

Cancer

Answer the questions below.

1. State two uses of cell division.

Asexual reproduction in unicellular organisms, growth and repair in multicellular organisms.

2. Define mitosis.

Mitosis is the part of the cell cycle where DNA (chromosomes) are separated.

3. Describe what happens to the genetic material before cell division takes place.

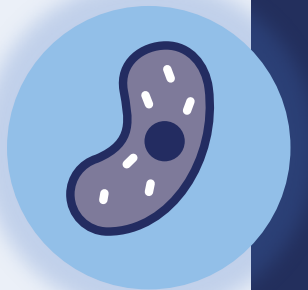
The genetic material must be replicated.

4. Explain what is meant by a balanced diet.

A diet consisting of sufficient amounts of each food group, vitamins and minerals that fulfils nutritional requirements.

5. Describe how to test for the presence of protein.

Using Biuret reagent, which changes colour from blue to purple if protein is present.



Cancer

B3.1.13

Science
Mastery

B3.1.1 Prior Knowledge Review
B3.1.2 Eukaryotic and Prokaryotic Cells
B3.1.3 Aseptic Technique
B3.1.4 Growth of Bacteria
B3.1.5 Microscopes
B3.1.6 Observing Cells
B3.1.7 Diffusion

B3.1.8 Diffusion in Living Things
B3.1.9 Osmosis
B3.1.10 Osmosis Investigation
B3.1.11 Active Transport
B3.1.12 Cell Division
➤ **B3.1.13 Cancer**
B3.1.14 Stem Cells



This is the fix-it portion of the lesson

The **fix-it** is an opportunity to respond to gaps in knowledge, especially those identified by the previous lesson's exit ticket.

- The teacher should customise this slide as needed, to facilitate
 - **reteach, explanation, demonstration** or **modelling** of ideas and concepts that students have not yet grasped or have misunderstood.
 - **practise** answering specific questions or of key skills.
 - **redrafting** or **improving** previous work.

Exit ticket

1. Mitosis is...

- ☐ A. The process of making new cells
- ☒ B. The process of cells dividing their genetic material to make two new cells
- ☐ C. The process of cells replicating their DNA and sub-cellular structures

2. Which is a stage of cell division?

- ☒ A. Replication of DNA and sub-cellular structures
- ☐ B. One cell being replaced by a newer cell
- ☐ C. A cell producing two new cells alongside it

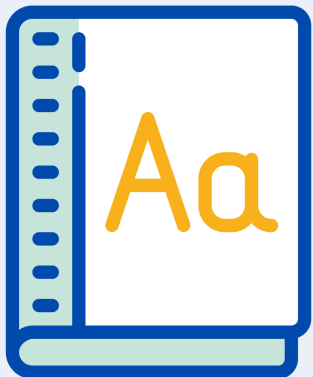
3. Which best describes the cells that are produced at the end of mitosis?

- ☐ A. Two daughter cells that have half the number of chromosomes as the original cell
- ☒ B. Two daughter cells that have the same number of chromosomes as the original cell
- ☐ C. One daughter cell that has double the number of chromosomes as the original cell

Following this lesson, students will be able to:

- State how cancer is caused
- Describe the difference between benign and malignant tumours
- Explain how certain risk factors may increase the likelihood of someone having cancer

Key Words:



cancer

risk factor

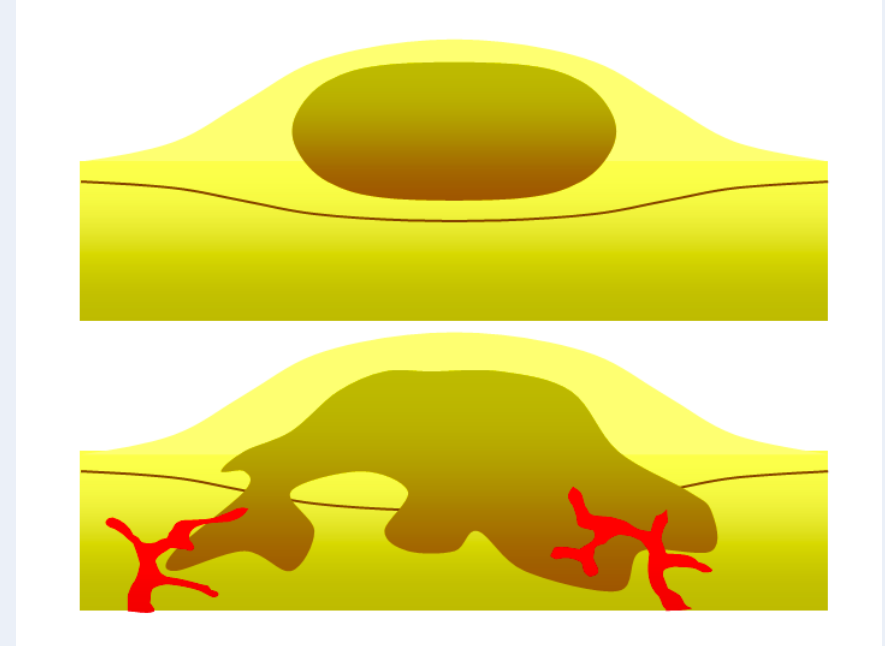
benign

malignant

Cancer

Tumours are a mass of cells, of which there are two different types:

- **Benign** tumours are a mass of cells contained in **one area**
- **Malignant** tumours are formed of **cancer** cells that **invade other tissues** and spread around the body forming secondary tumours



Cancer is when **cell division** happens **uncontrollably**, so cell numbers increases inappropriately

Cancer

There are various **lifestyle risks** for developing different types of cancer including:

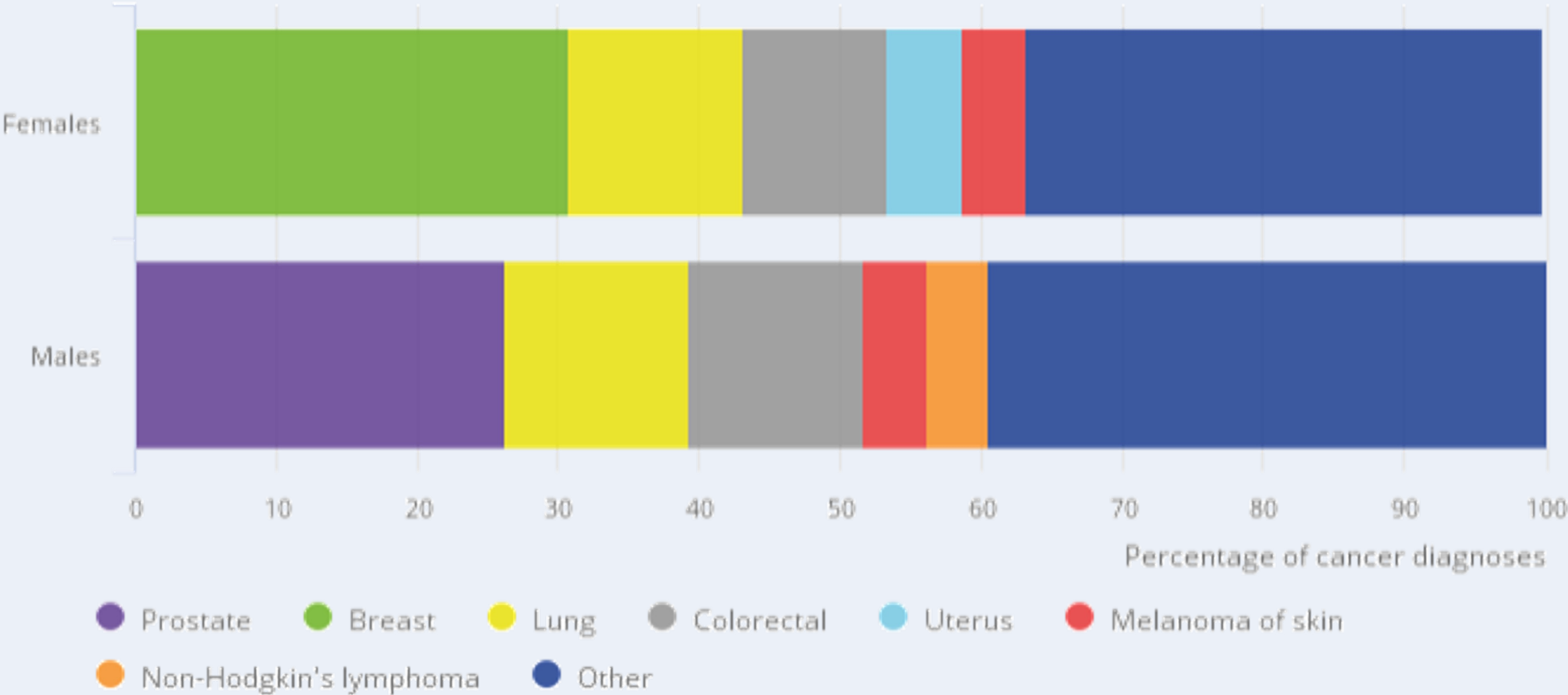
- Poor diet
- Sedentary lifestyle (lack of exercise)
- Excessive alcohol or drug consumption
- Smoking
- UV sunlight exposure
- Exposure to various chemicals or radiation



There are also **genetic risks** for cancer such as the BRCA gene for breast and ovarian cancer

These risks do not mean a person will certainly get cancer but they increase the chance of it happening

Cancer Statistics in England in 2017



Which statements do you agree with?

I think that a risk factor is something that will cause you to have cancer

I think that malignant tumours are harmful as they are able to spread

I think that cancer is caused when cells divide much more rapidly than usual

I think that there is an increased risk of getting cancer the older you get

Quick Quiz

Choose the correct answer for each question:

1. Malignant tumours are more worrying than benign tumours because...
 - ☒ A. They can invade other tissues and create secondary tumours
 - ☐ B. They are contained in one area which increases the size of the tumour
2. Cancer occurs when...
 - ☐ A. Cell division happens uncontrollably so that the number of cells decreases excessively
 - ☒ B. Cell division happens uncontrollably so the number of cells increases excessively
3. A person could reduce their risk of cancer by...
 - ☒ A. Exercising more, eating a healthy balanced diet and limiting alcohol intake
 - ☐ B. Drinking more alcohol, smoking and sunbathing every day

Drill

1. Define cancer
2. Define a benign tumour
3. Define a malignant tumour
4. State which type of tumour leads to cancer
5. Define risk factor (of cancer)
6. State three lifestyle risk factors for cancer

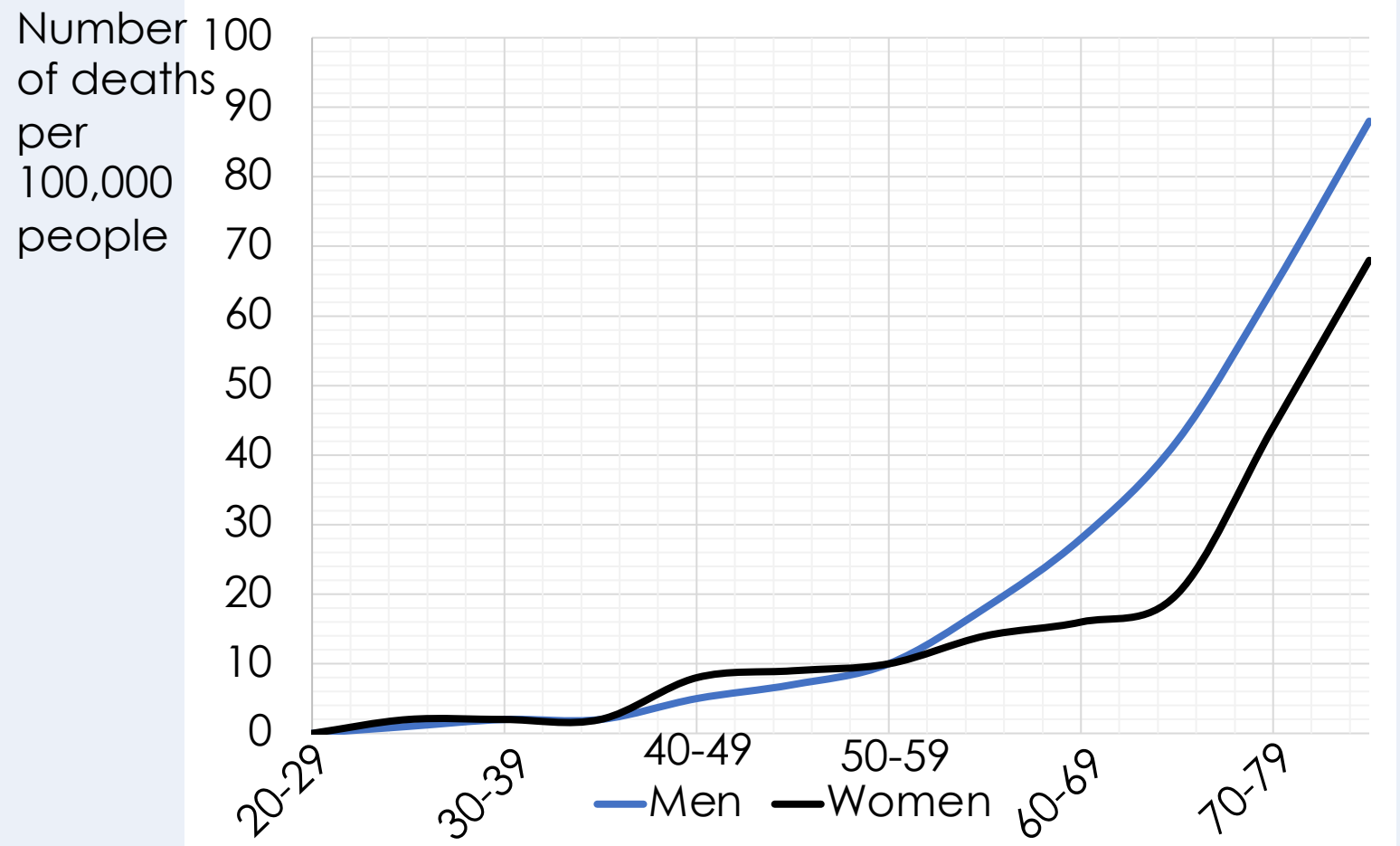
Drill answers

1. Cancer is when cell division happens uncontrollably, so cell numbers increases inappropriately
2. Benign tumours are a mass of cells contained in one area
3. Malignant tumours are formed of cancer cells that invade other tissues and spread around the body forming secondary tumours
4. Malignant tumour
5. Something that can increase the likelihood of cancer developing
6. Poor diet, sedentary lifestyle (lack of exercise), excessive alcohol or drug consumption, smoking, UV sunlight exposure, exposure to various chemicals or radiation

I: Analysing Patterns in Data

The graph shows the number of deaths caused by lung cancer at different ages for women and men.

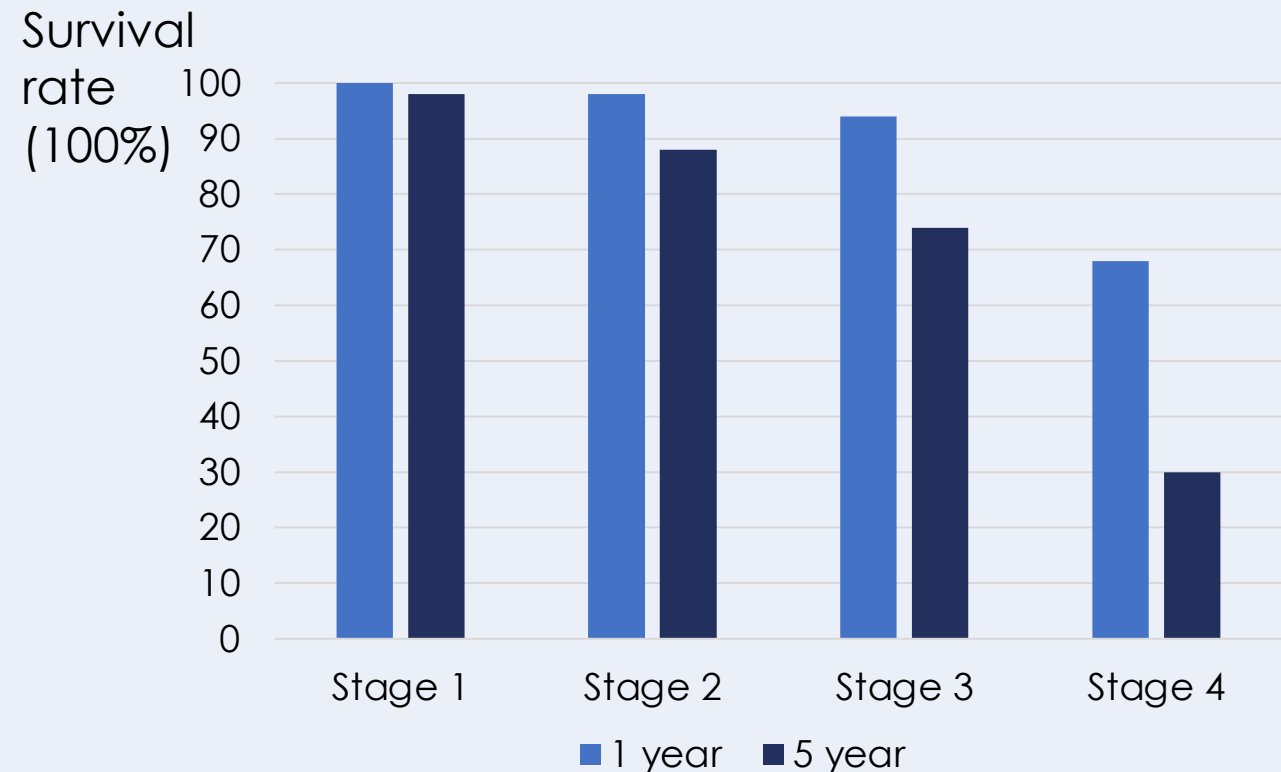
What are the patterns shown in the data?



We: Analysing Patterns in Data

The graph shows the survival rates after 1 year and 5 years for women diagnosed with breast cancer at different stages.

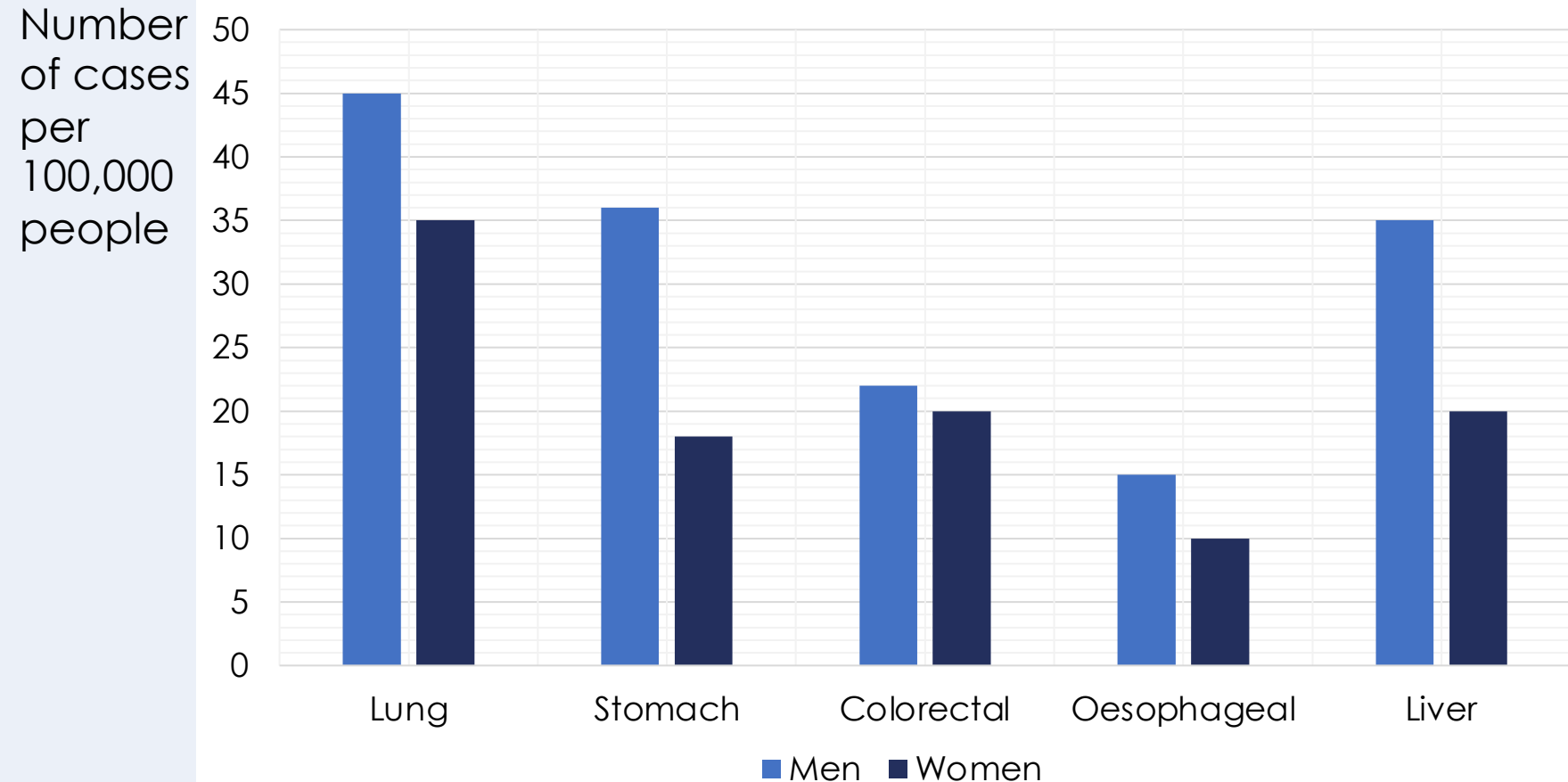
What pattern is shown in the data?



You: Analysing Patterns in Data

The graph shows the prevalence of different cancers that can affect both men and women.

What pattern is shown in the data?



Answer the questions below.

1. Cancer is...

- ☐ A. the process of making new cells
- ☐ B. when mitosis is controlled
- ☒ C. uncontrollable cell division

2. What is the difference between a benign and a malignant tumour?

- ☐ A. Benign tumours are isolated in one area, malignant tumours are always all over the body
- ☒ B. Benign tumours are isolated in one area, malignant tumours have the potential to spread to form new tumours around the body
- ☐ C. Benign tumours are all over the body, malignant tumours are isolated in one area

3. A risk factor is...

- ☐ A. an unhealthy lifestyle choice that means a person will get cancer
- ☐ B. a gene that is passed down and causes cancer
- ☒ C. a gene or lifestyle choice that will can increase the likelihood of a person developing cancer

Lesson B3.1.13

What was good about this lesson?

What can we do to improve this lesson?

[Send us your feedback by clicking this link](#)
or by emailing sciencemastery@arkonline.org
Thank you!