1. For each conditional state the hypothesis and the conclusion
a. If $2x - 8 = 40$, then $x = 24$
b. If you see lightening, then you'll hear thunder.

2. Write each statement as a conditional.
a. An eagle is a bird
b. a rhombus has four sides

3. State if each conditional is true or false, if it is false give a counterexample.
a. If a number is even, then it is a multiple of two.
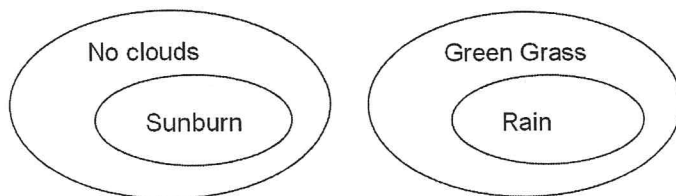b. If it is Monday, then I'm at school
c. If $x = -9$, then $|x| = 9$

4. Draw and label a Venn Diagram to represent each statement.
a. If it's a Tiger, then it's an animal.
b. all football teams have a quaterback.

5. Write the conditional that each statement represents.
a.   b.

6. Write the converse of each conditional and state if the converse is true or false. If it is false give a counterexample.
a. If a point is in the first quadrant, then the x-coordinate is positive.
b. if $x^2 > 100$, then $x > 10$

For 7 and 8, do the following:
a. Write the converse
b. State if the converse is true or false, if false give a counterexample
c. If converse is true, write a biconditional from the original conditional and its converse.

7. If an angle is a right angle, then its measure is equal to $90°$

8. If an integer ends in a zero, then it is a multiple of 10

9. Write the two conditionals that make up this biconditional:
A whole number is a multiple of 5 if and only if its last digit is either a 0 or a 5

10. Is each of the following biconditionals true or false? If false explain why.
a. Two points lie on the same vertical line if and only if they have the same x-coordinate

b. Two figures are congruent if and only if they have the same shape.

1

11. Write down ALL of the steps it takes to solve the given equation for x. Justify each step.
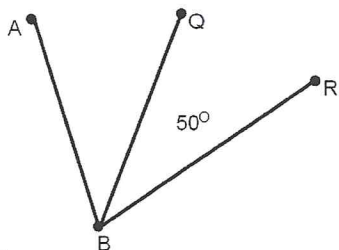
a. Given: $10x + 19 - 2x = 43$

Step	Reason
$10x + 19 - 2x = 43$	

b. $9x + 3(x - 4) + 2 = 74$

Step	Reason
$9x + 3(x - 4) + 2 = 74$	

12. Provide the reasons for each step.

Given: $m\angle ABR = 110°$
Prove: $m\angle ABQ = 60°$

Step	Reason
$m\angle ABR = 110°$	
$m\angle ABQ + m\angle QBR = m\angle ABR$	
$m\angle ABQ + 50° = 110°$	
$m\angle ABQ + 50° - 50° = 110° - 50°$	
$m\angle ABQ = 60°$	

13. Provide the reasons for each step.   Given: R is the midpoint of $\overline{AB}$
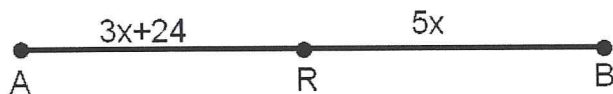
Step	Reason
R is the midpoint of $\overline{AB}$	
$AR = RB$	
$3x + 24 = 5x$	
$3x + 24 - 3x = 5x - 3x$	
$24 = 2x$	
$\frac{24}{2} = \frac{2x}{2}$	
$12 = x$	
$x = 12$	

14. Provide the reasons for each step.   Given: $MK = 123$

Step	Reason
$MR + RK = MK$	

$7x + 1 + 3x - 8 = 123$

$10x - 7 = 123$

$10x - 7 + 7 = 123 + 7$

$10x = 130$

$\dfrac{10x}{10} = \dfrac{130}{10}$

$x = 13$

15. Use the given property to complete each statement.
a. Addition Property of Equality: If $9x - 12 = 42$, then
b. Reflexive Property of Congruence: $\angle ABC \cong$
c. Substitution Property: If $AB = 12$ and $AB + BC = 120$, then
d. Transitive Property of Congruence: If $\overline{AB} \cong \overline{CD}$ and $\overline{CD} \cong \overline{KJ}$ and $\overline{KJ} \cong \overline{XY}$ then

16. State which property is demonstrated in each statement.
a. If $\angle A \cong \angle C$, then $\angle C \cong \angle A$
b. If $2x = 10$, then $x = 5$
c. If $4(x - 5) = 20$, then $4x - 20 = 20$