Homework #01

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Chapter 01

Problem 01

a. x*2 = {2,4,6}
b. x*y = {6,10,12}
c. x[1]*y[2] = 5

```
## [1] 2 4 6
```
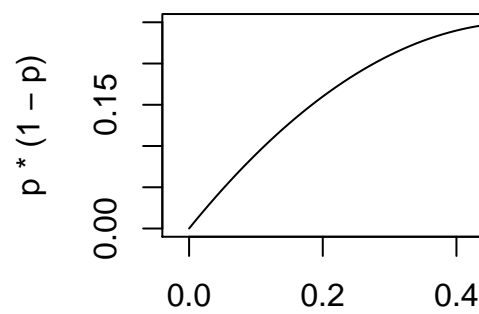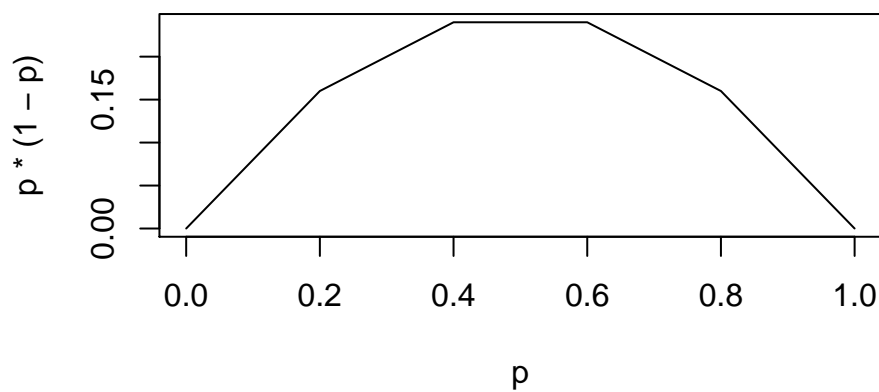
```
## [1]   6 10 12
```

```
## [1] 5
```

Problem 04

04 – B

Problem 05

```
##  [1]    1    4    9   16   25   36   49   64   81  100  121  144
## [13]  169  196  225  256  289  324  361  400  441  484  529  576
```
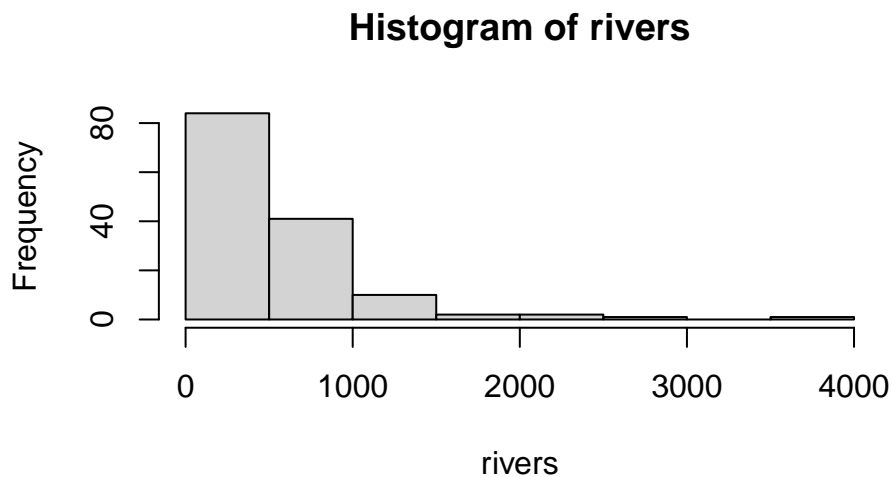
```
## [25]    625    676    729    784    841    900    961   1024   1089   1156   1225   1296
## [37]   1369   1444   1521   1600   1681   1764   1849   1936   2025   2116   2209   2304
## [49]   2401   2500   2601   2704   2809   2916   3025   3136   3249   3364   3481   3600
## [61]   3721   3844   3969   4096   4225   4356   4489   4624   4761   4900   5041   5184
## [73]   5329   5476   5625   5776   5929   6084   6241   6400   6561   6724   6889   7056
## [85]   7225   7396   7569   7744   7921   8100   8281   8464   8649   8836   9025   9216
## [97]   9409   9604   9801  10000
```

Problem 07

b.

```
## [1] 591.1844
```

```
## [1] 493.8708
```

Histogram of rivers

c.
d.

```
##    Min. 1st Qu.  Median    Mean 3rd Qu.    Max.
##   135.0   310.0   425.0   591.2   680.0  3710.0
```

e. Shortest:

```
## [1] 135
```

Longest:

```
## [1] 3710
```

f.

```
##  [1] 1459 1450 1243 2348 1171 3710 2315 2533 1306 1054 1270 1885 1100 1205 1038
## [16] 1770
```

Problem 08

   a. 153 observations of 6 variables

   b. {Ozone, Solar.R, Wind, Temp, Month, Day}

   c. {int, int, num, int, int, int}

   d. The datatypes make sense, worst case they could have been stored as strings or the num and int types
     could be switched. You would lose data, waste space, or lose functionality if they were changed.

Problem 10

   a. 12

   b. Cars that displace more than 150 cu.ins. and get more than 20 miles per gallon

   c.

```
##                  mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4       21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag   21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710      22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## Fiat 128        32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
## Honda Civic     30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
## Toyota Corolla 33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
## Fiat X1-9       27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
## Volvo 142E      21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

   d.

```
##                  mpg cyl  disp  hp drat    wt  qsec vs am gear carb
## Mazda RX4       21.0   6 160.0 110 3.90 2.620 16.46  0  1    4    4
## Mazda RX4 Wag   21.0   6 160.0 110 3.90 2.875 17.02  0  1    4    4
## Datsun 710      22.8   4 108.0  93 3.85 2.320 18.61  1  1    4    1
## Merc 240D       24.4   4 146.7  62 3.69 3.190 20.00  1  0    4    2
## Merc 230        22.8   4 140.8  95 3.92 3.150 22.90  1  0    4    2
## Merc 280        19.2   6 167.6 123 3.92 3.440 18.30  1  0    4    4
## Merc 280C       17.8   6 167.6 123 3.92 3.440 18.90  1  0    4    4
## Fiat 128        32.4   4  78.7  66 4.08 2.200 19.47  1  1    4    1
## Honda Civic     30.4   4  75.7  52 4.93 1.615 18.52  1  1    4    2
## Toyota Corolla 33.9   4  71.1  65 4.22 1.835 19.90  1  1    4    1
## Fiat X1-9       27.3   4  79.0  66 4.08 1.935 18.90  1  1    4    1
## Porsche 914-2   26.0   4 120.3  91 4.43 2.140 16.70  0  1    5    2
## Lotus Europa    30.4   4  95.1 113 3.77 1.513 16.90  1  1    5    2
## Ford Pantera L 15.8   8 351.0 264 4.22 3.170 14.50  0  1    5    4
## Ferrari Dino    19.7   6 145.0 175 3.62 2.770 15.50  0  1    5    6
## Maserati Bora   15.0   8 301.0 335 3.54 3.570 14.60  0  1    5    8
## Volvo 142E      21.4   4 121.0 109 4.11 2.780 18.60  1  1    4    2
```

   e.

```
## [1] 22.4
```

Problem 12

   a. 3 variables: {Factor, int, int}
   b. {"Beef", "Meat", 'Poultry"}
   c. 645mg
   d.

```
## [1] 156.85
```

Problem 13

   a. 70 observations of 6 variables of types: {Factor, Factor, int, int, num, int}
   b. A factory worker
   c.

```
## [1] 604
```

   d.

```
## [1] 24.59782
```

Problem 15 a-e

   a. 1794
   b. 991
   c.

```
##
## 1970 1971 1972 1973 1974 1975 1976 1977 1978 1979 1980 1981 1982 1983 1984 1985
##    1    5    3    5    7    5    8    7    8    5   14    9   14    5   16   10
## 1986 1987 1988 1989 1990 1991 1992 1993 1994 1995 1996 1997 1998 1999 2000 2001
##   10   14   19   14   15   13   20   16   26   36   42   51   62   56   63   64
## 2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 2013
##   80   64   81  100   90   73  101  124  129  124   86   99
```

   d. 2010
   e. 5