



Fertility and What Impacts It

LEARNING OUTCOMES

Knowledge, Skills
& Actions



To define and describe the human fertilisation process at a cellular level.

To explore what makes women and men fertile and understand ways to improve fertility.

To understand the various ways women can become pregnant including IVF treatment.

NEW VOCABULARY

IVF, Gut Flora, Fertility, Fertilisation, Artificial Insemination, Surrogate, Trimester, Embryo



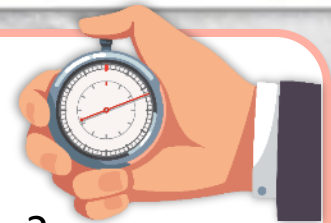
STARTER ACTIVITY

Explain how to successfully grow vegetables

What is needed?

How does the concept of 'fertility' link to humans?

What is needed?



3 Minutes

GROUND



Be Respectful

Listen & don't interrupt others
Only 1 person talking at a time
Use the agreed appropriate
Language (Avoid slang terms)



Be open and honest
No Personal Comments
Discussions must be about
'general situations'



PSHE CLASSROOM **RULES**

Don't Make Assumptions
about people's values,
attitudes, behaviours, life
experiences or feelings

You don't have to say
things about yourself if
you don't want to

DEALING WITH SENSITIVE TOPICS

Be Non-Judgemental
No put-downs. Challenge
the opinion, not the
person

SAFEGUARDING YOUR WELFARE & HAVING YOUR INTERESTS AT HEART

It's OK to be embarrassed
by a topic but don't show
that you are embarrassed
through silliness



There are **no stupid questions**
It's OK to get things wrong

Conversations on sensitive
topics stay in the
classroom unless it is a
safeguarding issue

Enjoy the lesson, challenge your perceptions and understand how to seek further advice and support








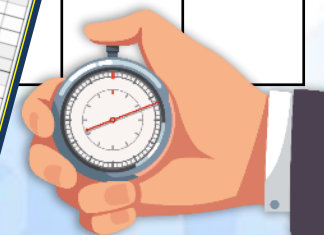
Fertility and What Impacts It

ASSESSMENT FOR LEARNING

BASELINE CONFIDENCE CHECKER




| BEFORE THE LESSON | NOT CONFIDENT | | CONFIDENT | | VERY CONFIDENT |
|--|---|--|---|---|--|
| Knowledge, Skills & Actions | 1  2 | 3  4 | 5  6 | 7  8 | 9  10 |
| I can explain what impacts fertility for men and women | | | | | |
| I understand how certain lifestyle changes can improve fertility | | | | | |
| I can describe the process of IVF treatment | | | | | |




Complete a baseline assessment of where you think you are at for this lesson
(Discuss or complete sheet)


2 Minutes




 I'm not confident at all on this topic

 A little confident

 Confident

 Very confident

 I am super confident on this topic

What is Fertility?

Fertility refers to the natural ability of an individual, whether male or female, to conceive and produce offspring.

In women, fertility is primarily associated with their ability to release a healthy egg from the ovaries during each menstrual cycle and sustain a pregnancy.

In men, fertility is determined by the production of healthy sperm, their ability to reach and fertilise an egg successfully, and the overall quality of the semen.

Did you know?

Fertility can be influenced by various factors and can vary among individuals.

Task

What do you think are some lifestyle choices that might impact a person's fertility?



In women, fertility is tied to their menstrual cycle.

The most fertile time for women occurs during a window known as the fertile window, which usually spans a few days in the middle of the menstrual cycle.

Whilst men are capable of producing sperm all the time, studies have shown that sperm parameters, such as sperm count, can vary throughout the year and even within a single day.

What Do You Think?



“The younger I am the more fertile I am.”

Talking Points



- I think that ...
- I don't think... is right because...
- My opinion is...
- I would argue the same because...
- I disagree with... because...
- Building on what... said. I think...
- An alternate way of looking at this is...
- I sort of agree, however...
- I would challenge what.. said because ...

Do you agree or disagree? Why?

Can you add to the statement?

Do you have a question about the statement?

Would you like to challenge what is being said?

Do you have an alternative idea?





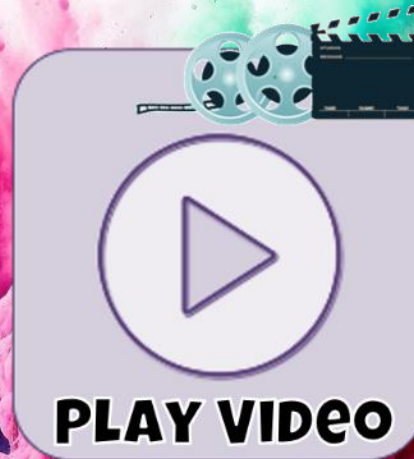
Human Fertilisation

Cellular Level Magnification



Fertilisation

Task: Pick one or two coloured hats and answer all the related questions.



6 Minutes



What facts do I know? What else do I need to know? What do I want to know?

How do I feel about this? What don't I like about this? What do I like about this?

Can something be done? New ideas? What are the solutions/suggestions?

What thinking is needed? Next steps? Where are we now?

What is wrong? Is it safe? Can it be done?

INFORMATION

FEELINGS

CREATIVITY

THINKING

JUDGEMENT

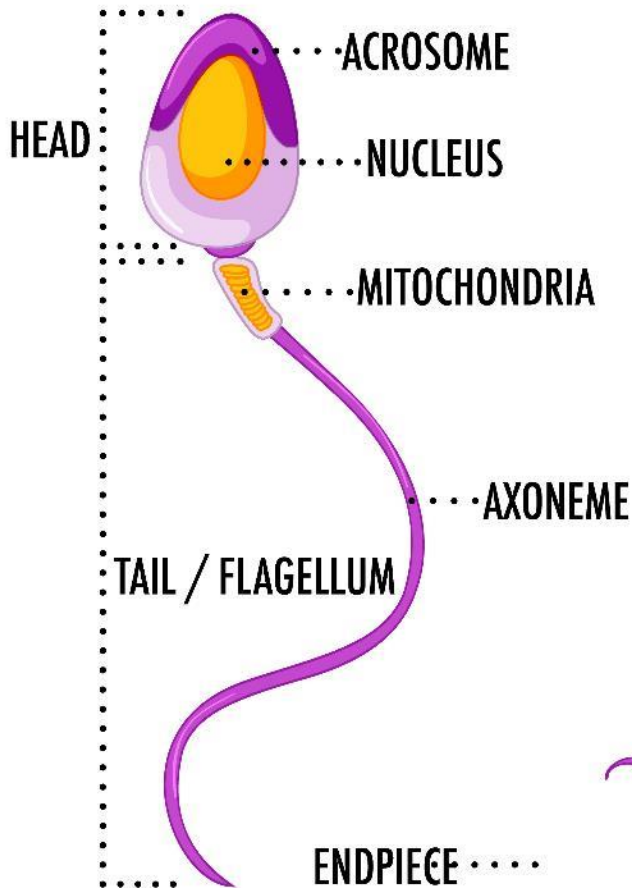
Fertilisation

Task

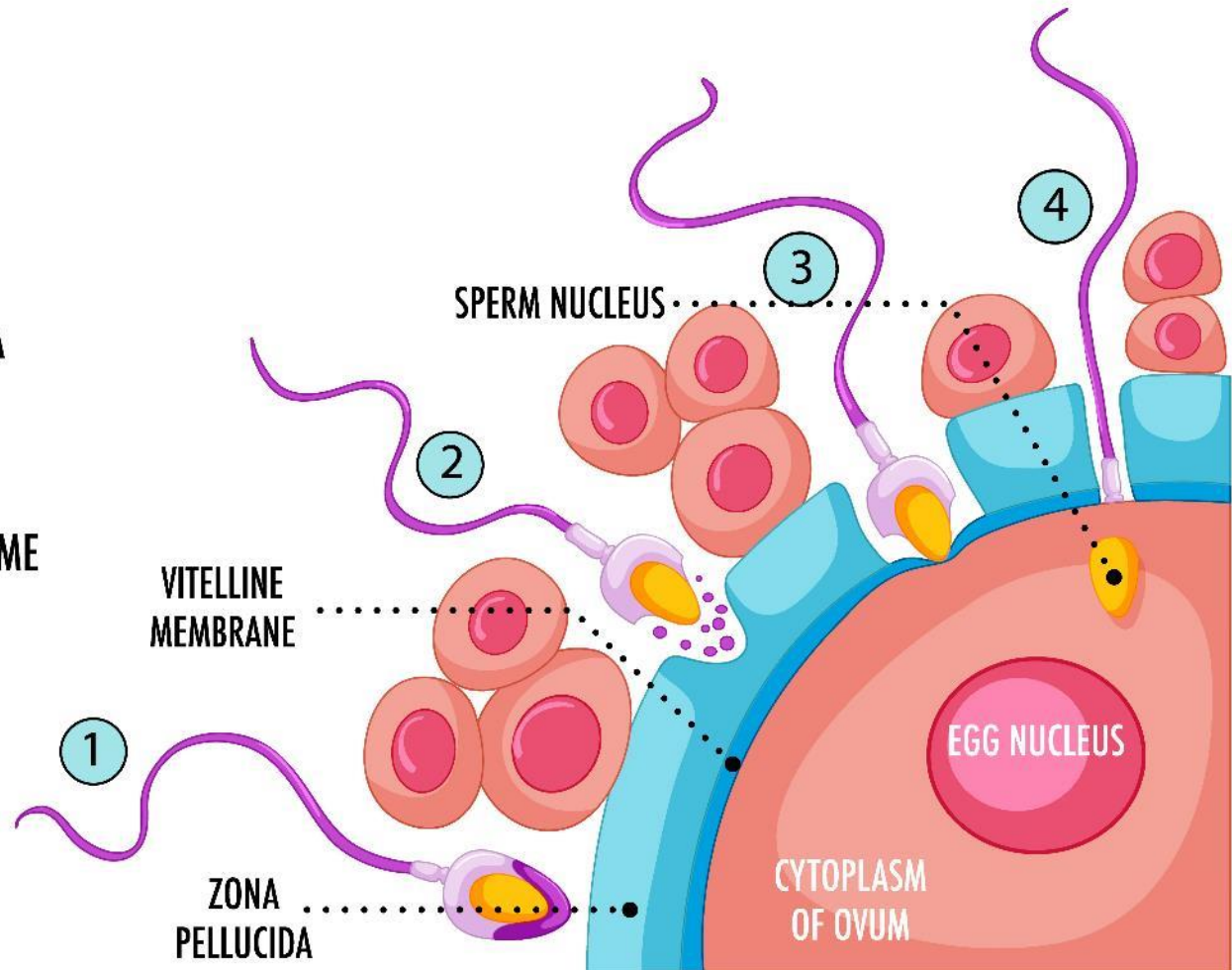
Discuss with your partner the fertilisation process from a cellular level.



SPERM



OVUM



Foetal Development

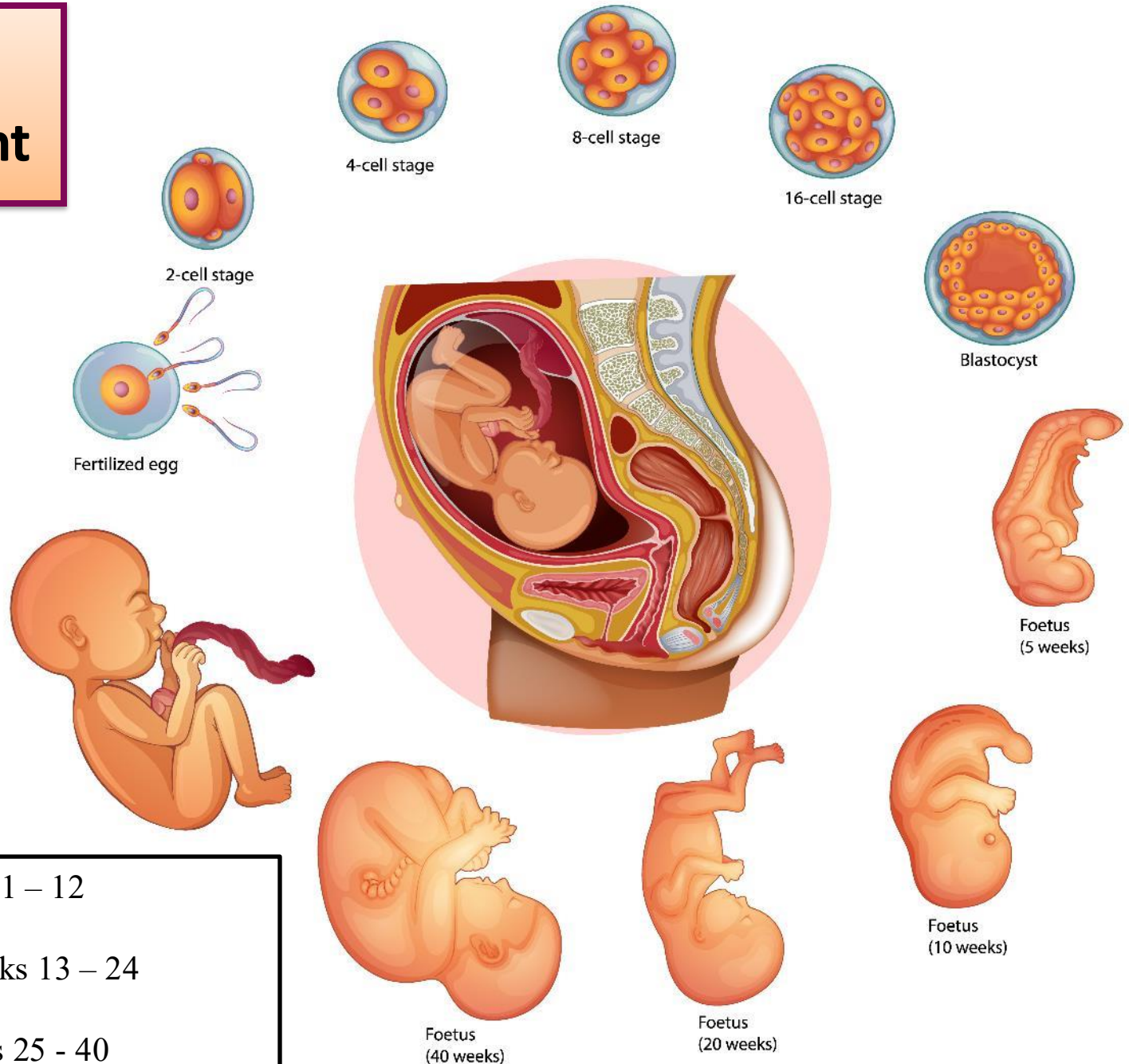
The process by which a fertilised egg grows and develops into a fetus within the womb during pregnancy.

It is a remarkable journey of transformation that spans approximately 40 weeks, divided into three trimesters.

First Trimester: Weeks 1 – 12

Second Trimester: Weeks 13 – 24

Third Trimester: Weeks 25 - 40



What Impacts Fertility?

Women

Fertility is primarily associated with the ability to release a healthy egg from the ovaries during each menstrual cycle.

Factors that can affect female fertility, include;

- Age
- Hormonal imbalance
- Ovulation regularity
- Overall health
- The presence of any underlying medical conditions

For both men and women lifestyle choices, environmental factors, genetics, and certain medical conditions can impact fertility.



Men

Fertility is determined by the production of healthy sperm, their ability to reach and fertilise an egg successfully, and the overall quality of the semen.

Factors that can influence male fertility include;

- Sperm count,
- Motility (the sperms ability to move),
- Morphology (shape and structure of the sperm),
- The presence of any reproductive disorders.

Some Factors That May Affect Fertility

(Medical Conditions)

STIs

If left untreated, can cause inflammation and scarring in the reproductive organs.

(Genetics)

Family Patterns

Certain conditions or factors related to fertility may run in families.

(Environmental) Heat

Frequent exposure of the testicles to hot baths, saunas, or tight underwear, can temporarily reduce sperm production and affect male fertility.

(Lifestyle) Smoking

Can lead to reduced sperm count, impaired sperm motility in men, and increased risk of miscarriage and infertility in women.

(Lifestyle) Drug Use

The use of recreational drugs, such as marijuana, cocaine, and anabolic steroids, can disrupt hormone levels.

(Lifestyle) Alcohol Consumption

Lifestyle, Environmental, Genetics, and Medical Conditions

(Lifestyle) Diet and Weight

A diet lacking in essential nutrients, and extremes in weight (either obesity or being underweight).

(Environmental) Exposure to Chemicals and Toxins

Prolonged exposure to things such as pesticides, lead, mercury, and certain industrial chemicals.

Key Term Definitions

With a partner come up with a definition for the following key term



- A) FERTILITY
- B) GUT FLORA
- C) ARTIFICIAL INSEMINATION
- D) SURROGACY

Definition– [\[Click to Reveal\]](#)

A

Definition– [\[Click to Reveal\]](#)

B

Definition– [\[Click to Reveal\]](#)

C

Definition– [\[Click to Reveal\]](#)

D



Task

Were any of your definitions close to these?

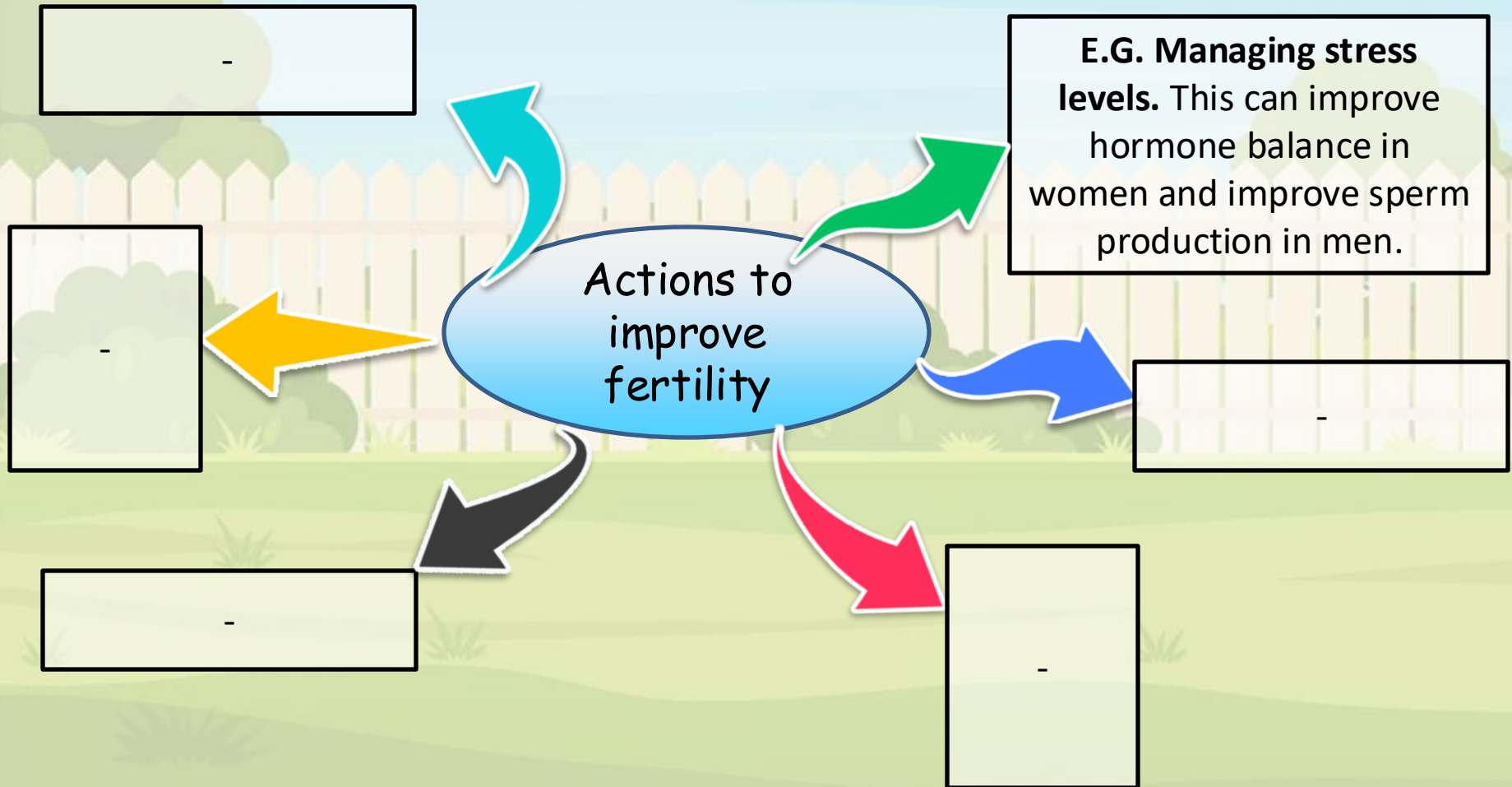




Improving Fertility

Task

Complete the mind map with specific examples for both males and females



Improving One's Fertility

Improving fertility in both men and women involves adopting a healthy lifestyle and addressing any underlying medical conditions that may affect reproductive health.

For Women:

Maintain a Healthy Weight: Through a balanced diet and regular exercise.

Eat a Nutritious Diet: Consume a diet rich in fruits, vegetables, whole grains, lean proteins, and healthy fats.

Manage Stress: Engage in stress-reducing activities such as exercise, meditation, yoga, or counselling.

Stop Smoking and Taking Drugs: Increase fertility and decrease the risk of miscarriage and complications during pregnancy.

Limit Alcohol and Caffeine: Moderate intake or avoiding them altogether can be beneficial.

For Men:

Maintain a Healthy Weight: Through a balanced diet and regular exercise.

Optimise Testicular Health: Avoid excessive heat exposure to the testicles, wear loose-fitting underwear to allow proper airflow.

Healthy Lifestyle Choices: Quit smoking, limit alcohol intake, avoid illicit drugs and minimise exposure to environmental toxins.

Balanced Diet: Consume a nutritious diet rich in antioxidants, vitamins, and minerals.

Manage Stress: Techniques such as exercise, relaxation exercises, or seeking support.

Task

Add other examples from this slide to your mind map.

IVF - In Vitro Fertilisation

Some people are unable to conceive naturally. However, there are other avenues that can be explored for those who would like children.

1 OVARIAN HYPERSTIMULATION



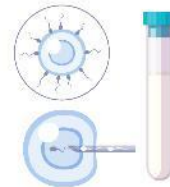
2 TRANSVAGINAL OOCYTE RETRIEVAL



3 EGG AND SPERM PREPARATION



4 EGG FERTILIZATION



5 EMBRYO TRANSFER



ADDITIONAL TECHNIQUES

PREIMPLANTATION GENETIC SCREENING

embryo tested for specific genetic diseases or the correct number of chromosomes



OOCYTE OR EMBRYO CRYOPRESERVATION

unused embryos may be frozen and implanted or donated at a later date



6 PREGNANCY



These technologies involve procedures where eggs and sperm are combined in a laboratory setting, and resulting embryos are transferred to the woman's uterus.



Medical Animation About IVF



3D animation of how IVF works

Task: Pick one or two coloured hats and answer all the related questions.



3 Minutes



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IVF Process

Stages

1. **Ovarian Stimulation:** The woman undergoes hormone injections to stimulate the ovaries to produce multiple eggs.
2. **Egg Retrieval:** Once the mature eggs are ready, a minor surgical procedure is performed. A needle is guided into the ovaries via the vaginal wall, and the eggs are aspirated using suction.
3. **Sperm Collection:** On the same day as egg retrieval, the male partner or a sperm donor provides a sperm sample.
4. **Fertilisation:** In the lab, the eggs and sperm are combined in a controlled environment.

Task

How does this process help with fertilisation?

Should the NHS offer IVF to all couples?

Could adoption be another option instead of IVF?

Did you know?

According to the NHS

IVF treatments that result in a live birth are:

29% for women under 35

23% for women aged 35 to 37

15% for women aged 38 to 39

9% for women aged 40 to 42

3% for women aged 43 to 44

2% for women aged over 44

5. **Embryo Development:** The fertilised eggs, now called embryos, are cultured in a lab for a few days to allow for embryo development.
6. **Embryo Transfer:** The best-quality embryos are selected for transfer into the woman's uterus.
7. **Embryo Freezing:** If there are additional viable embryos remaining after the transfer, they can be frozen for future use.
8. **Pregnancy Test:** Approximately two weeks after the embryo transfer, a blood test is performed to see if pregnancy has been achieved.

ACTIVITY

Fertility Leaflet

Fertility Fact Sheet

Your fertility is mostly determined by genetics, which influences how many eggs you are born with.

Doctors believe that the number of eggs you have at birth determines the length of time you will remain fertile.

You will release 400 mature eggs within your fertility window.

Two eggs can be released at the same time.

You are fertile for only 6 days of your cycle.




Knowing when you ovulate is important because it will tell you your personal 6 fertile days. It's not the same for everyone, so you can have sex with your partner on those days. This is the key to getting pregnant: having sex on your fertile days. Your fertile days are the five days before ovulation, and the day of ovulation itself.

Eggs can only be fertilised for around 24 hours (one day) after being released from the ovary.

12-24 hours after ovulation, a woman is no longer able to get pregnant during that menstrual cycle because the egg is no longer in the fallopian tube.

Ovulation largely happens in the morning during Spring/Summer and in the evening during Autumn and Winter. 50% of women ovulate between 12am-11am in the spring and 90% of women ovulate between 4pm-7pm in the colder months.

Younger women lean to ovulating from alternating ovaries, whilst women over the age of 30 can be found to ovulate from the same ovary.



Sperm lives for around five days when inside the uterus.

Ovulation doesn't always happen on day 14, that's why you should track your cycle.

A **study** from 2006 followed 141 healthy, regularly cycling women for up to a year so that researchers could better understand the average menstrual cycle. But, that's not what the researchers found. They found that on average, the follicular phase was about 16.5 days, putting the average day of ovulation on CD 16, two days later than classically predicted. They also found that while the average cycle length was 28 days, about 43 percent of the women had at least seven days of variability from cycle to cycle.

Get to know your cycle! Tracking your cycle with a cycle tracker app, cycle tracker pill, taking your temperature daily and becoming aware of your cervical fluid basal body temperature will help you understand when you are ovulating.

Your cervical fluid will become thicker, slippery and more like an egg white consistency in the fertile stage of your cycle.

Your temperature increases 0.2 degrees after ovulation. You are normally 36-36.5C. The heating effect is due to rising levels of Progesterone.

Fertility Fact Sheet

Men also have a biological clock (Quality of sperm can decrease with age)

Older men can have fertility issues due to lower testosterone levels.

Both prescription and recreational drugs affect fertility

Some antidepressants (like SSRIs) can raise a woman's serum prolactin level, which can then interfere with normal ovulation.

Even certain antiemetic (anti-nausea) medications can affect prolactin levels. Using any drugs, even cannabis, can affect the menstrual cycle.

Heavier drugs like opiates have been shown to suppress the reproductive cycle by affecting the centers of the brain that control the release of female hormones.

Smoking cigarettes and even second hand smoke has also been shown to reduce fertility time and time again.



Your weight affects your ability to conceive.

A minimum of 22 percent body fat is necessary for normal ovulation and reproductive competence.

Sexual positions don't affect your chances of conception.

You can conceive after 35.

A **study** of women from a more recent century (the 1990s) found that for women between 27-29 years old, the probability of conception was about 80 percent within a year of trying to conceive, and for women between 35-39 years old, the probability was about 77 percent. Only a 3% drop in fertility odds!

Sex on one, two, or three days before ovulation = 20-30% chance of getting pregnant

Sex four days before ovulation = 10-12% chance of getting pregnant

Sex five or six days before ovulation = 0-5% chance of getting pregnant.

One in six couples has trouble having a baby.

In 40 percent of these cases the difficulty is in fact associated with the man. However, having equal responsibility is about sharing knowledge and creating an open line of communication



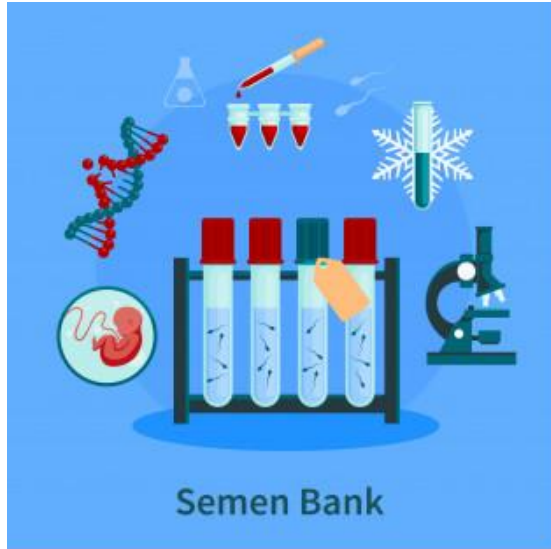
Success Criteria:

- ✓ Define fertility
- ✓ Negative impacts on fertility
- ✓ Present a range of possible solutions
- ✓ How to improve fertility
- ✓ Facts and statistics
- ✓ A basic overview of the fertilisation process
- ✓ A section on IVF

Task

Read the Fertility Fact Sheets and create a leaflet for young women and young men about improving their fertility.

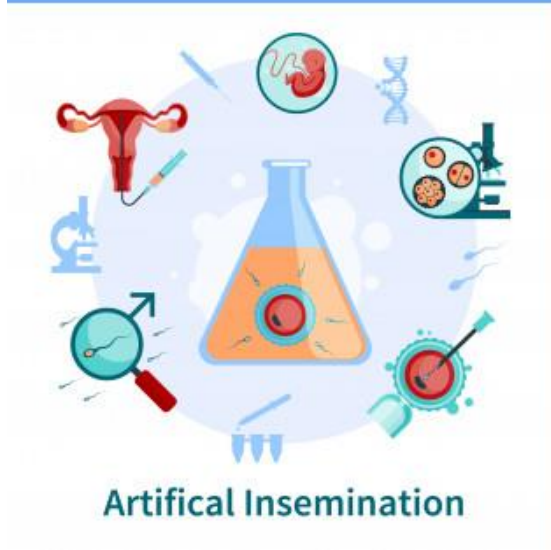
Some people are unable to conceive naturally, but there are other avenues that can be explored.



Semen Bank



Infertility Diagnosis



Artificial Insemination



Surrogate Motherhood

IVF IN VITRO FERTILIZATION

STEP 1



controlled ovarian hyperstimulation

STEP 2



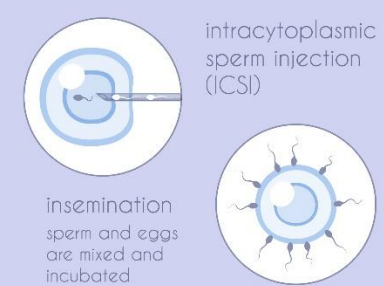
transvaginal oocyte retrieval

STEP 3



egg and sperm preparation

STEP 4



insemination sperm and eggs are mixed and incubated

STEP 5

embryo culture for 2-6 days



STEP 6



embryo transfer

STEP 7



pregnancy








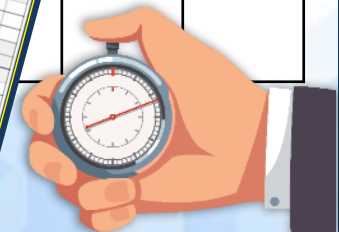
REVIEW YOUR LEARNING OUTCOMES

ASSESSMENT
FOR LEARNING

CONFIDENCE CHECKER



| AFTER THE LESSON | NOT CONFIDENT | | CONFIDENT | | VERY CONFIDENT |
|--|---|--|---|---|--|
| Knowledge, Skills & Actions | 1  2 | 3  4 | 5  6 | 7  8 | 9  10 |
| I can explain what impacts fertility for men and women | | | | | |
| I understand how certain lifestyle changes can improve fertility | | | | | |
| I can describe the process of IVF treatment | | | | | |





Complete the confidence checker of where you think you are at for this lesson

(Discussion or complete sheet)


3 Minutes




 I'm not confident at all on this topic

 A little confident

 Confident

 Very confident

 I am super confident on this topic

HOMWORK SUGGESTION



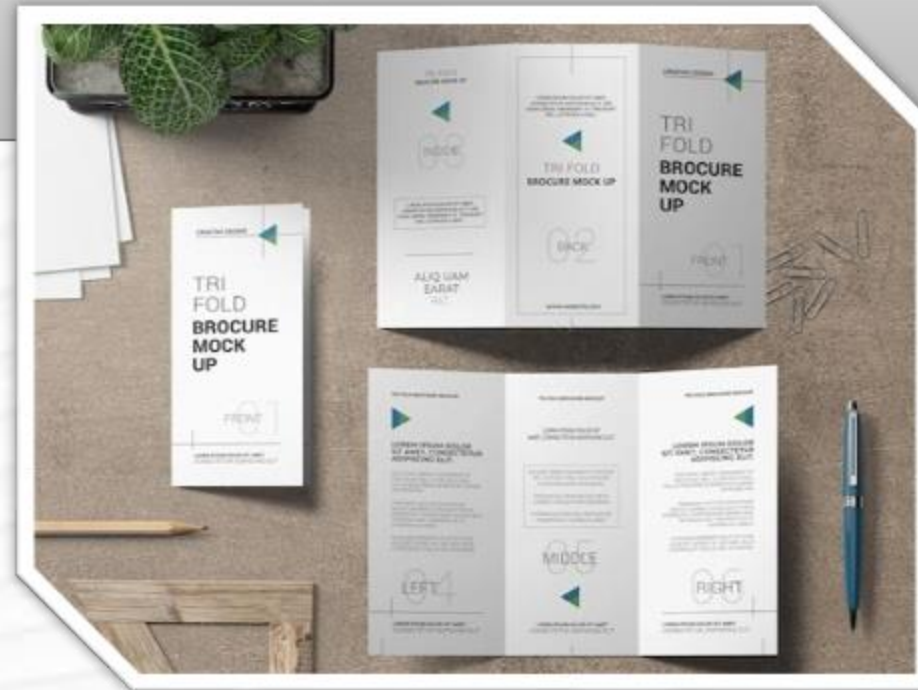
Homework Explained

Continue working on your fertility leaflet using the fact sheets and your own additional research.

DUE DATE

It must be submitted by..

Hand / Google
Classroom





IMPORTANT INFORMATION



2 Minutes



FOR MORE INFORMATION ABOUT THE TOPICS COVERED IN THIS UNIT
WE WOULD ADVISE ONE OF THE BELOW:

SPEAK TO YOUR PARENTS/GUARDIANS, HEAD OF YEAR,
A TRUSTED ADULT OR FRIEND.

IF YOU HAVE ANY CONCERNS ABOUT YOURSELF OR SOMEONE YOU KNOW.
IT IS IMPORTANT TO SPEAK UP AND TELL SOMEONE!

SPECIFIC FURTHER INFORMATION ON THIS TOPIC CAN BE FOUND HERE:

- A sexual health clinic (GUM clinic)
- <https://www.childline.org.uk/info-advice/> - info on topics including friends, relationships & sex
- Call the national sexual health helpline on 0300 123 7123 for details
- Brook centres - for under-25s
- GP surgeries
- NHS Website <https://www.nhs.uk/live-well/sexual-health/>

RELATIONSHIPS
& SEX EDUCATION



SEEKING SUPPORT

REFLECTION PLENARY



A problem I overcame today was...

**Before I only knew...
now I also know...**

**The key words for this lesson
were...**

I'm really proud of the way I have...

Today I have tried to...

**The most important thing I have
learnt today is...**

I used to feel ... but I now feel ...

**Before I would have done...
Now I will ...**

Next lesson I would like to...

**A question I would like to ask
is...**

**I would like to learn more
about...**

**I know if I need further support
or help, I could speak to... or
contact...**

**I now know I can support others
by...**

**One thing I didn't realise was...
this will help me to...**

2 Minutes

