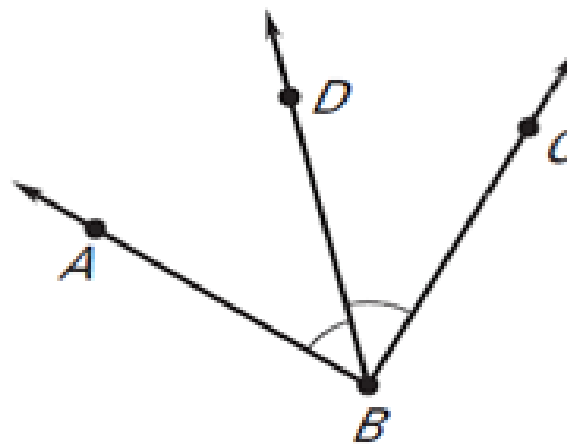


Warm-Up:

1. For the given statement, write the if-then form, the converse, the inverse, and the contrapositive. *Sophomores take driving lessons.*
2. Decide if the statement about the diagram is true. Explain.
 \overrightarrow{BD} bisects $\angle ABC$.



Determine whether the statements are good definitions.

3. If two angles are supplementary, then the sum of their measures is 180° .
4. If an angle is obtuse, then its measure is greater than that of an acute angle.

review... what is inductive reasoning?

deductive reasoning -

*deductive reasoning will help prepare us for proofs

Law of Detachment Make a valid conclusion...

- a. If two segments have the same length, then they are congruent. You know that $BC = AD$.

$$\overline{BC} \cong \overline{AD}$$

- b. Mary goes to the movies every Friday and Saturday. Today is Friday.

Mary is going to the movies.

- c. If Nathan is enrolled at Mepo High School, then Nathan has an ID number. Nathan is enrolled at Mepo High School.

Nathan has an ID#.

Law of Detachment:

If the hypothesis of a true conditional statement is true, then the conclusion is also true.

hypothesis *conclusion*
If p, then q. p is true.
Conclusion: q is true.

If possible, write a new conditional statement...

- a. If Joe takes Geometry this year, ~~then he will take Algebra 2 next year~~. If Joe takes Algebra 2 next year, then he will graduate.

If Joe takes Geom, then he will grad.

- b. ~~If $2x > 25$, then $2x > 20$~~ . If $x > 13$, ~~then $2x > 25$~~

If $x > 13$, then $2x > 20$

- c. ~~If Bob goes to practice~~, then he will see his teammates.
~~If Bob goes to practice~~, then he will work hard.

Not possible to write a new condition.

Law of Syllogism:

We know the following:

If hypothesis p , ~~then conclusion q .~~

~~If hypothesis q , then conclusion r .~~

Then we know the following is also true.

If hypothesis p , then conclusion r .

Know: $p \rightarrow q, q \rightarrow r$

then we know $p \rightarrow r$.

Which law of logic is illustrated?

Law of Detachment or Law of Syllogism

1. If you get an A on your math test, then you can go to the movies. If you go to the movies, then you can get popcorn and a drink.

Law of Syllogism.

2. If $x > 12$, then $x + 9 > 20$. The value of x is 14.
Therefore, $x + 9 > 20$.

Law of Detachment.

Use inductive and deductive reasoning.

What conclusion can you make about the product of an even integer and any other integer?

Plan of attack: 1. Find pattern, 2. Make conjecture, 3. prove for all cases.

1.

$$4 \cdot -3 = -12$$
$$-2 \cdot 5 = -10$$
$$-2 \cdot 1 = -2$$
$$-4 \cdot 3 = -12$$

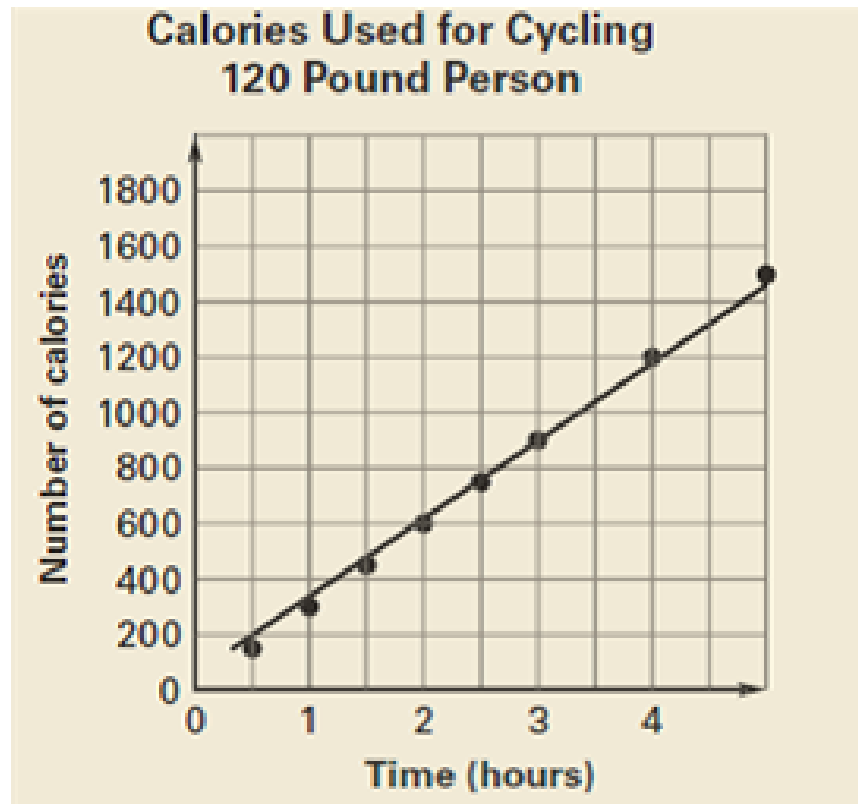
2. Even \cdot any = even.

3. x - any integer.

$2x$ - even integer
 y - other integer

$$2xy = 2(xy) \text{ - even.}$$

Tell whether the statement is a result of inductive reasoning or deductive reasoning. Explain your choice.



1. A 120 pound person uses twice as many calories when cycling 4 hours than when cycling 2 hours.

deductive - fact

2. The 120 pound person uses more calories per hour the longer he or she cycles.

inductive - patterns

Homework:

p 90-92

#'s 4-13, 16-19,
21, 22, 24-28