Using Objects

Problem 1. Planar coordinates

- Write functions for working with shapes in standard Planar coordinate system.
  - **Points** are represented by coordinates P(X, Y)
  - **Lines** are represented by two points, marking their beginning and ending L(P1(X1,Y1), P2(X2,Y2))
- Calculate the distance between two points.
- Check if three segment lines can form a triangle.

Problem 2. Remove elements

- Write a function that removes all elements with a given value.
- Attach it to the array type.
- Read about **prototype** and how to attach methods.

```
var arr = [1,2,1,4,1,3,4,1,111,3,2,1,'1'];
arr.remove(1); //arr = [2,4,3,4,111,3,2,'1'];
```

Problem 3. Deep copy

- Write a function that makes a deep copy of an object.
- The function should work for both primitive and reference types.

Problem 4. Has property

- Write a function that checks if a given object contains a given property.

```
var obj  = …;
var hasProp = hasProperty(obj, 'length');
```

Problem 5. Youngest person

- Write a function that finds the youngest person in a given array of people and prints his/hers full name

- Each person has properties firstname, lastname and age.

  Example:

```
var people = [
  { firstname : 'Gosho', lastname: 'Petrov', age: 32 },
  { firstname : 'Bay', lastname: 'Ivan', age: 81},… ];
```

Problem 6.

- Write a function that groups an array of people by age, first or last name.
- The function must return an associative array, with keys - the groups, and values - arrays with people in this groups

- Use function overloading (i.e. just one function)

  Example:

```
var people = {…};
var groupedByFname = group(people, 'firstname');
var groupedByAge= group(people, 'age');
```