What Is Grading on a Curve?

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Grading on a curve is a term that describes a variety of different methods that a teacher uses to adjust the scores her students received on a test in some way. Most of the time, grading on a curve boosts the students' grades by moving their actual scores up a few notches, perhaps increasing the letter grade. Some teachers use curves to adjust the scores received in exams, whereas other teachers prefer to adjust what letter grades are assigned to the actual scores.

What's the "Curve"?

The "curve" referred to in the term is the "bell curve," which is used in statistics to show the normal distribution—what the expected variation is—of any set of data. It's called a *bell* curve because once the data is plotted on a graph, the line created usually forms the shape of a bell or hill. In a normal distribution, most of the data will be near the middle, or the mean, with very few figures on the outside of the bell, known as outliers. All things being equal, if test scores were normally distributed, 2.1% of the tested students will receive an A on the test, 13.6% will get a B, 68% get Cs, 13.6% get Ds, and 2.1% of the class gets an F.

Why Do Teachers Use a Curve?

Teachers use the bell curve to analyze their tests, assuming that a bell curve will be visible if the test is a good one of the material she presented. If, for example, a teacher looks at her class scores and sees that the mean (average) grade of her midterm was approximately a C, and slightly fewer students earned Bs and Ds and even fewer students earned As and Fs, then she could conclude that the test was a good design.

If, on the other hand, she plots the test scores and sees that the average grade was a 60%, and no one scored above an 80%, then she could conclude that the test may have been too difficult. At that point, she might use the curve to adjust the scoring so that there is a normal distribution, including A grades.

How Do Teachers Grade on a Curve?

There are several ways to grade on a curve, many of which are mathematically complex. Here are a few of the most popular ways that teachers curve grades along with each method's most basic explanations:

Add Points: A teacher increases each student's grade with the same number of points.

> *When Is It Used?* After the test, a teacher determines that most of the kids got questions 5 and 9 incorrect. She may decide that the questions were confusingly written or not well taught; if so, she adds the score of those questions to everyone's score.
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> *Benefits:* Everyone gets a better grade.
>
> *Drawbacks:* Students don't learn from the question unless the teacher offers a revision.

Bump a Grade to 100%: A teacher moves one student's score to 100% and adds the same number of points used to get that student to 100 to everyone else's score.

When Is It Used? If no one in the class gets a 100%, and the closest score is an 88%, for example, a teacher could determine that the test overall was too difficult. If so, she could add 12 percentage points to that student's score to make it 100% and then add 12 percentage points to everyone else's grade, too.

Benefits: Everyone gets a better score.

Drawbacks: The kids with the lowest grades benefit the least (a 22% plus 12 points is still a failing grade).

Use the Square Root: A teacher takes the square root of the test percentage and makes it the new grade.

When Is It Used? The teacher believes everyone needs a little bit of a boost but has a wide distribution of grades—there aren't a lot of Cs as you would expect in the normal distribution. So, she takes the square root of everyone's percentage grade and uses it as the new grade: $\sqrt{x}$ = adjusted grade. Real grade = .90 (90%) Adjusted grade = $\sqrt{.90}$ = .95 (95%).

Benefits: Everyone gets a better score.

Drawbacks: Not everyone's grade is adjusted equally. Someone who scores a 60% would get a new grade of 77%, which is a 17-point bump. The kid scoring the 90% only gets a 5-point bump.

Who Threw Off the Curve?

Students in a class often accuse one person of throwing off the curve. So, what does that mean and how did she do it? The theory is that a very sharp student who aces an exam that everyone else has trouble with will "throw off the curve." For example, if the majority of testers earned a 70% and only one student in the whole class earned an A, a 98%, then when the teacher goes to adjust the grades, that outlier could make it harder for other students to score higher. Here's an example using the three methods of curved grading from above:

If the teacher wants to **add points** for missed questions to everyone's grade, but the highest grade is a 98%, then she can't add more than two points because it would give that kid a number above 100%. Unless the teacher is willing to give extra credit for the test, then she can't adjust the scores enough to count very much.

If the teacher wants to **bump a grade** to 100%, everyone will again only get two points added to their grade, which isn't a significant jump.

If the teacher wants to **use the square root**, it isn't fair to that student with the 98% because the grade would only go up one point.

What's Wrong With Grading on the Curve?

Grading on a curve has long been disputed in the academic world, just as weighting scores have. The main benefit to using the curve is that it fights grade inflation: if a teacher doesn't grade on a curve, 40% of her class could get an "A," which means that the "A" doesn't mean very much. An "A" grade should mean "excellent" if it means anything, and theoretically, 40% of any given group of students are not "excellent."

However, if a teacher strictly bases the grades on the curve, then it restricts the number of students who can excel. Thus, a forced grade is a disincentive to study: students will think "no point in studying too hard, Susan and Ted will get the only As available on the curve." And they create an atmosphere that's toxic. Who wants a class full of finger-pointing students blaming the one or two stars? Teacher Adam Grant suggests using the curve only to increase scores and building a collaborative atmosphere, so students help each other to get better scores. The point of a test is not the score, he argues, but to teach your students how to learn new things.

Sources and Further Information

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