

## Algebra and Geometry 1. Homework 12.

1. On the island of knights and knaves, you meet two inhabitants: Sue and Zippy.  
Sue  
says that Zippy is a knave. Zippy says, "I and Sue are knights." So who is a knight  
and who is a knave?
2. Many trucks carry the message: "If you do not see my mirrors, then I  
do not see you". Can you rewrite it in an equivalent form without  
using the word "not"?
3. Write the truth table for each of the following formulas. Are they  
equivalent (i.e., do  
they always give the same value)?  
(a)  $(A \text{ AND } B) \text{ OR } (A \text{ AND } C)$   
(b)  $A \text{ AND } (B \text{ OR } C)$
4. Dry apricots contain 22% of water. How much fresh apricot were  
used to produce a 200 g package of dry apricot if fresh apricot contain  
85% of water?
5. Number  $a$  is bigger than number  $b$  by 100%. By how many percent  
number  $b$  is smaller than number  $a$ ?
6. In an electronic store on a Christmas eve everything was 20% off.  
After Christmas, everything got another 30% off sale. Peter bought a computer for \$200 on  
December 26. What was a price for this computer before all sales?
7. Solve the following equations:  
 $a. \quad 2^x \cdot 2^{2x} = 64;$        $b. \quad 3^n \cdot 9 = 81;$        $c. \quad 5^p = 1$

