Selecting the Basis for Grading

Absolute Grading

- Common type is the use of letter grades defined by a 100-point system.
- for individual test - might represent the percentage of item correct or total number of points earned as final grade, typically represents a combination of grades
- Most appropriate in programs where:
    - the set of learning tasks has been clearly specified
    - standards have been defined in terms of the learning tasks
    - assessment techniques has been designed for criterion-referenced interpretation

	Points	Points	Points
A =	90 -100	95 -100	91 -100
B =	80 - 89	85 - 94	86 - 90
C =	70 - 79	75 - 84	71 - 85
D =	60 -69	65 -74	75 - 80
F =	below 60	below 65	below 75

Relative Grading

- students are typically ranked in order of performance
- students ranking highest receive a letter grade of A, the next a B, and so on
- what proportion is predetermined
- use of range favored because it makes allowance for differences in ability level of the class
- in advanced courses larger proportion of As and Bs should be assigned and fewer Fs

	Percent of students	Percent of students
A	15	10 - 20
B	25	20 - 30
C	45	40 - 50
D	10	10 - 20
F	5	0 - 10

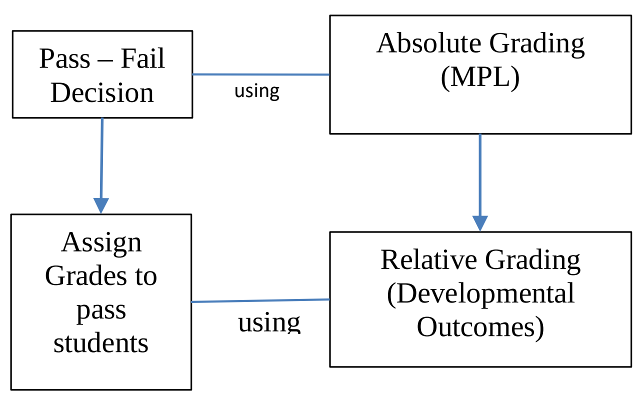
- Older books recommended using normal curve. This resulted in the same percent of **A**s and **F**s (e.g., 7 %) and Bs and Ds (e.g., 38%).
- However it is being discouraged because measures of achievement in classroom seldom yield normally distributed scores.

Combining Absolute and Relative Grading

- Grades should represent the degree of which instructional objectives are achieved by students.
- PASS-FAIL decision should be based on whether or not the minimal objectives have been mastered!
    - Requires ABSOLUTE GRADING
- Above the Pass-Fail cutoff point, grades should be assigned on a relative basis.
    - Why? Because students' scores will tend to be spread out in terms of their degree of development beyond the minimal level.

Minimal objectives - minimum essentials that must be mastered if a student is to proceed to the next level of instruction

Developmental - other outcomes that are never fully achieved but towards which students can show varying degrees of progress.



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Combining Grades:

How much influence each element has in a composite score is determined by the spread, or variability, of scores and not the number of total point.

Assume that we have two measures of achievement and we want to give them equal weight in a grade. Our two sets of achievement scores have score range as follows:

Test Scores	**20 to 100**
Laboratory Score	**30 to 50**

If we simply added together a student's test score and score on laboratory work, the grade would be determined largely by the test score. (composite score does not represent equal weighing)

	Student 1	Student 2
Test scores	100	20
Laboratory score	30	50
Composite score	130	70

What teacher would usually do is to attempt to give equal weight by making the top possible score (for example, multiplying score in laboratory work by 2).

	Student 1	Student 2
Test scores	100	20
Laboratory score (x2)	60	100
Composite score	160	120

Our composite scores make clear that **equalizing the maximum possible score does not provide equal weights** either.

We must **multiply each laboratory score by 4** to equalize the spread of scores and, thus given them equal weight.

	Student 1	Student 2
Test scores	100	20
Laboratory score (x4)	120	200
Composite score	220	220

Combining Grades

1. Select assessments to be included in the composite score and assign percentages.
2. Record desired weight for each assessment.
3. Equate range of scores by using multiplier
4. Determine the weight to apply to each score by multiplying "desired weight" by "multiplier to equate ranges."

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Components		Desired Weight	Range of Scores	Multiplier to Equate Ranges	Weight to Apply to Each Score
1. Test scores	50%	2	20 to 100 (80)	1	2 X 1 = 2
2. Laboratory work	25%	1	30 to 50 (20)	4	1 X 4 = 4
3. Homework	25%	1	0 to 10 (10)	8	1 X 8 = 8

Computing The Composite Scores

Students	Raw Scores 1.	2.	3.		Weighted Scores 1. (x2)	2.(x4)	3.(x8)	Composite 1. (w)+2.(w)+3.(w)
Dave	93	42	8	(143)	186	168	64	418
Derek	84	45	10	(139)	168	180	80	428
Maria	85	47	7	(139)	170	188	56	414
Tricia	95	35	10	(140)	190	140	80	410

Z scores and T scores

To understand Z - scores, let us start with a scenario.

- Kim has a score of 50 in her first exam and a score of 50 in her second exam.
- On which exam did Kim do best?

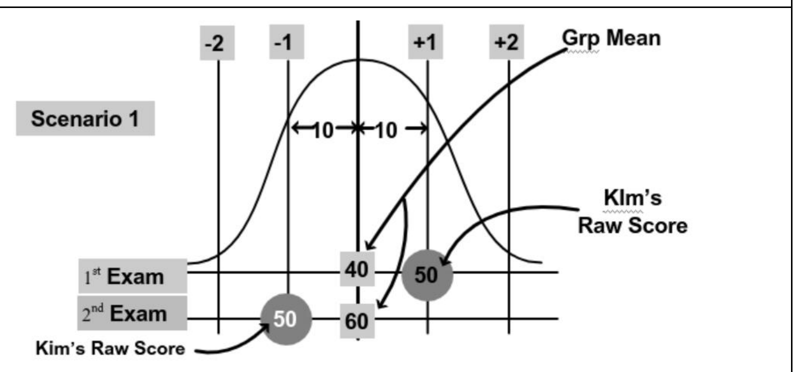
Scenario 1

- In first exam, Kim's exam score is 10 points above the mean.
- In the second exam, Kim's exam score is 10 points below the mean.

z- Scores This score simply indicates, in standard deviation units, how far a given raw score is above or below the mean.

$$\text{z- score} = \frac{\text{Raw score - Mean}}{\text{Standard deviation}}$$

	Kim's z-score in exam 1	Kim's z-score in exam 2
Scenario 1	z= (50-40)/10 = 1 (one SD above the mean)	z= (50-60)/10 = -1 (one SD below the mean)



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<tr>
<td>Scenario 2
• Both exams have same mean (40) but different SD (5 vs 20)</td>
<td>z- Scores

This score simply indicates, in standard deviation units, how far a given raw score is above or below the mean.

Scenario 2: means identical but two sets of score have different spread

Kim's z- score in exam 1
z= (50-40)/5 = 2

Kim's z- score in exam 2
z= (50-40)/20= .5</td>
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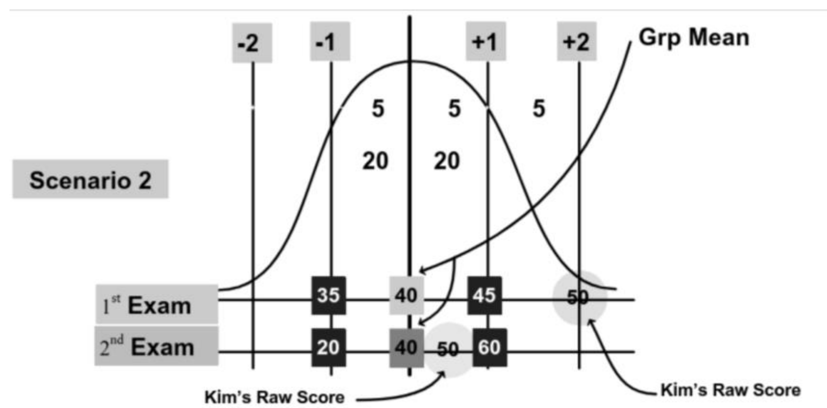
<td>
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<td>T-SCORES</td>
<td>T- Scores have a mean of 50 and standard deviation of 10. They are obtained from z-score by multiplying the z-score by 10 and then adding the result to 50.

T- score = 50 + 10 (z-score)

Scenario 1:
T = 50 + 10 (1.0) = 60
T = 50 + 10 (-1.0) = 40

Scenario 2:
T = 50 + 10 (2) = 70
T = 50 + 10 (.5) = 55</td>
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Major Reference

Gronlund, N. E., & Waugh, K. C. (2012). *Assessment of Student Achievement* . Pearson.

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