Questions on lesson 2.1 so far?

Look over Lesson 2.1's homework, we will be taking our content mastery quiz soon!

2.1 A Little Dash of Logic
Foundations for Proof

DAY 2

PG.128 IN YOUR BOOK

PROBLEM 5 You Can't Handle the Truth Value

A **conditional statement** is a statement that can be written in the form "If p, then q." This form is the **propositional form** of a conditional statement. It can also be written using symbols as $p \rightarrow q$, which is read as "p implies q." The variables p and q are **propositional variables**. The **hypothesis** of a conditional statement is the variable p. The **conclusion** of a conditional statement is the variable q.

The **truth value** of a conditional statement is whether the statement is true or false. If a conditional statement could be true, then the truth value of the statement is considered true. The truth value of a conditional statement is either true or false, but not both.

You can identify the hypothesis and conclusion from a conditional statement.

Conditional Statement

If $x^2 = 36$, then $x = 6$ or $x = -6$.

Hypothesis of the Conditional Statement

$x^2 = 36$

Conclusion of the Conditional Statement

$x = 6$ or $x = -6$.

p hypothesis q conclusion

Consider the conditional statement: If the measure of an angle is 32°, then the angle is acute.

1. What is the hypothesis p?

2. What is the conclusion q?

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PG.128 IN YOUR BOOK

3. If p is true and q is true, then the truth value of a conditional statement is true.

a. What does the phrase "If p is true" mean in terms of the conditional statement?

that the hypothesis is true; it actually happened.

b. What does the phrase "If q is true" mean in terms of the conditional statement?

That the hypothesis happened and so did the conclusion.

c. Explain why the truth value of the conditional statement is true if both p and q are true.

If both p & q are true, then what we've said in the conditional statement is true (we haven't lied).

TAKE 5 MINS TO WORK ON PG.129

Sep 8-8:48 AM

PG.130 IN YOUR BOOK

A **truth table** is a table that summarizes all possible truth values for a conditional statement $p \rightarrow q$. The first two columns of a truth table represent all possible truth values for the propositional variables p and q. The last column represents the truth value of the conditional statement $p \rightarrow q$.

The truth values for the conditional statement "If the measure of an angle is 32°, then the angle is acute" is shown.

The truth value of the conditional statement $p \rightarrow q$ is determined by the truth value of p and the truth value of q.

- If p is true and q is true, then $p \rightarrow q$ is true.
- If p is true and q is false, then $p \rightarrow q$ is false.
- If p is false and q is true, then $p \rightarrow q$ is true.
- If p is false and q is false, then $p \rightarrow q$ is true.

not there

p	q	$p \rightarrow q$
the measure of an angle is 32°	the angle is acute	If the measure of an angle is 32°, then the angle is acute.
T	T	T
T	F	F
F	T	T
F	F	T

hypothesis

7. Consider the conditional statement: If $m\overline{AB} = 6$ inches and $m\overline{BC} = 6$ inches, then $\overline{AB} \cong \overline{BC}$. conclusion

a. What is the hypothesis p?

b. What is the conclusion q?

c. If both p and q are true, what does that mean? What is the truth value of the conditional statement if both p and q are true?

truth value is true

p	q	$p \rightarrow q$
T	T	T
T	F	F
F	T	T
F	F	T

Tuna Fish is false

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PG.132 IN YOUR BOOK

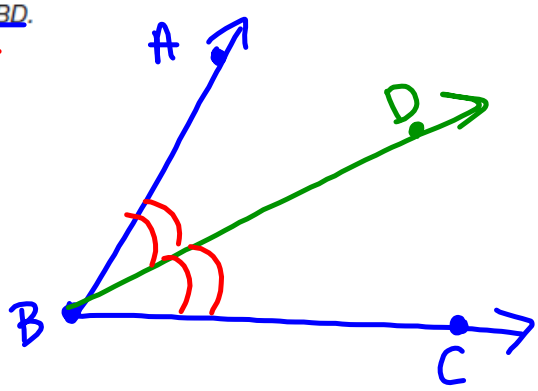
PROBLEM 6 Rewriting Conditional Statements

For each conditional statement, draw a diagram and then write the hypothesis as the "Given" and the conclusion as the "Prove."

1. If $\overrightarrow{BD}$ bisects $\angle ABC$, then $\angle ABD \cong \angle CBD$.

   Given: $\overrightarrow{BD}$ bisects $\angle ABC$ (hyp.)

   Prove: $\angle ABD \cong \angle CBD$ (concl.)



2.2

And Now From a New Angle

Special Angles and Postulates

PG. 136-7 IN YOUR BOOK

Two angles are **supplementary angles** if the sum of their angle measures is equal to 180°.

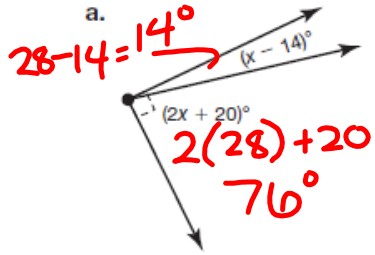
Two angles are **complementary angles** if the sum of their angle measures is equal to 90°.

Sep 10-8:21 AM

PG. 139 IN YOUR BOOK

Determine the angle measures in each diagram.

a.



28-14=14°

2(28)+20

76°

$90 = (x-14) + (2x+20)$

$90 = x - 14 + 2x + 20$

$90 = 3x + 6$

$-6 \quad -6$

$84 = 3x$

$\frac{84}{3} = \frac{3x}{3}$

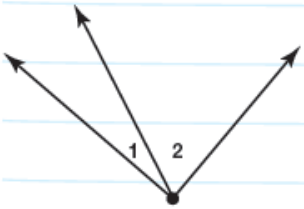
$28 = x$

PG. 140 IN YOUR BOOK

PROBLEM 2 Angle Relationships

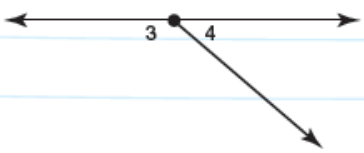
You have learned that angles can be supplementary or complementary. Let's explore other angle relationships.

∠1 and ∠2 are adjacent angles.

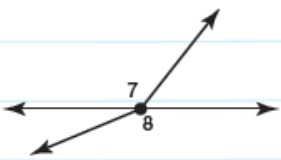


∠5 and ∠6 are *not* adjacent angles.

∠3 and ∠4 are adjacent angles.



∠7 and ∠8 are *not* adjacent angles.



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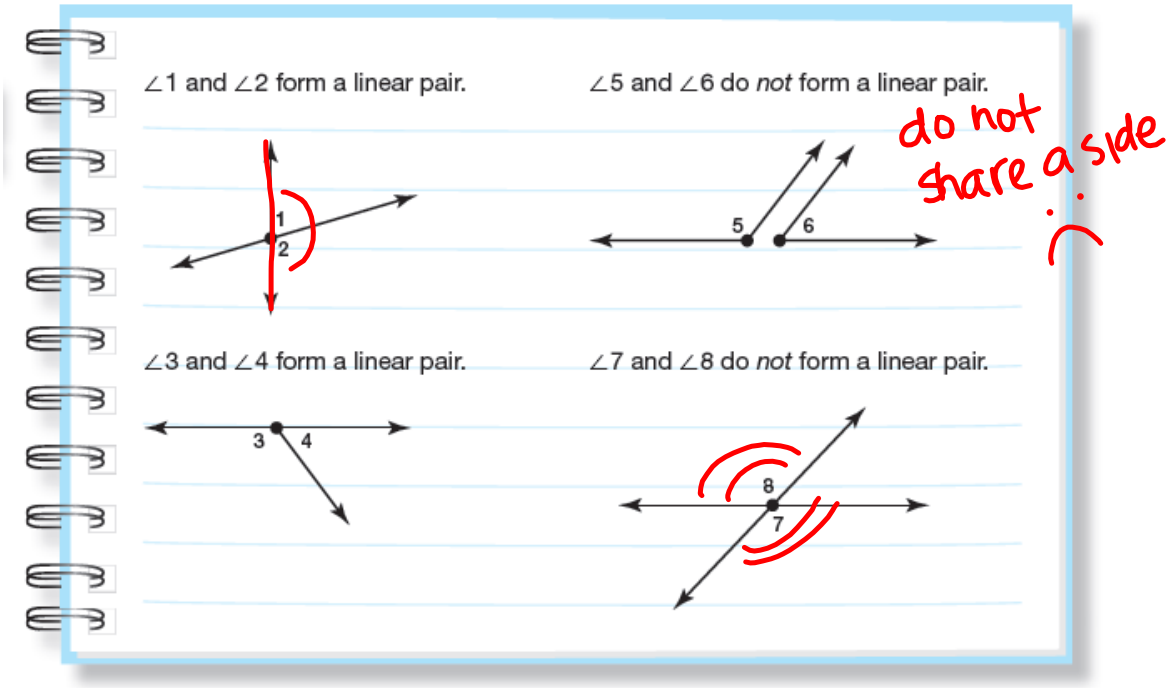
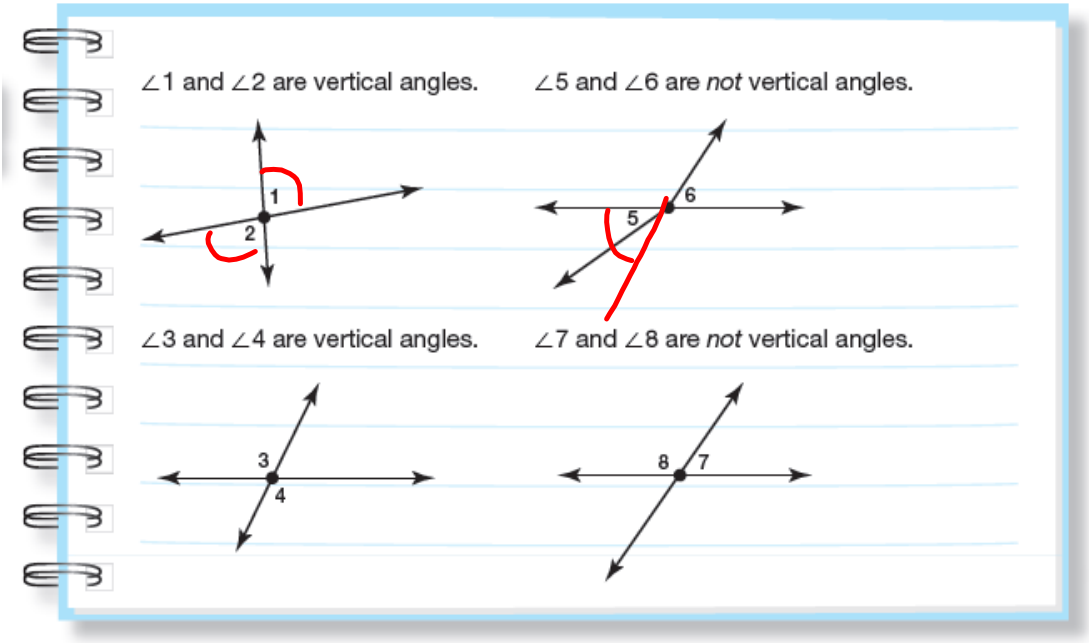
PG. 142 IN YOUR BOOK



PG. 144 IN YOUR BOOK



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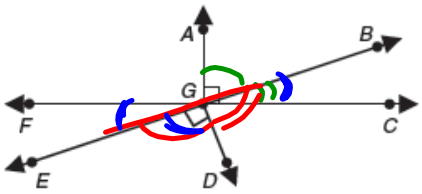
NOT IN YOUR BOOK

finish 2.1 & 2.2 through pg. 147

8. Identify each of the following in the figure.



a. Name two pairs of complementary angles.

∠AGB & ∠BGC (90°)

b. Name six pairs of supplementary angles.

∠EGD & ∠DGB (180°)

c. Name four pairs of angles that form linear pairs.

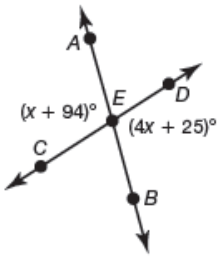
same

d. Name two pairs of vertical angles.

∠FGE & ∠BGC

PG. 146 IN YOUR BOOK

4. Determine $m\angle AED$. Explain how you determined the angle measure.



PG. 148 IN YOUR BOOK

A **postulate** is a statement that is accepted without proof.

A **theorem** is a statement that can be proven.

The Elements is a book written by the Greek mathematician Euclid. He used a small number of undefined terms and postulates to systematically prove many theorems. As a result, Euclid was able to develop a complete system we now know as **Euclidean geometry**.

Greek mathematician Euclid is sometimes referred to as the Father of Geometry.

Sep 10-8:27 AM

For each of these postulates, sketch a picture in your text, that is a question for your homework

PG. 150 IN YOUR BOOK

The **Linear Pair Postulate** states: "If two angles form a linear pair, then the angles are supplementary."

PG. 151 IN YOUR BOOK

The **Segment Addition Postulate** states: "If point B is on $\overline{AC}$ and between points A and C, then $AB + BC = AC$."

PG. 152 IN YOUR BOOK

The **Angle Addition Postulate** states: "If point D lies in the interior of $\angle ABC$, then $m\angle ABD + m\angle DBC = m\angle ABC$."

Homework

Finish lesson 2.1 & 2.2