



# More Proofs and Assumptions

## A

## ASSUMPTIONS

You can assume ...

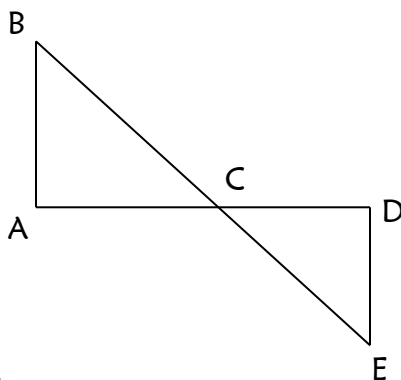
- Vertical  $\angle$ 's
- Linear pair  $\angle$ 's
- Straight  $\angle$ 's
- Collinearity
- Betweenness

You should NEVER assume ...

- Congruence
- Right  $\angle$ 's
- Relative size of figures

I can assume ...

- $\angle BCA$  and  $\angle DCE$  are vertical  $\angle$ 's
- $\angle ACD$  and  $\angle BCE$  are straight  $\angle$ 's
- B, C, E are collinear
- C is between A and D
- $\angle BCA$  and  $\angle BCD$  form a linear pair



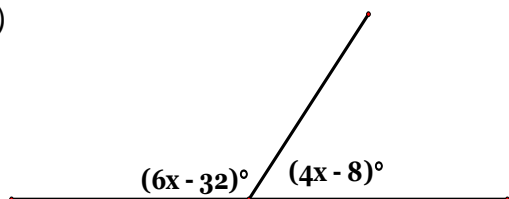
I cannot assume...

- $\angle A$  is a right  $\angle$
- $\angle A \cong \angle D$
- $\angle ACB$  is acute
- C is the midpt. of  $\overline{AD}$

Oh Algebra! I have missed you ...

For #1 and 2, determine the value of  $x$  in the diagrams shown below.

1)



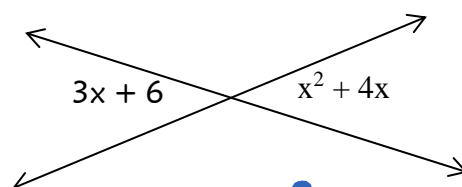
$$6x - 32 + 4x - 8 = 180$$

$$10x - 40 = 180$$

$$10x = 220$$

$$\boxed{x = 22}$$

2)



$$3x + 6 = x^2 + 4x$$

$$0 = x^2 + x - 6$$

$$0 = (x + 3)(x - 2)$$

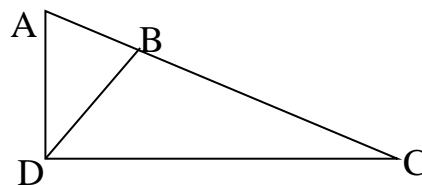
$$\cancel{x = -3}, \boxed{x = 2}$$

↑  
makes neg.  $\angle$ 's

Proof Partner Practice! Use the information below to write a two column proof:

1) Given:  $\angle ABD$  and  $\angle CBD$  form a linear pair

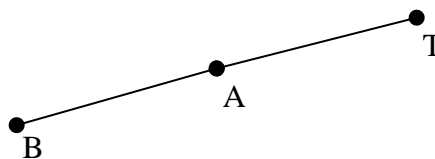
Prove:  $\angle ABD$  and  $\angle CBD$  are supplementary



Statements	Reasons
① $\angle ABD$ and $\angle CBD$ form a linear pair	① Given
② $\angle ABD$ and $\angle CBD$ are supp.	② If 2 $\angle$ 's form a linear pair, then they are supp.

2. Given: A is the midpoint of  $\overline{BT}$

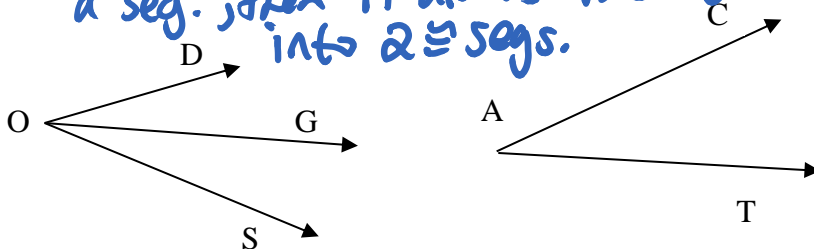
Prove:  $\overline{BA} \cong \overline{AT}$



Statements	Reasons
① A is the midpt. of $\overline{BT}$	① Given
② $\overline{BA} \cong \overline{AT}$	② If a pt is a midpt of a seg., then it divides the seg. into 2 $\cong$ segs.

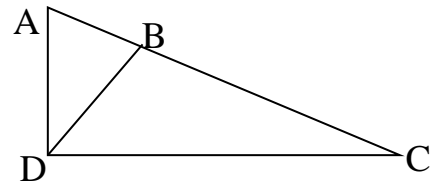
3. Given:  $\overrightarrow{OG}$  bisects  $\angle DOS$   
 $\angle DOG \cong \angle CAT$

Prove:  $\angle CAT \cong \angle GOS$



Statements	Reasons
① $\overrightarrow{OG}$ bis. $\angle DOS$	① Given
② $\angle DOG \cong \angle GOS$	② If a ray bis an $\angle$ , then it divides the $\angle$ into 2 $\cong$ $\angle$ 's.
③ $\angle DOG \cong \angle CAT$	③ Given
④ $\angle CAT \cong \angle GOS$	④ Transitive Property

4. Given:  $\angle ADB$  is comp  $\angle A$   
 $\angle CDB$  is comp  $\angle C$   
 $\angle ADB \cong \angle CDB$



Prove:  $\angle A \cong \angle C$

Statements	Reasons
① $\angle ADB$ comp. to $\angle A$	①
② $\angle CDB$ comp. to $\angle C$	②
③ $\angle ADB \cong \angle CDB$	③ Given
④ $\angle A \cong \angle C$	④ If 2 $\angle$ 's are comp to $\cong \angle$ 's, then they are $\cong$ .