BAR PLOT HOMEWORK

TEXT: 2.1

LAST NAME	FIRST NAME	DATE

This homework should be done with R or a comparable technology, and should be uploaded to Canvas as an office document or a PDF.

Consider the `chickwts` dataset built into R, and in particular the `chickwts$feed` column with chicken feed data:

```
chickwts$feed
```

You can read about this dataset with `?chickwts` command. Note the sample size $n = 71$, which you can also compute with

```
length(chickwts$feed)
```

1. Construct the absolute frequency distribution for the chicken feed data.

2. Construct the relative frequency distribution for the chicken feed data.

3. Construct a relative frequency bar plot for the chicken feed data.

4. Construct a pie chart for the chicken feed data.

Use R to create a data set with the names of some common pets. Add one or two other other types of pet if you like.

```
pets = c("Cat", "Dog", "Fish", "Snake", "Spider")
```

You can now simulate random samples (with replacement) of size n with

```
sample(pets, n, replace=T)
```

5. Construct three simple random samples of pets, each of size $n = 17$, and for each construct a corresponding bar plot. Do the bar plots look similar or different?

6. Draw three more random samples, this time each of size 16000, and once again, construct the three corresponding bar plots. Do these bar plots look similar or different?

Consider the `mtcars` dataset built into R, and in particular the `mtcars$gear` column with the number of gears data.

7. Is the number of gears variable qualitative or quantitative? In either case, what is the level of measurement? Justify your answer.

8. Construct the absolute frequency distribution for the number of gears data.

9. What is the category with the highest frequency?

10. Construct an absolute frequency bar plot for the number of gears data.

One can use R to create bar plots with specified categories and frequencies. For example, one can create a bar plot corresponding to a sample of 70 coin tosses, with 42 of them being Heads and 28 of them being Tails, try it:

```
sides = c("Heads", "Tails")
f = c(42, 28)
barplot(f, names=sides)
```

Here `sides` is the list of category names and `f` is the list of frequencies. Notice that in this case we don't need to use the `table` function because the frequencies are already known.

Consider the following absolute frequency distribution for various movie genres:

Genre	Action	Horror	Comedy	Drama	SciFi
Absolute Frequency	35	8	18	43	13

11. Construct a corresponding absolute frequency bar plot.

12. What is the relative frequency of the SciFi category?

A sample of 6,000 Internet live streams has the following categories and corresponding relative frequencies:

Game	LOL	CS	WOW	GTAV
Relative Frequency	36%	23%	21%	20%

13. Construct a corresponding relative frequency bar plot.

14. What is the absolute frequency of the CS category?

Do some research online, with or without the help of AI, to answer the following questions:

15. Find a command to print the list of colors known to R.

16. Find a command to construct a bar plot for `chickwts$feed` dataset where all bars are shaded magenta color.

17. Find a command to construct a bar plot for `chickwts$feed` dataset where each bar is shaded a different color.

ANSWERS

1.

```
table(chickwts$feed)
```

```
casein horsebean   linseed  meatmeal   soybean sunflower
    12        10        12        11        14        12
```

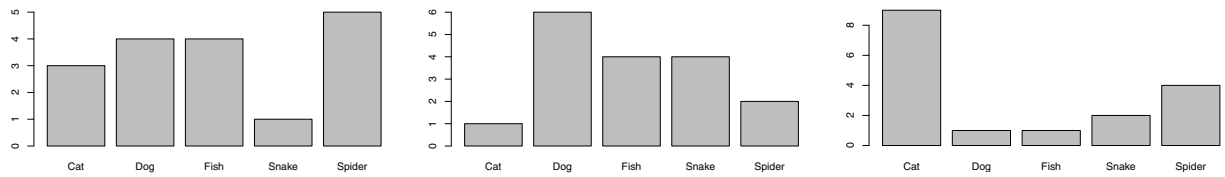
3.

```
barplot(table(chickwts$feed)/length(chickwts$feed))
```

5. To construct each bar plot:

```
data = sample(pets, 17, replace=T)
barplot(table(data))
```

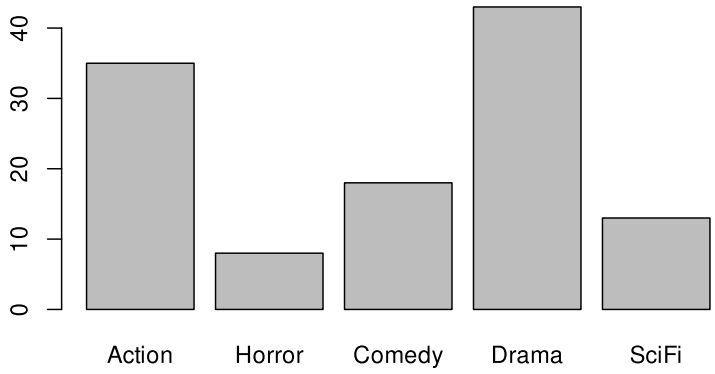
Since the samples are random, the results will vary, but you might see something like this:



These looks quite different from each other, which is what often happens for a sample this small, though sometimes by luck they might look similar or even identical to each other.

11.

```
genres = c("Action", "Horror", "Comedy", "Drama", "SciFi")
f = c(35, 8, 18, 43, 13)
barplot(f, names=genres)
```



12. $1/9 \approx 11.11\%$