Idaho State University
College of Education

Teacher Work Sample Cover Sheet

Name: ___Camille_____ Student Number: _____

Degree Program: _____ Elementary _X__ Secondary

Components: _____

(Or) Teaching Major: Mathematics Teaching Minor: History

Course: EDUC 309 _ _ EDUC 402 __X__

Instructor: ___Julie Newsome___ Date Submitted: _October 15, 2007__

Field Placement (School and District): Preston High School: Preston School District # 201

TWS Grade Level(s): __9th-12th Grade_ TWS Content Area(s): _Geometry_

I affirm and testify that all materials included in this teacher work sample were completed by me this current semester and are not identical to my own previous work.
I understand that submission of materials identical to those of another teacher education student will constitute academic dishonesty and that both of us may be dismissed from the teacher education program.

Signature:_____ Date: __10-15-07

As specified in the Assessment Consent section in your course syllabus, if your performance assessments are used to demonstrate program accountability, then your identity will be protected or disguised. Your signature below provides permission to disclose your identity in order to give you credit for your performance.

Signature:_____ Date: __10-15-07

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A. Description and Analysis of the Learning-Teaching Context

Preston High School: Geometry

Demographic Chart

Total # of Students	15	
	Males	**Females**
Total #	7	8
With Disabilities	0	0
English Language Learners (ELL)	0	0
Native American / Alaskan Native	0	0
Asian	0	0
Black	0	0
Hispanic	0	0
Native Hawaiian / Pacific Islander	0	0
White or Caucasian	7	8
Other (Multi-racial / Multi-ethnic)	0	0
Free or Reduced Lunch	3*	3*

*Figure is based from the percentage of the entire school

School Community Characteristics:

Preston High School (PHS) is located in Preston, Idaho which has a population of approximately 4,600 people. The school consists of six different buildings housing different subject areas. There are separate buildings for the music, art, and agriculture, and math programs. This impacts student learning because there are only math classes being held in the math building☺ ☻. Therefore, there is less distraction from what the class across the hall is doing. This also impacts my teaching because the math teachers are located close together, which makes collaboration easier.

PHS has a time set aside every day before first period called Enrichment. This is a time when teachers are expected to be in their classrooms and students can come in to get extra help if they need it. Enrichment impacts my teaching because it gives me the opportunity to get some one-on-one time with struggling students during the school day but outside of class. Many students struggle with math so this impacts☻ their learning because they have a chance to get answers to their individual questions without the intimidation of their peers in class.

There is a math track in place for the students who go through Preston High School. The track each student takes depends on whether or not they passed the previous class. The classes offered range from Basic ISAT math to AP Statistics and Calculus. The upper classes are concurrent enrollment classes through Utah State University. This impact ☻ s my teaching because I will have to teach a combination of these classes which will require both a lot of preparation and individual adaptations. This math track impacts student learning because they are required to pass the class they are taking before being able to move on.

Classroom Characteristics:

The classroom I am in is very organized. The desks are arranged in rows that are only five desks deep and face the white board and Smartboard. This arrangement ☻ impacts student learning because the students sitting in the back are still able to see the front of the classroom. However, the desks also face the two doors so the students can see everyone who is passing in the hall. This impacts student learning because the students are more likely to be distracted by what is happening outside the classroom.

There is a lot of technology available in this classroom. There is a Smartboard, projector, blue clickers, eight student computers, and the teacher's computer. This impacts ☻ my teaching because there are endless possibilities with what I can do to present material in the classroom. Many adaptations can be made for students with special needs on both ends of the spectrum using this technology. Technology also impacts student learning because it is new and exciting ☻, students are comfortable with using it, and like to use it as a learning tool. Also, there is the opportunity for more practice using the student computers when a student is struggling with something in class. This class also has its own website ☻ where students and parents can download class notes, homework assignments, and check grades. This helps keep

students and parents up to date about what is going on in class each day, impacting student learning.

Preston High School is run on block schedule. Therefore, there are A and B days with 84 minute class periods. This impacts my teaching because students will often tune out after sitting that long. Therefore, I must not be afraid to try something new every once in a while. In addition, there is an extra day between when homework is assigned and when it is due. This impacts ☻ student learning because students must be more responsible and disciplined about completing their homework.

Student Characteristics

This class is made up of 15 students: seven males and eight females. There is a mix of students consisting of three freshmen, ten sophomores, no juniors, and two seniors. Therefore, students range from fourteen to eighteen years old. ☻ This impacts student learning because the freshmen are nervous and unsure of themselves in the new high school environment while the seniors are comfortable and used to it. Therefore, the seniors are more outspoken than their underclassmen. Because this class is small, this impacts my teaching because there is more one-on-one time with the students and more opportunity for trying new things in the classroom.

It is interesting to find that this entire class is white or Caucasian. This means there is a lack of cultural diversity in this classroom. This impacts my teaching because I must be careful to realize that every student is different and has different needs and abilities, even though they may look like those around them ☻ ☻. This also impacts student learning because there is less opportunity to learn about different cultures by simply conversing with their classmates.

There are two students who make up my subgroup. These two students are the only two seniors in the class. I will refer to them as Student A and Student B. Although neither of them is

on an Individual Education Plan (IEP) nor has any identified special needs, they both struggle with math. This is evidenced by being placed in Geometry as a senior according the math track in place at Preston High School. This impacts ☻ my teaching because I will need to make adaptations to try to help them understand the material and succeed in passing the class.

B. Achievement Targets

Targets

1. Students will know and understand the vocabulary concerning parallel and perpendicular lines. (Knowledge)
2. Students will use properties of parallel lines to determine angle measures. (Reasoning)
3. Students will use slopes of lines to identify parallel and perpendicular lines. (Knowledge)
4. Students will prove two lines parallel based on given angle relationships. (Reasoning)
5. Students will use blue clicker technology to aid in learning. (Performance)

Rationale

Target One is developmentally appropriate because students this age have passed through Piaget's preoperational stage in which children have "an intuitive grasp of logical concepts in some areas" (Child Development Institute, LLC, 2006). Students can learn vocabulary because they are "able to use language and words to represent things not visible" (SUNY Cortland, 2006). This target is also in line with my classroom teacher's long-range instructional goal. He wants his students to have a better understanding of the mathematical language and how it is used because they will use it again in later math courses. Target One aligns with Idaho's standards for tenth grade mathematics 10.M.1.1.6 which states that students will "use appropriate vocabulary" (Board of Education, 2007, p. 1).

Target Two is developmentally appropriate because students this age are currently in Piaget's period of formal operations where their thoughts become more abstract, and they are able to work through problems using logic. Students are able to "generate abstract propositions, multiple hypotheses and their possible outcomes is evident" (Child Development Institute, LLC,

2006). Therefore, students can use known properties of parallel lines to determine angle measurements.

Target Two aligns with my cooperating teacher's (CT's) long-range goal of covering the required material to prepare the students for the Idaho State Achievement Test (ISAT). It is also in line with state standard 10.M.4.1.2 which requires students to be able to "recognize and use similarity as it relates to size variations in two- and three- dimensional objects" (Board of Education, 2007, p. 5).

Similar to Target Two, Target Three is developmentally appropriate because students are in Piaget's formal operation stage. They are able to think abstractly enough to use the slope of lines to determine if they are parallel or perpendicular. Target Three is in line with my CT's goal of covering the material up through Unit five by the end of the semester to keep up with the whole math department. It also aligns with state standard 10.M.4.4.3 which says students will "interpret attributes of linear relationships such as slope, rate of change, and intercepts" (Board of Education, 2007, p. 7).

Target Four is developmentally appropriate according to Jean Piaget's formal operational stage. In this stage a child is "able to think abstractly and to understand the form or structure of a mathematical problem" (SUNY Cortland, 2007). Therefore, students are able to work a problem to prove lines parallel because they understand the logic behind it. It is in line with my CT's goal of covering a certain amount of material this semester to prepare the students for the ISAT and well as later math courses. This target aligns with state standard 10.M.4.5.1 which says students will "use logic to make and evaluate mathematical arguments" (Board of Education, 2007, p. 6).

Target Five is developmentally appropriate according to Piaget's concrete operational stage that says that students need concrete objects to learn something new and receive immediate feedback (Lin, 2002). Target Five is in line with my CT's goal of having students use technology in the classroom to bring variety to teaching and help them learn the material. This target aligns with the International Society for Technology in Education (ISTE) standard 3 for students which states "students use technology tools to enhance learning, increase productivity, and promote creativity" (ISTENets, 2007).

C. Assessment Plan

Achievement Target	Assessments	Rationale	Modifications/Adaptations
Achievement Target 1 Students will know and understand the vocabulary concerning parallel and perpendicular lines. (Knowledge) Criteria for Target to be met is 70%. Criteria was determined by a conversation with my CT.	**Pre-Assessment:** Selected Response (Multiple Choice) **Interim Assessment**: Selected Response (Multiple Choice, Fill-in) **Post-Assessment:** Selected Response (Multiple Choice, Fill-in)	**Pre-Assessment**: Stiggins (2005) says that selected response can show mastery of a knowledge target. **Interim Assessment**: Stiggins (2005) says that selected response can show mastery of a knowledge target. **Post-Assessment**: Stiggins (2005) says that selected response can show mastery of a knowledge target.	**Pre-Assessment:** No adaptations made for Student A or B. **Interim Assessment:** Walk around the room and monitor Student A and B progress. Answer questions they may have. **Post-Assessment:** Clarify any instructions that may be unclear for Student A and B.
Achievement Target 2 Students will use properties of parallel lines to determine angle measures. (Reasoning) Criteria for Target to be met is 70%. Criteria was determined by a conversation with my CT.	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Personal Communication (in-class questions) Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)	**Pre-Assessment**: Stiggins (2005) says that selected response "can assess application of some patterns of reasoning" (p. 69). **Interim Assessment**: According to Stiggins (2005), you "can ask students to 'think aloud' or can ask follow up questions to probe reasoning" (p. 69). Stiggins (2005) says that teachers "can assess application of some patterns of reasoning" (p. 69). **Post-Assessment**: Stiggins (2005) says that selected response "can assess application of some patterns of reasoning" (p. 69).	**Pre-Assessment:** No adaptations made for Student A or B. **Interim Assessment:** Ask Student A questions to keep him involved. Allow enough wait time ☻ for Student B. Make sure Student A and B are following the lesson. **Post-Assessment:** Walk around and monitor Student A and B progress.
Achievement Target 3 Students will use slopes of lines to identify parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Fill-in)	**Pre-Assessment**: Stiggins (2005) says that selected response can show mastery of a knowledge target.	**Pre-Assessment:** No adaptations for Students A or B.

Criteria for Target to be met is 70%. Criteria was determined by a conversation with my CT.	**Interim Assessment**: Selected Response (Multiple Choice) **Post-Assessment:** Selected Response (Fill-in)	**Interim Assessment**: Stiggins (2005) says that selected response can show mastery of a knowledge target. **Post-Assessment**: Stiggins (2005) says that selected response can show mastery of a knowledge target.	**Interim Assessment:** Allow enough wait time for Student A and B to answer questions. **Post-Assessment:** Clarify any instructions for Student A and B. Walk around and monitor progress.
Achievement Target 4 Students will prove two lines parallel based on given angle relationships. (Reasoning) Criteria for Target to be met is 70%. Criteria was determined by a conversation with my CT.	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Personal Communication (in-class questions) Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)	**Pre-Assessment**: Stiggins (2005) says that teachers "can assess application of some patterns of reasoning" (p. 69). **Interim Assessment**: According to Stiggins (2005), you "can ask students to 'think aloud' or can ask follow up questions to probe reasoning" (p. 69). Stiggins (2005) says that teachers "can assess application of some patterns of reasoning" (p. 69). **Post-Assessment**: Stiggins (2005) says that teachers "can assess application of some patterns of reasoning" (p. 69).	**Pre-Assessment:** No adaptations made for Student A or B. **Interim Assessment:** Model writing proofs for Student A and B. Ask questions to make sure both are following the lesson. **Post-Assessment:** Walk around and monitor Student A and B progress.
Achievement Target 5 Students will use blue clicker technology to aid in learning. (Performance) Criteria for Target to be met is 100%. Criteria was determined by a conversation with my CT.	**Pre-Assessment:** None **Interim Assessment:** Performance (blue clickers) **Post-Assessment:** Performance (blue clickers)	**Pre-Assessment:** None **Interim Assessment:** Stiggins (2005) says that teachers "can observe skills as they are being performed" (p. 69). **Post-Assessment:** Stiggins (2005) says that teachers "can observe skills as they are being performed" (p. 69).	**Pre-Assessment:** None **Interim Assessment:** No adaptations for Student A or B. **Post-Assessment:** No adaptations for Student A or B.

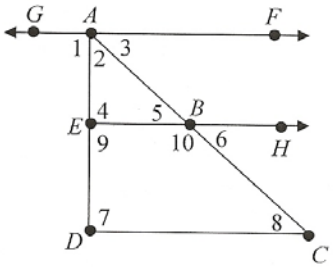
Pre- and Post-Assessment for Target 1, 2, 3, and 4: Selected Response

Name Key +52
Date
Period
Test 2

Mr. Smith
Geometry

Carefully read the directions for each set of problems. You must show your work for full credit. Circle your answers where appropriate.

For 1-4, refer to the figure at right.



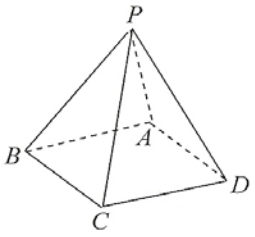
1. Identify the relationship between angles $\angle 1$ and $\angle 4$. Circle one. (1 point)
   a) Consecutive interior b) corresponding c) vertical d) alternate interior

2. Given $\overline{GF} \parallel \overline{EH}$ and $m\angle 3 = 47$, find $m\angle 5$. (2 points) 47

3. Given $\overline{EH} \parallel \overline{DC}$ and $m\angle 10 = 10x + 2$ and $m\angle 8 = 4x + 10$, find the value of x. (3 points)
   $10x+2+4x+10=180$
   $14x+12=180$
   $14x=168$
   $x=12$

4. Given $m\angle 3 = 9x + 1$ and $m\angle 8 = 64$, find the value of x so that $\overline{GF} \parallel \overline{DC}$. (3 points)
   $9x+1=64$
   $9x=63$
   $x=7$

For 5-7, use the figure at right.



5. Name a plane that is parallel to plane ABC. (2 points) None

6. Name all segments parallel to $\overline{BC}$. (2 points) $\overline{AD}$

7. Name all segments skew to $\overline{AB}$. (2 points) $\overline{DP}$ & $\overline{CP}$

For 8-11, find the slope of the line passing through points having the given coordinates. Then describe the line as you move from left to right as *rising, falling, horizontal, or vertical*. (4 points each)

8. $(5,-3),(8,2)$
   $m=\frac{-3-2}{5-8}=\frac{-5}{-3}$
   $m=\frac{5}{3}$ rising

9. $(5,8),(5,4)$
   $m=\frac{8-4}{5-5}$
   $m=\frac{4}{0}$
   Undefined Vertical

10. $(3,-6),(2,-6)$
    $m=\frac{-6-(-6)}{3-2}$
    $m=\frac{0}{1}$
    $m=0$ horizontal

11. $(-4,0),(1,-5)$
    $m=\frac{-5-0}{1-(-4)}=\frac{-5}{5}$
    $m=-1$ falling

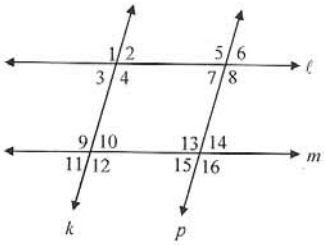
12. Find the slope of a line perpendicular to the line that passes through the points $(3,-2),(5,1)$. (3 points)

$m = \frac{-2-1}{3-5} = \frac{-3}{-2} = \frac{3}{2}$ $\boxed{-\frac{2}{3}}$

13. Find the slope of a line parallel to the line that passes through the points $(0,-6),(-2,-3)$. (3 points)

$\frac{-6-(-3)}{0-(-2)} = \boxed{-\frac{3}{2}}$

For 14-16, use the figure at right.



14. Given $\angle 4$ and $\angle 10$ are supplementary, which lines are parallel and why? (3 points)

$\ell \| m \rightarrow$ consecutive angles supplementary

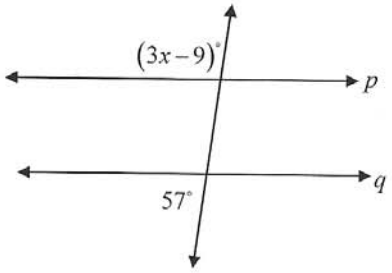
15. Given $\angle 3 \cong \angle 7$, which lines are parallel and why? (3 points)

$k \| p \rightarrow$ corresponding angles $\cong$

16. Given $\angle 12 \cong \angle 13$, which lines are parallel and why? (3 points)

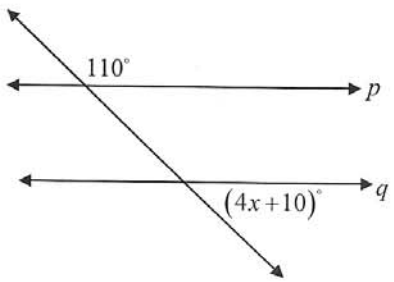
$k \| p \rightarrow$ alternate interior $\cong$

17. Find the value of x so that $p \| q$ (3 points)



$3x-9+57=180$
$3x+48=180$
$3x=132$
$\boxed{x=44}$

18. Find the value of x so that $p \| q$ (3 points)



$4x+10+110=180$
$4x+120=180$
$4x=60$
$\boxed{x=15}$

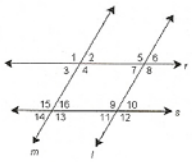
Interim Assessment for Target 1: Selected Response

Homework
Parallel Lines and Transversals

Describe each of the following as *intersecting, parallel, or skew.*

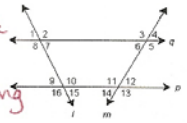
1. Yard lines on a football field parallel
2. ceiling and wall of a room line
3. a flag pole in a park and a road that runs along the edge of the park. skew
4. the service lines on a tennis court parallel

Determine whether each statement is *true* or *false*. Explain your reasoning.



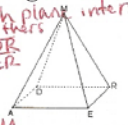
5. line m is a transversal for lines r and s. true
6. $\angle 4$ and $\angle 9$ are consecutive interior angles. false
7. $\angle 14$ and $\angle 10$ are alternate exterior angles. true
8. $\angle 2$ and $\angle 16$ are corresponding angles. true
9. $\angle 7$ and $\angle 10$ are alternate interior angles. true
10. $\angle 13$ and $\angle 11$ are formed by lines l and m and transversal r. false

State the transversal that forms each pair of angles. Then identify the special name for the angle pair.



11. $\angle 6$ and $\angle 7$ q; consecutive
12. $\angle 16$ and $\angle 2$ l; Alt. ext.
13. $\angle 13$ and $\angle 5$ m; corresponding
14. $\angle 8$ and $\angle 10$ l; Alt. int.
15. $\angle 11$ and $\angle 15$ p; Alt. int. 16. $\angle 4$ and $\angle 8$ q; Alt. ext.

Name each of the following from the figure.



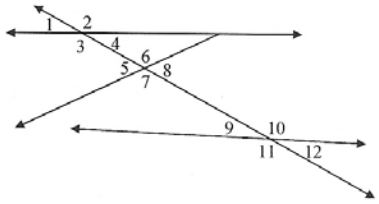
17. all pairs of intersecting planes each plane intersects all others
18. all pairs of parallel segments $\overline{AE} \parallel \overline{DR}$, $\overline{AD} \parallel \overline{ER}$
19. all pairs of skew segments
20. all pairs of parallel planes none
21. all points contained in four lines M
22. all planes intersecting with plane ADM plane ADR, DRM, ERM, AEM

Draw a diagram to illustrate each of the following.

23. two parallel planes
24. two parallel planes containing two lines that are skew
25. three parallel planes with a line intersecting the planes
26. two parallel lines with a plane intersecting the lines.
27. The measure of an angle is $9x + 14$, and the measure of its supplement is $12x + 19$. Find the value of x. $x = 7$
28. T is between R and S. If $TS = 7$ and $RS = 20$, find RT. 13

Examples

Identify each pair of angles as *alternate interior, alternate exterior, corresponding, or consecutive angles.*



9. $\angle 1$ and $\angle 8$
10. $\angle 7$ and $\angle 10$
11. $\angle 8$ and $\angle 12$
12. $\angle 1$ and $\angle 5$
13. $\angle 4$ and $\angle 6$
14. $\angle 8$ and $\angle 9$

Interim Assessment for Target 2: Personal Communication

Question: What did you discover about corresponding angles?
Expected Answer: They are the same (congruent).

Question: What did you discover about alternate interior angles?
Expected Answer: They are the same (congruent).

Question: What did you discover about alternate exterior angles?
Expected Answer: They are the same (congruent).

Question: What did you discover about consecutive interior angles?
Expected Answer: Their sum is 180 degrees (supplementary).

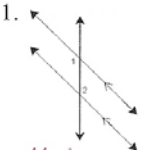
(Asked with each example)
Question: What kind of angles are _____ and _____?
Expected Answer: Alternate interior, alternate exterior, corresponding, or consecutive

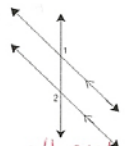
Follow-up Question: And _____ angles are _____?
Expected Answer: Congruent or supplementary

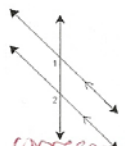
Interim Assessment for Target 2: Selected Response

Homework
Angles & Parallel Lines

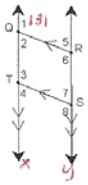
State the postulate or theorem that allows you to conclude $\angle 1 \cong \angle 2$.

1.  alt int.

2.  alt. ext

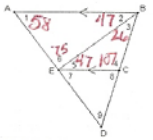
3.  corresponding

In the figure, $x \parallel y$, $\overline{ST} \parallel \overline{RQ}$, and $m\angle 1 = 131$. Find the measure of each angle.



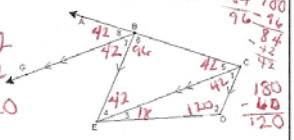
4. $\angle 6$ 131
5. $\angle 7$ 49
6. $\angle 4$ 49
7. $\angle 2$ 49
8. $\angle 5$ 49
9. $\angle 8$ 131

In the figure, $\overline{AB} \parallel \overline{EC}$, $m\angle 1 = 58, m\angle 2 = 47$ and $m\angle 3 = 26$. Find the measure of each angle.



10. $\angle 7$ 58
11. $\angle 5$ 47
12. $\angle 6$ 75
13. $\angle 4$ 107
14. $\angle 8$ 73
15. $\angle 9$ 49

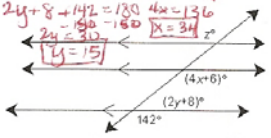
In the figure, $\overline{BG} \parallel \overline{CE}$, $\overline{BE} \parallel \overline{CD}$, BG bisects $\angle EBA$, $m\angle 8 = 42$, and $m\angle 3 = 18$. Find the measure of each angle.



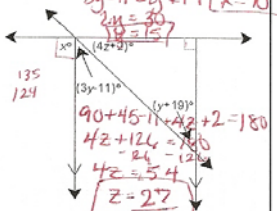
16. $\angle 7$ 42
17. $\angle 5$ 42
18. $\angle 1$ 42
19. $\angle 4$ 42
20. $\angle 6$ 96
21. $\angle 2$ 120

Find the values of x, y, and z in each figure.

22. $z = 142$ $2y + 8 + 142 = 180$ $2y = 30$ $y = 15$



23. $3y - 11 = y + 19$ $2y = 30$ $y = 15$ $x = 90$



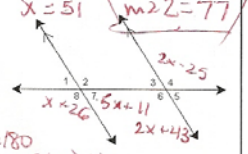
$90 + 45 - 11 + 4z + 2 = 180$ $4z + 126 = 180$ $4z = 54$ $z = 27$

Refer to the figure at right.

24. If $m\angle 4 = 2x - 25$ and $m\angle 8 = x + 26$ find $m\angle 2$.

$2x - 25 = x + 26$ $x = 51$ $m2 = 77$

25. If $m\angle 6 = 2x + 43$, and $m\angle 7 = 5x + 11$, find $m\angle 5$.



$5x + 11 + 2x + 43 = 180$ $7x + 54 = 180$ $7x = 126$ $x = 18$

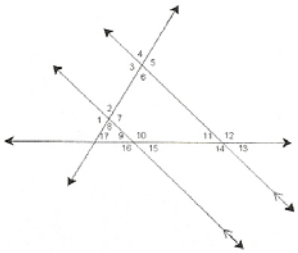
$5(18) + 11$ $90 + 11$ 101

Examples

In the figure, $p \parallel q$, $m\angle 1 = 107$ and $m\angle 11 = 48$. Find the measure of each angle.

5. $\angle 3$

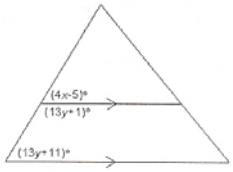
6. $\angle 5$



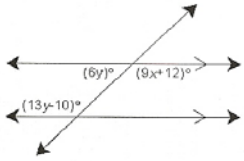
7. $\angle 13$
8. $\angle 9$
9. $\angle 15$
10. $\angle 17$

Find the values of x and y in each figure.

11.



12.



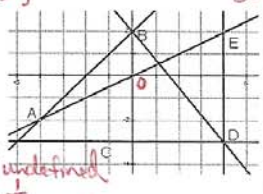
Interim Assessment for Target 3: Selected Response

Homework
Slopes of Lines

Find the slope of the line passing through the given points. Then describe the line as *rising*, *falling*, *horizontal*, or *vertical*.

1. $A(0,6)$, $B(4,0)$ $-\frac{3}{2}$, falling
2. $C(-3,8)$, $D(4,2)$ $-\frac{6}{7}$, falling
3. $E(6,3)$, $F(-6,3)$ 0, horizontal
4. $G(8,1)$, $H(8,-6)$ undefined, vertical
5. $I(-2,-3)$, $H(-6,-5)$ $\frac{1}{2}$, rising
6. $K(-2,5)$, $L(4,9)$ $\frac{2}{3}$, rising

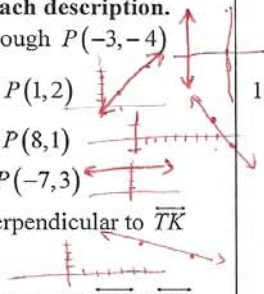
Use the figure at right to determine the slope of each line.



7. $\overleftrightarrow{BD}$ $-\frac{5}{4}$
8. $\overleftrightarrow{CD}$ 0
9. $\overleftrightarrow{AB}$ 1
10. $\overleftrightarrow{EO}$ $\frac{1}{2}$
11. any line parallel to $\overleftrightarrow{DE}$ undefined
12. any line parallel to $\overleftrightarrow{EO}$ $\frac{1}{2}$
13. any line perpendicular to $\overleftrightarrow{BD}$ $\frac{4}{5}$
14. any line perpendicular to $\overleftrightarrow{CD}$ undefined
15. any line perpendicular to $\overleftrightarrow{DE}$ 0

Graph the line that satisfies each description.

16. undefined slope, passes through $P(-3,-4)$
17. slope = $\frac{3}{5}$, passes through $P(1,2)$
18. slope = -2, passes through $P(8,1)$
19. slope = 0, passes through $P(-7,3)$
20. passes through $P(6,4)$, perpendicular to $\overleftrightarrow{TK}$ with $T(0,2)$ and $K(5,0)$ $-\frac{2}{5}$

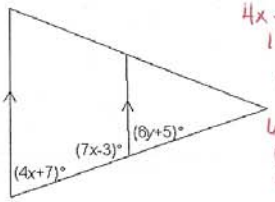


Given each set of points, determine if $\overleftrightarrow{MA} \parallel \overleftrightarrow{TH}$.

21. $M(-6,1), A(2,8), T(1,1), H(9,8)$ Yes
22. $M(-3,-1), A(7,-10), T(-1,6), H(4,3)$ No

Determine if the intersection of $\overleftrightarrow{PQ}$ and $\overleftrightarrow{RS}$ forms a right angle.

23. $P(-9,2), Q(0,1), R(-1,8), S(-2,-1)$ Yes
24. $P(3,6), Q(-1,4), R(4,0), S(0,8)$ Yes
25. Find the values of x and y.



$4x+7+7x-3=180$
$11x+4=180$
$11x=176$
$x=16$

$6y+5=4(16)+7$
$6y+5=64+7$
$6y+5=71$
$6y=66$
$y=11$

Examples

9. Given $A(-3,-2), B(9,1), C(3,6)$, and $D(5,-2)$, determine if $\overleftrightarrow{AB}$ is parallel or perpendicular to $\overleftrightarrow{CD}$.

10. Given $P(-2,2), Q(2,1), R(1,-1)$, and $S(5,-2)$, determine if $\overleftrightarrow{PQ}$ is parallel or perpendicular to $\overleftrightarrow{RS}$.

11. Find the value of x so the line that passes through $(x,5)$ and $(6,-1)$ is perpendicular to the line that passes through $(2,3)$ and $(-3,-7)$.

12. Find the value of x so the line that passes through $(x,2)$ and $(3,5)$ is perpendicular to the line that passes through $(0,1)$ and $(2,7)$.

Interim Assessment for Target 4: Personal Communication

Question: What is the reciprocal of 2?
Expected Answer: ½

Question: What is the opposite of 2?
Expected Answer: -2

Question: What is the opposite reciprocal of 2?
Expected Answer: - ½

Question: If two lines have the same slope, are they parallel or perpendicular?
Expected Answer: Parallel

Question: If two lines have slopes that are opposite reciprocals, are they parallel or perpendicular?
Expected Answer: Perpendicular

Question: If two lines have neither the same slope nor opposite reciprocal slopes, are they parallel or perpendicular?
Expected Answer: Neither, they are just two lines.

Interim Assessment for Target 4: Selected Response

Homework
Proving Lines Parallel

Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

1. $\angle EAJ \cong \angle HGA$ $\overleftrightarrow{EC} \parallel \overleftrightarrow{HF}$ corres. $\cong$
2. $\angle BAD \cong \angle GDA$ $\overleftrightarrow{AB} \parallel \overleftrightarrow{GD}$ alt. int $\cong$
3. $m\angle GAB + m\angle LBA = 180$ $\overleftrightarrow{JK} \parallel \overleftrightarrow{BL}$ consec. $\angle$s supp.
4. $\overline{EC} \perp \overline{BL}$, $\overline{FH} \perp \overline{BL}$ $\overleftrightarrow{EC} \parallel \overleftrightarrow{HF}$ alt int $\cong$
5. $\angle 1 \cong \angle 7$ p $\parallel$ q alt. ext $\cong$
6. $\angle 16 \cong \angle 3$ $l \parallel m$ corres. $\cong$
7. $m\angle 14 + m\angle 10 = 180$ p $\parallel$ q cons. $\angle$s supp.
8. $\angle 4 \cong \angle 13$ $l \parallel m$ alt. int. $\cong$
9. $m\angle 8 + m\angle 10 = 180$ $l \parallel m$ consec. $\angle$s supp.
10. Use slope to determine whether $\overleftrightarrow{AB}$ is parallel to $\overleftrightarrow{CD}$ given that $A(-3,0)$, $B(0,4)$, $C(3,0)$, and $D(6,4)$. $\overleftrightarrow{AB}$ $m = \frac{4}{3}$ $\overleftrightarrow{CD}$ $m = \frac{4}{3}$ YES

Find the value of x so that $l \parallel m$.

11. $x = 13$
12. $x = 11.375$
13. $x = 9$

State which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

14. $\overline{EF} \parallel \overline{HG}$ Alt. int. $\cong$
15. $l \parallel m$ corres. $\cong$
16. $\overleftrightarrow{BE} \parallel \overleftrightarrow{AD}$ consec. $\angle$s supp. $\overleftrightarrow{BK} \parallel \overleftrightarrow{LA}$ Alt. int $\cong$

17. Find the slope of the line that passes through points at (-2, 3) and (-7, -1). Then describe the line as you move from left to right as *rising, falling, horizontal, or vertical.* $\frac{4}{5}$; rising
18. Find the measures of $\angle 1$ and $\angle 2$ if $m\angle 1 = 2x + 15$ and $m\angle 2 = 8x - 5$.

$m\angle 1 = 49°$
$m\angle 2 = 131°$

19. Find the measure of the supplement of an angle that measures 159. 21
20. Find the midpoint of the segment whose endpoints have coordinates (8, 11) and (-4, 7). (2, 9)

Examples

For 4-6, use the diagram below.

4. If $\angle 10 \cong \angle 13$, which lines, if any, are parallel. Justify your answer.

5. If $\angle 1 \cong \angle 6$, which lines, if any, are parallel. Justify your answer.

6. If $\angle 2 \cong \angle 13$, which lines, if any, are parallel. Justify your answer.

Interim and Post Assessment Rubric for Target 5: Performance

	1 point	0 point
Student used blue clicker to answer questions in class.		
Student answered **all** blue clicker questions asked.		
Student used immediate feedback to make improvement on follow-up questions.		
Total		**/3**

D. Instructional Sequence

Results of Pre-Assessment

My pre-assessment was one test that included my first four targets. I chose not to pre-assess Target Five because it is a performance target, and therefore, difficult to pre-assess. There were three students out of fifteen who did not take the pre-assessment due to absence.

The class averaged 16% for Target One. This tells me that the students have had some exposure to parallel lines, but they are unfamiliar with the vocabulary associated with them. Therefore, I will take time during the lesson to give formal definitions for the appropriate vocabulary.

There were only three students who got any of Target Two correct. Two students scored 33% and one scored 66%. This shows that these three students have some grasp of angle measures but still need additional instruction. The other nine students scored 0% on this target, revealing that this concept in completely new to them. Therefore, I will start from the beginning when teaching Target Three to accommodate the majority of the class.

Target Three proved to be more difficult for most of the students. Ten out of twelve students scored 0% on this target. Two students remembered some things about slope but scored low. Therefore, I will start from the beginning on this target as well to benefit all the students.

One student out of twelve did reach the 70% criteria on Target Four. However, when I asked him where he learned how to prove parallel lines, he said that he just guessed by looking at the picture. One additional student scored 60% on the target, but the rest of the class scored 0%. I believe I will start from the beginning when teaching this target. I will not provide enrichment activities for the one student who met the criteria because I do not feel that guessing and getting it right is true comprehension of the concept.

Learning Activity Plan # _1__

Name: Camille **Estimated Time: 84 minutes**

Content Area(s): Mathematics **Grade Level(s): 9th – 12th**
Standard(s): Idaho Standard 10.M.1.1.6: Students will use appropriate vocabulary.
ISTE Standard 3 for Students: Students use technology tools to enhance learning, increase productivity, and promote creativity.

Achievement Targets:	Assessments:
Students will know and understand the vocabulary concerning parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Multiple Choice) **Interim Assessment:** Selected Response (Multiple Choice, fill-in) **Post-Assessment:** Selected Response (Multiple Choice, fill-in)
Students will use blue clicker technology to aid in learning. (Performance)	**Pre-Assessment:** None **Interim Assessment:** Performance (blue clickers) **Post-Assessment:** Performance (blue clickers)

Special Planning/Preparations (i.e., safety concerns, etc.): printed copy of notes/homework, PowerPoint presentation.

Procedures Direct Instruction	Time	Materials	Adaptations/Modifications for Students' Diverse Needs
Introduction Tell students that we have these things: railroad tracks, field, a house, and an overpass. Explain that each of these real life things represent special line relationships in Geometry.	2 min	Pictures of items	None
Presentation Give students the formal definition of parallel lines, skew lines, and transversal. Relate the definition to the real life example. Explain the notation used for parallel lines. Work through some examples using a figure to identify these particular things. Move on to defining the special angles created when two parallel lines are cut by a transversal: Exterior Angles, Interior Angles, Consecutive Interior, Alternate Exterior, Alternate Interior, and Corresponding Angles. Work through some examples using a figure as a class.	60 min	*PowerPoint* presentation, notes/homework papers for each student, prepared examples	Ask students often if there are any questions, provide a 3D plastic figure for visual learners to see, allow enough wait time for Student A and B.

Guided Practice Have students use blue clickers to answer multiple choice examples. Provide them with immediate feedback to know if they understand the material or not. Do more examples if necessary.	10 min	Blue Clicker problems on Smartboard, blue clickers for each student	Allow enough wait time for students to answer the questions without feeling rushed.
Independent Practice Assign homework problems and instruct students to ask additional questions if needed.	12 min	Homework problems	Walk around the room and monitor Student A and B progress.

Integration of Technology: *PowerPoint* presentation using the Smartboard and projector. Students will use blue clickers to answer questions and get immediate feedback.

Outreach to Families: Class notes are posted on the class website so parents can see what is happening in the classroom. Students are also able to download the notes and homework assignment if they lose theirs or are absent. http://teacherweb.com/ID/Preston/Smith/photo1.stm

Reflection: This lesson went very well. The students seemed to like the anticipatory set of geometric lines in real life. The use of a 3-Dimensional plastic box seemed to help the students understand the difference between parallel and skew lines. As a result, the class seemed to catch on quickly, and one student even commented that it was easy. The students seemed engaged because they asked a lot of really good questions that I had not even thought of. ☻ ☻

Learning Activity Plan # _2__

Name: Camille **Estimated Time: 84 minutes**

Content Area(s): Mathematics **Grade Level(s): 9th – 12th**
Standard(s): Idaho Standard 10.M.4.1.2: Students will recognize and use similarity as it relates to size variations in two- and three- dimensional objects.
Idaho Standard 10.M.1.1.6: Students will use appropriate vocabulary.
ISTE Standard 3 for Students: Students use technology tools to enhance learning, increase productivity, and promote creativity.

Achievement Targets:	Assessments:
Students will use properties of parallel lines to determine angle measures. (Reasoning)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Personal Communication (in-class questions), Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)
Students will know and understand the vocabulary concerning parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Multiple Choice) **Interim Assessment:** Selected Response (Multiple Choice, fill-in) **Post-Assessment:** Selected Response (Multiple Choice, fill-in)
Students will use blue clicker technology to aid in learning. (Performance)	**Pre-Assessment:** None **Interim Assessment:** Performance (blue clickers) **Post-Assessment:** Performance (blue clickers)

Special Planning/Preparations (i.e., safety concerns, etc.): printed copy of notes/homework, *PowerPoint* presentation.

Procedures Discussion Model (Social Interaction)	Time	Materials	Adaptations/Modifications for Students' Diverse Needs
Introduction Give students the materials needed for the Modeling mathematics activity. Review how to use a protractor. Have the students pair up and put the instructions up so the students can see them.	5 min	Notebook paper, protractor, straightedge, directions	None

Exploration Have students follow the directions to discover the relationships between corresponding angles, alternate interior angles, alternate exterior angles, and consecutive interior angles. Bring the class together to find what they discovered. Proceed to give and explain the postulates and theorems concerning these relationships. Review notation about congruent angles. Work through examples together as a class as well as using clickers.	70 min	*PowerPoint* presentation, prepared examples, blue clickers	Make sure Student A and B are paired with someone they can work with. Monitor progress and provide visuals with each postulate and theorem to explain what it means.
Closure Emphasize the need for students to memorize these theorems because they will keep coming back over and over again later in the year.	10 min	None	None

Integration of Technology: *PowerPoint* presentation using the Smartboard and projector. Students will use blue clickers to answer questions and get immediate feedback.

Outreach to Families: NA

Reflection: This lesson was fun to teach. The students enjoyed doing something a little different. I was pleased that they discovered what I was hoping they would during the activity. This made it successful and more applicable. Because they discovered the theorems on their own they seemed to understand the lesson better and were more excited about what they were learning.

Learning Activity Plan # _3__

Name: Camille **Estimated Time: 40 minutes**

Content Area(s): Mathematics **Grade Level(s): 9th – 12th**
Standard(s): Idaho Standard 10.M.4.4.3: Students will interpret attributes of linear relationships such as slope, rate of change, and intercepts.
ISTE Standard 3 for Students: Students use technology tools to enhance learning, increase productivity, and promote creativity.

Achievement Targets:	Assessments:
Students will use slopes of lines to identify parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Selected Response (Multiple Choice) **Post-Assessment:** Selected Response (Fill-in)
Students will use blue clicker technology to aid in learning. (Performance)	**Pre-Assessment:** None **Interim Assessment:** Performance (blue clickers) **Post-Assessment:** Performance (blue clickers)

Special Planning/Preparations (i.e., safety concerns, etc.): printed copy of notes/homework, *PowerPoint* presentation.

Procedures Direct Instruction	Time	Materials	Adaptations/Modifications for Students' Diverse Needs
Introduction Ask students if anybody likes to snow ski or snowboard. If so, ask where they like to go skiing/boarding. Expression "Hit the slopes." Why do we say that? What is slope? Mountains have a slope - may be big or small. We're going to learn how to find the slope of a line.	5 min	Ski picture	None
Presentation Explain what the slope of a line is. Show the formula for finding the slope. "Rise over Run" Relate back to ski slope and the bigger the slope, the steeper the mountain. Work through several examples to model how to do this. Explain how you know when the slope of a line is rising, falling, zero, or undefined. Emphasize that every line either has a slope (including a slope of zero) or has a slope of undefined. NOT "no slope."	20 min	*PowerPoint* presentation, prepared examples	Ask Student A and B questions to make sure they are following the lesson. Provide visuals for any definitions, if possible.

Guided Practice Use blue clickers to do some examples and let student see if they understand the concepts by getting immediate feedback.	10 min	Blue clickers for each student, clicker problems on Smartboard	Allow enough wait time for students to answer questions.
Independent Practice Assign homework problems and answer any individual questions.	5 min	Homework problems	Walk around and monitor Student progress.

Integration of Technology: *PowerPoint* presentation using the Smartboard and projector. Students will use blue clickers to answer questions and get immediate feedback.

Outreach to Families: NA

Reflection: This lesson went okay. It was a little chaotic because it fell on the first day of Homecoming week and the students were a little wound up. However, it was successful because the students had seen slope before. Several students made the comment that they did not understand slope the first time around but they got it this time. That was a good thing to hear. The period was shorter than I originally thought because of an assembly, so I was a little pressed for time, but I made it through just fine.

Learning Activity Plan # _4__

Name: Camille **Estimated Time: 45 minutes**

Content Area(s): Mathematics **Grade Level(s): 9th – 12th**
Standard(s): Idaho Standard 10.M.4.4.3: Students will interpret attributes of linear relationships such as slope, rate of change, and intercepts.
ISTE Standard 3 for Students: Students use technology tools to enhance learning, increase productivity, and promote creativity.

Achievement Targets:	Assessments:
Students will use slopes of lines to identify parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)
Students will use blue clicker technology to aid in learning. (Performance)	**Pre-Assessment:** None **Interim Assessment:** Performance (blue clickers) **Post-Assessment:** Performance (blue clickers)

Special Planning/Preparations (i.e., safety concerns, etc.): printed copy of notes/homework, *PowerPoint* presentation.

Procedures Direct Instruction	Time	Materials	Adaptations/Modifications for Students' Diverse Needs
Instruction Tell students that now we have learned how to find the slope of a line, we are going to use slope of lines to identify parallel and perpendicular lines.	3 min	None	None
Presentation Explain that two parallel lines have the same slope. If they are raising or falling at the same rate, they will never meet, so they are parallel. Then explain that two perpendicular lines have opposite reciprocal slopes. Explain what opposite reciprocal means. Work through examples as a class to demonstrate how to determine if lines are parallel or perpendicular.	25 min	*PowerPoint* presentation, prepared examples	Make sure Student A and B are following the lesson by asking them a question. Provide visuals whenever possible.
Guided Practice Have students answer blue clicker question to see if they are understanding how to identify lines using slopes	10 min	Blue clickers for each student, clicker questions	Monitor Student A and B progress on answering questions.

Independent Practice Assign homework problems and answer any individual questions.	10 min	None	Walk around room and monitor student progress.

Integration of Technology: *PowerPoint* presentation using the Smartboard and projector. Students will use blue clickers to answer questions and get immediate feedback.

Outreach to Families: Letters are mailed home to parents of those students who have either a "D" or "F" in the class.

Reflection: This lesson immediately followed lesson three in the same day. The two lessons tied together nicely, and the students seemed to follow what we were doing. There was a little confusion about opposite reciprocal, but for the most part, the lesson flowed well. Because of the time crunch due to the assembly, I was not able to do as much guided practice as I had hoped, but the students seemed confident in their understanding of the concepts.

Learning Activity Plan # _5__

Name: Camille **Estimated Time: 84 minutes**

Content Area(s): Mathematics **Grade Level(s): 9th – 12th**
Standard(s): Idaho Standard 10.M.4.5.1: Students will use logic to make and evaluate mathematical arguments.
ISTE Standard 3 for Students: Students use technology tools to enhance learning, increase productivity, and promote creativity.

Achievement Targets:	Assessments:
Students will prove two lines parallel based on given angle relationships. (Reasoning)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Personal Communication (in-class questions), Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)
Students will use blue clicker technology to aid in learning. (Performance)	**Pre-Assessment:** None **Interim Assessment:** Performance (blue clickers) **Post-Assessment:** Performance (blue clickers)

Special Planning/Preparations (i.e., safety concerns, etc.): printed copy of notes/homework, *PowerPoint* presentation.

Procedures Madeline Hunter	Time	Materials	Adaptations/Modifications for Students' Diverse Needs
Anticipatory Set Imagine you are hiking by yourself in the mountains. You aren't carrying anything because you'll only be gone for a couple hours. You are walking along minding your own business when all of the sudden, Bigfoot comes trampling through the trees. You can't believe you have just seen Bigfoot ☻ ☻ and you didn't have a camera or anything. So, when you come to class, you try to tell us that you saw Bigfoot in the mountains. What do we say to you? "Prove it!" Then you have to try to give us proof of seeing Bigfoot. Today we're going to "Prove it."- "it" meaning when two lines are parallel.	1 min	None	None
Objective Tell students that we will be learning how to prove two lines are parallel based on given angle relationships. This applies to their learning because it teaches them to think in order to work through a problem.	2 min	None	None

Providing Input Remind them of learning about angle relationships given two parallel lines. Explain that we are simply going backwards: given angle relationships, prove that two lines are parallel.	5 min	*PowerPoint* presentation, previous postulates and theorems	None
Modeling Provide the three "If, Then" statements. Point out that this is exactly opposite of what they learned earlier. Work through some examples of how to prove two lines are parallel.	40 min	*PowerPoint* presentation, prepared examples	Be careful to include each step so Student A and B can follow the lesson.
Check for Understanding Have students work a problem or two on their own. Bring them back together to work through it and clear up any misconceptions.	10 min	Prepared examples	Walk around and monitor student progress as they work examples
Guided Practice Have students answer some clicker problems to provide them with immediate feedback. Answer any additional questions they might have.	10 min	Blue clickers for each student, clicker questions	Allow enough wait time for Student A and B to answer questions.
Closure Now you can go home and tell your mom or dad or sister or brother that you learned so much today. You can say those two line are parallel and when they say, "Prove it!" you can prove it.	1 min	None	None
Independent Practice Assign homework problems. Emphasize that if the question asks them to explain their answer, they must include the explanation on their paper.	15 min	Homework problems	Walk around and monitor student progress.

Integration of Technology: *PowerPoint* presentation using the Smartboard and projector. Students will use blue clickers to answer questions and get immediate feedback.

Outreach to Families: NA

Reflection: This lesson was difficult to teach. It is a difficult concept, and therefore, mentally exhausting to patiently explain. Overall, the lesson went okay, but I never felt like the whole class had it click for them. I think that the majority of the students did understand most of what I was teaching, but there were a couple who were very vocal about not understanding it. Therefore, I do not think this was my most successful lesson, but it went just fine.

Learning Activity Plan # _6__

Name: Camille **Estimated Time: 84 minutes**

Content Area(s): Mathematics **Grade Level(s): 9th – 12th**
Standard(s): Idaho Standard 10.M.1.1.6: Students will use appropriate vocabulary.
Idaho Standard 10.M.4.1.2: Students will recognize and use similarity as it relates to size variations in two- and three- dimensional objects.
Idaho Standard 10.M.4.4.3: Students will interpret attributes of linear relationships such as slope, rate of change, and intercepts.
Idaho Standard 10.M.4.5.1: Students will use logic to make and evaluate mathematical arguments.

Achievement Targets:	Assessments:
Students will know and understand the vocabulary concerning parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Multiple Choice) **Interim Assessment:** Selected Response (Multiple Choice, fill-in) **Post-Assessment:** Selected Response (Multiple Choice, fill-in)
Students will use properties of parallel lines to determine angle measures. (Reasoning)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Personal Communication (in-class questions), Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)
Students will use slopes of lines to identify parallel and perpendicular lines. (Knowledge)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Selected Response (Multiple Choice) **Post-Assessment:** Selected Response (Fill-in)
Students will prove two lines parallel based on given angle relationships. (Reasoning)	**Pre-Assessment:** Selected Response (Fill-in) **Interim Assessment**: Personal Communication (in-class questions), Selected Response (Fill-in) **Post-Assessment:** Selected Response (Fill-in)

Special Planning/Preparations (i.e., safety concerns, etc.): printed copy of review homework problems

Procedures Social Interaction (STAD)	Time	Materials	Adaptations/Modifications for Students' Diverse Needs
Introduction Ask students if there are any question on the previous homework. Go over any questions they might have. Hand out new homework assignment.	5-10 min	Copies of homework problems	None

Transition to Team Explain that the review paper is their homework for the day, it is due by the end of the period, and they can work in groups of their choosing.	5 min	None	None
Team Study Students work together on the review problems which are very similar to the test. They are able to use a calculator, notes, each other, and the teacher.	60 min	Homework problems, calculators	Walk around and monitor Student A and B in their group and assist when necessary.
Assessment When students finish the problems, they will bring it to me and I will grade it and hand it back after I have received every student's paper. Review the frequently missed questions with the whole class. Answer any additional questions they have and work requested problems on the board.	10 min	None	Answer any additional questions Student A and B have after getting their papers back.

Integration of Technology: NA

Outreach to Families: Progress reports are sent out to each student informing him/her and his/her parents of their grade in the class prior to the Unit Test. Students and parents are also able to check grades on the class website or Power School.

Reflection: This lesson went well but was extremely rushed. Classes were shortened from 84 minutes to 34 minutes due to Homecoming activities. Most of the students were able to finish and hand in the worksheet, however, some were not. I allowed those couple students to take it home and bring it to me the next day. I was able to grade the papers and hand them back just as the bell rang. Therefore, I was not able to go over the missed questions and answer any additional questions students had. I told them that we would go over the review before they took the test so they could get their questions answered. So, the lesson did not go exactly as I had planned, but it was doable.

E. Reflection-in-Action

Instance One

Context:

We were in the process of learning Target Three which states that students will use slopes of lines to identify parallel and perpendicular lines. We had previously covered how to find the slope of a line and the students seemed to have mastered that concept pretty well. We had moved on and were talking about how to find the slope of a line that is parallel and/or perpendicular to a given line. I explained that the slopes will be the same for parallel lines and opposite reciprocals for perpendicular lines.

Analysis:

The students were doing well with finding the slope of line. This was partly due to the fact that they had learned how to find slope using rise over run in a previous math class. They were comfortable with the idea that parallel lines have the same slope. However, the idea of opposite reciprocals was confusing to them. When I tried to explain with words what the opposite reciprocal of a number is, I got looks of confusion and the comment, "What? I don't get it" from more than one student. I decided that I needed to back up and explain it more thoroughly using concrete examples instead of just a verbal explanation.

Modifications:

In order to explain opposite reciprocals more thoroughly, I broke the concept down into pieces. I first reviewed what a reciprocal is. Most of the students could remember what the reciprocal of a number was because they learned it in Algebra I. I wrote down the number two on the board and asked them what the reciprocal of two was. They responded with ½ which was correct. I explained further that the reciprocal is just flipping the number upside down for those students who did not remember. Then I wrote down the number two again and asked the

students to tell me what the opposite of positive two was. They had to think for a moment, but then answered that it was negative two. That was the correct answer, so then I told them to put the two pieces together. I wrote down the number two a third time and asked them what the opposite reciprocal of two was. The students then understood that the answer was negative ½.

Rationale:

Math is a subject whose concepts build on each other. As students move further along, they are expected to remember the things they have learned before. However, if it has been awhile since they have seen the material, many cannot remember it clearly. For this reason, a teacher may need to quickly review material to refresh it in students' minds. This was case in this reflective instance. By breaking down the question and reviewing what they had previously learned, the students were able to understand opposite reciprocals and identify whether lines were parallel or perpendicular, which was the target for the day.

Instance Two

Context:

I was teaching Target Four which states that students will prove two lines parallel based on given angle relationships. This target was a difficult one to understand so I was trying to move through the lesson slowly and thoroughly. We were working through some examples and I was trying to carefully explain what the questions were asking so the students knew what they were trying to find. After completing each step, I would stop and ask if there were any questions because I knew this target was more difficult than anything we had done in the class thus far.

Analysis:

With each example, I would first ask the students what special relationship the given angles had. This was the third lesson involving these angles and so I was surprised and

frustrated that I kept getting silence after I asked the question. The students could not remember if the angles were alternate interior angles, alternate exterior angles, corresponding angles, or consecutive angles. As a result of this, they could not remember if we needed the angles to be congruent (the same measure) or supplementary (sum of measures is 180 degrees). Since this was vital to understanding the lesson, I decided I needed to go over them once again.

Modifications:

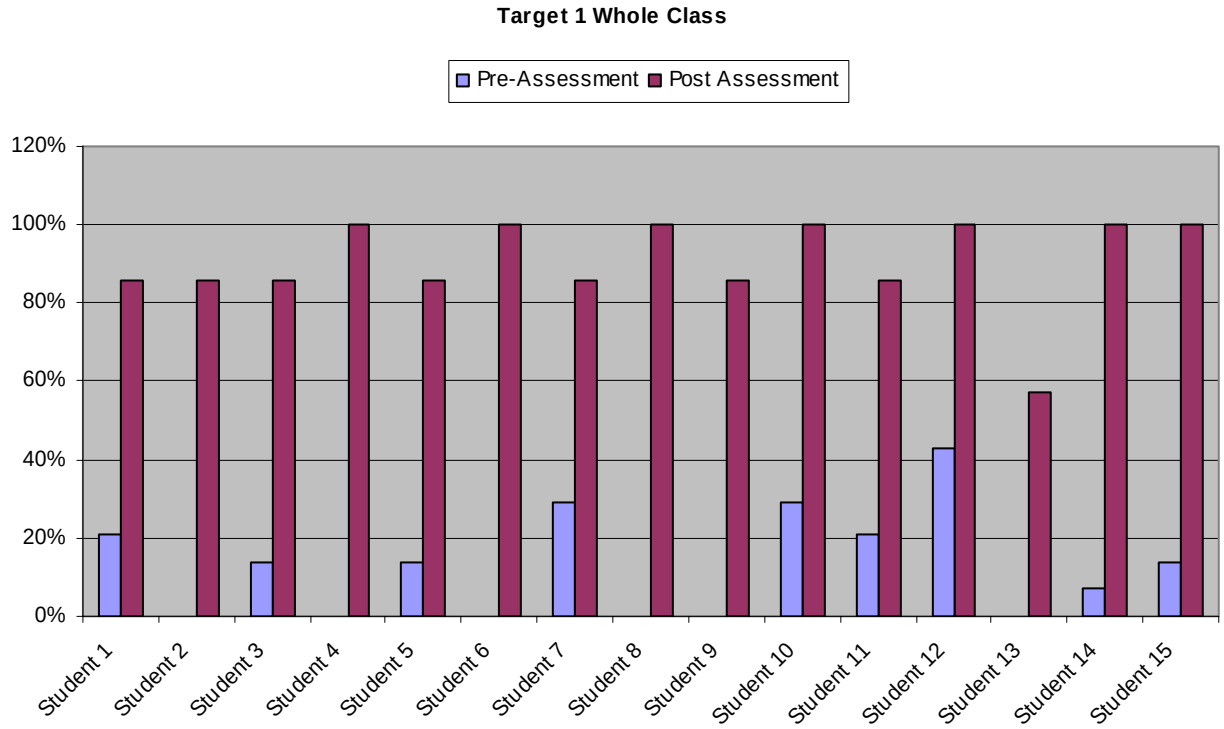
I stopped the lesson and told the students we were going to review the names of the angles. I reviewed the formal definition of each angle relationship and provided a visual example to illustrate what the definition was saying. With each angle relationship, I asked the students to tell me if the angles had to be congruent or supplementary for the two lines to be parallel. This was more difficult for the students to remember so I grouped the angles together. I told them that only one angle relationships is supplementary and that is consecutive angles; all the other angle relationships should be congruent. The light seemed to come on ☼for several students because they were then able to apply this knowledge to proving lines parallel.

Rationale:

The target for the day was about being able to prove two lines parallel based on given angle relationships. Knowing what these angle relationships were and how they related to each other was crucial to learning this target. Since the students were unsure of themselves in this aspect, it was imperative that I back up and solidify the students' understanding. Otherwise, they would not have been able to prove anything without the required background knowledge.

F. Profile and Analysis of Student Learning

My pre-assessment and post assessment assessed four of my five achievement targets. I have chosen to profile Targets One and Three. Target One states that students will know and understand the vocabulary concerning parallel and perpendicular lines. Target Three states that students will use slopes of lines to identify parallel and perpendicular lines. The following graphs indicate students' performance for these two targets.



The graph above shows that nine students had some prior knowledge of the vocabulary concerning parallel and perpendicular lines. There were no students who met the 70% criteria on the pre-assessment. There were three students who did not take the pre-assessment due to absence. Therefore, 100% of the class did not meet the criteria for this target.

The students did very well on the post assessment. Fifteen students, or 100% of the class, improved from pre to post. There was only one student who did not meet the 70% criteria.

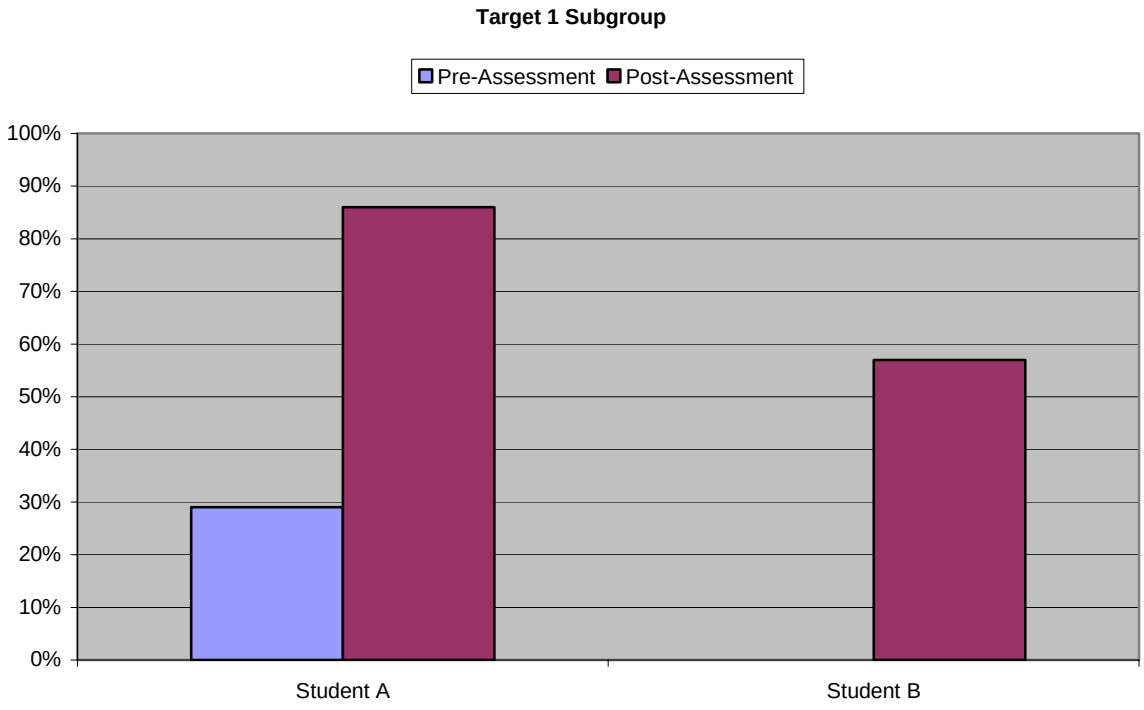
Therefore, 14 students, or 93% of the class, achieved Target One. The one student who did not meet the target scored a 57%. This tells me that he did learn some of the vocabulary because he improved from 0% on the pre-assessment. The results of the entire class tell me that the target was both taught and learned well.

The results from the pre-assessment of Target Three showed that only two people had some prior knowledge about slope. However, neither of these students met the 70% criteria. Three students did not take the pre-assessment due to absence and the other ten students scored 0%. The students should have seen slope in a prior math class, but their scores tell me that most had forgotten what they had learned.

The results of the post assessment were very good. Fifteen students out of 15, or 100%, improved from pre to post. These results were pleasing to me. There were 13 out of 15 students who met the 70% criteria. This means that 87% of the class achieved Target Three. One student

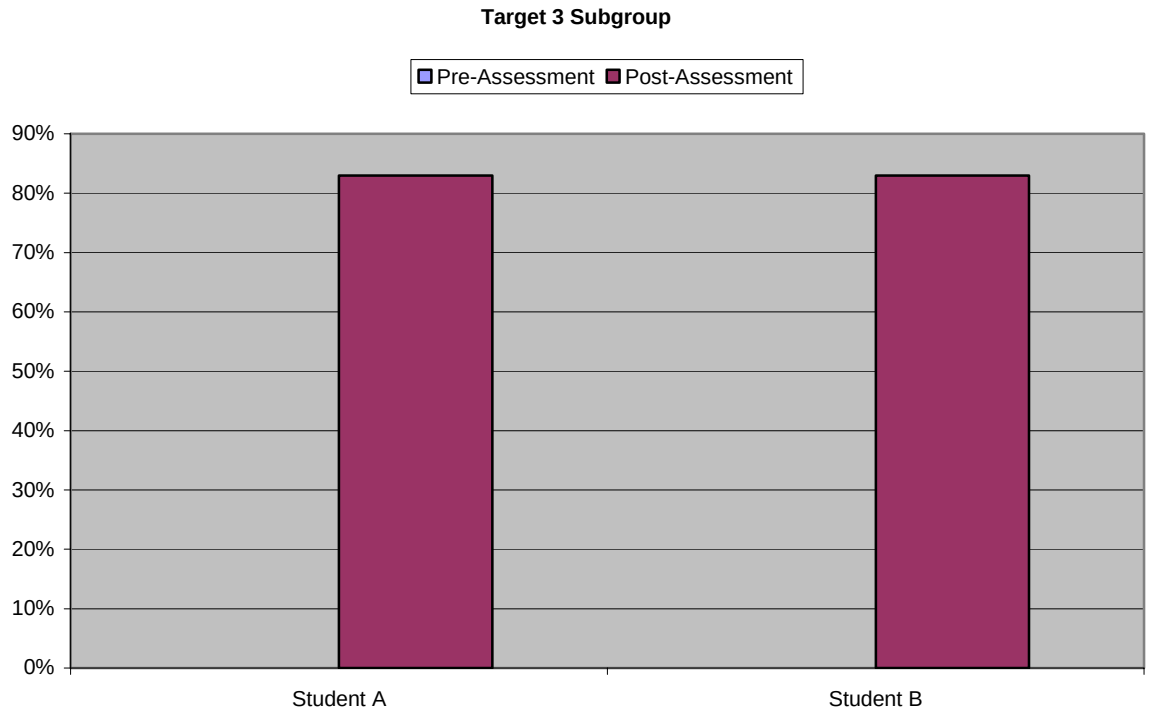
missed the 70% criteria by just 3%. This tells me she did learn the majority of the target. The other student who did not meet the criteria was absent on the days we covered Target Three. Therefore, it is not surprising he only scored 33% on the post assessment. The results for the whole class tell me that the students understood this target and were comfortable enough with it to score well on the post assessment.

The subgroup I chose to showcase consists of two students. These students are the only seniors in the class and both struggle with math. This is evidenced by being in a Geometry class as a senior. It was important to make adaptations to help these two students learn because they have to pass Geometry in order to graduate. Both of these students work hard, but need just a little extra assistance to improve their understanding of the concepts and achievement targets.



The graph above displays the results of my subgroup for Target One. Student A did have some knowledge about the vocabulary concerning parallel and perpendicular lines because he scored 29% on the pre-assessment. Student B did not have prior knowledge because he scored

0% for this target. However, both students improved from pre to post. Student A did meet the 70% criteria for achieving this target by scoring 86% on the post assessment. Although Student B did not reach the 70%, he did score 57%, which tells me that he did learn some of the vocabulary. Therefore, 50% of my subgroup achieved Target One, and I cannot completely conclude that my adaptations helped these students to fully understand the target.



The graph above shows that both Student A and B scored 0% on the pre-assessment. Both students improved significantly from pre to post. Moreover, both Student A and B reached, and surpassed, the 70% criteria with 83% on the post test. Therefore, 100% of my subgroup both improved on and achieved Target Three. I was very pleased to see these results since both students scored so low on the pre-assessment. This tells me that my adaptations may have helped them to succeed.

These two graphs tell me that my subgroup's scores were comparable to the whole class. Their scores were similar to those of their classmates. Therefore, I might conclude that my adaptations not only helped my subgroup, but the entire class as well. These results also show that although these two students struggle in math, they are also capable of doing just as well as anybody else.

	Students Who *Achieved the Target* According to Stated Criteria		Students Who *Showed Improvement* from Pre-assessment to Post-assessment	
	Number	**Percent**	**Number**	**Percent**
Achievement **Target #1**	14	93	15	100
Achievement **Target #2**	13	87	15	100

TWS Content __Geometry__

TWS Grade Level __9^{th} – 12^{th}__

G. Reflection-on-Action

1. Teaching Effectiveness

Overall, I felt my teaching sequence went very well. All but one student passed the entire post assessment with a 70% or better. The majority of the students achieved all of my achieved targets, which are discussed in detail below.

There was only one student who did not achieve Target One. This student scored 57%, which tells me he did learn some of the vocabulary because his pre-assessment score was 0%.

Target Two went very well. Thirteen out of 15 students scored 100% which shows these students mastered the target. Two students did not meet the 70% criteria. One of these two students only missed the target by 3% and the other scored 33%. Therefore, one student learned the majority of the target while the other student must have not completely understood what was being taught.

Thirteen out of 15 students achieved Target Three. One student was absent on the days we covered this target, and consequently only scored 33% on the post assessment. Another student scored 67% which was really close to the 70% criteria. I was pleased with the results of this target.

Target Four was the most difficult target during my sequence. Ten out of 15 students met the 70% criteria. Three students scored 60% and two students scored 40%. Therefore, each student improved from pre to post which was great to see.

All 15 students achieved Target Five. Each student used blue clickers correctly and effectively. I felt the clickers helped aid student learning, which is partly why I think so many students achieved my achievement targets.

There were several things that I think contributed to students reaching my achievement targets. These included anticipatory sets☼ that peaked the students' interest in what we were learning, real world examples the students could relate to, application of prior knowledge to relate past material to current material, guided practice, and immediate feedback using blue clickers. This immediate feedback☼ helped me as a teacher to know if the students understood the concepts, as well as provided the students with the confidence that they knew what they were doing.

2. Sequence Success

I felt that my lessons were successful as a whole. I think the lesson where I had the students discover the special angle relationships was the most effective. The students discovered that corresponding, alternate interior, and alternate exterior angles are congruent on their own. Therefore, the lesson was more successful because the students found the answer ☼themselves rather than me just telling them how the angles related to each other.

The technology available to me in the classroom also contributed to this sequence being so successful. The students like the blue clickers and the immediate feedback is valuable. I was able to do my entire sequence using *PowerPoint* presentations projected on a Smartboard. This helped moved the lessons along because I did not have to write out the examples and I could write directly on the slide when working the examples.

I feel that the most unsuccessful portion of my sequence was Target Four. The least number of students achieved this target. I feel this was due to the fact that it was the most difficult of my five targets and I only spent one day on it. Also, it must be noted that my sequence happened to fall during Homecoming week. Therefore, the students were a little distracted. My planned day for review had shortened class periods. Therefore, I was not able to

get the review sheets graded, handed back, and questions answered before students had to leave. As a result, there was less time to review the material before the test.

3. Sequence Redesign

If I were to teach this sequence again, I would make a couple changes. First, I would spend more time on Target Four. The students did well considering this was a difficult target. However, I feel they would benefit from another day practicing proving lines parallel.

The next change I would make is to make sure my review day is going to be as long as I originally planned. In the case of this sequence, my review day was shortened from 84 minutes to 34 minutes. Therefore, my students barely had enough time to complete the review sheet and hand it in. Without adequate time to see what they did wrong and ask questions, I felt the students were not as well prepared for the test and they could have been.

The last issue I would be conscious of is whether or not the sequence fell during Homecoming week. If it did, I would be more careful about my lesson planning to make up for the interruptions and distractions that happen during the highly spirited week.

I learned that technology is wonderful in aiding student learning. Teachers must be flexible and adjust lessons when a concept needs more time spent on it or other issues shorten class periods. Homecoming week is something that will happen every year in high school. Since it is not realistic to avoid teaching anything during that week, I must be more conscious about the schedule for the week. I need to make sure the lesson I plan to teach works with whatever bell schedule is happening on that particular day.

4. Plan for Professional Development

I learned that organization and preparation make teaching much more enjoyable. I have learned that technology is an excellent teaching tool. Therefore, I plan to attend workshops, take

additional computer classes, and borrow ideas from future colleagues to become more proficient at using technology and learn what exciting new things are available. I also hope to learn how to write a grant☼ to receive funds to buy technology tools for my classroom.

I also plan to research and practice Love and Logic to become better at classroom management and motivation. I own the book and I hope to attend some seminars and workshops to improve my use of it in the classroom. Additionally, I would like to gain more ideas on how to teach and present math to students. I plan to borrow ideas from colleagues as well as attend math conferences. Math is a difficult subject for many students, and so it is important for teachers to constantly be looking for different and better ways to present content material.

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