1. Simplify (*First simplify inside parenthesis, then do the powers and simplify!*):

   (a) $\left(\dfrac{5a^2b^5}{4a^3b^3}\right)^3 =$ (b) $\left(2z^2 \cdot 3z^3 \cdot z\right)^2 =$ (c) $\dfrac{(-ab)^8}{(ab)^2} =$

   (d) $\left(\dfrac{3ab^3}{15b}\right)^2 \cdot \dfrac{75c}{a^2b^6} =$ (e) $\left(\dfrac{3a^5b^2}{21ab}\right)^2 \cdot \dfrac{7^4}{a^{16}b^2} =$ (f) $\dfrac{\left(x^3\,y\right)^2 \cdot z^2y^3}{y^2z^3} =$

2. Evaluate: (NOT A) AND (A OR B)

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 OR B) AND (A OR C)
   b. A OR (B ANDC)

4. You meet two inhabitants: Marge and Zoey. Marge says, 'Zoey and I are both knights or both knaves.' Zoey claims, 'Marge and I are the same.' Can you determine who is a knight and who is a knave?

5. On the island of Knights and Knaves, you meet three inhabitants: Bozo, Carl and Joe. Bozo says that Carl is a knave. Carl tells you, 'Of Joe and I, exactly one is a knight.' Joe claims, 'Bozo and I are different.

6. Alice, Brian, and Charlie are from the island of knights and knaves. Alice claims, "Charlie could tell you that I am a knight." Brian says, "Either Alice is a knave, or I am a knight." Charlie says that the others are either both knaves or both knights. What are Alice, Brian, and Charlie?

7. Recall "if A then B" logic. Remember that if **A is False**, **A->B is a true** statement. "If the sky is green then 2+2=5" is a true statement. A mom tells the son "If you do not do the dishes, you will not go to the movie". Is it the same as "If you do the dishes, you go to the movie?"

8. Solve the equation $|7x + 3| = 24$

9. Point M has coordinates (5, 7).
   a. Find coordinates of the point M1 obtained from M by reflection around the x-axis
   b. Find coordinates of the point M2 obtained from M by reflection around the diagonal line.

10. Draw the graphs of the following linear functions (on a quadrille paper):
    a. 2x + 3y = 1
    b. 2x − 1 = y
    c. y = |x| − 2

Hints: first, solve for y so that you have y = *function(x)*. Then, if you do not know any shortcuts, make a table with x and y column, pick five values for x, use them to calculate the corresponding value for y by plugging in the equation. The x - values are your choice; for example, -3,-1, 0,1,3. Draw the (x,y) pairs on a x-y coordinate system, then draw the line(s)/curve(s) through the points