STM4PSD – Workshop 2 Solutions

1. -
2. -
3. -
4. This should be calculated as follows: `exp(5) + sqrt(3*15^2 + log(9, base=5))`
5. Of these functions, only the `round` function has an optional argument. The argument is the `digits` argument, representing the number of decimal places to round to.
6. `numbers <- seq(15, 105, by=5)`
7. The vector `numbers` has 19 elements.
8. You should observe here that calculations are done to each individual element. For example, calculating `x^2` squares each element of the vector `x`, and calculating `x+y` adds the elements in the same position.
9. -
10. -
11. -
12. -
13. -
14. -
15.
```
to.fahrenheit <- function(temp) {
    temp * 9/5 + 32
}
```

16.
```
quadratic <- function(a,b,c) {
    ans1 <- (-b - sqrt(b^2 - 4*a*c))/(2*a)
    ans2 <- (-b + sqrt(b^2 - 4*a*c))/(2*a)
    c(ans1, ans2)
}
```

    There are other approaches that could be taken to this question. For example, the following takes advantage of R's vector features, encoding the $\pm$ as multiplication by `c(-1,1)`:

```
quadratic <- function(a,b,c) {
    (-b + c(-1,1)*sqrt(b^2 - 4*a*c))/(2*a)
}
```