

Wind Chill and Winter Storms

You've probably heard weather reporters talk about the wind chill factor. They might say, "It's 15 degrees outside, but with the wind chill factor, it feels like 2 below zero!" Did you ever wonder how it can feel so much colder than it really is?

Your body knows the answer. It produces heat – that's why your temperature is usually 98.6° Fahrenheit. This heat warms up the air next to your bare skin, creating a thin layer of warmer air on your face and hands. When it is windy, this thin layer of air gets pushed away, and your body has to work harder to keep your bare skin warm. To your body, it feels colder than it really is, because it has to produce as much heat as it would on a much colder day.



Weather forecasters have created a chart that anyone can use to look up the wind chill factor. You just need to know the temperature and the wind speed. The chart also shows how quickly you can get frostbite when the wind chill factor is really low. Frostbite happens when a part of your body starts to freeze. If you get a tingly or numb feeling, especially in a part of your body that is exposed to the cold, like your ears or nose, that could be frostbite. But with the wind chill chart, you can plan to come inside and warm up before that happens!



Wind Chill Chart

Use this wind chill chart to give winter weather advice to the kids in the situations described below. For each situation, look up the wind chill factor, and write it in the space provided. Then use your math skills to figure out when the kids need to come inside to avoid frostbite and what they should do.

Temperature (°F)										
Wind Speed (mph)		20	15	10	5	0	-5	-10	-15	-20
	5	13	7	1	-5	-11	-16	-22	-28	-34
	10	9	3	-4	-10	-16	-22	-28	-35	-41
	15	6	0	-7	-13	-19	-26	-32	-39	-45
	20	4	-2	-9	-15	-22	-29	-35	-42	-48
	25	3	-4	-11	-17	-24	-31	-37	-44	-51
	30	1	-5	-12	-19	-26	-33	-39	-46	-53
	35	0	-7	-14	-21	-27	-34	-41	-48	-55
	40	-1	-8	-15	-22	-29	-36	-43	-50	-64
Frostbite Times										
30 minutes				10 minutes				5 minutes		

The Shovelers

Temperature: 5°F Wind Speed: 30 mph
Wind Chill Factor: ____°F

Josh and his brother had been shoveling snow for 20 minutes, but the driveway was only halfway done. "Let's keep going until we get this finished," said Josh.

How long can Josh and his brother safely stay outside?
____ minutes

Should they try to finish shoveling before they go inside?
____ Yes ____ No

Visiting a Friend

Temperature: -20°F Wind Speed: 15 mph
Wind Chill Factor: ____°F

School was closed because of a big snow storm and Samantha wanted to play with her friend, Lia. It was only a 5-minute walk and Samantha knew how to dress to stay warm.

How long can Samantha safely stay outside? ____ minutes

Is it okay for Samantha to walk to her friend's house?
____ Yes ____ No

ANSWERS: The Shovelers: No. Wind Chill Factor: -19°F; 30 minutes; Yes. Visiting a Friend: No. Wind Chill Factor: -45°F; 10 minutes; Yes.

Be Prepared! Wear layers of clothing when it's cold outside, and always wear a hat. Go inside to warm up if your fingers, toes, ears, or nose feel tingly or numb – that's a sign of frostbite. Go inside quickly if you start to shiver – that's a sign that your body has lost too much heat, which can cause a dangerous illness called *hypothermia*. During a winter storm, stay inside and off the roads. If grownups need to be on the road when the news is warning about winter storms, remind them to have an emergency kit in the car and to say in the car if they get stuck – it's dangerous to go looking for help.

To Learn More about winter storms, visit www.nssl.noaa.gov/education/svrwx101/winter and www.ready.gov/kids/know-the-facts/winter-storms-extreme-cold, and play the winter storm episode of Monster Guard, a free app available at redcross.org/monsterguard. To learn more about all kinds of emergencies, visit redcross.org/pillowcase.