

Exercise 1.3

Use a negative parameter value to move left, e.g. -70

Exercise 1.9

The House Picture

The main building:

- Create a new Square object
- Invoke its method `makeVisible()`
- Make the square bigger by invoking the method `changeSize(newSize)` (100 is a good size)
- Move the square down by invoking the method `moveVertical(distance)` (again 80 is a good value)

The window:

- Create a new Square object.
- Invoke its method `makeVisible()`
- Change its color by invoking `changeColor()`
- write "black" in the popupwindow
- Move the square down by invoking the method `moveVertical(distance)` (100 is a good value)
- Move it to the right by invoking `moveRight()`

The roof:

- Create a new triangle object.
- Invoke its method `makeVisible()`
- Change its size with `changeSize(newHeight, newWidth)` (50,140)
- `moveVertical(70)`
- `moveHorizontal(60)`

The Sun:

- Create new Circle object.
- Invoke its method `makeVisible()`
- Change its color by invoking `changeColor()` (write "yellow" in the popup window) Optionally change its size with `changeSize(60)`
- Move it to the right by invoking `moveHorizontal(180)`

The Hilltop Picture

The hill:

- Create a new Circle object.
- Invoke its `makeVisible()` method.
- Change its color by invoking `changeColor` (write "green" in the popup window) Change its size with `changeSize` to something like 1000.
- Move it left with `moveHorizontal(-500)`.

- Move it down with `moveVertical(125)`.

The sun:

- Create a Circle.
- Make it visible.
- Set its size to 30.
- Move it right by 150 pixels.
- Move it down by 50 pixels.

The larger figure:

- Create a new Person object.
- Invoke its `makeVisible` method.
- Change its size to something like 50 high and 25 wide.
- Move it left by 30 pixels and up by around 8.

The smaller figure:

- The size should be around 40 by 20.
- Move it left by 3 pixels and down by 2.

Exercise 1.14

- It uses the objects of the classes Circle, Square and Triangle.
- It then moves these objects to the right places and changes the sizes and colors of the objects. Essentially calling the same methods as used in exercise 1.9

Exercise 1.16

Change:

```
sun.changeColor("yellow");
```

to be:

```
sun.changeColor("blue");
```

Note that this change should be made in both the `draw()` and `setColor()` methods. Students often forget to do it in the latter. Illustrate the problem by drawing the picture, then calling `setBlackAndWhite()` then `setColor()` – the sun will have been changed to yellow, rather than blue, if the second change is not made.

Exercise 1.17

The second sun will need to be positioned somewhere different from the first sun to be visible. As with the previous exercise, it is common for students to miss the need to change the `setColor` and `setBlackAndWhite` methods for compatibility with the

addition. This is an earlier introduction to the need for *regression testing*!

Exercise 1.18

After the line `sun.makeVisible()` insert the following:

- `sun.slowMoveVertical(250);`
- Compile the `Picture` class (Press compile in the editor window)
- Create instance of class `Picture` and invoke its `draw()` method.

Exercise 1.19

Remove the line (if added in the previous exercise): `slowMoveVertical(250);` Right below the last `}` after the `draw()` method, add the `sunset()` method :

```
/**
 * Animates the sunset.
 */
public void sunset()
{
    sun.slowMoveVertical(250);
}
```

Compile! And run it.

Exercise 1.20

Define a new field:

```
private Person person;
```

Initialize and position them in the `draw()`:

```
person = new Person();
person.changeSize(80, 40);
// Place them at ground level.
person.moveVertical(15);
// Make sure they are to the right of the house to start.
person.moveHorizontal(200);
```

Make them visible and move up to the house in `sunset()`:

```
person.makeVisible();
// Walk up to the house.
person.slowMoveHorizontal(-150);
```

Exercise 1.22

When calling the method `getName()`, the name of the student is displayed in a popup window. The name displayed is the one typed in when the object was created.

Exercise 1.24

It shows the number of students in the `LabClass` which is zero.

Exercise 1.31

Students looking these values up in the tutorial might not be able to readily identify that the integer types used here are `int`, as opposed to `byte`, `short` or `long`. Similarly, they may well suggest `float` rather than `double` for the final one. Be sure to point out that `String` always has an initial upper-case letter, because these subtleties are often missed.

0	<code>int</code>
"hello"	<code>String</code>
101	<code>int</code>
-1	<code>int</code>
true	<code>boolean</code>
"33"	<code>String</code>
3.1415	<code>double</code>

Exercise 1.32

First you would have to decide which type the field should have. `String` would be a good type to hold a name, so we add the following line to the source file of `Circle`:

```
private String name;
```

The above line could be placed after this line in the source code of the `Circle` class:

```
private boolean isVisible;
```

Exercise 1.33

```
public void send(String msg)
```

The name `msg` is arbitrarily chosen.

Exercise 1.34

```
public int average(int firstNumber, int secondNumber)
```

Exercise 1.35

The book is an object because it is *a specific instance* of the `Book` class.

Exercise 1.36

Yes, an object can belong to several classes. One of the more famous examples are the platypus, which is both a mammal and egg-laying.