EQ: How do I solve problems with parallel lines?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 4, Lesson 1

1. Warm Up
2. Notes
3. Practice
4. Closure

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Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

Warm Up:

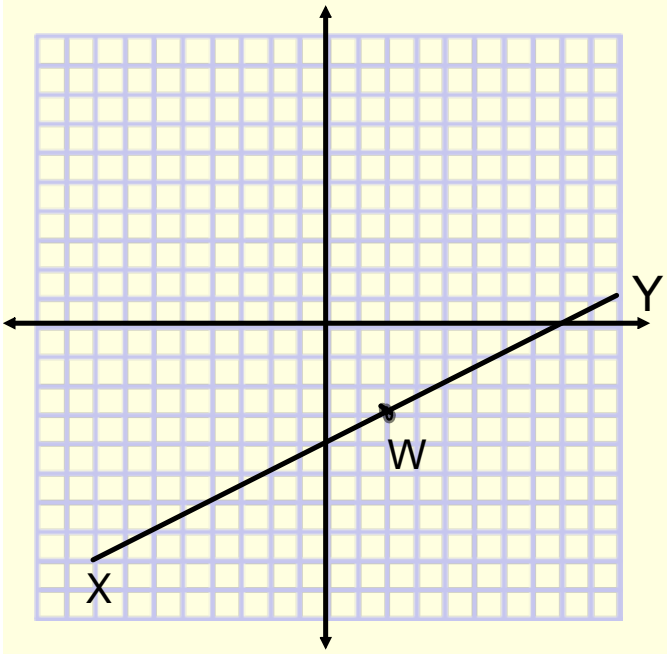
1. The graph of which equation is perpendicular to the graph of $4x + 3y = 12$?

A. $y = \frac{3}{4}x + 9$

C. $y = \frac{4}{3}x + 9$

B. $y = -\frac{3}{4}x + 9$

D. $y = -\frac{4}{3}x + 9$



Is Point W a midpoint of Line XY? Justify your answer.

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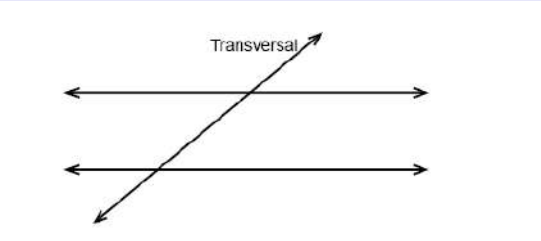
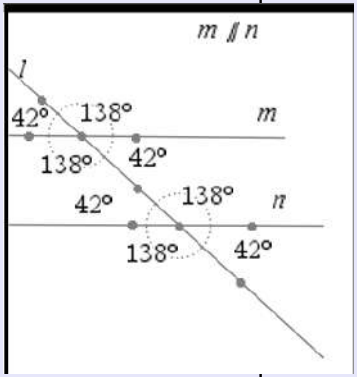
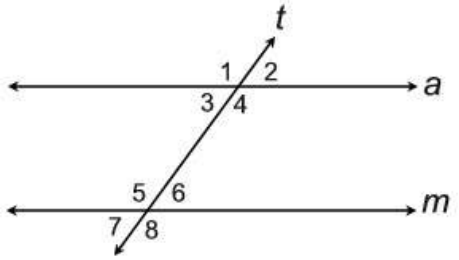
transversal

a line that intersects two or more coplanar lines



There are 8 angles that have special names that are formed by parallel lines cut by transversals. There is a pattern to these angles.





alternate exterior angles

alternate interior angles

corresponding angles

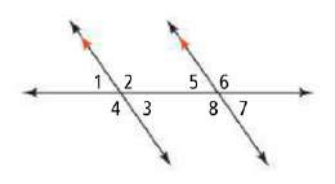
same side interior angles

vertical angles

Summary:

Left-Side Practice

1. Draw the diagram at the right.



2. Identify which angles are:

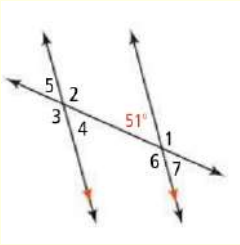
- corresponding
- alternate exterior
- alternate interior
- same-side interior
- vertical

3. If the measure of angle 7 is 35°, what are the measurements of the other angles?

4. Given the diagram below, find the measurements of all other angles.

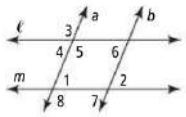
5. Identify which angles are:

- corresponding
- alternate interior
- alternate exterior
- same-side interior
- vertical



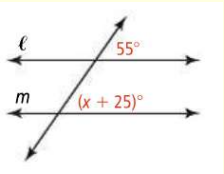
6.

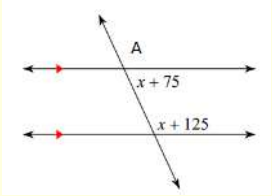
Which lines are parallel if ∠1 ≅ ∠2? Justify your answer.



7. What is the relationship between these two angles?

8. Find the value of x.



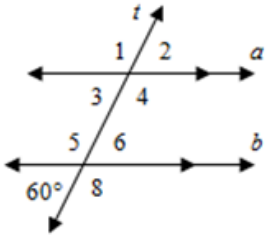


Name _____ pd _____ IAN. page 26

1. For the diagram below, find the measure of the other angles.

1 = ____ 2 = ____ 3 = _____ 4 = _____

5 = ____ 6 = ____ 7 = _60°__ 8 = _____



2. Identify which angles are:

corresponding _____; Are corresponding angles congruent or supplementary?

alternate interior _____; Are alternate interior angles congruent or supplementary?

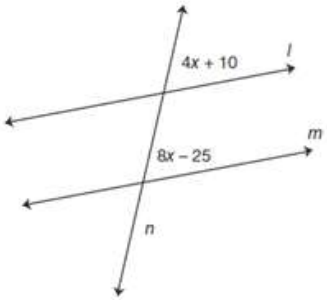
alternate exterior _____; Are alternate exterior angles congruent or supplementary?

same-side interior _____; Are same-side interior angles congruent or supplementary?

vertical _____; Are vertical angles congruent or supplementary?

3. Given: line l || line m

Find the value of x and the measure of each angle.
Explain the relationship between the two angles.



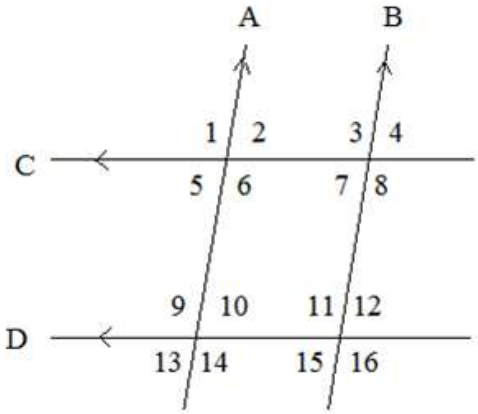
x = _____

the measure of one angle is _____, the measure of the other angle is _____

The relationship: _____.

4. If $\angle 1 \cong \angle 8$, which two lines must be parallel, if any?

Explain.



_____
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Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure Closure

Right Side...

Write a summary that answers the essential question.

Left Side...

What types of angles are formed when two parallel lines are cut by a transversal?

What do I need to do to prepare for the Unit 1 Assessment?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question

Week 4, Lesson 2

1. Warm Up
2. Quiz: G.CO.9
3. Review for Unit Test

Unit 1 Review

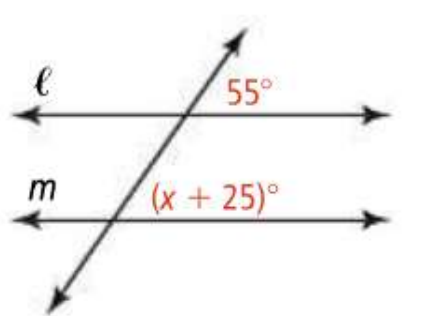
Stop!!!

Use your own Paper.

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

Warm Up:

Line *l* is parallel to line *m.*



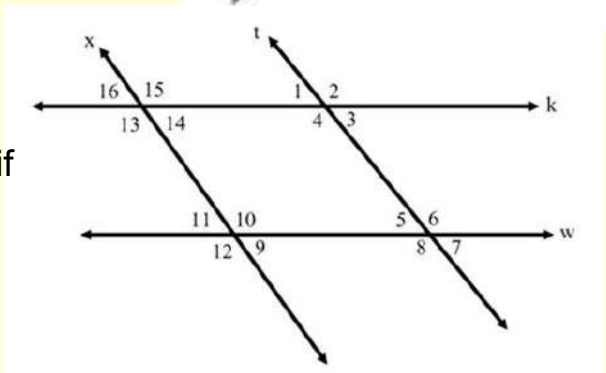
1. Find the value of x.

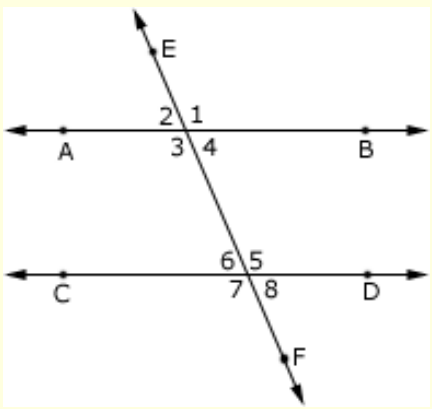
2. Explain the relationship between the two given angles.

3. In the diagram at the right, angle 4 is equal to angle 6.

Which two lines are parallel, if any?

Explain.





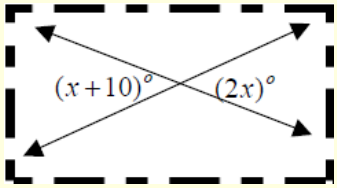
Angle Relationships Matching Activity

Your group has been given an envelope filled with cards.

You will match the **picture** to the angle relationship **name** to the **equation** to the **solution.**

A complete match will have FOUR cards.

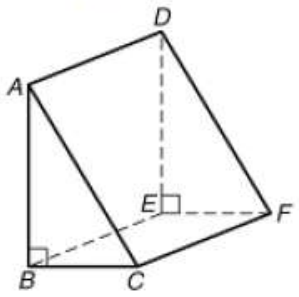
Example:

Picture	Angle relationship name	Equation	Solution
	Vertical Angles	$x+10=2x$	$x=10$

G.CO.9 Quiz!

G-CO.1: *I can define and identify basic geometric terms.*

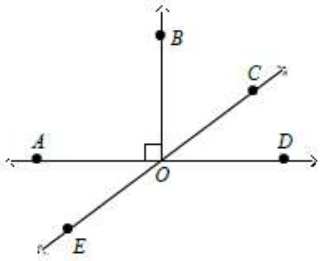
1. Use the figure below. Assume that lines that look parallel are parallel.



a) Name a pair of parallel lines

b) Name a pair of perpendicular lines

2. Use the diagram below to answer the following questions.



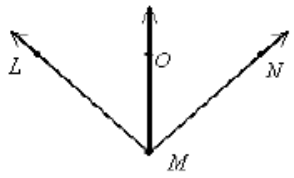
2a) Name a linear pair

2b) Name two complementary angles

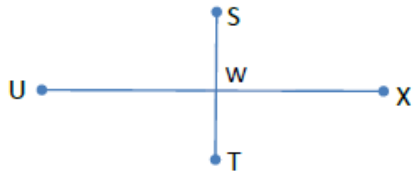
2c) Name two supplementary angles

2d) Give at least two pairs of adjacent angles

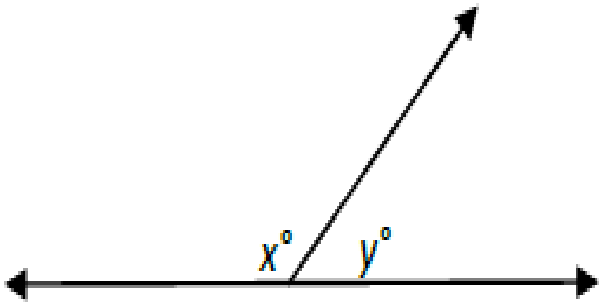
3. In the figure $\overline{MO}$ bisects $\angle LMN$, $m\angle LMO = (9x-14)°$, and $m\angle NMO = (x+74)°$. Solve for x and find $m\angle LMN$



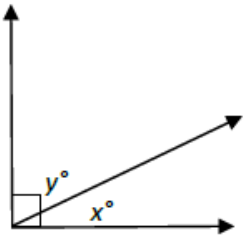
4. In the figure $\overline{ST}$ bisects $\overline{UX}$, If $\overline{UW} = 8x-4$, and $\overline{WX} = 2x+20$. Solve for x and find $\overline{UX}$



5. If $x > 100$, then what are the possible values of y?

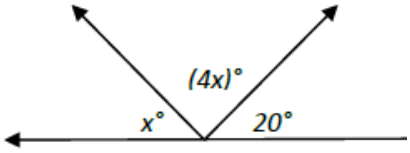


6. If $x < 35$, then what are the possible values of y?



7. Using the diagram below, find x and explain how you would tell a fellow student to solve it.

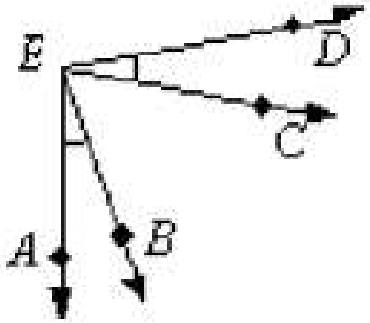
Solve:



Explain_____

_____

8. Write down as many facts as are observable from the figure below. (Need at least 3)



9. Part A: Draw a diagram that satisfies these three conditions:

i. $\measuredangle AEB \cong \angle CED$

ii. $\measuredangle BEC$ *is adjacent to* $\angle CED$

iii. $\angle AEB \cong \angle BEC$

Part B: If $m\angle AEB = 30°$, find $m\angle BEC, m\angle CED$ *and* $m\angle AED$. Justify your answers.

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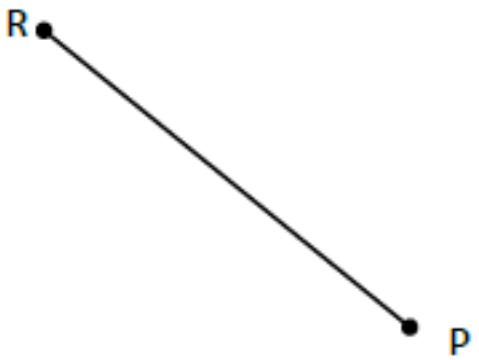
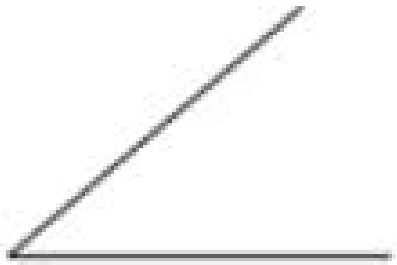
10. Construct the perpendicular bisector of $\overline{RP}$



11. Draw acute angle ABC and then construct its bisector. Label all your points.

12. Draw a right angle and then construct its bisector. Label all your points. What are the measures of the two smaller angles?

13. Construct a copy of the angle.



14. Use a straightedge and compass to construct a segment that satisfies SN = 2(SU) and that all of the points are collinear. Explain why U is the midpoint of SN?

Explain:

_____

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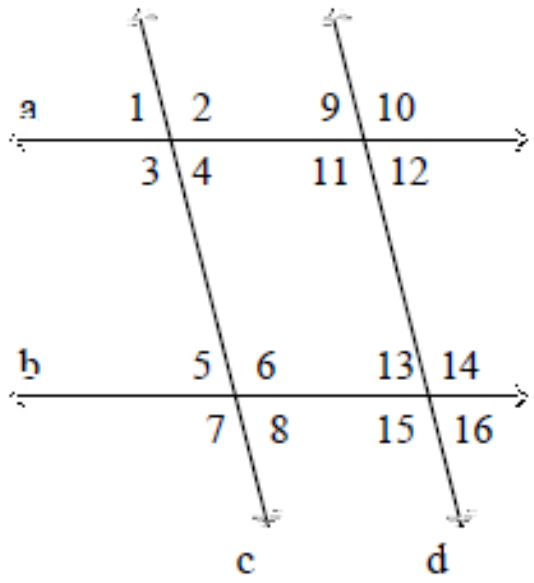
_____

15. Draw a diagram that fits the following criteria: Draw two lines and a transversal such that $\angle 1$ and $\angle 2$ are corresponding angles, $\angle 2$ and $\angle 3$ are vertical angles, and $\angle 3$ and $\angle 4$ are corresponding angles. What type of angle pair is $\angle 1$ and $\angle 4$?

16. Which lines, if any, must be parallel based on the given diagram and information. Give the justification for each conclusion. Given: $\angle 13 \cong \angle 12$



G-GPE.4 *Use coordinates to prove simple geometric theorems algebraically.*

17. Given the following coordinates A (-1.5,4) and B (3,2.5). Find the midpoint and length of AB. Round to the nearest hundredth.

G-GPE.5 *Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.*

18. What is the equation of the perpendicular bisector of the segment with endpoints A (-8, -7) and B (-4, 9)?

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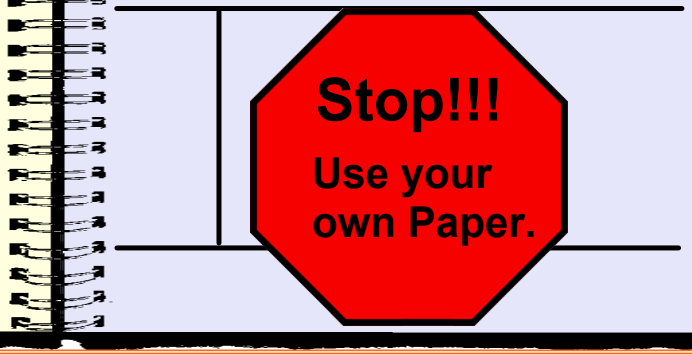
Week 4, Lesson 3

1. Warm-Up
2. Review for Unit Test



Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

Warm Up:

1. A line has the following equation: -2x + 3y = 10

(a) What is the slope of the line?

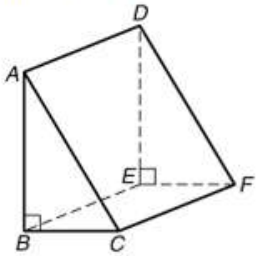
(b) What is the slope of the line parallel to this line?

(c) What is the slope of the line perpendicular to this line?

2. Given point R (3,-2) and point T (1, 6), calculate the midpoint between these two points.

G-CO.1: *I can define and identify basic geometric terms.*

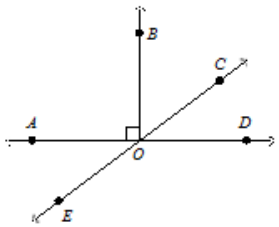
1. Use the figure below. Assume that lines that look parallel are parallel.



a) Name a pair of parallel lines

b) Name a pair of perpendicular lines

2. Use the diagram below to answer the following questions.

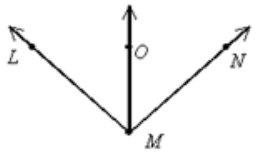


2a) Name a linear pair

2b) Name two complementary angles

2c) Give at least two pairs of adjacent angles

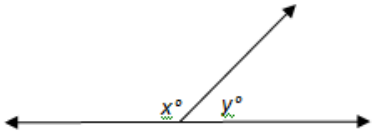
3. In the figure $\overline{MO}$ bisects $\angle LMN$, $m\angle LMO = (9x-14)°$, and $m\angle NMO = (x+74)°$. Solve for x and find $m\angle LMN$



x = _____

$m\angle LMN$ = _____

4. If $x > 100$, then what are the possible values of y? Explain.



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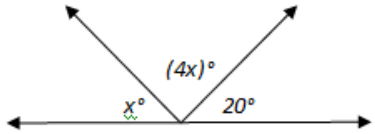
5. Given the following, find the length of BC.
   - AB = 6
   - BD = 15

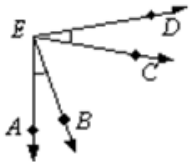
BC = _____

6. Using the diagram below, find x and show each step. You may not use every box.



Solution Steps

7. Circle all of the following statements that are definitely true about the diagram below. (There may be more than one answer.)



(a) $\angle AEB \cong \angle DEC$
(b) $\angle AEC$ is adjacent to $\angle BED$
(c) $\angle AEB$ and $\angle BEC$ are complementary
(d) $\angle AEB$ and $\angle BEC$ are supplementary
(e) $\overline{EC}$ bisects $\angle BED$

8. Part A: Draw a diagram that satisfies these conditions:

- $\overrightarrow{EF}$ bisects acute $\angle BER$

Part B: If $m\angle REF = 30°$, find $m\angle BEF$, and $m\angle BER$. Explain how you found your answers.

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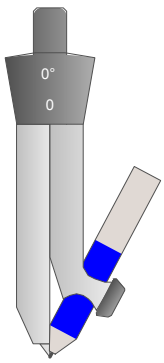
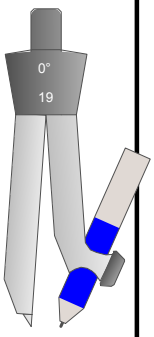
G-CO.12 *I can make the following constructions: copy a segment, copy an angle, perpendicular bisector, angle bisector*

9. Construct the perpendicular bisector of $\overline{RP}$



10. Draw acute ∠ ABC and then construct its bisector. Label all your points.

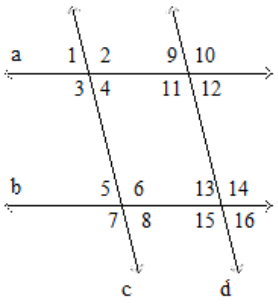


11. Construct a copy of the given angle.

G-CO.9 *I can prove theorems about lines and angles.*

12. Which lines, if any, must be parallel based on the given diagram and information. Explain.

Given: ∠13 ≅ ∠12



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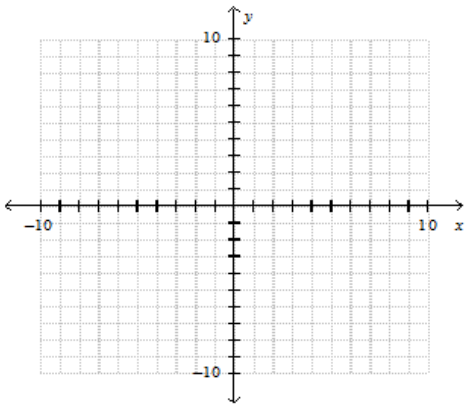
G-GPE.4 *Use coordinates to prove simple geometric theorems algebraically.*

13. Given the following coordinates A (-1,6) and B (3,-2). Draw segment AB. Find the midpoint of AB. Then, plot it, labeling it C.



G-GPE.5 *Prove the slope criteria for parallel and perpendicular lines and use them to solve geometric problems.*

18. Given the equation 6y - 2x = 18, what would the slope of the line be that is:

a) Perpendicular

b) Parallel

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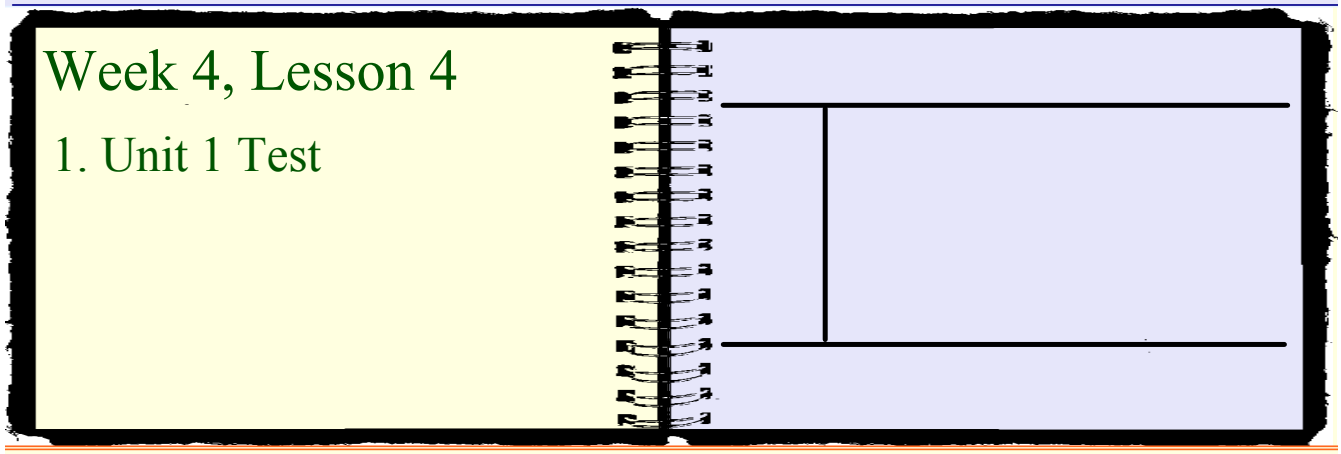
Week 4, Lesson 4

1. Unit 1 Test



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Week 4, Wednesday

1. Warm Up
2. Study Guide

Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

Warm Up:

On a blank piece of paper, please answer the following questions.

1. Given the diagram below, find the measure of all the numbered angles.

2. Using the same diagram, identify a pair of each of the following:

- corresponding angles
- alternate exterior angles
- alternate interior angles
- same-side interior angles
- vertical angles