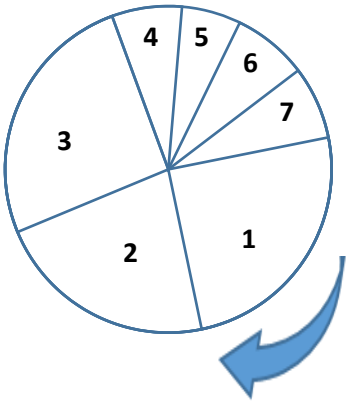
Cell Cycle

1. The cell cycle is as follows:

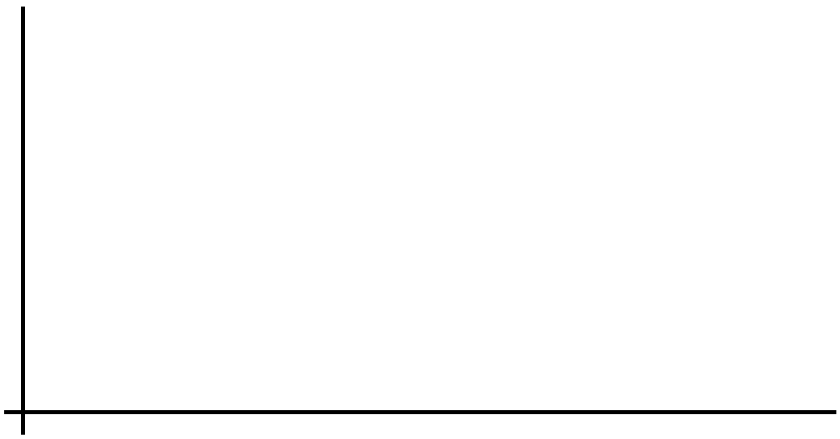


Stages 1, 2 and 3 are called _____. Stage 1 is the _____ phase, in which _____ synthesis is occurring. Stage 2 is when _____ _____ occurs in preparation for cell division. Stage 3, the _____ phase, is also a time of _____ synthesis and _____ of extra organelles.

Stages 4- 6 are called _____. This is the division of the _____ into two _____ identical _____ _____.

The cell cycle is regulated by proteins called _____ . They bind to _____ -dependent kinase enzymes, moving the cell into the next phase. These proteins were discovered by _____.

This graph shows the change in concentration in the different _____. Complete it, and include a key.



We will look at the steps in detail (you must make diagrams in the boxes):

Stage 1 of _____ is called _____ (**4** on diagram). In this stage, the sister _____ are _____ coiling. They are held together at the _____. The _____ envelope is _____ down, and the _____ micro _____ are spreading towards the poles.

Stage 2 is called _____ (**5** on diagram). In this stage, the sister _____ are _____ up at the _____. The _____ micro _____ attach to _____ sides of the _____.

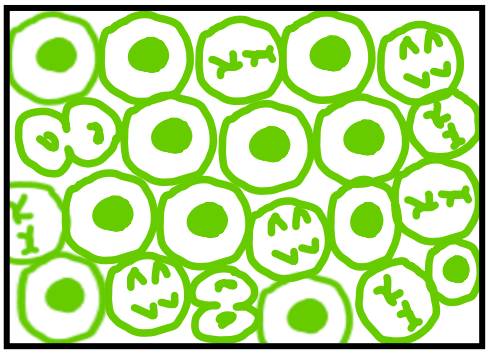
Stage 3 is called _____ (**6**). In this stage, the sister _____ separate because the _____ gets broken. This creates two _____ that then migrate to _____ poles.

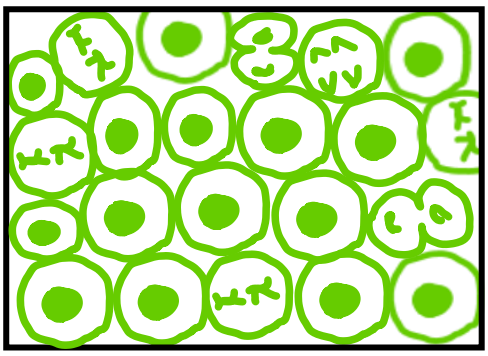
Stage 4 is called _____ (**7**). In this stage, the _____ envelope reforms around the _____. The _____ moves inwards and pinches off, forming two new cells. This is called _____ and is different in plant and animal cells, mostly because plant cells have a _____.

2. The _____ of cell division can be used to detect _____ cells. These cells divide _____, so a sample will show many cells in any of the above stages of _____ when comparing to the overall number of cells in a sample. This is called the _____ index and the formula is: _____ index = _____

Remember, it is easy to see if a cell is in interphase or in _____. In _____, the chromosomes are always visible because they have _____.

Work out the mitotic index for these simulated tissue samples:





Which sample is more likely to be from a tumour?

3. _____ can be caused by _____ which alter the genetic code, or by _____ which are genes that can, under certain circumstances, lead to the development of _____. These two factors can cause _____ tumours in one organ. If the _____ spreads to other organs, this is called _____. The new tumours formed in other organs are called _____ tumours.

4. There is known to be a _____ correlation between _____ and getting _____ cancer. It is important to understand that correlation does not mean _____ . Unless all other variables have been _____, it is not necessarily true that one causes the other.

