

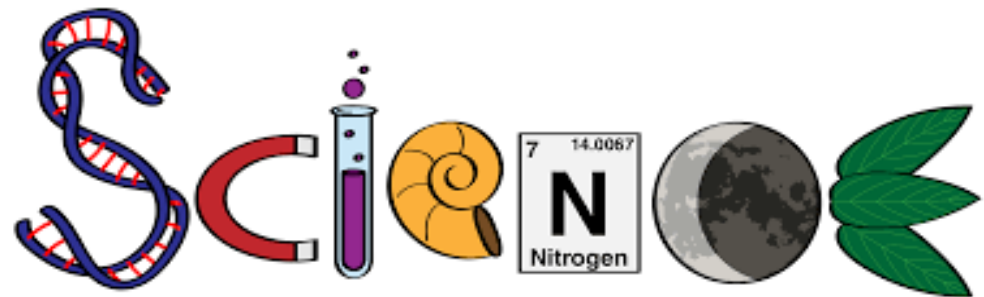
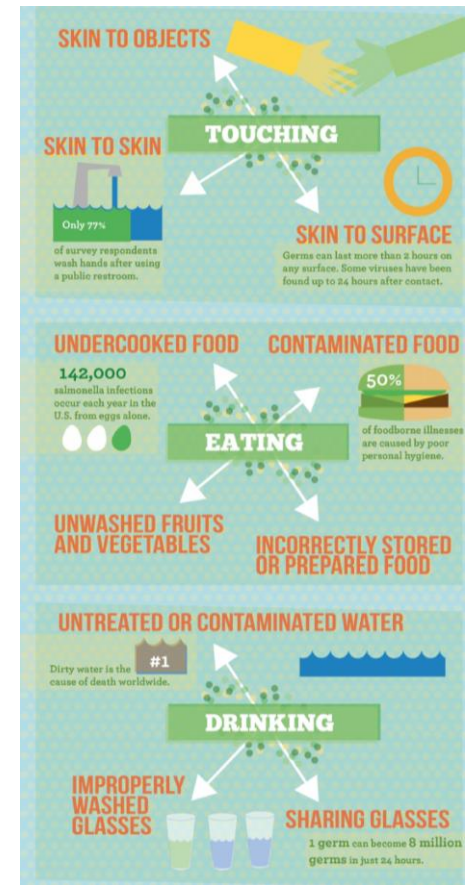
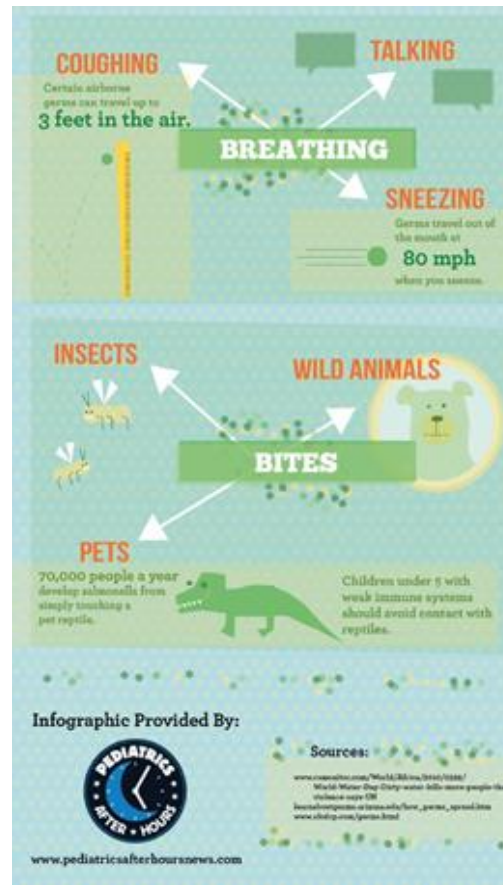


STEAM itUP

How can masks prevent
the transmission of germs
through the air?

STEAM week

How are germs spread?

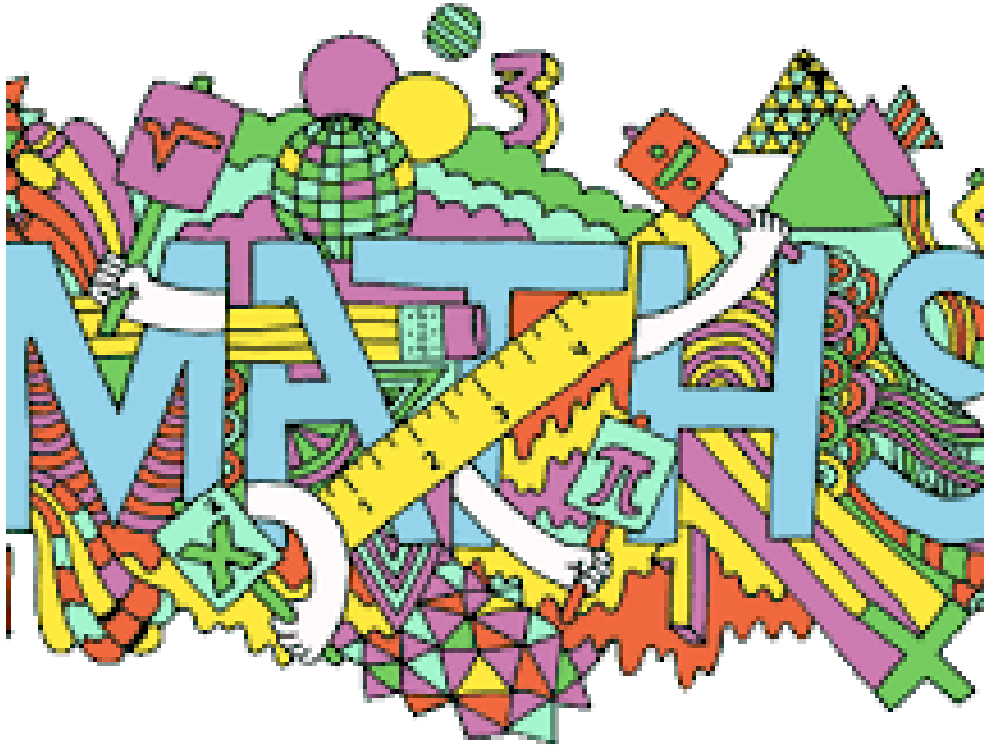


How can we stop germs from spreading?

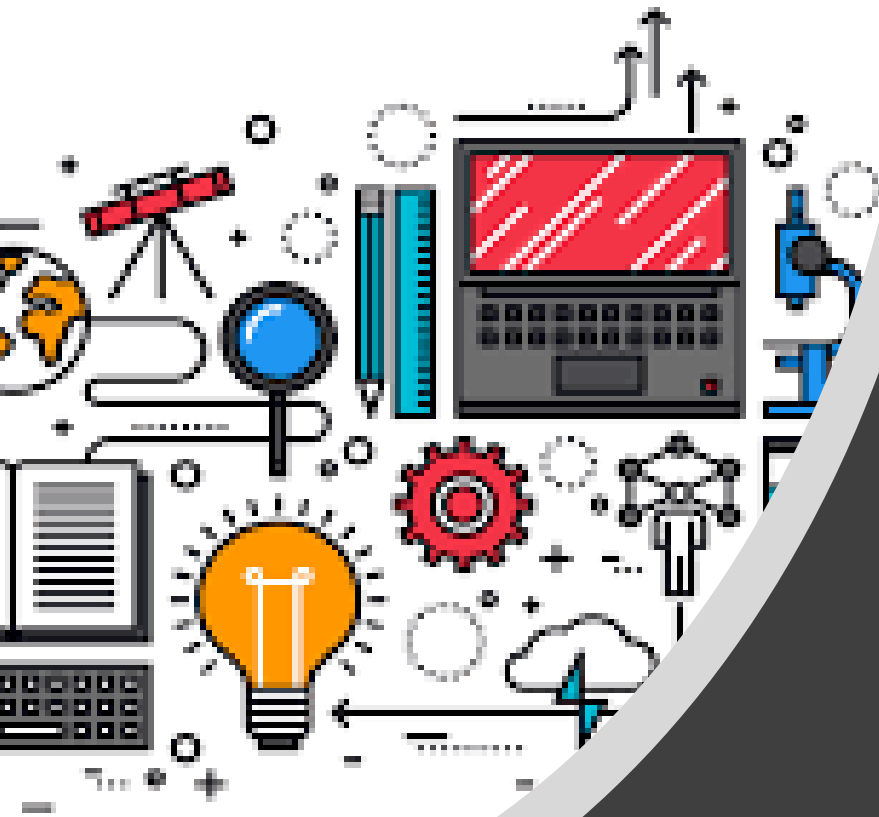
- Educate people how to protect themselves and others.
- Design devices and other things that stop germs from spreading.



What do we need in order to make this happen?



- Find the materials we need and calculate the quantities of each material.



Technology

- Create and test what we created

How can we stop germs from spreading?

BE HEALTHY, BE CLEAN



CLEAN & DISINFECT



SOCIAL DISTANCE



PICK-UP & DELIVERY



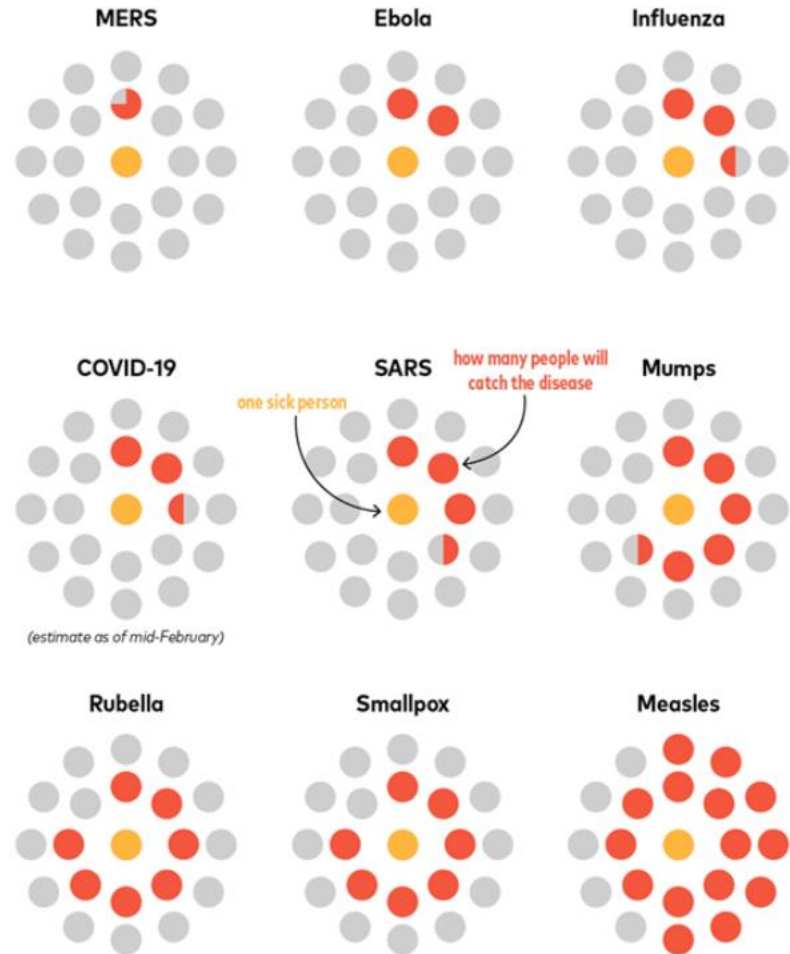


The SARS-Cov-2 virus

- Causes the disease COVID-19.
- COVID-19 is caused by a type of coronavirus.
- There are many types of coronaviruses, including the virus that causes the common cold.

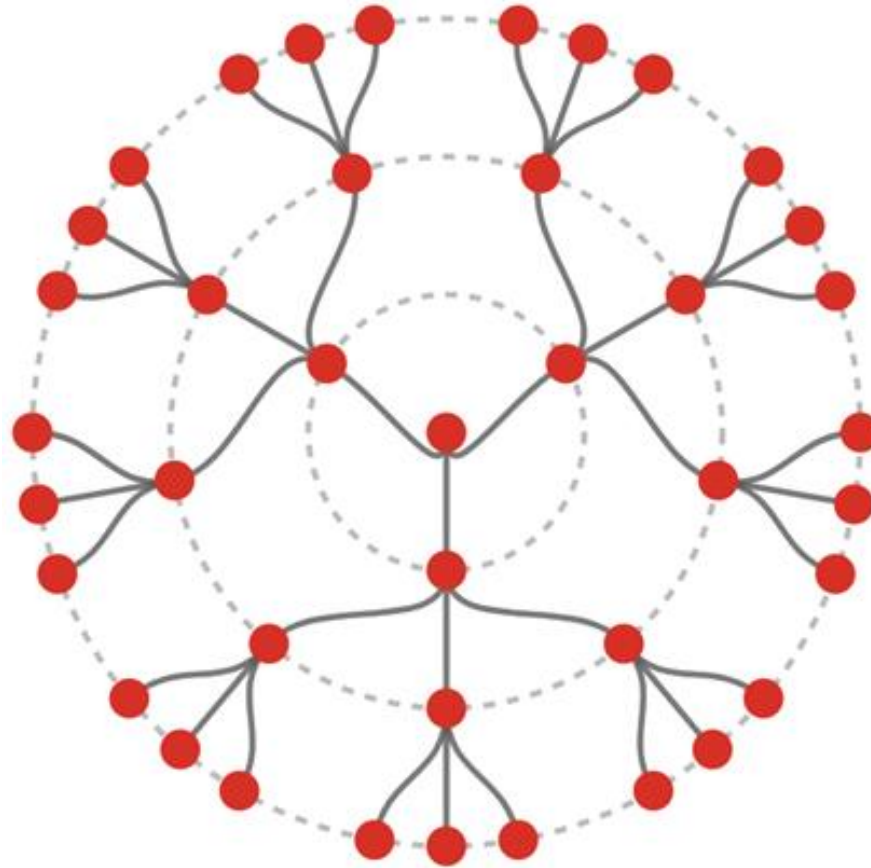
Reproduction number

- R: How many people are infected from an ill individual before he recovers or dies.



[Just how contagious is COVID-19?](#)
[This chart puts it in perspective](#)

How fast COVID-19 spreads?



What do
we use in
order to
stop
COVID-19
from
spreading?

- Soap
- Alcohol based solutions
- Bleach
- Face masks



Air filter technology

How can we stop COVID-19 from spreading?

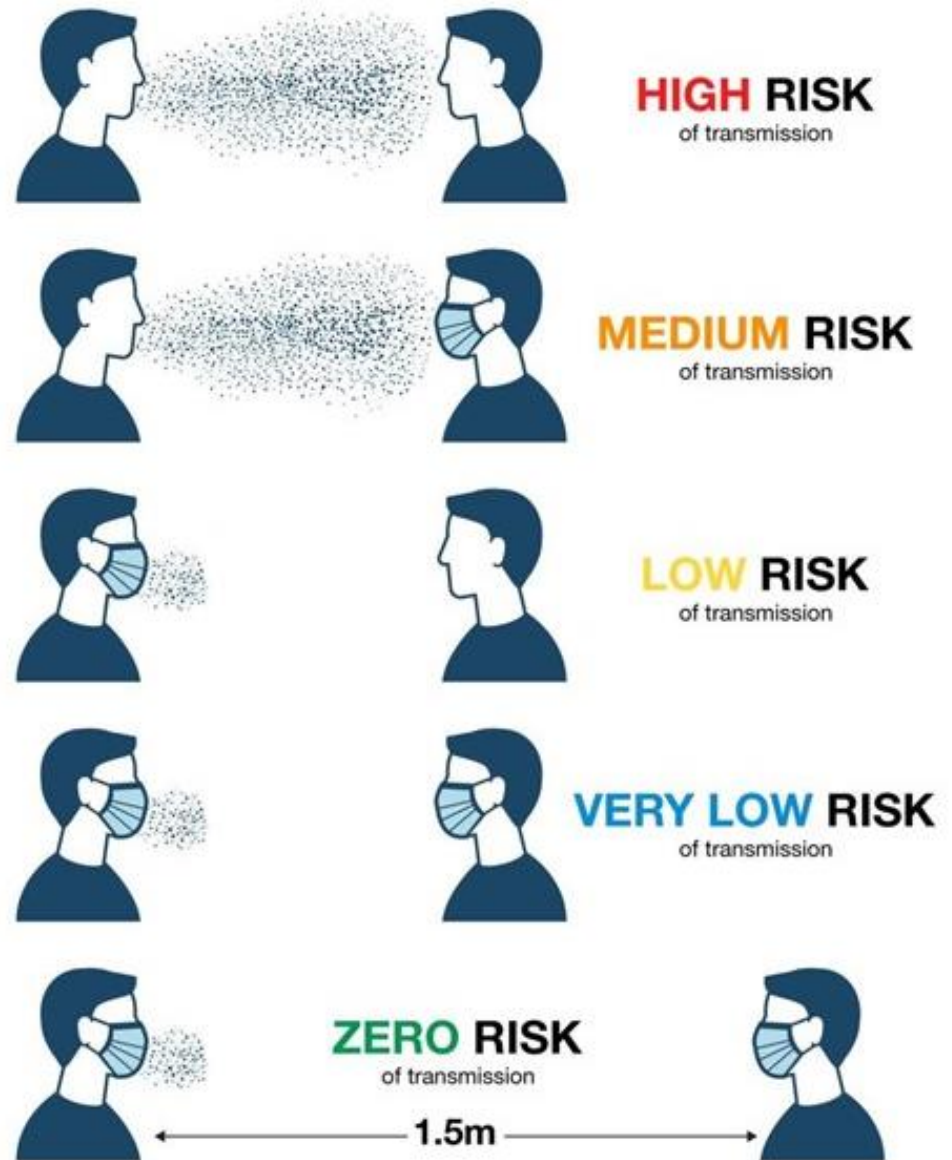
How do Air Filters Work?



▶ ⏪ 🔊 0:03 / 2:36



How effective are face masks?



What is the technology behind the face masks?

- Surgical masks are today manufactured using non-woven fabrics made from plastics like polypropylene to filter and protect.
- They are available in many different styles and grades depending on the level of protection the user requires.



5-layer filter protection system

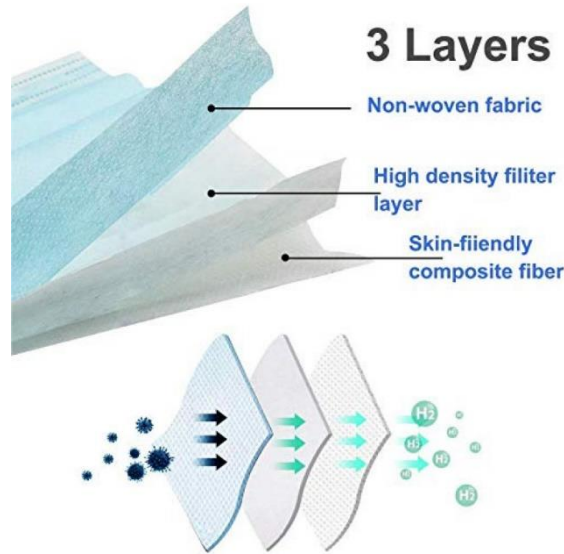
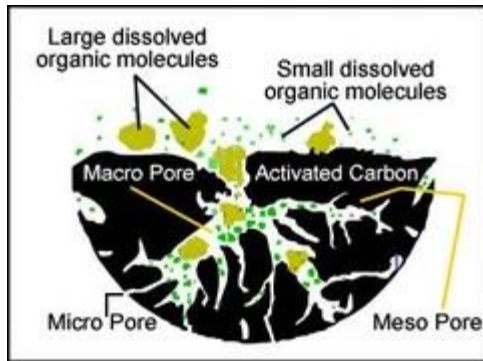
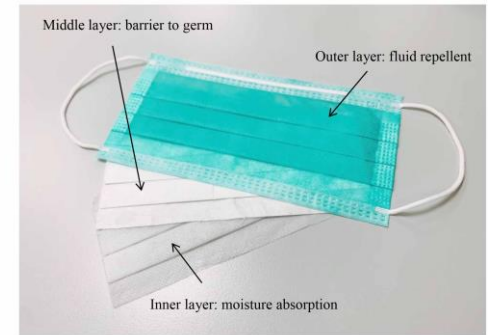


Illustration of Three-layer Design Surgical Mask






Materials of surgical masks

Face Mask Differences

ProjectProtect

In partnership with Intermountain Healthcare,
University of Utah Health and Latter-day Saint Charities

Type	Protection	Appropriate for	Use Guidelines	Reuse	Fabrication
 Homemade Cloth Mask	May protect the wearer and those around them from large droplets coming from coughs or sneezes	For community members following use guidelines	Wearers should practice physical distancing, handwashing, and avoid touching their faces	Can be reused when properly cleaned.*	Can be easily made at home using breathable materials such as cotton or cotton blend
 Clinical Mask	Resistant to fluids and will filter small particles	For frontline health workers	Health workers should follow institutional protocol	Health workers should follow institutional protocol	Must be made using medical-grade polypropylene following fabrication guidelines
 N95 Respirator	Filters 95% of very small particles when tightly fitted	For frontline health workers. Community use is discouraged so more masks are available for healthcare workers.	Requires professional fit-testing to be fully effective	Extended use or reuse requires following CDC guidelines	Manufactured using specialized materials and processes

*Cleaning instructions for homemade cloth masks

- To wash, launder the mask often in your washing machine in HOT water using soap or detergent that leaves no residue.
- Dry on HOT in your dryer.

Cotton masks

- CDC recommends wearing cloth face coverings in public settings where other social distancing measures are difficult to maintain. Cloth face coverings fashioned from household items or made at home from common materials at low cost can be used as an additional, voluntary public health measure.



Cotton masks

- In the case of influenza, the median-fit factor of the homemade masks was one-half that of the surgical masks. Both masks significantly reduced the number of microorganisms expelled by volunteers, although the surgical mask was 3 times more effective in blocking transmission than the homemade mask.





Hands-on STEM!

How to make your own face mask

Materials needed:

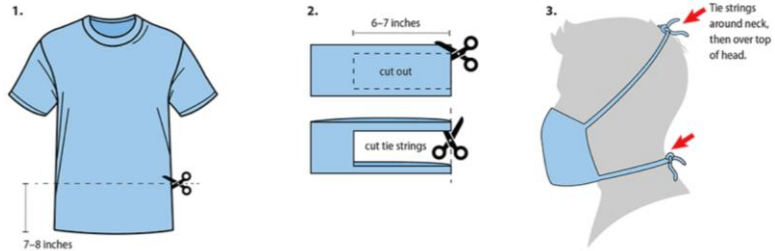
- T-shirt
- Scissors

OR

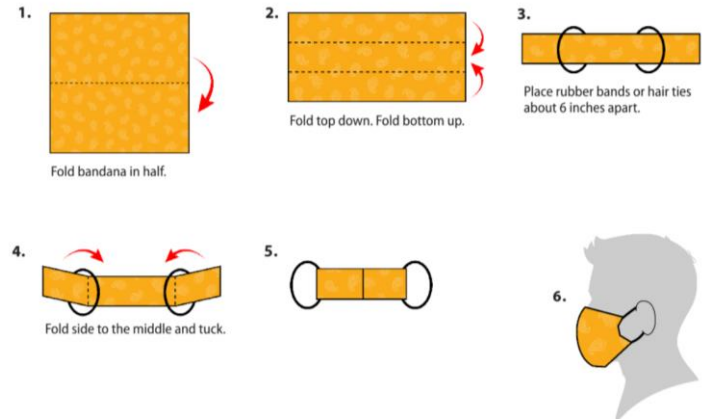
- Bandana (or square cotton cloth approximately 20"x20")
- Rubber bands (or hair ties)
- Scissors (if you are cutting your own cloth)

Steps to follow!

Tutorial

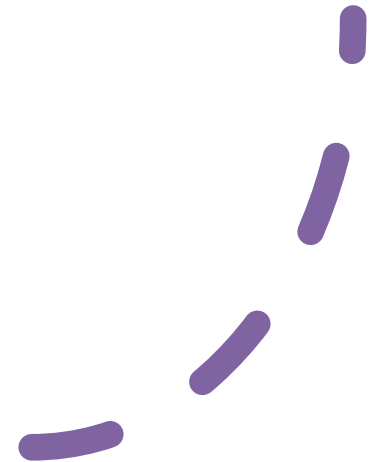


Tutorial



Cloth face
masks
must be
used as
follows:

- Regularly washed in 60°C
- Individuals should be careful not to touch their eyes, nose, and mouth when removing their face covering and wash hands immediately after removing.



Use of masks in schools

WHO & UNICEF advice on masks & children in the context of COVID-19¹

Where there is intense community transmission of COVID-19 and in settings where physical distancing is not possible:

- ✓ Children under five years should not be required to wear masks
- ✓ 6 to 11 years old, the use of mask should be based on:
 - Whether there is widespread transmission in the area
 - Ability of the child to safely and appropriately use a mask
 - Access to clean and replacement masks
 - Adequate adult supervision
 - Potential impact on learning and psychosocial development
 - Specific settings and interactions with persons at higher risk
- ✓ 12 years and older should wear a mask under the same conditions as adults
- ✓ Teacher and support staff should wear masks when they cannot guarantee at least a 1-metre distance from others or if there is widespread transmission in the area



¹ [Advice on the use of masks for children in the community in the context of COVID-19](#)