EQ: G.CO.3 How do I identify quadrilaterals?

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

Week 15, Lesson 1

1. Warm Up
2. TI-NSpire activity
3. Notes
4. Closure

84

Quadrilaterals

85

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:

Based on what you already know, sketch a <u>diagram</u> for each of the following AND write ONE <u>characteristic</u> for each.

1. quadrilateral
2. parallelogram
3. square
4. rectangle

Proficient

| G-CO.1 | G-CO.12 | G-CO.9 | G-GPE.4 | G-GPE.5 | G-CO.2 | G-CO.3 | G-CO.4 | G-CO.5 | G-CO.6 | G-CO.7 | G-CO.8 | G-CO.9 | G-CO.10 | G-CO.13 | G-SRT.5 | G-SRT.8 | G-CO.11 | G-CO.13 | G-GPE.4 |

Introduction to Geometry   **Transformations**   **Triangles**   **Quadrilaterals**

Independent Work (30.0%)	C	75.0
Overall Class Grade	**A**	**91.3**

Date Assigned	Category	Assignment	Points	Mark	Comment	Note
10/13/2014	Independent Work	Unit 2 Proficiency Graph	1.00 / 1.00	10 (100.0%)		
11/14/2014	Assessed Standards	Unit 3 G-CO.7	1.00 / 1.00	10 (100.0%)		
11/15/2014	Assessed Standards	Unit 3 G-CO.8	1.00 / 1.00	10 (100.0%)		
11/16/2014	Assessed Standards	Unit 3 G-CO.9	1.00 / 1.00	10 (100.0%)		
11/17/2014	Assessed Standards	Unit 3 G-CO.10	1.00 / 1.00	10 (100.0%)		
11/18/2014	Assessed Standards	Unit 3 G-CO.13	1.00 / 1.00	10 (100.0%)		
11/19/2014	Assessed Standards	Unit 3 G-SRT.5	1.00 / 1.00	10 (100.0%)		
11/20/2014	Assessed Standards	Unit 3 G-SRT.8	0.88 / 1.00	8.8 (88.0%)		
11/24/2014	Independent Work	Unit 3 Proficiency Graph				
11/24/2014	Independent Work	Unit 3 Notebook Check	0.50 / 1.00	5 (50.0%)		
12/9/2014	Assessed Standards	Unit 4 G-CO.11				
12/10/2014	Assessed Standards	Unit 4 G-CO.13				
12/11/2014	Assessed Standards	Unit 4 G-GPE.4				

I will give you 3 points to put on your Unit 3 Notebook grade if you will have your parents sign the progress report and return it by the end of the week.

Parent Signature _____

MATCHING ACTIVITY

Match the <u>WORD</u> to the <u>PICTURE</u> to the <u>DESCRIPTION</u>.

Answers:

Kite		No pairs of parallel sides 2 pairs of congruent sides
Quadrilateral		4 sides
Square		2 pairs of parallel sides 4 congruent sides 4 right angles
Rhombus		2 pairs of parallel sides 4 congruent sides
Rectangle		2 pairs of parallel sides 2 pairs of congruent sides 4 right angles
Parallelogram		2 pairs of parallel sides 2 pairs of congruent sides
Isosceles Trapezoid		1 pair of parallel sides 1 pair of congruent sides
Trapezoid		1 pair of parallel sides No pairs of congruent sides

quadrilateral	four-sided polygon
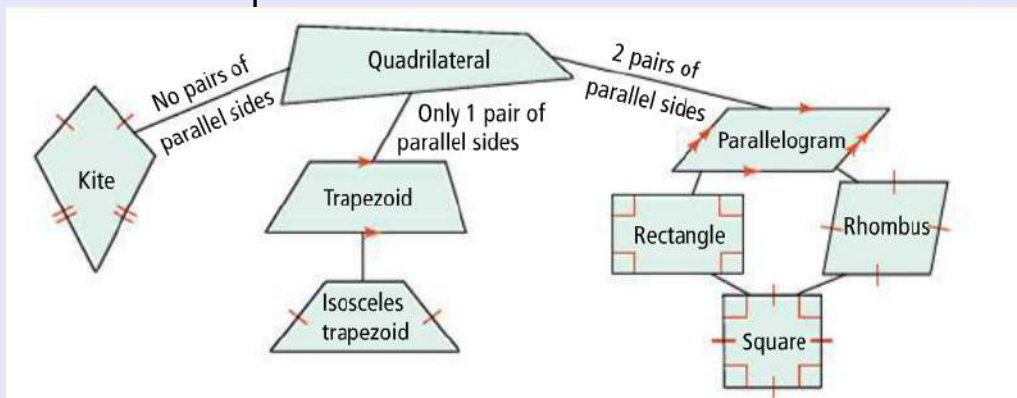
Parallelogram	A quadrilateral with both pairs of opposite sides parallel
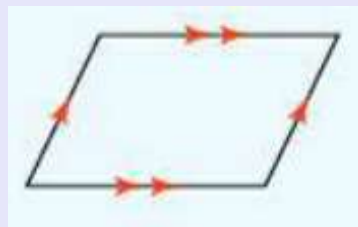
Summary:

TI-NSPire Activity

By the end of the activity, you should have the following information recorded in your IAN (LEFT-SIDE):

#1.1a... Explanation: _____

#1.1b...

Slope of $\overline{AB}$:

Slope of $\overline{BC}$:

Slope of $\overline{CD}$:

Slope of $\overline{AD}$:

#1.1c...

Observations: _____

#1.2a...

Length of $\overline{AB}$:

Length of $\overline{BC}$:

Length of $\overline{CD}$:

Length of $\overline{AD}$:

#1.2b... Observations: _____

#1.2c... Observations of pattern: _____

#1.3a...

Angle A:

Angle B:

Angle C:

Angle D:

#1.3b... Observations of pattern: _____

#1.3c... Observations using the term "supplementary": _____

#1.4a

Length of $\overline{AE}$:

Length of $\overline{CE}$:

Length of $\overline{DE}$:

Length of $\overline{BE}$:

#1.4b

Observations: _____

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.

53. Name the postulate or theorem that justifies $\triangle EFG \cong \triangle GHE$.

54. Complete each statement.

    a. $\angle FEG \cong \blacksquare$ **b.** $\angle EFG \cong \blacksquare$ **c.** $\angle FGE \cong \blacksquare$

    d. $\overline{EF} \cong \blacksquare$ **e.** $\overline{FG} \cong \blacksquare$ **f.** $\overline{GE} \cong \blacksquare$

EQ: G.CO.11 What are properties of parallelograms?

Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question Essential Question
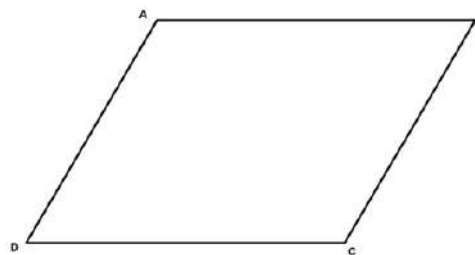
Week 15, Lesson 2

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

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Properties of Parallelograms

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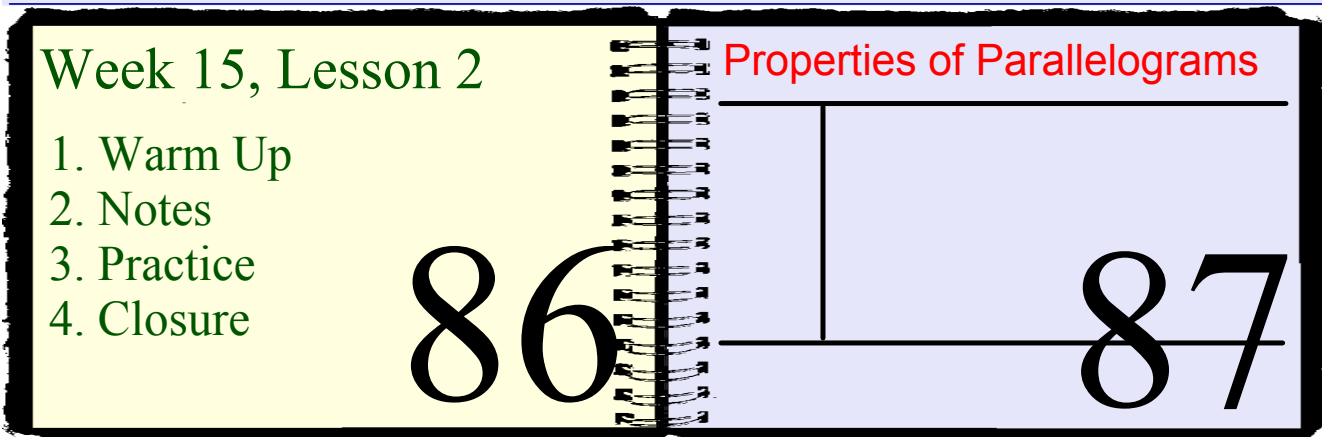
Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up Warm-up

Warm Up:

Using the information from your TI-NSpire activity on page 84, answer the following questions.
1. True or False: If the quadrilateral at the right is a parallelogram, AB will be parallel to CD.
2. True or False: If the quadrilateral at the right is a parallelogram, AD and AB will be congruent.
3. True or False: If the quadrilateral at the right is a parallelgram, angle A will be equal to angle C.

notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes -

Properties of
Parallelograms

1. opposite sides are parallel

2. opposite sides are congruent

$\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$

3. consecutive angles add to 180° (are supplementary).

*consecutive angles - angles that share a side.

$m\angle A + m\angle B = 180$
$m\angle B + m\angle C = 180$
$m\angle C + m\angle D = 180$
$m\angle D + m\angle A = 180$

4. Opposite angles are congruent.

$\angle A \cong \angle C$ and $\angle B \cong \angle D$

5. Diagonals bisect each other

$\overline{AE} \cong \overline{CE}$ and $\overline{BE} \cong \overline{DE}$

6. 1 pair of sides is parallel AND congruent.

Summary:

Left-Side Practice

Find the value of x in each parallelogram. What property of parallelograms did you use to solve the problem?

$53°$

$x°$

$8x°$ $7x°$

A   B

$8x°$ $(y + 87)°$

$4y°$ $(7x + 8)°$

D   C

$4x - 9$

A   B

$2y - 3$

$2x + 1$

D   C

$3x + 3$

Am I Parallelogram? practice

For each of the statements, identify
if the figure is a parallelogram.
Then, give the reason why.

Statement	Parallelogram? (yes or no)	Why?
1) AB = CD BC = AD		
2. $\angle ABC \cong \angle CDA$ $\angle BCD \cong \angle BAD$		
3. AB = BC AD = CD		
4. $\angle B = 75°$ $\angle A = 105°$		
5. $\angle B = 75°$ $\angle D = 105°$		

Statement	Parallelogram?	Why?
6. E is the midpoint of BD and AC		
7. $\angle 7 \cong \angle 3$ $\angle 5 \cong \angle 1$		
8. $\angle 7 \cong \angle 3$ $\angle 8 \cong \angle 4$		
9. AB = BC = CD = AD		
10. $\overline{BE} \cong \overline{DE}$		
11. $\angle ABC$ and $\angle BCD$ are supplementary; AND $\angle BAD$ and $\angle ADC$ are supplementary		

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...

Compare and Contrast What is the difference between a quadrilateral and a parallelogram?

EQ: G.CO.11 What are properties of parallelograms?

Week 15, Lesson 3

1. Warm Up
2. Practice
3. Closure

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Properties of Parallelograms

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Warm Up:

1. Given the parallelogram below, solve for x and y.

2. What property of parallelograms allows you to solve this problem?
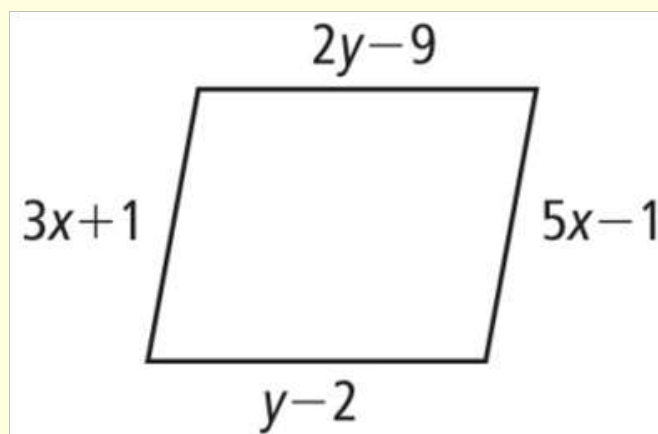
$$2y-9$$

$$3x+1 \qquad 5x-1$$

$$y-2$$

ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity ICA: In Class Activity

Left-Side Practice

From memory, list as many of the 6 properties of parallelograms that you can.

For each of the parallelograms shown, solve for each variable. Then, describe what property of parallelograms you used to solve the problem.

Parallelogram ABCD: side A to B = $3x - 5$, side AD (at D) = $2y - 6$, side BC (at B) = $y + 3$, side DC = $2x + 2$, with diagonals drawn.

Parallelogram ABCD: angle at A = $8y°$, angle at B = $10y°$, angle at C = $(4x - 20)°$.

Parallelogram ABCD: side A to B = $2x + 4$, segment from A = 11, segment $2x + 5$, $y + 4$, with diagonals drawn.

Parallelogram: angles $(4x - 5)°$, $(2x + 5)°$, $(2y + 5)°$.
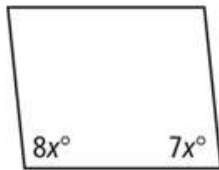
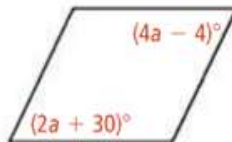Name _____   pd _____   IAN. page 80

G.CO.11 Practice Worksheet

1. For each of the following parallelograms, solve for the variable(s). Then, describe the property you used.
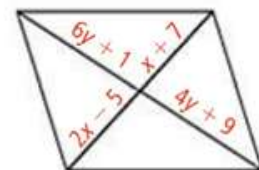
(a)

$8x°$ $7x°$

(b)

$(4a − 4)°$

$(2a + 30)°$

(c)

$6y + 1$ $x + 7$

$2x − 5$ $4y + 9$

x = _____
Property:
_____
_____
_____

a = _____
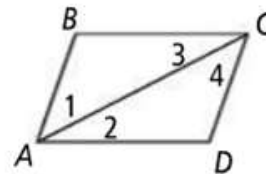Property:
_____
_____
_____

x = _____ y = _____
Property:
_____
_____
_____

2. Complete the following proof.

Given: $\square ABCD$

Prove: $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$

Statements	Reasons
1) $ABCD$ is a parallelogram.	1)
2) $\overline{AB} \parallel \overline{CD}$ and $\overline{BC} \parallel \overline{DA}$	2)
3) $\angle 1 \cong \angle 4$ and $\angle 3 \cong \angle 2$	3)
4) $\overline{AC} \cong \overline{AC}$	4)
5) $\triangle ABC \cong \triangle CDA$	5)
6) $\overline{AB} \cong \overline{CD}$ and $\overline{BC} \cong \overline{DA}$	6)

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...

Error Analysis Your friend says, "If a quadrilateral has a pair of opposite sides that are congruent and a pair of opposite sides that are parallel, then it is a parallelogram." What is your friend's error? Explain.

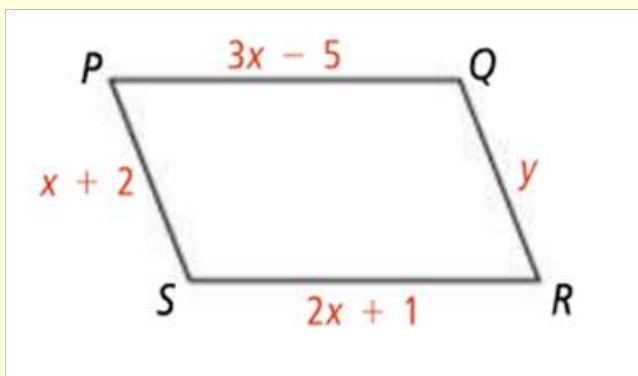EQ: G.CO.11 What are properties of parallelograms?

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

Week 15, Lesson 4

1. Warm Up
2. TI-NSpire activity
3. Notes
4. Practice
5. Closure

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Properties of Parallelograms

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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:

Given the parallelogram below, find the values of x and y.
Then, explain which property of parallelograms you used to
solve this problem.

# TI-NSpire Activity

At the end of this activity, you should have the following information recorded in your IAN (LEFT-SIDE):

#1.1

Yes or No

Explanation: _____

_____

_____

#1.2

Characteristic: _____

#1.3

Characteristic: _____

notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes - notes -

Rectangles

Special quadrilaterals that have all of the characteristics of parallelograms PLUS:
- consecutive sides are perpendicular (90^0 Angles)
- diagonals are congruent (BD = CD)
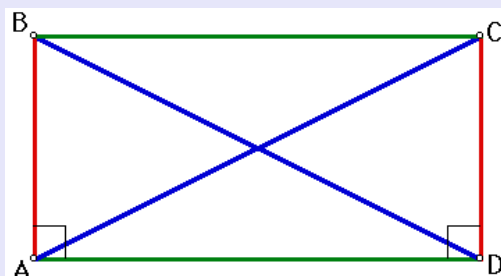
Squares

Special quadrilaterals that have all of the characteristics of parallelograms PLUS:
- consecutive sides are perpendicular
- all sides are congruent
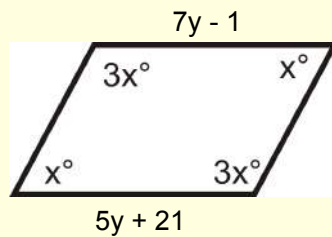-Diagonals are congruent
-Diagonals are Perpendicular
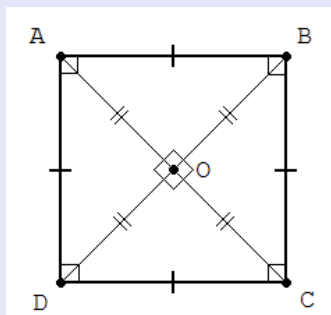
Summary:

Left-Side Practice

Given the following slopes, write the slope of the line <u>parallel</u> to it and the slope of the line <u>perpendicular</u> to it.

1. m = 1/2

2. m = -3

3. m = 3/4

4. m = -1

5. m = 1

6. (a) Given the quadrilateral below, what is the most specific name for it? What property justifies it as this shape?

7y - 1

3x°   x°

x°   3x°

5y + 21

(b) Solve for y. Then, find the length of the side.

7. (a) Given the quadrilateral below, what is the most specific name for it? What properties justifies it as this shape?

2y

2y   2x + 2   2y

3x - 5

2y
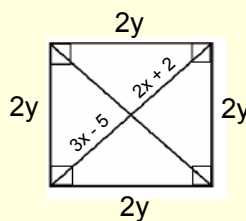
(b) Find the value of x and the length of the diagonal.

8. Complete the following proof.

Given: $\square ABCD$

Prove: $\overline{AB} \cong \overline{CD}, \overline{BC} \cong \overline{AD}$
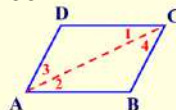
	STATEMENTS		REASONS
1	$\square ABCD$	1	Given
2	Draw segment from A to C	2	Two points determine exactly one line.
3	$AB \parallel CD, AD \parallel BC$	3	
4	$\angle 1 \cong \angle 2, \angle 3 \cong \angle 4$	4	
5	$\overline{AC} \cong \overline{AC}$	5	
6	$\triangle ABC \cong \triangle CDA$	6	
7	$\overline{AB} \cong \overline{CD}, \overline{BC} \cong \overline{AD}$	7	

Name _____   pd _____   IAN.page 82

G.CO.11 Practice #2

Final Exam Review...

1. For rectangle ABCD, the slope of AB is ½. Fill in the slopes for the remaining sides.
Slope of AB = ½   Slope of BC = ____   Slope of CD = ____   Slope of AD = ____

2. What one transformation is the same as reflections over two parallel lines?
(a) Translation   (b) Rotation   (c) Reflection   (d) None of the above

3. Jon places a ladder on level ground against a vertical wall. When the base of the ladder is 12 feet from the wall, the ladder reaches a height of 10 feet along the wall. Jon then moves the base 3 feet closer to the wall. To the nearest foot, how high up does the ladder reach?
(a) 12 feet
(b) 13 feet
(c) 15 feet
(d) 16 feet

4. Classify the relationship between $\overline{EH}$ and $\overline{BC}$.
_____

5. Find the values of x and y. What property was used to solve this problem?

x = ____
y = ____
Property: _____

6. Find the values of x and y. What property was used to solve this problem?

x = ____
y = ____
Property: _____

7. Find the value of x and the measure of each angle.

x = ____
angle measures: _____, _____, _____

Right Side...

Write a summary that answers the essential question.

Left Side...

EQ: G.CO.11 What are properties of parallelograms?

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

Week 15, Wednesday

1. Warm Up
2. Finish WS
3. Practice
4. Closure

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not a new page!!

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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. From memory, list as many of the 6 properties of parallelograms as you can.

2. Given the parallelogram at the right, find the values of x and y. Then, describe the property you used to solve this problem.

$3x + 5$

$y + 3$

$2y - 1$

$4x$

Am I Parallelogram? practice

For each of the statements, identify
if the figure is a parallelogram.
Then, give the reason why.

Statement	Parallelogram? (yes or no)	Why?
1) AB = CD BC = AD		
2. $\angle ABC \cong \angle CDA$ $\angle BCD \cong \angle BAD$		
3. AB = BC AD = CD		
4. $\angle B = 75°$ $\angle A = 105°$		
5. $\angle B = 75°$ $\angle D = 105°$		

6. E is the midpoint of BD and AC		
7. $\angle 7 \cong \angle 3$ $\angle 5 \cong \angle 1$		
8. $\angle 7 \cong \angle 3$ $\angle 8 \cong \angle 4$		
9. AB = BC = CD = AD		
10. $\overline{BE} \cong \overline{DE}$		
11. $\angle ABC$ and $\angle BCD$ are supplementary; AND $\angle BAD$ and $\angle ADC$ are supplementary		

Left-Side Practice

Using the diagram above, describe the ways you could prove ABCD is a parallelogram.