Solving problems with the astrolabe: Questions

1. Calculate the times of sunrise and sunset for the following days:

i) 25 January

ii) 12 December

iii) 12 June

2. Estimate the solar time for the following settings:

i) 8 February, with the sun at 10^{o}

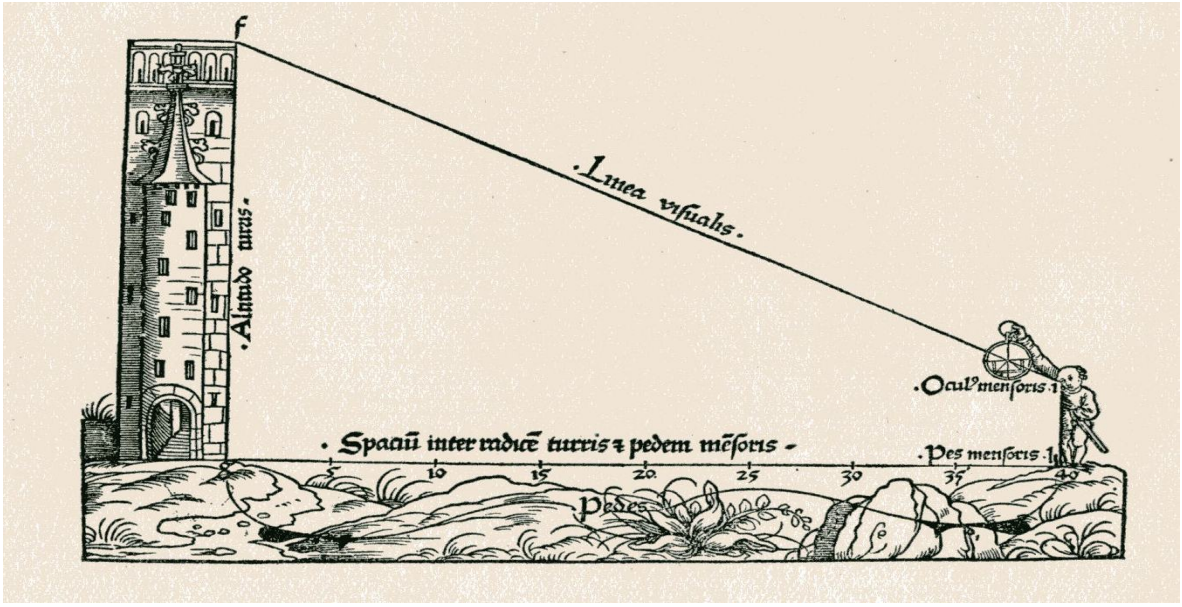
ii) 3 September, with the sun at 30^{o}

iii) 24 July, with the sun at 15^{o}

3. Calculate the altitude of the sun at the following dates and times:

i) Calculate the altitude of the sun at 9.00 am on 31 December

ii) Calculate the maximum and minimum **altitudes** of the sun at midday over the course of a year
(**hint:** on which dates would the sun be at their maximum and minimum positions?)



Solving problems with the astrolabe: Answers

1. Calculate the times of sunrise and sunset:

i) Ans: Sunrise 7.30am, sunset 4.30pm

ii) Ans: Sunrise 8.15am, sunset 3.45pm

iii) Ans: Sunrise 3.30am, sunset 8.30pm

2. Estimate the solar time:

i) Ans: 8.15am or 3.45 pm

ii) Ans: 11.15am or 12.45pm

iii) Ans: 6.00am or 6.00pm

3. Calculate the altitude of the sun at the following dates and times:

i) Ans: 6^{o} altitude

ii) Ans: Min = 14^{o} (Winter Solstice), Max = 62^{o} (Summer Solstice)