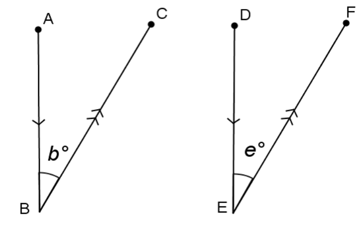
4.6

Name (print first and last) ______________________________ **Per**_____ **Date:** 11/25 due 12/2

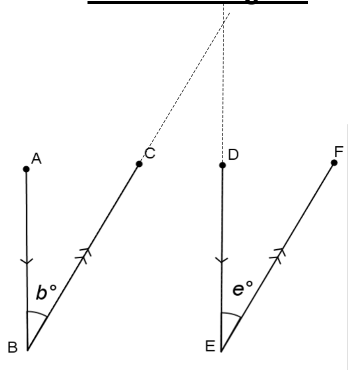
4.6 Angles: Writing Proof with auxiliary lines **Geometry Regents 2013-2014 Ms. Lomac**

SLO: I can write proofs about angles with auxiliary lines.

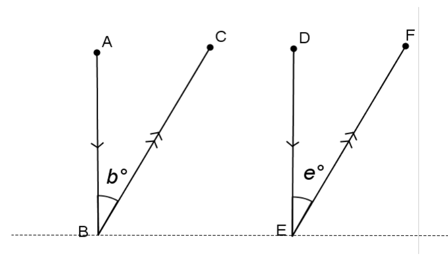
(1) ☐ Prove that the measures of angles B and E are equal.
Extend lines or add auxiliary lines to help you.



Terrina's diagram



Quan's diagram



☐ Describe Terrina's additions to the diagram

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☐ Describe Quan's additions to the diagram

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☐ Terrina says she can use alternate interior angles to write her proof. Do you agree with her? Why or why not?

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☐ Quan says he can use corresponding angles to write his proof. Do you agree with him? Why or why not?

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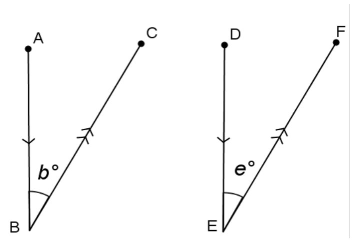
☐ Choose ONE of their drawings and prove that the measure of angle B is equal to the measure of angle E. Add letters to the diagram where needed to help you write the proof



__________because______________________________

__________because______________________________

__________because ______________________________

__________because ______________________________

__________because ______________________________

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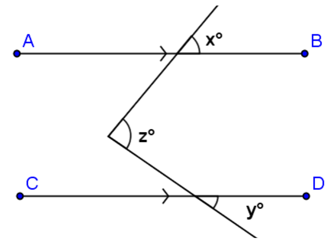
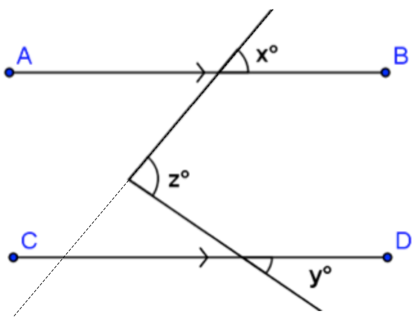
(2) ☐ The diagrams that Terrina and Quan could BOTH be used to write the proof. Like problem #1, there is more than one way to add to the diagram at right to prove the statement below.



Given: $\overline{AB} \parallel \overline{CD}$

Prove: $z = x + y$

The three diagrams below have different extensions or auxiliary lines drawn. Add the letters *a* and *b* to each diagram to help you write the proof.



☐ **THINK:**

Angle z is an interior/exterior (circle one) angle of the triangle formed. An ____________________ angle of a triangle is equal to the sum of the _______________________ ____________________ angles. If we can get the remote interior angles to be the same measures as _____ and ______, then we can prove that $z = x + y$

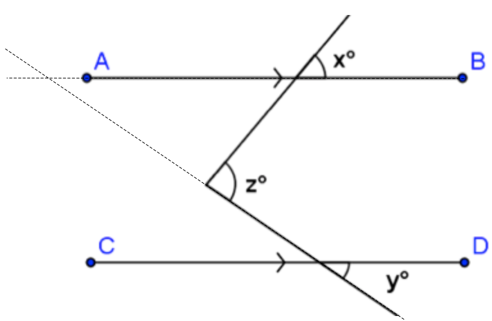
☐ **PROOF:**

(1) a = x because the angles are corresponding (add a to the diagram)

(2) b = y because they are vertical (add b to the diagram)

(3) _____ + _____ = z because of the ____________ _____________ theorem.

(4) _____ + _____ = z because equal values can be substituted.



☐ **THINK:**

Angle z is an interior/exterior (circle one) angle of the triangle formed. An ____________________ angle of a triangle is equal to the sum of the _______________________ ____________________ angles. If we can get the remote interior angles to be the same measures as _____ and ______, then we can prove that $z = x + y$

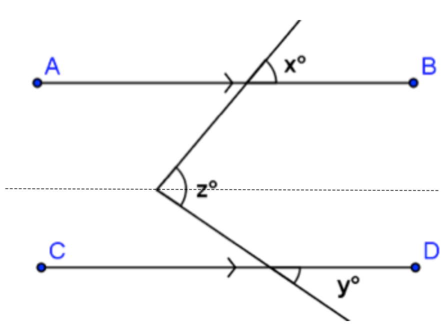
☐ **PROOF:**

(1) a = x because the angles are ____________________ (add a to the diagram)

(2) b = y because they _________________________ (add b to the diagram)

(3) _____ + _____ = z because of the ____________ _____________ theorem.

(4) _____ + _____ = z because equal values can be _________________.



☐ **THINK:**

Angle z is composed of _____ adjacent angles. If we can prove that one of the angles is congruent to _____ and the other is congruent to ______ then we can prove that $z = x + y$

☐ **PROOF:**

(1) a = x because the angles are ____________________ (add a to the diagram)

(2) b = y because the angles are ____________________ (add b to the diagram)

(3) _____ + _____ = z because the measure of an angle is equal to the sum of the __________________ angles that make up the larger angle.

(4) _____ + _____ = z because ___________________________________.

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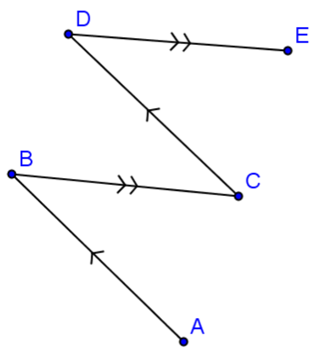
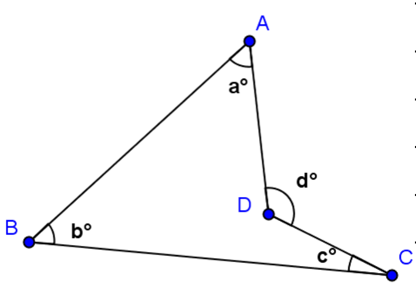
(3) ☐ Prove each statement below. You may or may not need to draw an auxiliary line.

☐ (a) In the figure, $AB \parallel CD$ and $BC \parallel DE$. Prove that $\angle ABC = \angle CDE$.



____________because ____

☐ (b) In the figure, prove that $d = a + b + c$.



____________because ____

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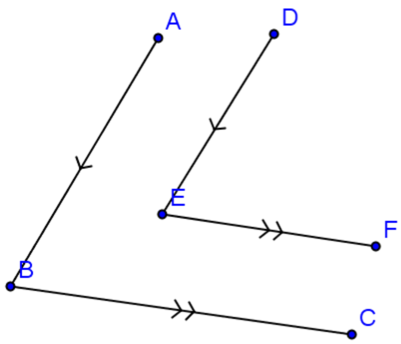
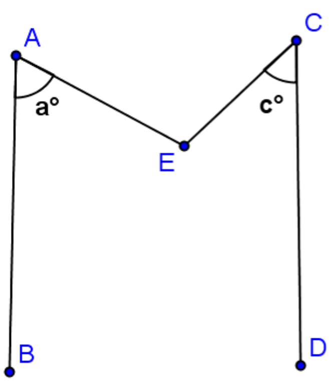
☐ (c) In the figure, $AB \parallel DE$ and $BC \parallel EF$. Prove that $\angle ABC = \angle DEF$.



____________because ____

☐ (d) In the figure, $AB \parallel CD$. Prove that $\angle AEC = a + c$



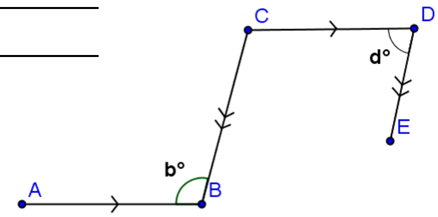
____________because ____

4.6 Exit Ticket Name______________________________ Per______

- ☐ I got this!
- ☐ I can with a bit of help
- ☐ I will, given lots of help
- ☐ I can't
- ☐ I won't bother to
- ☐ I refuse to

In the figure, $AB \parallel CD$ and $BC \parallel DE$. Prove that $b + d = 180$.

______________ because ______________________________



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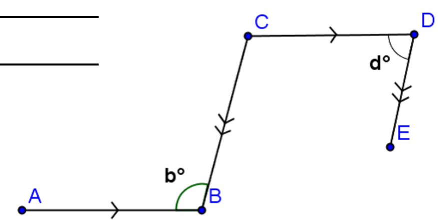

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