New Mexico Common Course Assessment Reports Form

Reporting Institution: Central New Mexico Community College

New Mexico Common Core Area: Area III: Laboratory Science

Competency Number Assessed: (note that *not* all competencies have to be assessed – mark all that apply to this assessment) (link to list of competencies for each area)

State Competency 1 ☑	State Competency 2 ☑	State Competency 3 ☑
State Competency 4 ☑	State Competency 5 ☑	State Competency 6

Academic Year of Assessment: 2013-2014

Submission Date: January 2015

Institution Course Number: BIO 1092, 1492, 1610/1692, & 2192; CHEM 1410 & 1892; EPS 1101; GEOG 1101 & 1192; NS 1010

NM Common Core Number (link to list of NMCC Numbers): BIOL 1113/1111 & BIOL 2513/2511; CHEM 1113 & 1221; ENVS 1113/1111; GEOL 1113/1111

Submitted by: Ursula Waln, Director of Student Learning Assessment

Instructions: Fill in the text boxes in the table below for each course, area, or competency on which you are reporting assessment efforts.

Description of Assessment Procedure:

In Biology, the following internal, direct assessments were used to assess all six competencies: a midterm exam in BIO 2192; final exams in BIO 1092, 1492, 2192, 2292 & 2392; and a project assignment in BIO 1610/1692.

In Chemistry, State competencies 3 (Communicate scientific information) was assessed using a writing assignment in CHEM 1892. This was the first time this assessment was conducted, so this year's results will establish a baseline for future assessment. State competency 5 was assessed using a final exam in CHEM 1410, also establishing baseline data.

In Earth and Planetary Science, State competencies 2 (Solve problems scientifically) and 4 (Apply quantitative analysis to scientific problems) were assessed using test questions on in-class midterm, and final exams for EPS 1101 (Physical Geology) and EPS 1192 (Physical Geology Lab).

For Geography, State competency 5 (Apply scientific thinking to real world problems) was assessed in GEOG 1101, and State competencies 2 (Solve problems scientifically) and 4 (Apply quantitative analysis to scientific problems) were assessed in GEOG 1192. In both cases, this was a first-time assessment, used to establish baseline data. In GEOG 1101, common exam questions on plate tectonics were used for the assessment. In GEOG 1192, assignment or quiz sections had students calculate map scale. Two common word-problem measurement questions were given in all course sections. All assessments were internal and direct.

In Natural Science, baseline data was collected in assessment of State competency 2 (Solve problems scientifically), using lab reports in NS 1010 in which students were required to demonstrat proper operation of laboratory equipment to collect relevant and quality data.

Report of Assessment Data and Results:

Biology: See Addendum 1

Chemistry: In CHEM 1892, 71% of students met or exceeded expectations. In CHEM 1410, the result was a 53% success rate for competency 5.

Earth and Planetary Science: See Addendum 2

Geography: See Addendum 3

Natural Science: 77.5% mastery

Analysis and Interpretation/Reflection on Results or Trends:

Biology:

Students achieved the 70% success mark for all assessments related to State competencies 2, 3 and 5. Although there may have been a drop below 70% in one of the terms for different classes, the average of the 2 terms equaled or exceeded 70%.

CNM outcome 2, corresponding to State competencies 1 (Describe the process of scientific inquiry) & 2 (Solve problems scientifically): Students achieved the 70% success target for assessments in BIO 1610/1692 and BIO 2192. For assessment of this outcome in BIO 1092, students struggled with the assessment question. However, analysis of the question suggested that those that missed the question were having a difficult time differentiating genotype from phenotype. This differentiation was not the primary focus of the problem. Rather than assessing the ability of students to analyze and manipulate genetic information, the issue of phenotype versus genotype was skewing the data. For assessment of this outcome in BIO 1492, students continue to struggle with their understanding of the steps and methods used to extract DNA from onion cells. The assessment committee questioned whether this was a good question for assessment, and felt that an alternative question from the final should be used for assessment. For assessment of this outcome in BIO 2392, students struggled with selecting the appropriate EKG that relates to a specific cardiac pathology. Since this concept is not a general outcomes for the course, it was felt that this question may not be suitable for assessment across courses.

CNM outcome 4, corresponding to State competencies 2 (Solve problems scientifically)& 4 (Apply quantitative analysis to scientific problems): Students achieved the 70% success target for assessments in BIO 1610/1692. For assessment of this outcome in BIO 1092, students struggled with the math. However, the committee felt that the way the question is set-up, an assessment of math is not being accurately performed since the question assesses memorization of the equation in addition to math skills. For assessment of this outcome in BIO 1492, students continue to struggle with metric conversions and cell size estimations. For cell size estimations, it is not clear whether math kills related to calculation of cell size or metric conversion are the issue.
For assessment of this outcome in BIO 2192, Fall 2013 assessment broke cell size estimate into four steps and data showed that students were challenged with calculating field size of microscope and the final metric conversion from millimeters to micrometers. In Spring 2014, only the final answer in micrometers was assessed and students were below the 70% target (64%). This number was similar to the performance by students in Fall 2013, of which 66% got the final answer in micrometers correct. For assessment of this outcome in BIO 2292 and 2392, students showed a dramatic improvement during Spring 2014 compared to Fall 2013. For BIO 2292, student success rose from 44% to 65%. For BIO 2392, student success rose from 31% to 73%.

CNM outcome 6, corresponding ton State competency 5 (Apply scientific thinking to real-world problems): Students achieved the 70% success target for assessment in BIO 2192 and BIO 2292. Assessment of this outcome in BIO 1092 suggested that students do not understand the difference between phenotype and genotype. This was felt to create a problem with correctly assessing the learning outcome.

Chemistry:

We were satisfied that 71% met or exceeded the expecation for communicating scientific information.

It is unclear if the success rate in CHEM 1410 was low because students' ability to apply scientific thinking to real-world problems was low or because the measurement tool (the final exam) didn't assess the competency well.

Earth and Planetary Science:

In year 1 of the 5-year assessment cycle, EPS faculty members successfully assessed Gen Ed outcomes #3 and #4 for both EPS 1101 and 1192, planned how they would measure the outcome (test questions), administered the assessment tools, and collected results. In year two, faculty will analyze Year 1 results, re-plan and make changes, and do it again.

Geography:

GEOG 1101: Scores might be improved by asking more general plate-tectonic related questions. There will be both a pre-test and post-test given during future assessments. Please see Addendum 3 regarding results for example of updated assessment questions.

GEOG 1192: Many students continue to have problems with slope (rise/run) calculations. Might be a problem with thinking spatially: vertical versus horizontal: thinking 3-D to 2-D. It is relatively easy to measure from point A to point B but to then throw slope in, this gets to be the confusing part especially when applying our 3-D thinking to 2-D viewing (a map from above), not the normal human way of perceiving our world. We see 3-D and cross section view versus a 2-D plan/map view.

Natural Science:

77.5% of the students assessed earned an 80% or higher on the lab report assignment.

Plan for Improving the Assessment Process and/or Student Learning:

Biology:

CNM outcome 2, corresponding to State competencies 1 (Describe the process of scientific inquiry) & 2 (Solve problems scientifically): For BIO 1092, the action plan is to ask faculty teaching BIO 1092 the associated lecture BIO 1010 to provide more stress on this topic in their courses, and to increase the assessment of these concepts on weekly quizzes. For BIO 1492, the action plan is for course coordinators to look for an alternative question to assess GE2.

CNM outcome 4, corresponding to State competencies 2 (Solve problems scientifically)& 4 (Apply quantitative analysis to scientific problems): For BIO 1092, the action plan is to provide the students with the equation within the assessment question. This will then assess the ability of the students to put the correct data into the equation and perform the math accurately. For BIO 1492, the action plan will include the use of online quizzing programs and a stronger emphasis of scientific conversions in the newly updated lab manual. In addition, the cell size estimation problem will be assessed in multiple steps. The first step of equation set-up will remain the same. The calculation will be divided into calculation of cell size first and then conversion to mm. This will help to determine if general math skills or scientific conversion or both are the issue.
For BIO 2192, the action plan is to continue emphasizing the math skills related to this assessment outcome.

CNM outcome 6, corresponding ton State competency 5 (Apply scientific thinking to real-world problems): The action plan for BIO 1092 is to revise the question to remove the emphasis from understanding genotype versus phenotype. The question will not relate specifically to their ability to analyze genetic information and calculate the percentage of offspring with a particular trait.

Chemistry:

In future assessment of this outcome, collect and cross reference data from students regarding which English classes they have successfully completed.

Earth and Planetary Sciences:

Recommend that CNM fund Geology tutors at all CNM campuses offering EPS 1101 and/or EPS1192.

Geography:

Continue to assess.

Natural Science:

This was a baseline year for State competency 2, and our results are good so we are expecting the same numbers this coming assessment cycle.

Addendum 1: Biology Assessment Data and Results:

GE1 Employ critical thinking skills to judge the validity of information from a scientific perspective.

BIO 1492: Interpret DNA Fingerprint to determine mostly likely adult to be parent F13=95%; SP14=94%

BIO 1610/1692:

3. What do you conclude about your prediction in question 2 from these results from Visser (2012). Explain. SP14=90%
5. What do you conclude about your prediction in question 4 from these results from Visser (2012). Explain. SP14=88%
7. What do you conclude about your prediction in question 6 from these results from Visser (2012). Explain. SP14=86%
10. What do you conclude about your prediction in question 8 from these results from Visser (2012). Explain. SP14=90%
11. Considering the above discussion and results, what do you conclude about the initial overall hypothesis that the *HERC2* intron 86 rs12913832 T/C SNP influences eye color variation because it leads to variation in its ability to bind the transcription factor HLTF and act as an enhancer at the *OCA2* promoter? Explain. SP14=84%

BIO 2192: Do the results of your selective media support your gram stain? Midterm F13=81%; SP14=88%

BIO 2292: Judge the validity of the statement. F13=74.4%; SP14=67.2%

BIO 2392: Pick the statement --- RE female fertility F13=81.4%; SP14-86.7%

GE2 Apply the scientific method to formulate questions, analyze information/data and draw conclusions.

BIO 1092: You decide to compare oxygen consumption in two sets of rats. The first group contains normal rats. In the second group of rats, you surgically remove the thyroid gland of each rat (referred to as thyroidectomy). You measure oxygen consumption for one hour each week during the rats' regular activities. You compare oxygen consumption of both groups to determine if the removal of the thyroid gland has any effect on how much oxygen is consumed. Each rat is 2 years old and consumes 6 grams of food and 15 milliliters (ml) of water each day. Answer the following questions about this experiment:

1A. What is the independent variable? F13=62%; SP14=71%
1B. What is the dependent variable? F13=60%; SP14=69%
1C. What is one controlled variable? F13=76%; SP14=79%

BIO 1492: Methodology for extracting DNA from onion cells F13=53%; SP14=51%

1610/1692:

2. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of this region to act as an enhancer at the *OCA2* promoter relative to the T-allele, what would you predict about the rate of expression of *OCA2* mRNA transcripts in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? Explain. SP14=88%
3. What do you conclude about your prediction in question 2 from these results from Visser (2012). Explain. SP14=90%
4. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of this region to act as an enhancer at the *OCA2* promoter relative to the T-allele, what would you predict about the rate of binding of RNA polymerase II to the *OCA2* promoter in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? Explain. SP14=90%
5. What do you conclude about your prediction in question 4 from these results from Visser (2012). Explain. SP14=88%
6. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of the rs12913832 region to bind HLTF and thus to act as an enhancer at the *OCA2* promoter relative to the T-allele, what would you predict about the rate of binding of HLTF to the hypothesized enhancer element in the *HERC2* rs12913832 region in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? Explain. SP14=88%
7. What do you conclude about your prediction in question 6 from these results from Visser (2012). Explain. SP14=86%
8. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of the rs12913832 region to interact with the *OCA2* promoter as an enhancer relative to the T-allele, what would you predict about the frequency of interaction of the *HERC2* rs12913832 region with the *OCA2* promoter in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? In other words, how frequently do you expect the

rs12913832 region to be found looped out to the *OCA2* promoter region with the C-allele, relative to the T-allele? You would have drawn this looping interaction for the T-allele in question 1. Explain. SP14=86%

10. What do you conclude about your prediction in question 8 from these results from Visser (2012). Explain. SP14=90%
11. Considering the above discussion and results, what do you conclude about the initial overall hypothesis that the *HERC2* intron 86 rs12913832 T/C SNP influences eye color variation because it leads to variation in its ability to bind the transcription factor HLTF and act as an enhancer at the *OCA2* promoter? Explain. SP14=84%
BIO 2192: Based on your Gram stain, formulate a hypothesis about the growth of your organism on MacConkey agar. MIDTERM F13=82%; SP14=82%
BIO 2392: Select the ECG F13=51%; SP14=74.5%

GE3 Properly operate laboratory equipment to collect relevant and quality data.
BIO 1492: Use microscope to identify a state of mitosis in cells F13=76%; SP14=86%
BIO 2192: Gram Stain Technique MIDTERM F13=84% SP14=82%
BIO 2292:
Microscope Use: Bring an osteon into focus ---> Proper use of microscope F13=90.0%; SP14=92.2
Bring an osteon into focus ---> locate the osteon F13: data lost; SP14=92.2%
Return scope to put-away state F13=86.7%; SP14=87.6%
BIO 2392:
Proper use of scopes (focused at 400x)_Bring a glomerulus into focus at 400x magnification. F13=96.1%; SP14=95.8%
Located the structure- Bring a glomerulus into focus at 400x magnification. F13=85.3%; SP14=97.9%
Return the microscope to a state where it could be put away. F13=100%; SP14=97.9%

GE4 Utilize mathematical techniques to evaluate and solve scientific problems.
BIO 1092: Maria is at Defined Fitness, and she has just finished a 15-minute run on the treadmill. Before she got on the treadmill her heart rate was 77 beats per minute. Now, after 15 minutes of exercise, it is 139 beats per minute. What is the percent change for Maria's heart rate? (Include a plus sign or a minus sign to indicate the direction of the change.) F13=67%; SP14=63%
BIO 1492 Scientific conversion F13=53%; SP=46%
BIO 1492 Cell size estimation equation Set-up F13=64%; SP14=59%
BIO 1492 Calculation of cell size estimation and convert answer to mm F13=71%; SP14=56%
BIO 1610/1692: Reading a graph 9. Examining the above figure, what is the relative frequency of association of the HERC2 region with the OAC2 promoter region for chromosomes with the T allele and chromosomes with the C-allele? SP14=100%
BIO 2192:
Determine the field size of your microscope at 1000x total magnification. MIdterm F13= 67%
Write down the formula for estimating cell size. MIdterm F13= 75%
Estimate the approximate size of your organism in millimeters. MIdterm F13= 70%
What is the estimated cell size of your organism in micrometers. MIdterm F13=66% Midterm SP14=64%

BIO 2292: Cell Size Estimation F13=44.4% SP14=65%

BIO 2392: Size of Glomerulus F13= 31.4% SP14: 73.2%

GE5 Communicate effectively about scientific ideas and topics, in both oral and written formats.

BIO 1610/1692:
2. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of this region to act as an enhancer at the *OCA2* promoter relative to the T-allele, what would you predict about the rate of expression of *OCA2* mRNA transcripts in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? Explain. SP14=88%
3. What do you conclude about your prediction in question 2 from these results from Visser (2012). Explain. SP14=90%
4. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of this region to act as an enhancer at the *OCA2* promoter relative to the T-allele, what would you predict about the rate of binding of RNA polymerase II to the *OCA2* promoter in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? Explain. SP14=90%
5. What do you conclude about your prediction in question 4 from these results from Visser (2012). Explain. SP14=88%
6. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of the rs12913832 region to bind HLTF and thus to act as an enhancer at the *OCA2* promoter relative to the T-allele, what would you predict about the rate of binding of HLTF to the hypothesized enhancer element in the *HERC2* rs12913832 region in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? Explain. SP14=88%
7. What do you conclude about your prediction in question 6 from these results from Visser (2012). Explain. SP14=86%
8. If the *OCA2-HERC2* C-allele has its influence on the development of blue iris color through decreasing the ability of the rs12913832 region to interact with the *OCA2* promoter as an enhancer relative to the T-allele, what would you predict about the frequency of interaction of the *HERC2* rs12913832 region with the *OCA2* promoter in melanocytes homozygous for the C-allele compared to those homozygous for the T-allele? In other words, how frequently do you expect the rs12913832 region to be found looped out to the *OCA2* promoter region with the C-allele, relative to the T-allele? You would have drawn this looping interaction for the T-allele in question 1. Explain. SP14=86%
10. What do you conclude about your prediction in question 8 from these results from Visser (2012). Explain. SP14=90%
11. Considering the above discussion and results, what do you conclude about the initial overall hypothesis that the *HERC2* intron 86 rs12913832 T/C SNP influences eye color variation because it leads to variation in its ability to bind the transcription factor HLTF and act as an enhancer at the *OCA2* promoter? Explain. SP14=84%
BIO 2192: Unknown final report discussion (70% minimum score). FINAL EXAM F13=69%; SP14=87%
BIO 2292:
Predict action at joint when tape muscle is moved. F13=61.7% SP14=78.9%
Predict action at joint when tape muscle is moved. F13=66.7%; SP14=83.3%
BIO 2392:
Can Bethany receive Bubba's blood? F13=65.7%; SP14=72.5%

GE6 Relate science to personal, social or global impact.
BIO 1092: Suppose both Mom and Dad are able to roll their tongues. Mom is RR and Dad is Rr. What phenotypes are possible among their offspring? F13=63%; SP14=65%
BIO 2192: Unknown final report introduction (70% minimum score) F13=85%; SP14=92%
BIO 2292: Combat veterans who suffer injury to the occipital lobe of the brain will have _____. F13=75%; SP14=67.2%
BIO 2392: Prediction ---> Can Bethany receive Bubba's blood? F13=67.3%; SP14=67.3%

Addendum 2: Earth and Planetary Science Assessment Data and Results:

EPS Gen-Ed Outcome Data: Assessment Year 1

Fall 2013 through Summer 2014

Class EPS1101

Outcome#4

Question: If you start out with a mineral that has 1,000 atoms of a particular unstable (radioactive) isotope, how much of that unstable isotope remains after 3 half lives

a. 500 atoms
b. 250 atoms
c. 125 atoms
d. 62.5 atoms
e. 0

Results

			Number Testing	Number of Correct Scores	Percentage Correct
Fall 2013	**EPS1101 001**	**J.Rogers**	**41**	**35**	**85**
Fall 2013	**EPS1101 301**	**R.Weaver**	**38**	**27**	**71**
Spring 2014	**EPS1101 001**	**J.Rogers**	**36**	**32**	**89**
Spring 2014	**EPS1101 301**	**J.Rogers**	**35**	**24**	**69**
Summer 2014	**EPS1101 101+301**	**R.Weaver**	**56**	**41**	**73**

Class: EPS1192

Outcome#3

Question: 1) Determine the mass of a mystery sample

Results

			Number Testing	Number of Correct Scores	Percentage Correct
Fall 2013	**EPS1192 101**	**J.Rogers**	**21**	**18**	**86**
Fall 2013	**EPS1192 301**	**R.Weaver**	**24**	**18**	**75**
Spring 2014	**EPS1192 101**	**J.Rogers**	**20**	**17**	**85**
Spring 2014	**EPS1192 301+302**	**R.Weaver**	**31**	**24**	**77**
Summer 2014	**EPS1192 101+301**	**R.Weaver**	**29**	**22**	**76**

Outcome#4

Question: 2) Activity 2.4 C 2 (unit conversion)

Fall 2013	**EPS1192 101**	**J. Rogers**	**21**	**17**	**81**
Fall 2013	**EPS1192 301**	**R. Weaver**	**24**	**15**	**63**
Spring 2014	**EPS1192 101**	**J. Rogers**	**20**	**15**	**75**
Spring 2014	**EPS1192 301+302**	**R. Weaver**	**31**	**20**	**65**
Summer 2014	**EPS1192 101+301**	**R. Weaver**	**29**	**21**	**72**

EPS Gen-Ed Outcome Data: Assessment Year 1

Fall 2013 through Summer 2014

Class EPS1101

Outcome#4

Question: If you start out with a mineral that has 1,000 atoms of a particular unstable (radioactive) isotope, how much of that unstable isotope remains after 3 half lives

a. 500 atoms
b. 250 atoms
c. 125 atoms
d. 62.5 atoms
e. 0

Results

			Number Testing	Number of Correct Scores	Percentage Correct
Fall 2013	**EPS1101 001**	**J.Rogers**	**41**	**35**	**85**
Fall 2013	**EPS1101 301**	**R.Weaver**	**38**	**27**	**71**
Spring 2014	**EPS1101 001**	**J.Rogers**	**36**	**32**	**89**
Spring 2014	**EPS1101 301**	**J.Rogers**	**35**	**24**	**69**
Summer 2014	**EPS1101 101+301**	**R.Weaver**	**56**	**41**	**73**

Class: EPS1192

Outcome#3

Question: 1) Determine the mass of a mystery sample

Results

			Number Testing	Number of Correct Scores	Percentage Correct
Fall 2013	**EPS1192 101**	**J.Rogers**	**21**	**18**	**86**
Fall 2013	**EPS1192 301**	**R.Weaver**	**24**	**18**	**75**
Spring 2014	**EPS1192 101**	**J.Rogers**	**20**	**17**	**85**
Spring 2014	**EPS1192 301+302**	**R.Weaver**	**31**	**24**	**77**
Summer 2014	**EPS1192 101+301**	**R.Weaver**	**29**	**22**	**76**

Outcome#4

Question: 2) Activity 2.4 C 2 (unit conversion)

Fall 2013	**EPS1192 101**	**J. Rogers**	**21**	**17**	**81**
Fall 2013	**EPS1192 301**	**R. Weaver**	**24**	**15**	**63**
Spring 2014	**EPS1192 101**	**J. Rogers**	**20**	**15**	**75**
Spring 2014	**EPS1192 301+302**	**R. Weaver**	**31**	**20**	**65**
Summer 2014	**EPS1192 101+301**	**R. Weaver**	**29**	**21**	**72**

Addendum 3: Geography Assessment Data and Results: GEOG 1101

The Pacific "ring of fire" refers to the _____.

A) Azores Islander's & their love for the Johnny Cash tune
B) subduction zones on the ocean floor
C) flood basalts
D) volcanoes around the Pacific Ocean
E) the Hawaiian Islands

Since the 1960s, the cause of plate tectonics has been identified to be _____.

A) convection
B) warping
C) diastrophism
D) uniformitarianism
E) sun spots

The first comprehensive theory of continental drift was propounded by _____.

A) Sagan B) Wegener C) Köppen D) Wallace E) Darwin

Overall Results: 16 sections reporting, scores averaged then averaged again.

Question # 1: 93%

Question # 2: 85%

Question # 3: 91%

Next round of assessment qustions will be changed to the following:

Geog 1101: 2014-2015 common assessment questions
Please use these questions on both a pre-test and a post-test during the semester and report results at the end of the assessment cycle.

1) If you travel away from a midocean ridge you will find _____.

A) increasingly older rocks
B) increasingly younger rocks
C) the seafloor is drifting opposite to your direction of motion
D) more and more earthquakes
E) little evidence of paleomagnetic reversals of the poles

2) Research since the 1970s has identified the cause of plate tectonics to be _____.
A) diastrophism
B) convection
C) sun spots
D) warping
E) uniformitarianism

3) The Himalayas were formed by crumpling of plate edges in a _____ zone.
A) transcurrent
B) divergent
C) convergent
D) rift
E) basalt

GEOG 1192

The following two questions are based on Map 1 (The smaller scale side 1:15,840' side of the "Sandia Mountain Cross Country Skiing Map". There are hard copies of the map that will be available during the final. PLEASE LET ME KNOW IF THERE ARE MAPS MISSING AT ANY CAMPUS (MAIN & MONTOYA R OK< NOT SO SURE ABOUT WS CAMPUS).

Locate the word "restaurant" in the SW corner of the map (along Sandia Crest in the NW quarter of Section 8).

Measure 1" to the west & 1 inch to the east (keeping ruler in horizontal alignment with the word "restaurant" of the black dot that represents the actual restaurant.

1) On this map, what does one inch equal in terms of miles on the ground? _____

2) Calculate the slope both east & west of the restaurant symbol. Show your calculations. You may show your answers as a decimal, a percent, or as elevation change per mile.

a: East Slope =

___/ ____= ____

b. West Slope =

___/ ____= ____

3) Which side is steeper? _____

Results of Question: All scores added, averaged, then averaged again.

1: Overall score from 8 sections reported: 84%

2: Overall score from 8 sections reporting: 78%