


2.1 & 2.2 HOMEWORK  
(INDUCTIVE AND DEDUCTIVE REASONING)

NAME: \_\_\_\_\_  
HW #: 2

1. When you use inductive reasoning you are generalizing from careful observation that something is probably true. When you use Deductive reasoning you are establishing that, if a set of properties is accepted as true, something else must be true.

2.  $\angle A$  and  $\angle B$  are complementary.  $m\angle A = 25^\circ$ . What is  $m\angle B$ ?  $m\angle B = 90 - 25 = \boxed{65^\circ}$   
What type of reasoning do you use when solving this problem? deductive

3. If the pattern continues, what are the next two terms?  


What type of reasoning do you use when solving this problem? inductive

4. The definition of a parallelogram says, "If both pairs of opposite sides of a quadrilateral are parallel, then the quadrilateral is a parallelogram." Quadrilateral LNDA has both pairs of opposite sides parallel. What conclusion can you make?

LNDA is a parallelogram

What type of reasoning do you use when solving this problem? Deductive

5. Use deductive reasoning to solve the following equations. Next to each step, justify what you have done with a reason.

a.  $-2x + 3(x - 5) = 2$   
 $-2x + 3x - 15 = 2$  distribute  
 $1x - 15 = 2$  combine terms  
 $\boxed{1x = 17}$  add 15

b.  $4(5 - 2b) + 3(2b - 10) = -7(b + 2)$   
 $20 - 8b + 6b - 30 = -7b - 14$  Dist.  
 $-2b - 10 = -7b - 14$  combine terms  
 $5b - 10 = -14$  add 7b  
 $5b = -4$  add 10  
 $\boxed{b = -\frac{4}{5}}$  divide by 5

$$c. \frac{1}{3}(3 - \frac{x}{2}) - 1 = 4$$

$$6 \left( 1 - \frac{x}{6} - 1 = 4 \right) \text{ distribute}$$

$$6 - x - 6 = 24 \text{ mult by 6}$$

$$-x = 24 \text{ combine}$$

$$\boxed{x = -24} \text{ divide by -1}$$

$$d. 7(2-x) = -5x$$

$$14 - 7x = -5x$$

$$14 = 2x$$

$$\boxed{7 = x}$$

dist.  
add 7x  
divide by 2

$$e. \frac{3c+5}{15} = \frac{-2}{3}$$

$$3(3c+5) = -30$$

$$9c + 15 = -30$$

$$9c = -45$$

$$c = -5$$

cross multiply

Distribute

subtract 15

divide 9

$$f. -2|a| - 6 = -20$$

$$-2|a| = -14$$

$$|a| = 7$$

$$\boxed{a = 7, -7}$$

add 6

divide -2

definition of  
ab. val.

6. Use inductive reasoning to find the next two terms of the sequence.

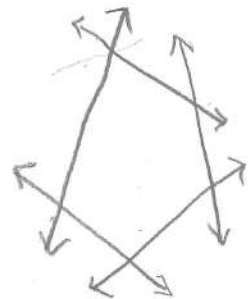
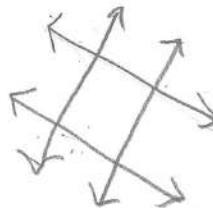
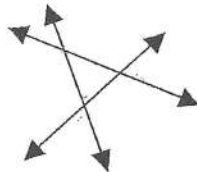
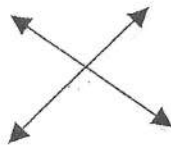
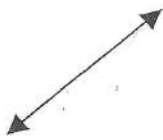
a. 180, 360, 540, 720, 900, 1080

b. 1, 10, 21, 33, 46, 60, 75, 91  
 $+9$   $+11$   $+12$   $+13$   $+14$

c.  $\frac{1}{2}$ ,  $9$ ,  $\frac{2}{3}$ ,  $10$ ,  $\frac{3}{4}$ ,  $11$ ,  $\frac{4}{5}$ , 12

7. Draw the next two shapes in the sequence.

a.



**Directions:** In each problem below, the GIVEN information will lead you to a **CONCLUSION** based on the geometric definitions. Using the diagram and the GIVEN information, determine what direct conclusion with a definition.

1. Given:  $\overline{AC} \cong \overline{CB}$

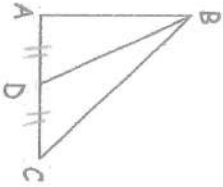
Conclusion: C is the midpoint of  $\overline{AB}$



2. Given: Point D is a midpoint

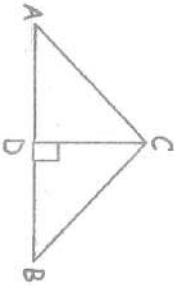
Conclusion:

$$\overline{AD} \cong \overline{DC}$$



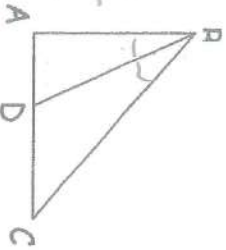
3. Given:  $\overline{CD} \perp \overline{AB}$

Conclusion:  $\angle CDB = 90^\circ$   
 $\angle CDA = 90^\circ$



4. Given:  $\overline{BD}$  bisects  $\angle ABC$

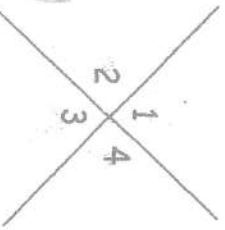
Conclusion:  $\angle ABD \cong \angle DBC$



5. Given: 2 intersecting segments

Conclusion:

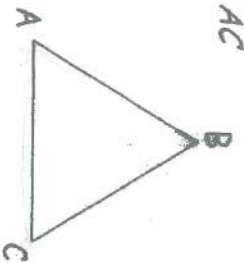
4 angles formed  
 $\angle 1 \cong \angle 3$  vertical  
 $\angle 2 \cong \angle 4$  vertical



6. Given:  $\triangle ABC$  is isosceles with base  $\overline{AC}$

Conclusion:

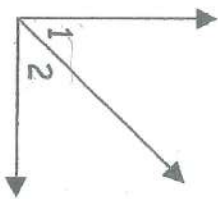
$$\overline{AB} \cong \overline{BC}$$



7. Given:  $\angle 1$  is complementary to  $\angle 2$

Conclusion:

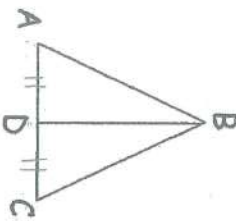
$$m\angle 1 + m\angle 2 = 90^\circ$$



8. Given:  $\overline{BD}$  bisects  $\overline{AC}$

Conclusion:

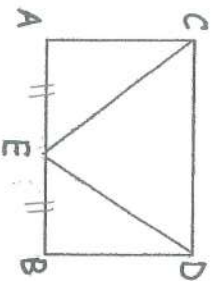
$$\overline{AD} \cong \overline{DC}$$



9. Given: E is the midpoint of  $\overline{AB}$

Conclusion:

$$\overline{AE} \cong \overline{EB}$$



10. Given: Diagonal  $\overline{AC}$  bisects diagonal  $\overline{BD}$

Conclusion:

$$\overline{DE} \cong \overline{BE}$$

