

WORKSHEETS FOR PUPILS

Activity name	Estimated duration	Difficulty of activity	Age of children for which activity is suitable	Aids and material	Objective of activity
Trajectory of dwarf planets	20 – 30 minutes	medium	14 – 15	encyclopedia, atlas or the Internet, calculator, spreadsheet	summary of distances and dimensions of dwarf planets, calculations of various distances
Dwarf planet's set	20 – 30 minutes	medium	14 – 15	encyclopedia, atlas or the Internet, calculator, spreadsheet	work with graph, calculation of equation
Model of trajectory	20 – 30 minutes	medium	14 – 15	paper, computer, calculator	making trajectory model, work with models
What is your weight?	20 – 30 minutes	medium	14 – 15	1 metre long ruler, calculator, spreadsheet, graph paper	average figure, gravitational factor, jump height, order of objects

Worksheet 2: DWARF PLANET'S SET

When does Ceres set?

Exercise: In this exercise we will predict when dwarf planet Ceres sets, observing it with the Faulkes Telescope North (FTN) in Hawaii. Assume that the object's set is the moment when it is in the height of 0° above the horizon.

The chart below contains the height of Ceres above the horizon as viewed from the FTN every day for the period of 21 days starting on the 27th February 2006. When we look at the data, it is obvious that the height of Ceres above the horizon gradually lowers every day. When does it reach the horizon?

Day	Height above horizon (°)	Day	Height above horizon (°)
1	19	12	14
2	19	13	14
3	18	14	13
4	18	15	13
5	17	16	12
6	17	17	12
7	16	18	11
8	16	19	11
9	16	20	10
10	15	21	10
11	15		

a) Draw a graph of the height of Ceres above the horizon in degrees, using the data from the chart above. Draw a straight line through the points.

b) Calculate the straight line's tilt and its point of intersection with the axis y . Assuming that it is best to draw points with a straight line, what is the equation for these data?

c) Determine in how many days Ceres will be below the horizon. (Clue: An object sets if its height above the horizon is 0° .)