Problem Set 1

1. List all factors of 26.

2. Consider a rectangle with sides 10 cm and 4 cm long.

   a) Compute the perimeter of the rectangle. Include units in your computation and answer.

   b) Compute the area of the rectangle. Include units in your computation and answer.

3. Perform the divisions with remainder. Show both the quotient and the remainder. For example, $19 \div 7 = 2$ R 5.

   a) $58 \div 8$ b) $45 \div 7$ c) $2011 \div 15$

4. Simplify each of the following expressions.

   a) $(12 - 5) + 2$ d) $(24 \div 3) \cdot 2$ g) $5 \cdot 3^2 - (3 + 2 \cdot 5 - 1) \div 2$ j) $\sqrt{16} + \sqrt{9}$

   b) $12 - (5 + 2)$ e) $24 \div (3 \cdot 2)$ h) $(10 - 2)(3^2 - 5)$ k) $\sqrt{16 + 9}$

   c) $12 - 5 + 2$ f) $24 \div 3 \cdot 2$ i) $10 - 2(3^2 - 5)$

5. Insert parentheses into the expression on the left-hand side to make the equation true. You may use more than one pair.

$$30 - 2 \cdot 5 - 2^2 + 4 = 4$$

6. Let $x = 5$ and $y = 3$.

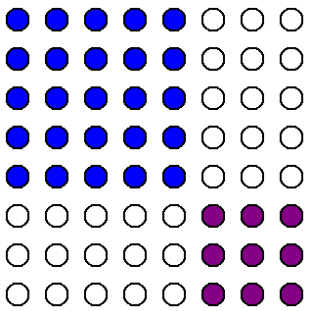
   a) Evaluate $(x + y)^2$

   b) Evaluate $x^2 + y^2$

   c) Based on parts a) and b), determine if the following statement is true or false.

   If x and y are any numbers, then $(x + y)^2 = x^2 + y^2$

   d) Consider the picture shown below. Find $x^2 + y^2$ and $(x + y)^2$ on the figure.



   e*) Based on the picture, state the correct formula for $(x + y)^2$.

7. a) There are four people in a room. If everybody shakes hand with everybody, how many handshakes took place?

   b) There are five people in a room. If everybody shakes hand with everybody, how many handshakes took place?