

Weather Review Answers

1. C
2. B
3. D
4. A
5. D
6. C
7. D – Heat rises and moves towards cold objects. Therefore the heat will go up and to the left (counter clockwise)
8. C
9. D
10. A
11. A
12. D – Albedo represents the amount of total solar energy (not just light but heat as well) that is reflected by a surface.
13. C
14. D
15. A
16. B
17. A
18. D
19. C
20. D

21.
 - (a) clouds reflect some of the energy coming in from the sun back into space the energy that clouds absorb is re-emitted in all directions, some of it towards the earth, but all of this energy must be re-emitted at some point to maintain the energy balance
 - (b) albedo represents the percentage of the solar energy that is reflected a light colored surface reflects more energy than a dark colored one

22. Certain gases in the atmosphere (water, carbon dioxide, methane) absorb heat energy from the sun (and reflected and emitted from the surface of the earth) this heat is later emitted (because the energy that is absorbed must be emitted). This process raises the temperature of the earth. Technically, the gases do not really act as a greenhouse. A greenhouse traps heat, whereas greenhouse gases simply slow down how fast the heat leaves the earth.

23. A warm front rises up on top of the cold air in the area (eventually warming the air). Since warm air rises, the warm front will lower the air pressure.

24. In North America, the prevailing wind is towards the East. Therefore the airplane will have a tail wind when flying from Winnipeg to Toronto, giving the faster time.

25. A thunderstorm goes through three phases:

- Developing Phase
 - Warm, humid air rises
 - The air cools as it rises, causing the water vapor to condense and form clouds
 - This is enhanced by a cold front moving in

- Mature Phase
 - As the water vapor condenses, it warms the surrounding air causing it to rise further
 - This generates an updraft at the front of the storm
 - The water vapor droplets group together to form ice crystals which eventually fall to the earth (usually melting along the way)
 - This generates a downdraft at the back of the storm

- Dissipating Phase
 - Eventually the downdraft will cool the area sufficiently that the updraft will stop
 - Since there is no more water vapor being pulled into the cloud, it will stop raining once the clouds run out of water

26. Inside:

- Go down to the basement or hide under a bed
- Stay away from windows and outside walls

Outside:

- If it is impossible to get to a tornado shelter, then lie flat in a low lying area and protect your head

27. In Winnipeg, the conditions would be:

- Falling or blowing snow
- Wind speeds of at least 40 km/h
- Wind chill of -25°C
- Visibility of less than 400m
- Lasting for 4 hours