

GEOMETRY WORKSHEET---BEGINNING PROOFS

I Given:  $\frac{2x-9}{5} = 1$

Prove:  $x = 7$

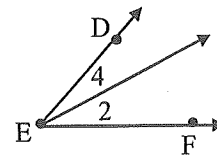
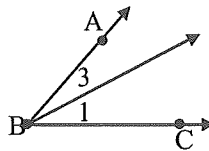
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II. Given:  $AC = BD$   
 Prove:  $AB = CD$



<p>1. <math>AC = BD</math></p> <p>2. <math>AC = AB + BC</math>  <math>BD = BC + CD</math></p> <p>3. <math>AB + BC = BC + CD</math></p> <p>4. <math>AB = CD</math></p>	<p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p>
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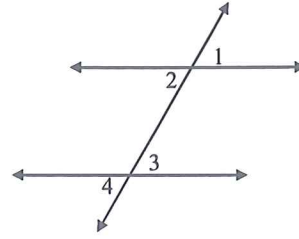
III. Given:  $m\angle 1 = m\angle 2$ ;  $m\angle 3 = m\angle 4$   
 Prove:  $m\angle ABC = m\angle DEF$



<p>1. <math>m\angle 1 = m\angle 2</math>; <math>m\angle 3 = m\angle 4</math></p> <p>2. <math>\angle ABC = \angle 1 + \angle 3</math>  <math>\angle DEF = \angle 2 + \angle 4</math></p> <p>3. <math>\angle ABC = \angle 2 + \angle 4</math></p> <p>4. <math>m\angle ABC = m\angle DEF</math></p>	<p>1.</p> <p>2.</p> <p>3.</p> <p>4.</p>
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IV. Given:  $\angle 2 \cong \angle 3$

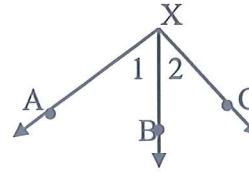
Prove:  $\angle 1 \cong \angle 4$



- 
- |                              |    |
|------------------------------|----|
| 1. $\angle 1 \cong \angle 2$ | 1. |
| 2. $\angle 2 \cong \angle 3$ | 2. |
| 3. $\angle 3 \cong \angle 4$ | 3. |
| 4. $\angle 1 \cong \angle 4$ | 4. |

V. Given:  $\angle 1$  and  $\angle 2$  are complementary

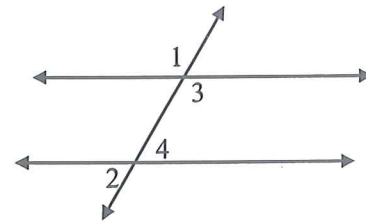
Prove:  $\overrightarrow{XA} \perp \overrightarrow{XC}$



- 
- |   |    |
|---|----|
| 1. $\angle 1$ and $\angle 2$ are complementary        | 1. |
| 2. $m\angle 1 + m\angle 2 = \underline{\hspace{2cm}}$ | 2. |
| 3. $m\angle AXC = m\angle 1 + m\angle 2$              | 3. |
| 4. $m\angle AXC = \underline{\hspace{2cm}}$           | 4. |
| 5. $\angle AXC$ is a right angle                      | 5. |
| 6.  | 6. |

VI. Given:  $\angle 1$  and  $\angle 2$  are supplementary

Prove:  $\angle 3$  and  $\angle 4$  are supplementary

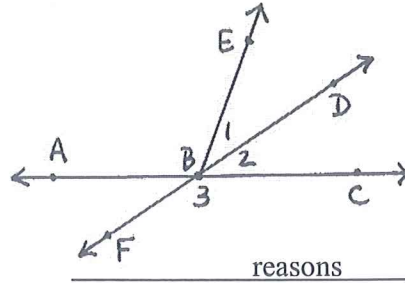


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- |                          |  |
|--------------------------|--|
| 1.                       | 1. Given                               |
| 2.                       | 2. Def. of supplementary angles        |
| 3.                       | 3. Vertical angles are congruent       |
| 4. <i>Skip this step</i> | 4. Def. of congruent angles            |
| 5.                       | 5. Substitution                        |
| 6.                       | 6. Def. of <u>                    </u> |

VII. Given:  $\overline{BD}$  bisects  $\angle EBC$

Prove:  $\angle 1$  and  $\angle 3$  are supplementary

statements



reasons

1.  $\overline{BD}$  bisects  $\angle EBC$

1.

2.  $\angle 1 \cong \angle 2$

2.

3.  $\angle 2$  and  $\angle 3$  form a linear pair

3. skip this step

4.  $m\angle 2 + m\angle 3 = 180$

4.

5.  $m\angle 1 = m\angle 2$

5. skip this step

6.  $m\angle 1 + m\angle 3 = 180$

6.

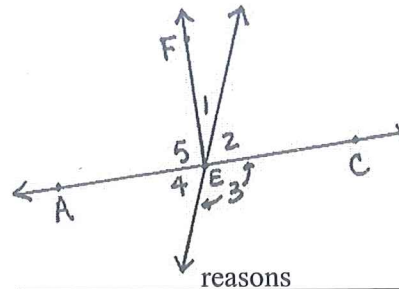
7.  $\angle 1$  and  $\angle 3$  are supplementary

7.

VIII. Given:  $\angle FEC$  is a right angle

Prove:  $\angle 1$  and  $\angle 4$  are complementary

statements



reasons

1.  $\angle FEC$  is a right angle

1.

2.  $m\angle FEC = 90$

2.

3.  $m\angle FEC = m\angle 1 + m\angle 2$

3.

4.  $m\angle 1 + m\angle 2 = 90$

4.

5.  $\angle 2 \cong \angle 4$

5.

6.  $m\angle 2 = m\angle 4$

6. skip

7.  $m\angle 1 + m\angle 4 = 90$

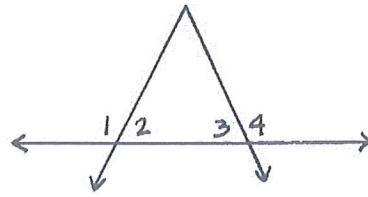
7.

8.  $\angle 1$  and  $\angle 4$  are complementary

8

IX. Given:  $\angle 2 \cong \angle 3$

Prove:  $\angle 1 \cong \angle 4$



statements

reasons

1.  $\angle 2 \cong \angle 3$

1.

2.  $\angle 1 + \angle 2 = 180$   
 $\angle 3 + \angle 4 = 180$

2.

3.  $\angle 1 + \angle 2 = \angle 3 + \angle 4$

3.

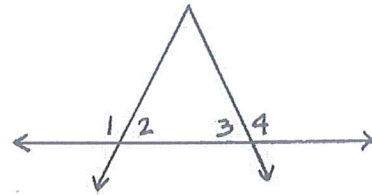
4.  $\angle 1 + \angle 2 = \angle 2 + \angle 4$

4.

5.  $\angle 1 \cong \angle 4$

X. Given:  $\angle 2 \cong \angle 3$

Prove:  $\angle 1 \cong \angle 4$



statements

reasons

1.  $\angle 2 \cong \angle 3$

1.

2.  $m\angle 1 + m\angle 2 = 180$   
 $m\angle 3 + m\angle 4 = 180$

2.

3.  $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$

3.

4.  $\angle 1 + \angle 2 = \angle 2 + \angle 4$

4.

5.  $\angle 1 \cong \angle 4$

5.

GEOMETRY WORKSHEET---BEGINNING PROOFS

I Given:  $\frac{2x-9}{5} = 1$

Prove:  $x = 7$

1.)  $\frac{2x-9}{5} = 1$

2.)  $2x-9 = 5$

3.)  $2x = 14$

4.)  $x = 7$

1.) given

2.) multiply

3.) addition

4.) divide

II. Given:  $AC = BD$   
Prove:  $AB = CD$



1.  $AC = BD$

2.  $AC = AB + BC$   
 $BD = BC + CD$

3.  $AB + BC = BC + CD$   
 $-BC - BC$

4.  $AB = CD$

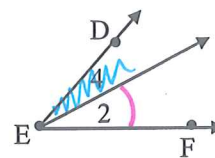
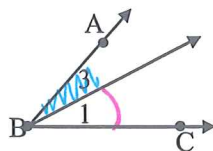
1. Given

2. Segment addition

3. Substitution

4. subtraction

III. Given:  $m\angle 1 = m\angle 2$ ;  $m\angle 3 = m\angle 4$   
Prove:  $m\angle ABC = m\angle DEF$



1.  $m\angle 1 = m\angle 2$ ;  $m\angle 3 = m\angle 4$

2.  $m\angle 1 + m\angle 3 = m\angle 2 + m\angle 4$

3.  $m\angle 1 + m\angle 3 = m\angle ABC$   
 $m\angle 2 + m\angle 4 = m\angle DEF$

4.  $m\angle ABC = m\angle DEF$

1. given

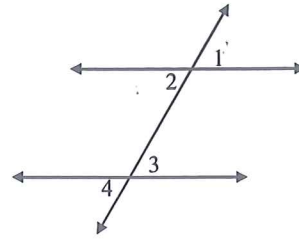
2.

3.

4.

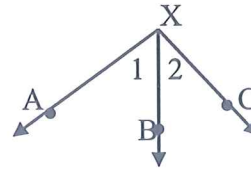
Fix

IV. Given:  $\angle 2 \cong \angle 3$   
 Prove:  $\angle 1 \cong \angle 4$



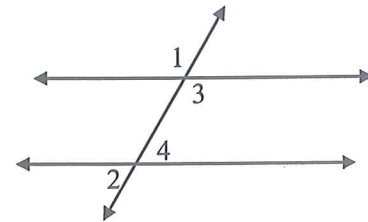
- |                              |                                    |
|------------------------------|------------------------------------|
| 1. $\angle 1 \cong \angle 2$ | 1. Vertical $\angle$ s are $\cong$ |
| 2. $\angle 2 \cong \angle 3$ | 2. given                           |
| 3. $\angle 3 \cong \angle 4$ | 3. vertical $\angle$ s are $\cong$ |
| 4. $\angle 1 \cong \angle 4$ | 4. substitution                    |

V. Given:  $\angle 1$  and  $\angle 2$  are complementary  
 Prove:  $\overrightarrow{XA} \perp \overrightarrow{XC}$



- |  |                          |
|--|--------------------------|
| 1. $\angle 1$ and $\angle 2$ are complementary | 1. given                 |
| 2. $m\angle 1 + m\angle 2 = 90^\circ$          | 2. def of compl.         |
| 3. $m\angle AXC = m\angle 1 + m\angle 2$       | 3. angle addition        |
| 4. $m\angle AXC = 90^\circ$                    | 4. substitution          |
| 5. $\angle AXC$ is a right angle               | 5. def of Right $\angle$ |
| 6.   | 6.                       |

VI. Given:  $\angle 1$  and  $\angle 2$  are supplementary  
 Prove:  $\angle 3$  and  $\angle 4$  are supplementary



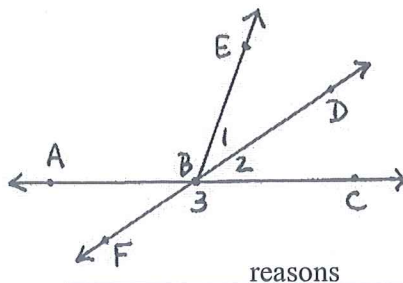
- |   |                                   |
|---|-----------------------------------|
| 1. $\angle 1$ and $\angle 2$ are suppl.               | 1. Given                          |
| 2. $\angle 1 + \angle 2 = 180^\circ$                  | 2. Def. of supplementary angles   |
| 3. $\angle 1 \cong \angle 3, \angle 4 \cong \angle 2$ | 3. Vertical angles are congruent  |
| 4. <del>_____</del>                                   | 4. Def. of congruent angles. skip |
| 5. $\angle 3 + \angle 4 = 180^\circ$                  | 5. Substitution                   |
| 6. $\angle 3$ and $\angle 4$ are suppl.               | 6. Def. of <u>suppl.</u>          |

VII. Given:  $\overline{BD}$  bisects  $\angle EBC$

Prove:  $\angle 1$  and  $\angle 3$  are supplementary

statements

1.  $\overline{BD}$  bisects  $\angle EBC$
2.  $\angle 1 \cong \angle 2$
3.  $\angle 2$  and  $\angle 3$  form a linear pair
4.  $m\angle 2 + m\angle 3 = 180$
5.  $m\angle 1 = m\angle 2$
6.  $m\angle 1 + m\angle 3 = 180$
7.  $\angle 1$  and  $\angle 3$  are supplementary



reasons

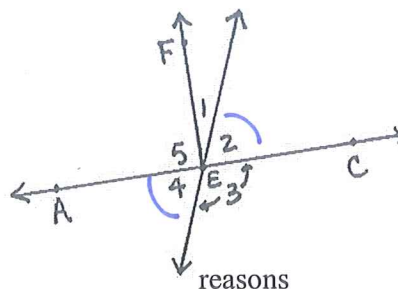
1. given
2. def of  $\angle$  bisector
3. skip step
4. linear pairs are suppl.
5. skip step
6. substitution
7. def of suppl.

VIII. Given:  $\angle FEC$  is a right angle

Prove:  $\angle 1$  and  $\angle 4$  are complementary

statements

1.  $\angle FEC$  is a right angle
2.  $m\angle FEC = 90$
3.  $m\angle FEC = m\angle 1 + m\angle 2$
4.  $m\angle 1 + m\angle 2 = 90$
5.  $\angle 2 \cong \angle 4$
6.  $m\angle 2 = m\angle 4$
7.  $m\angle 1 + m\angle 4 = 90$
8.  $\angle 1$  and  $\angle 4$  are complementary



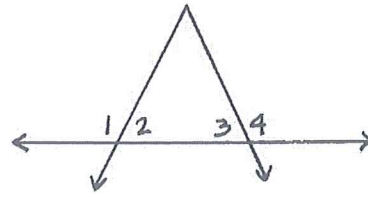
reasons

1. given
2. def of RT $\angle$
3. angle addition
4. substitution
5. vertical  $\angle$ s are  $\cong$
6. skip
7. substitution
8. def of compl.

IX. Given:  $\angle 2 \cong \angle 3$

Prove:  $\angle 1 \cong \angle 4$

Fix



statements

reasons

1.  $\angle 1$  and  $\angle 2$  form a linear pair  
 $\angle 3$  and  $\angle 4$  form a linear pair

$$\angle 2 \cong \angle 3$$

1.

given

2.  $\angle 1$  and  $\angle 2$  are suppl.  $\angle 1 + \angle 2 = 180$   
 $\angle 4$  and  $\angle 3$  are suppl.  $\angle 4 + \angle 3 = 180$

2.

linear pairs are suppl.

3.  $\angle 2 \cong \angle 3$

$$\angle 1 + \angle 2 = \angle 4 + \angle 3$$

3.

substitution

4.  $\angle 1 \cong \angle 4$

$$\angle 1 + \angle 2 = \angle 4 + \angle 2$$

4.

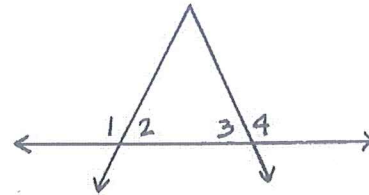
substitution

$$\angle 1 \cong \angle 4$$

5. subtraction

X. Given:  $\angle 2 \cong \angle 3$

Prove:  $\angle 1 \cong \angle 4$



statements

reasons

1.  $\angle 2 \cong \angle 3$

1.

given

2.  $m\angle 1 + m\angle 2 = 180$   
 $m\angle 3 + m\angle 4 = 180$

2. linear pairs are suppl.

3.  $m\angle 1 + m\angle 2 = m\angle 3 + m\angle 4$

3. substitution

4.  $\angle 1 + \angle 2 = \angle 2 + \angle 4$

4. substitution

5.  $\angle 1 \cong \angle 4$

5. subtraction