**Mitosis/Meiosis Drawing Practice Questions (Science 9 Pathways)**

*Please copy down and answer the following questions onto a separate sheet of paper.*

Note: chromosome drawings:

* Each chromosome has its own centromere
* Unique (i.e. non-homologous chromosomes) can differ in length and/or centromere placement

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| --- | --- | --- |
| Non-replicated chromosome: | Replicated chromosome (two sister chromatids): | Homologous chromosomes (recommend using different colours for each ‘set’ of chromosomes): |
|  |  |  |

1. Draw each of the following cells:
   1. Haploid cell with 3 chromosomes (n=3)
   2. Diploid cell with 6 chromosomes (2n=6)
   3. Haploid cell with 4 chromosomes (n=4)
   4. Diploid cell with 4 chromosomes (2n=4)
2. Draw a diploid cell with 4 chromosomes (2n=4) undergoing mitosis. Show prophase, metaphase, anaphase, final daughter cells.
3. Draw a diploid cell with 4 chromosomes undergoing meiosis. Show prophase I, metaphase I, anaphase I, daughter cells after meiosis I, metaphase II, anaphase II, daughter cells after meiosis II.
4. Draw each of the following cells in the specified stage of mitosis or meiosis. Make sure to show: centriole, spindle fibers, centromeres where relevant.
   1. Diploid cell with 8 chromosomes in metaphase I
   2. Diploid cell with 4 chromosomes in metaphase of mitosis
   3. Haploid cell with 4 chromosomes after meiosis II
   4. Diploid cell with 6 chromosomes in prophase I
   5. Diploid cell with 6 chromosomes in prophase of mitosis
   6. Diploid cell with 4 chromosomes undergoing anaphase I
   7. n=3 cell with 3 chromosomes in metaphase II