

Adam writes numbers 300 - 400

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The Busy Lizzie Maths Library

Writing numbers from 300 to 400

Adam writes all the numbers from 300 to 400

How many times did he write the digit 3?

Explain your thinking to a friend.



Writing numbers from 300 to 400

Adam writes all the numbers from 300 to 400

How many times did he write the digit 3?

Explain your thinking to a friend.



There are two or three ways to solve this problem.

1. Make a hundred square and write out all the numbers (this will take a long while).
2. Try to imagine the 100 square and by counting on or writing key numbers down, 303, 313 etc calculate the answer.
3. Use your knowledge of place value to help you answer the question.

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 |
| | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 |
| | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 |
| | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 |
| | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 |
| | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 |
| | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 |
| | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 |
| | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 |
| | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 |

From 300 to 400 is a total of 101 three-digit numbers. We don't include 400, as it does not contain the digit 3.

| | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 |
| | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 |
| | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 |
| | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 |
| | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 |
| | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 |
| | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 |
| | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 |
| | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 |
| | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 |

There are one hundred 3s in the hundreds position. Here they are, highlighted in red.

| | | | | | | | | | | |
|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|------------|
| 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 |
| | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 |
| | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 |
| | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 |
| | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 |
| | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 |
| | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 |
| | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 |
| | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 |
| | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 |

There are ten 3s in the tens position. Here highlighted in red.

| | | | | | | | | | | |
|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 300 | 301 | 302 | 303 | 304 | 305 | 306 | 307 | 308 | 309 | 310 |
| | 311 | 312 | 313 | 314 | 315 | 316 | 317 | 318 | 319 | 320 |
| | 321 | 322 | 323 | 324 | 325 | 326 | 327 | 328 | 329 | 330 |
| | 331 | 332 | 333 | 334 | 335 | 336 | 337 | 338 | 339 | 340 |
| | 341 | 342 | 343 | 344 | 345 | 346 | 347 | 348 | 349 | 350 |
| | 351 | 352 | 353 | 354 | 355 | 356 | 357 | 358 | 359 | 360 |
| | 361 | 362 | 363 | 364 | 365 | 366 | 367 | 368 | 369 | 370 |
| | 371 | 372 | 373 | 374 | 375 | 376 | 377 | 378 | 379 | 380 |
| | 381 | 382 | 383 | 384 | 385 | 386 | 387 | 388 | 389 | 390 |
| | 391 | 392 | 393 | 394 | 395 | 396 | 397 | 398 | 399 | 400 |

There are ten 3s in the ones position. Here highlighted in red.

A place value problem

Possible solutions:

- You could write all the numbers from 300 to 400 on some paper and count all the 3s. This would be time consuming but you would be able to work out an answer.
- Use your knowledge of place value and calculate the number of hundreds with a 3 in the hundreds position, the number of tens with a 3 in the tens position and the ones with a 3 in the ones position.

Hundreds = 100

Tens = 10

Ones = 10

Total = 120