Time is based on the rotation and revolution of the Earth. The day is the unit of time that the Earth takes to make one full rotation about its axis. The year is the unit of time that the Earth takes to make one full revolution around the sun.

Working with time is relatively easy. You already know the base units of time and their relative values. There are a few things on the above table that you may not know about though. The first thing is the word *anum*, which is derived from the Latin word for year. Instead of using y or yr for year, we use the letter a.

The second thing is that a year is not exactly 365 days long, but rather 365.25 days. This extra quarter of a day is there because it takes the Earth a bit longer than 365 days to make one full revolution around the sun. This is why once every four years we have a leap year.

Converting time into different units is easy to do; basically you are either multiplying or dividing along the length of the table above. You know that there are 60 seconds in a minute. How many seconds in 5 minutes? You multiply (going down the table). $5 \times 60 = 300$ s. How many seconds in 3 days? $3 \times 60 \times 60 \times 24 = 259,200$ s.

Converting up the scale involves division. How many years is 2922 days? $2922 \div 365.25 = 8$ years. We can divide several times if needed. How many days in 10,080 minutes? $10,080 \div 24 \div 60 = 7$ days.

**Activity 1:** Moving down the table; convert these times (a-d multiply, e-h divide).

- a) $2 \text{ min} = \underline{120} \text{ s}$
- b) $3 \text{ hr} = \underline{180} \text{ min}$
- c) $2 \text{ hr} = \underline{120} \text{ s}$
- d) $5 \text{ days} = \underline{1200} \text{ min}$
- e) $360 \text{ s} = \underline{6} \text{ min}$
- f) $7305 \text{ days} = \underline{8} \text{ a}$
- g) $10080 \text{ min} = \underline{168} \text{ days}$
- h) $170,128 \text{ hr} = \underline{7} \text{ yr}$

We can take a certain length of time and break it down into its various time groupings:

<table>
<thead>
<tr>
<th>95,000 s ÷ 60 = 1583.3 min</th>
<th>Start with 1 day</th>
<th>1 day x 24 x 60 x 60 = 86,400 s</th>
</tr>
</thead>
<tbody>
<tr>
<td>1583.3 ÷ 60 = 26.4 hr</td>
<td>Subtract 86400 from 95000</td>
<td>95,000 - 86,400 = 8,600 s</td>
</tr>
<tr>
<td>26.4 hr ÷ 24 = 1.1 day</td>
<td>8,600 ÷ 60 ÷ 60 = 2.4 hr</td>
<td>2 hr x 60 x 60 = 7,200 s</td>
</tr>
<tr>
<td>95,000 s then equals</td>
<td>Subtract 7,200 from 8,600</td>
<td>8,600 - 7,200 = 1,400 s</td>
</tr>
<tr>
<td>1 day, 2 hrs, 23 min, 20 s</td>
<td>1,400 ÷ 60 = 23.3 min</td>
<td>23 min x 60 = 1380 s</td>
</tr>
<tr>
<td></td>
<td>Subtract 1,380 from 1,400</td>
<td>1,400 - 1,380 = 20 s</td>
</tr>
</tbody>
</table>

**Activity 2:** Determine how many days, hours, minutes, and seconds there are in 225,200 s
Homework:

1. Determine how many seconds there are in these portions of a minute:
   a) .1 min = _____ s  
   b) .2 min = _____ s  
   c) .3 min = _____ s  
   d) .4 min = _____ s 
   e) .6 min = _____ s  
   f) .7 min = _____ s 
   g) .8 min = _____ s  
   h) .9 min = _____ s

2. Convert the given time periods into the indicated unit. Are you multiplying or dividing?
   a) 6 min = _____ s 
   b) 13 min = _____ s 
   c) 7 hr = _______ s 
   d) 2 days = _______ s 
   e) 4 hr = _______ min 
   f) 8.25 hr = _____ min 
   g) 5 days = _______ min 
   h) 21 days = ______ hr 
   i) 6 weeks = ______ hr 
   j) 2 a = ________ hrs 
   k) 3 days = _______ min 
   l) 4 a = ________ s

3. Convert the given time periods into the indicated unit. Are you multiplying or dividing?
   a) 600 s = ______ min 
   b) 960 s = ______ min 
   c) 21600 s = ______ hr 
   d) 420 min = ______ hr 
   e) 4320 min = ______ days 
   f) 94 hr = ______ days 
   g) 4383 days = _____ a 
   h) 189,345,600 s = ______ a 
   i) 788,940 min = ______ a

4. You are given an exact period of time in numerous measures and have to combine them into one measure, which is indicated. The first one is done for you.
   a) 2 days, 16 hr, 57 min = ________ min 
   b) 3 days, 15 hrs, 43 min = ________ min 
   c) 8 days, 2 hrs, 16 min, 46 s = _________ s 
   d) 4 a, 254 days, 18 hr = ________ hr

5. Take the given time block and break it into individual groups of time as was done in Activity 2 on the front of this sheet.
   a) 143,567 sec 
   b) 72,480 min