 1 vitamin for a stat, this trick will not work. After doing this for each stat and entering the number of vitamins you used, enter the Pokemon’s stats (from BEFORE you used the vitamins) and press calculate. The DVs will show as yellow instead of red – because vitamins are an imprecise way of measuring stat experience, the best accuracy that can be had is within a range of 2. If you can’t use at least 1 vitamin for a stat, your only option is to level the Pokemon until it has maximum stat experience, check the “Max Exp” checkbox and press save, then calculate. You can find out if the Pokemon has maximum stat experience by using it in battle and occasionally depositing it and withdrawing it from Bill’s PC; if there is no change in stat value from before the deposit and after the withdrawal, the stat experience is maxed – it might take 30 knockouts before this value will change, so this is a slow way of finding DVs.

History of the DV Calculator

2016 – Pokemon Red, Blue, and Yellow were released on the Nintendo virtual console. The best existing gen 1 DV Calculator was written in the early 2000s and doesn't work on modern operating systems. I created an Excel spreadsheet for my own purposes because calculating DVs by hand was tedious. I guessed that many other people were probably looking for a DV calculation tool so I built a simple web application based on that spreadsheet and made it public.

2017 – Gold, Silver, and Crystal were also released on the virtual console. A user of the gen 1 DV Calculator requested that I add GSC functionality, so a version 2 beta was created and uploaded.

2018 – The DV Calculator was converted to an offline tool because its popularity and math-heavy functions were costing me in hosting fees, and as a student I couldn't afford to keep it online.

Credits

Phil Erwin's DV Calculator served as the inspiration for my application.

Many other resources were helpful in its creation.

- Bulbapedia
- Cave of Dragonflies
- Pokedream
- Psypokes
- Smogon University

Support

If you encounter bugs, please record some detail about how they occurred and send me a message on Github!

If you are a developer that wants to use part of this application, you may do so under the GPL 3.0 license. Please include a link back to my github page; a lot of work went into making this application!

The DV calculator began as one large PHP file supported by a database. It was then converted to an MVC application to support an additional generation, and then converted again to an offline Javascript page. There are some artifacts in the code, and some redundancy, because of these conversions. I've tried to clean up the code somewhat but it could use some more refactoring.