Bellwork  9/25/15

Quiz today!!

List the property that goes with each example.

\[ \begin{align*}
  a &= b \\
  c &= b \\
  m\angle 1 + m\angle 2 &= 180 \\
  m\angle 2 + m\angle 3 &= 180 \\
  m\angle 1 + m\angle 2 &= m\angle 2 + m\angle 3
\end{align*} \]

Reflexive

Family Fortune!

With a partner, write your statement to convince me that Ol' Molly was your grandmother!
Homework 2-5
P. 116 # 4, 8, 13, 18, 20

4. a) given
   b) subtraction property
   c) division property

8. a) segment addition postulate
   b) substitution property
   c) distribution property
   d) combine like terms
   e) subtraction property
   f) division property

13. a) given
   b) midpoint divides segment into two congruent segments
   c) substitution
   d) \(2x = 12\)
   e) division property

18. \(EF + 7\)

20. \(BD \cong BE\)
    \(BD = BE\)
    \(m\angle 1 + m\angle 2 = 180°\) (Linear pair)
    \(\angle ABD \perp \angle EBC\) are vertical
    \(\angle ABD \parallel \angle EBC\) is adjacent to \(\angle 1\)

Bellwork 9/29/15

Ex 1: Use a 2-column proof to solve:

\[3(x-17) + 5 = 27\]

<table>
<thead>
<tr>
<th>STATEMENTS</th>
<th>REASONS</th>
</tr>
</thead>
</table>
| 1. \(3(x-17) + 5 = 27\) | \n| 2. \(3x - 51 + 5 = 27\) | \n| 3. \(3x - 46 = 27\) | \n| 4. \(3x = 73\) | \n| 5. \(x = \frac{73}{3}\) | \n
Sep 25-7:25 AM
Bellwork 9/30/15

Given: AC = BD
Prove: AB = CD

\[
\begin{align*}
AC &= BD & \text{given} \\
AC &= AB + BC & \text{segment addition} \\
BD &= BC + CD \\
AB + BC &= BC + CD & \text{substitution} \\
AB - BC &= CD
\end{align*}
\]
Making observations

What can we observe or assume about the diagram below?

∠2 + ∠3 are supplementary
∠BEF + ∠DEF are supplementary and congruent \(→\) right angles
∠1 + ∠3 are vertical angles
∠1 + ∠2 are a linear pair (supplementary)

BE = ED
∠BEC + ∠CEF are complementary

What are some possible observations to make about angles/angle pairs?

Complementary (don't have to be adjacent)

\[ \text{add to 90°} \]

Supplementary (don't have to be adjacent)

\[ \text{add to 180°} \]

Adjacent angles

\[ \text{Linear pair} \rightarrow 2 \angle\text{s that are supplementary} + \text{adjacent} \]

Vertical Angles

\[ \text{Congruent} \]

Right angles

\[ \text{all right angles are congruent} \]

Congruent angles

\[ \text{Supplementary + congruent} \rightarrow \text{right angle} \]
Write down as many observations as you can about this diagram.

SUPPOSE the lines intersect so that \( m\angle DAB = m\angle CBD \)

a. What can you conclude about these two angles? Prepare an argument to prove your conjecture.

b. What can you conclude about the other angles in the diagram? Prove your conclusion.

c. What mathematical facts did you use to help prove your statements in Parts a and b? Were these facts definitions, postulates, or theorems?

d. Describe the relationship between \( AC \) and \( DE \).

Be prepared to share your conjectures and explain your proofs.

Sep 24-2:04 PM

Given: \( \angle A \cong \angle BDA \)
Prove: \( x = 5 \)

\( \angle A \cong \angle BDA \) given
\( \angle A \cong \angle CDE \) transitive \( \angle BDA \cong \angle CDE \) vertical

\( 11x + 20 = 12x + 15 \) substitution

Sep 25-7:24 AM
Given: \( \angle 1 \cong \angle 4 \)
Prove: \( \angle 2 \cong \angle 3 \)

1. \( \angle 3 \cong \angle 4 \) \hspace{1cm} (Vertical angles)
2. \( \angle 2 \cong \angle 1 \) \hspace{1cm} (Vertical angles)
3. \( \angle 1 \cong \angle 4 \) \hspace{1cm} (Given)
4. \( \angle 3 \cong \angle 1 \) \hspace{1cm} (Substitution)
5. \( \angle 2 \cong \angle 3 \) \hspace{1cm} (Transitive property)
Given: \( \angle 1 \) and \( \angle 2 \) are complementary,
\( \angle 2 \) and \( \angle 3 \) are complementary,
\( \overrightarrow{BD} \) bisects \( \angle ABC \)

Prove: \( m\angle 1 = 45 \)

\[
\begin{align*}
\angle 1 + \angle 2 &= 90 \\
\angle 2 + \angle 3 &= 90 \\
\angle 2 &= \angle 3 \\
m\angle 2 + m\angle 2 &= 90 \\
2m\angle 2 &= 90 \\
m\angle 2 &= 45 \\
m\angle 1 + 45 &= 90 \\
m\angle 1 &= 45
\end{align*}
\]

Sep 28-2:31 PM

Given: \( \angle 1 \equiv \angle 2 \)

Prove: \( \angle 3 \equiv \angle 4 \)

\[
\begin{align*}
m\angle 2 + m\angle 4 &= 90 & \text{comp.} \\
m\angle 1 + m\angle 3 &= 90 & \text{comp.} \\
m\angle 2 + m\angle 4 &= m\angle 1 + m\angle 3 & \text{transitive prop.} \\
m\angle 1 &= m\angle 2 \\
m\angle 2 + m\angle 4 &= m\angle 2 + m\angle 3 & \text{substitute} \\
m\angle 4 &= m\angle 3 \\
m\angle 4 \equiv \angle 3 & \text{subtraction}
\end{align*}
\]
Homework p. 124 # 6, 12, 14, 19, 22, 25, 40, 42