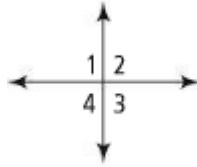


Spend a few minutes looking over the **Unit 6: Reasons for proofs** sheet. Always start your proofs with the given information and build from there.

1. Fill in the blanks on the following proof.
 Given: $\angle 1 \cong \angle 2$
 Prove: $\angle 4 \cong \angle 3$



#1 Choices for blanks
 Given
 Vertical angles are congruent
 Transitive Property of Congruence
 $\angle 1 \cong \angle 4$

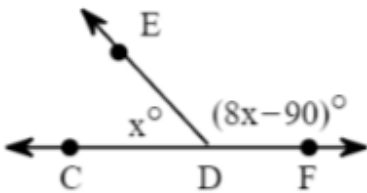
Statements:

- 1) $\angle 1 \cong \angle 2$
- 2) $\angle 4 \cong \angle 2$
- 3) _____
- 4) $\angle 1 \cong \angle 3$
- 5) $\angle 4 \cong \angle 3$

Reasons:

- a) _____
- b) Vertical angles are \cong
- c) Transitive Property of Congruence
- d) _____
- e) _____

2. Given the angles below:



#2 Choices for blanks:
 Definition of Supplementary,
 Division Property
 Distributive Property,
 Addition Property of Equality,
 Substitution Property,
 Transitive Property,
 Subtraction Property of Equality,
 Division Property,
 Reflexive Property

Fill in the reason that justifies each step.

$\angle CDE$ and $\angle EDF$ are supplementary.

$$m\angle CDE + m\angle EDF = 180$$

$$x + (8x - 90) = 180$$

$$9x - 90 = 180$$

$$9x = 270$$

$$x = 30$$

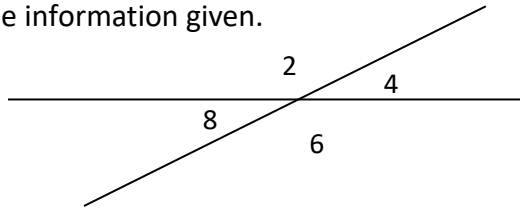
\angle s that form a linear pair are supplementary.

- a.
- b.
- c.
- d.
- e.

3. Write a complete proof using the information given.

Given: $\angle 2 \cong 140^\circ$

Prove: $\angle 8 \cong 40^\circ$



#3 Choices for blanks
 Definition of linear pair
 $\angle 2 + \angle 8 = 180^\circ$
 Substitution property of equality
 Given
 $\angle 8 = 40^\circ$

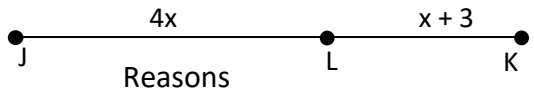
Statements:	Reasons:
1) $\angle 2 \cong 140^\circ$ 2) $\angle 2$ and $\angle 8$ are supplementary 3) _____ 4) $140^\circ + \angle 8 = 180^\circ$ 5) _____	a) _____ b) _____ c) Definition of supplementary d) _____ e) Subtraction Property

4. Complete the proof by filling in the spaces below.

#4 Choices for blanks
 Segment Addition Postulate
 $JK = 48$
 Division property of equality
 Subtraction property of equality
 $4x + (x + 3) = 48$
 $5x = 45$

Given: $JK = 48$

Prove: $x = 9$



Statements	Reasons
1) 2) $JL + LK = JK$ 3) 4) $5x + 3 = 48$ 5) 6) $x = 9$	a) Given b) c) Substitution Property d) Substitution Property e) f)

5. Use the statements and reasons given at the bottom to write a complete proof of the following:

Given: C is the midpoint of \overline{AD} .

Prove: $x = 4$

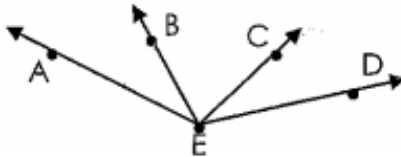


Statements:

Reasons:

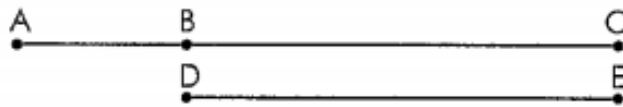
1)	a) Given
2) $\overline{AC} \cong \overline{CD}$	b)
3) $m\overline{AC} = m\overline{CD}$	c)
4)	d) Substitution Property
5) $2x = 8$	e)
6)	f) Division Property of Equality
Statement choices: $5x = 3x + 8$ $x = 4$ C is the midpoint of \overline{AD}	Reason choices: Congruent segments have equal length Subtraction Property of Equality Definition of midpoint

6. Given: $\angle AEC \cong \angle DEB$
Prove: $\angle AEB \cong \angle DEC$



Statements	Reasons
1. $\angle AEC \cong \angle DEB$	1.
2. $m\angle AEC = m\angle DEB$	2.
3. $m\angle AEB + m\angle BEC = m\angle AEC$	3.
4. $m\angle DEC + m\angle BEC = m\angle DEB$	4.
5. $m\angle AEB + m\angle BEC = m\angle DEC + m\angle BEC$	5.
6. $m\angle AEB = m\angle DEC$	6.
7. $\angle AEB \cong \angle DEC$	7.

7. Given: $\overline{BC} \cong \overline{DE}$
Prove: $AC = AB + DE$



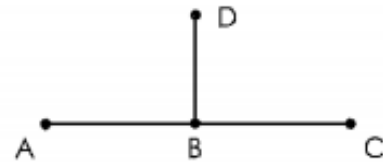
Statements	Reasons
1. $\overline{BC} \cong \overline{DE}$	1.
2. $BC = DE$	2.
3. $AC = AB + BC$	3.
4. $AC = AB + DE$	4.

8. Given: B is between A and D ; C is between A and D
 Prove: $AB + BD = AC + CD$



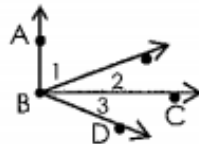
Statements	Reasons
1. B is between A and D ; C is between A and D	1.
2. $AB + BD = AD$	2.
3. $AC + CD = AD$	3.
4. $AD = AC + CD$	4.
5. $AB + BD = AC + CD$	5.

9. Given: $A, B,$ and C are collinear; $AB = BD$; $BD = BC$
 Prove: B is the midpoint of \overline{AC}



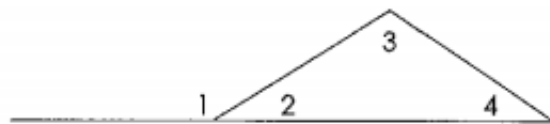
Statements	Reasons
1.	1. Given
2.	2. Transitive Property of Equality
3.	3. Definition of Congruent Segments
4.	4. Definition of Midpoint

10. Given: $\overline{AB} \perp \overline{BC}$; $m\angle 2 = m\angle 3$
 Prove: $m\angle 1 + m\angle 3 = 90^\circ$



Statements	Reasons
1. $\overline{AB} \perp \overline{BC}$; $m\angle 2 = m\angle 3$	1.
2.	2.
3.	3.
4.	4.
5.	5.
6. $m\angle 1 + m\angle 3 = 90^\circ$	6.

11. Given: $\angle 1$ and $\angle 2$ form a linear pair;
 $m\angle 2 + m\angle 3 + m\angle 4 = 180^\circ$
 Prove: $m\angle 1 = m\angle 3 + m\angle 4$



Statements	Reasons
1. $\angle 1$ and $\angle 2$ form a linear pair	1.
2. $\angle 1$ and $\angle 2$ are supplementary	2.
3. $m\angle 2 + m\angle 3 + m\angle 4 = 180^\circ$	3.
4. $m\angle 1 + m\angle 2 = 180^\circ$	4.
5. $m\angle 2 = m\angle 2$	5.
6. $m\angle 1 + m\angle 2 = m\angle 2 + m\angle 3 + m\angle 4$	6.
7. $m\angle 1 = m\angle 3 + m\angle 4$	7.