# Acceleration due to gravity

In this simple activity the acceleration due to gravity will be determined by simply dropping an object and measuring the time it takes to fall to the ground.

The activity is shown in the diagram below.



Tall building

Ball is dropped from a height

Tall building

Students measure the time for the ball to reach the ground

C:\Program Files (x86)\Microsoft Office\MEDIA\CAGCAT10\j0240719.wmf

A ball is dropped from a measured height *h* above the ground. The time for the ballto reach the ground is measured and the activity is repeated several times.

From the equation of motion s = u t + ½ a t2

s = height

u = 0 (as the ball is dropped not thrown)

t = time taken to reach the ground

a = g (acceleration due to gravity)

Substitution and rearrangement of the formula gives g = 2h / t2

Record your times in the table and find the average time for the ball to reach the ground. You may want to discount any outliers (i.e. any odd results that are obviously inaccurate)

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The average time is \_\_\_\_\_\_\_\_\_\_\_\_\_s

The height that the ball fell is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_m

Use this average time and height to determine the acceleration due to gravity in units of m s-2

How well does your value for g compare with the standard figure of 9.8 m s-2? Can you account for any differences?

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