

EIWL Sections 45, 46

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Due to getting a little behind in the final two weeks of the semester,
I only checked for completeness on PS 18-21. ~Brian

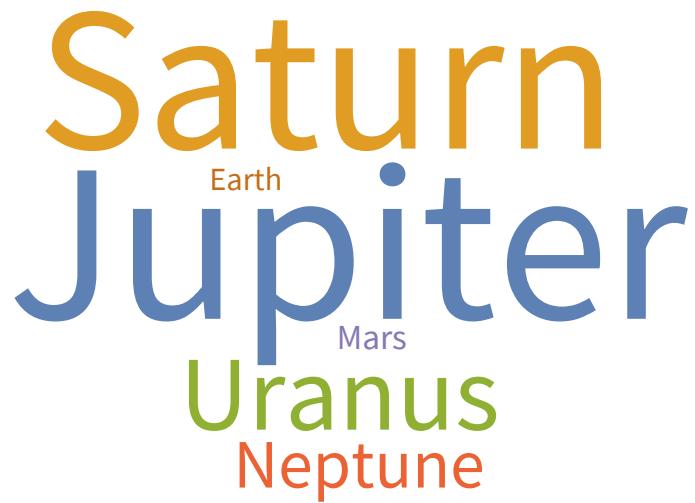
Section 45

```
In[1]:= planets = CloudGet["http://wolfr.am/7FxLgPm5"]
```

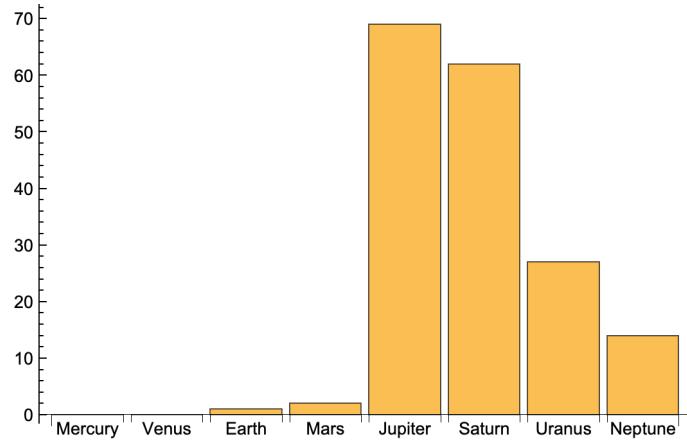
```
Out[1]=
```

	Mass	Radius	Moons		
				Mass	Radius
Mercury	3.30104×10^{23} kg	1516.0 mi			
Venus	4.86732×10^{24} kg	3760.4 mi			
Earth	5.9721986×10^{24} kg	3958.761 mi	Moon	7.3459×10^{22} kg	1079.6 mi
Mars	6.41693×10^{23} kg	2106.1 mi	Deimos	1.5×10^{15} kg	3.9 mi
			Phobos	1.072×10^{16} kg	6.90 mi
Jupiter	1.89813×10^{27} kg	43 441. mi	Adrastea	$7. \times 10^{15}$ kg	5.1 mi
			Aitne	$4. \times 10^{13}$ kg	0.93 mi
69 total ↴					
Saturn	5.68319×10^{26} kg	36 184. mi	Aegaeon	—	0.16 mi
			Aegir	—	1.9 mi
62 total ↴					
Uranus	8.68103×10^{25} kg	15 759. mi	Ariel	1.35×10^{21} kg	359.7 mi
			Belinda	3.57×10^{17} kg	25.0 mi
27 total ↴					
Neptune	1.02410×10^{26} kg	15 299. mi	Despina	2.1×10^{18} kg	47. mi
			Galatea	3.7×10^{18} kg	55. mi
14 total ↴					

```
In[•]:= WordCloud[Normal[planets[All, "Moons", Length]]]
Out[•]=
```



```
In[•]:= BarChart[planets[All, "Moons", Length], ChartLabels → Automatic]
Out[•]=
```



```
In[•]:= SortBy[planets[All, "Mass"], planets["Moons", Length]]
Out[•]=
```

Mercury	3.30104×10^{23} kg
Mars	6.41693×10^{23} kg
Venus	4.86732×10^{24} kg
Earth	5.9721986×10^{24} kg
Uranus	8.68103×10^{25} kg
Neptune	1.02410×10^{26} kg
Saturn	5.68319×10^{26} kg
Jupiter	1.89813×10^{27} kg

In[6]:= `planets[All, "Moons", Total, "Mass"]`

Out[6]=

Mercury	0
Venus	0
Earth	7.3459×10^{22} kg
Mars	1.22×10^{16} kg
Jupiter	3.9301×10^{23} kg
Saturn	1.4051×10^{23} kg
Uranus	9.14×10^{21} kg
Neptune	2.1487×10^{22} kg

In[7]:= `planets[All, "Moons", Total, "Mass"] [Sort]`

Out[7]=

Mercury	0
Venus	0
Mars	1.22×10^{16} kg
Uranus	9.14×10^{21} kg
Neptune	2.1487×10^{22} kg
Earth	7.3459×10^{22} kg
Saturn	1.4051×10^{23} kg
Jupiter	3.9301×10^{23} kg

In[8]:= `planets[All, "Moons", Median, "Mass"]`

Out[8]=

Mercury	—
Venus	—
Earth	7.3459×10^{22} kg
Mars	6.10×10^{15} kg
Jupiter	1.9×10^{14} kg
Saturn	8.2×10^{15} kg
Uranus	3.57×10^{17} kg
Neptune	3.7×10^{18} kg

```
In[•]:= planets[All, "Moons", Select[#Mass > 5.972*^24 kg &] /* Keys]
```

Out[•]=

Mercury	
Venus	
Earth	
Mars	
Jupiter	
Saturn	
Uranus	
Neptune	

```
In[•]:= WordCloud[Association[# → Length[TextWords[WikipediaData[#]]] & /@ EntityList[Central America COUNTRIES ... ]]]]
```

Out[•]=



```
In[•]:= ResourceData["Fireballs and Bolides"][[Max, "Altitude"]]
```

Out[•]=

66.6 km

```
In[6]:= TakeLargest[ResourceData["Fireballs and Bolides"] [All, "Altitude"], 5]
```

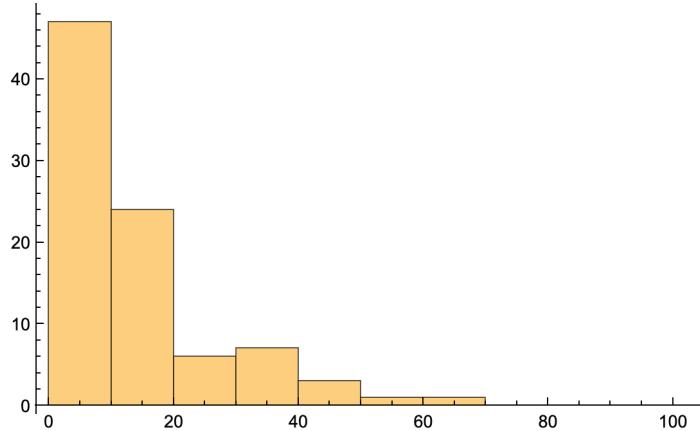
Out[6]=

66.6 km
59.3 km
50 km
45.5 km
44 km

```
In[7]:= Histogram[
```

```
Differences[Normal[ResourceData["Fireballs and Bolides"] [All, "PeakBrightness"]]]]
```

Out[7]=



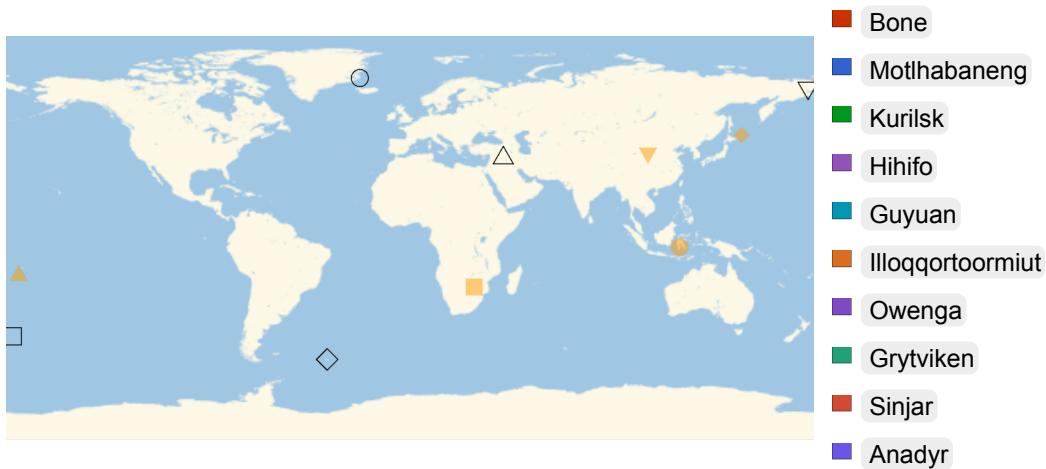
```
In[8]:= Take[ResourceData["Fireballs and Bolides"] [All, "Coordinates"], 10]
```

Out[8]=

4.2°S 120.6°E	22.0°S 29.2°E	38.0°N 158.0°E	15.8°S 174.8°W	36.2
76.7°N 10.6°W	61.8°S 135.5°W	41.8°S 36.2°W	36.4°N 41.5°E	63.1

In[1]:= GeoListPlot[GeoNearest["City", #] & /@	4.2°S 120.6°E	22.0°S 29.2°E	38.0°N 1
	76.7°N 10.6°W	61.8°S 135.5°W	41.8°S 3

Out[1]=



```
In[6]:= SortBy[ResourceData["Fireballs and Bolides"][[All]] "LargestAltitude"]
```

```
Out[6]=
```

SortBy[LargestAltitude]

PeakBrightness	Coordinates	NearestCity
Thu 8 Oct 2009 02:57:00	4.2°S 120.6°E	Bone
Sat 21 Nov 2009 20:53:00	22.0°S 29.2°E	Kobojango
Sat 25 Dec 2010 23:24:00	38.0°N 158.0°E	Kurilsk
Sat 21 Apr 2012 16:08:23	15.8°S 174.8°W	Hihifo
Mon 23 Apr 2012 22:01:10	36.2°N 107.4°E	Pingliang
Fri 4 May 2012 21:54:49	76.7°N 10.6°W	Illoqqortoormiut
Tue 15 May 2012 11:04:17	61.8°S 135.5°W	Owenga
Fri 25 May 2012 11:31:24	41.8°S 36.2°W	Grytviken
Wed 25 Jul 2012 07:48:20	36.4°N 41.5°E	Sinjar
Fri 27 Jul 2012 04:19:50	63.1°N 172.3°E	Anadyr
Sun 26 Aug 2012 14:55:47	11.8°N 117.0°E	El Nido
Mon 27 Aug 2012 06:57:43	18.3°S 64.2°E	Quatre Cocos
Mon 10 Sep 2012 01:03:32	69.8°S 111.7°W	Rothera - permanent sta
Tue 11 Sep 2012 22:07:30	18.9°S 105.2°E	The Settlement
Tue 18 Sep 2012 19:34:39	1.2°N 52.2°W	Mazagão
Fri 28 Sep 2012 05:44:12	6.9°S 73.7°E	Feydhoo
Tue 2 Oct 2012 16:38:38	8.1°S 111.9°W	Hanga Roa
Wed 3 Oct 2012 22:50:12	41.5°S 21.9°W	Edinburgh
Tue 9 Oct 2012 00:54:55	51.2°N 84.6°W	Hearst
Fri 19 Oct 2012 16:26:22	75.4°S 49.6°E	Syowa - permanent stati

⤵ ⤶ rows 1–20 of 92 ⤷ ⤸

```
In[1]:= GeoListPlot[ResourceData["Fireballs and Bolides"][[TakeLargestBy[#, Altitude &, 10], "NearestCity"]], GeoLabels → True]
```

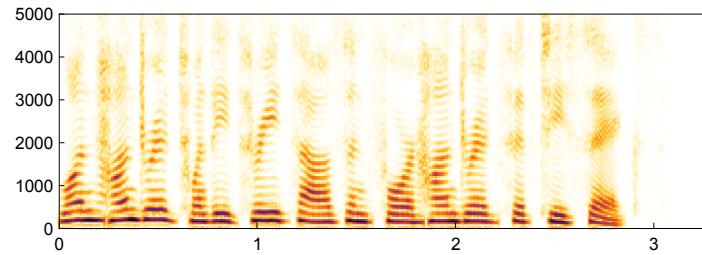
Out[1]=



Section 46

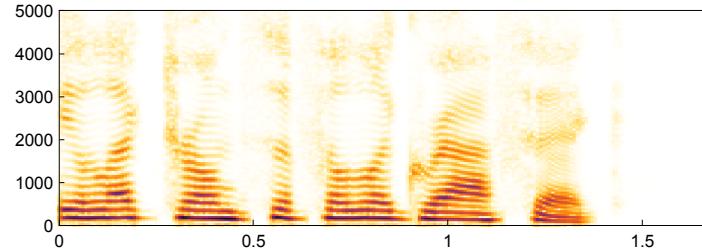
```
In[2]:= Spectrogram[SpeechSynthesize[IntegerName[123 456]]]
```

Out[2]=



```
In[3]:= Spectrogram[SpeechSynthesize[Reverse[SortBy[WordList[], StringLength]][[1]]]]
```

Out[3]=



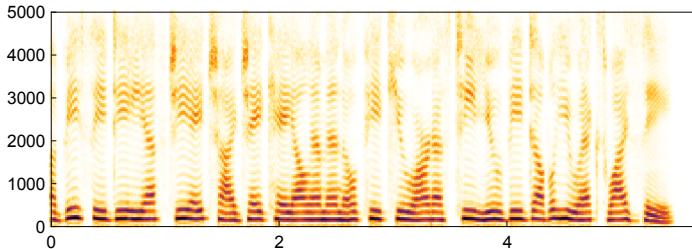
```
In[4]:= SpeechSynthesize[StringJoin[Riffle[Alphabet[], " "]]]
```

Out[4]=



```
In[1]:= Spectrogram[SpeechSynthesize[StringJoin[Riffle[Alphabet[], " "]]]]
```

Out[1]=



```
In[2]:= AudioPitchShift[SpeechSynthesize["hello"], 2]
```

Out[2]=



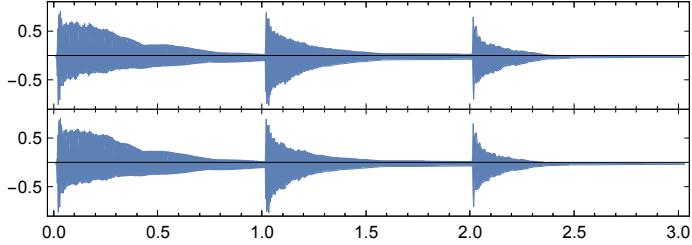
```
(*Table[SpeechRecognize[AudioPitchShift[SpeechSynthesize["computer"],x]],  
{x,1,1.5,0.1}]* ) (*This was taking a long  
time to evaluate but I think it's right?*)
```

Out[3]=

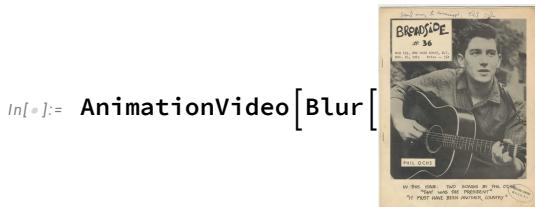
\$Aborted

```
In[4]:= AudioPlot[Sound[{SoundNote[0, 1, "Guitar"],  
SoundNote[12, 1, "Guitar"], SoundNote[24, 1, "Guitar"]}]]
```

Out[4]=

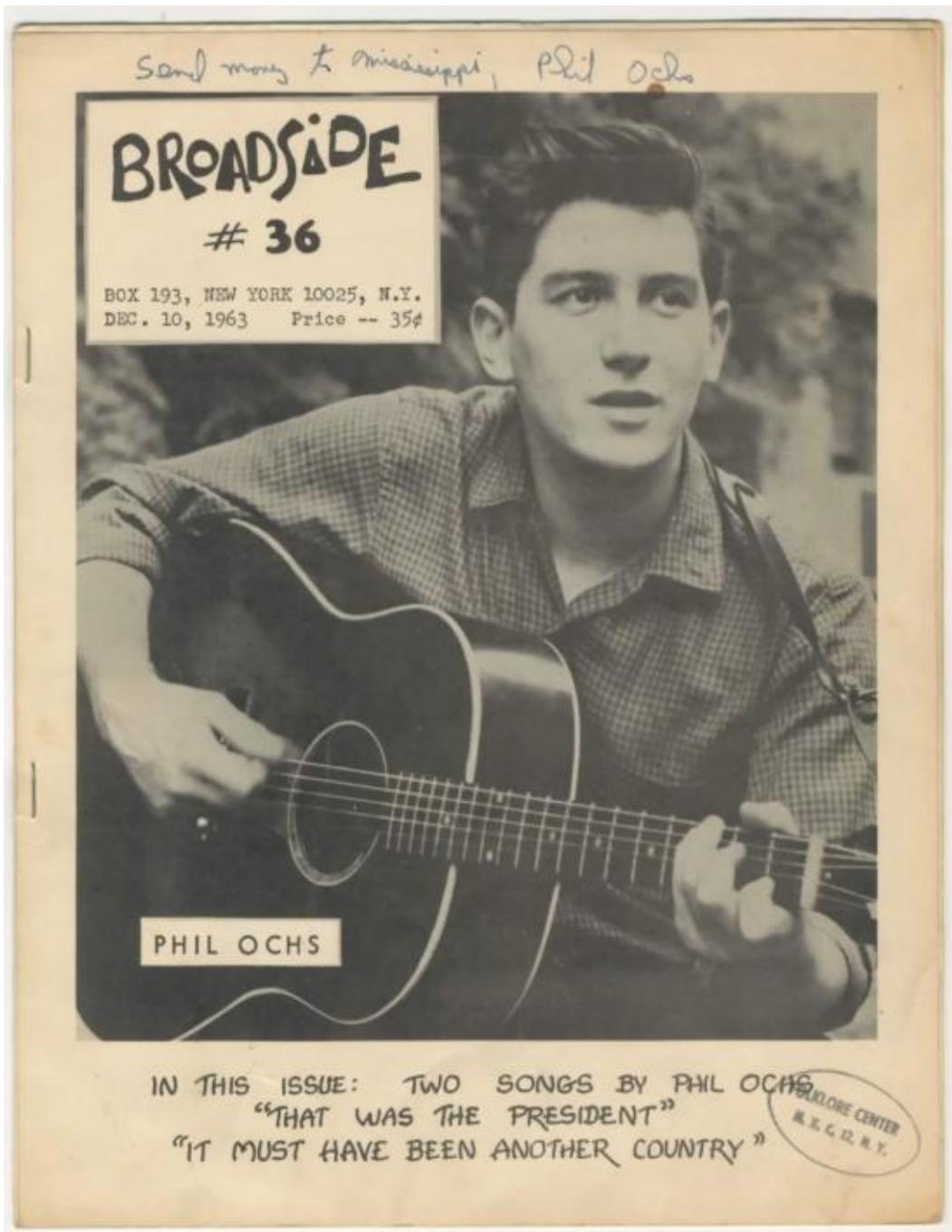


```
(*Table[SpeechRecognize[AudioPitchShift[Sound[SoundNote[0,1,"Trumpet"]],x]],  
{x,0.5,1,0.1}]* ) (*This one is also just not executing*)
```

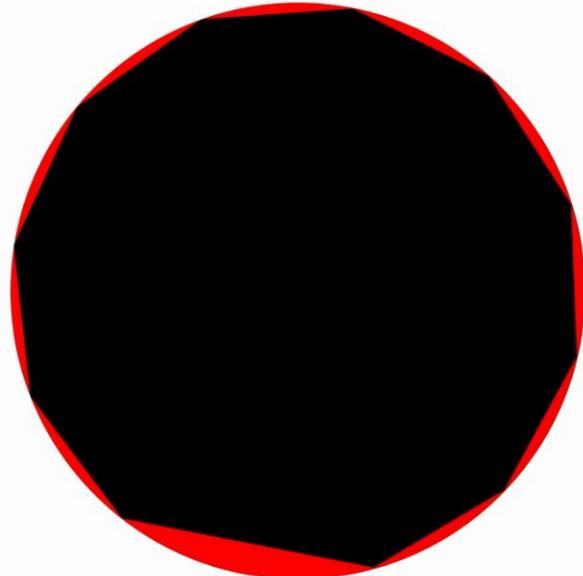


In[]:= AnimationVideo[Blur[, x], {x, 20, 0}]

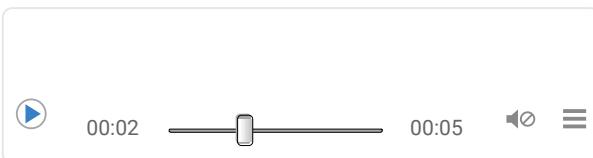
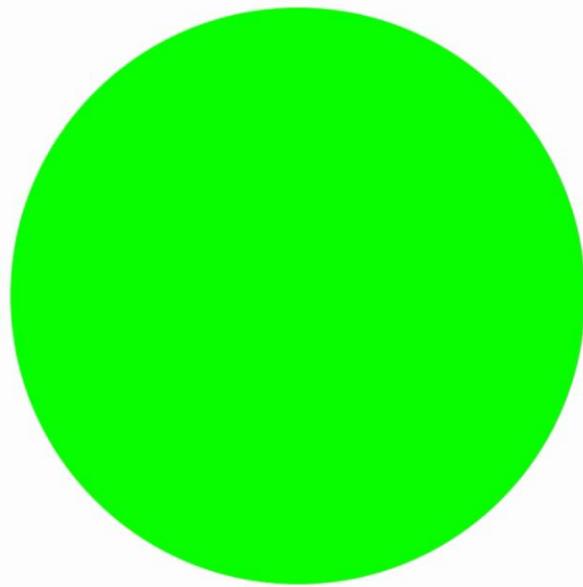
Out[]=



```
In[]:= AnimationVideo[Graphics[{Style[Disk[], Red], RegularPolygon[x]}], {x, 3, 20}]  
Out[]=
```



```
In[]:= Style[AnimationVideo[Graphics[Style[Disk[], Hue[x]]], {x, 0, 1}], 50]  
Out[]=
```



```
In[④]:= AnimationVideo[
  Rasterize[Style[ToUpperCase[FromLetterNumber[x]], 50]], {x, 1, 26, 1}]
  ••• AnimationVideo: Warning: the output frame rate changed from  $\frac{26}{5}$  to  $\frac{2599653}{500000}$ .
Out[④]=
```

