

# Pressure

- **WALT: Be able to calculate pressure and explain its applications to life**
- I must be able to use the equation to calculate pressure
- I should be able to explain how this relates to things we see

# What is pressure?



A



B





Why do you  
think my feet are  
wide?





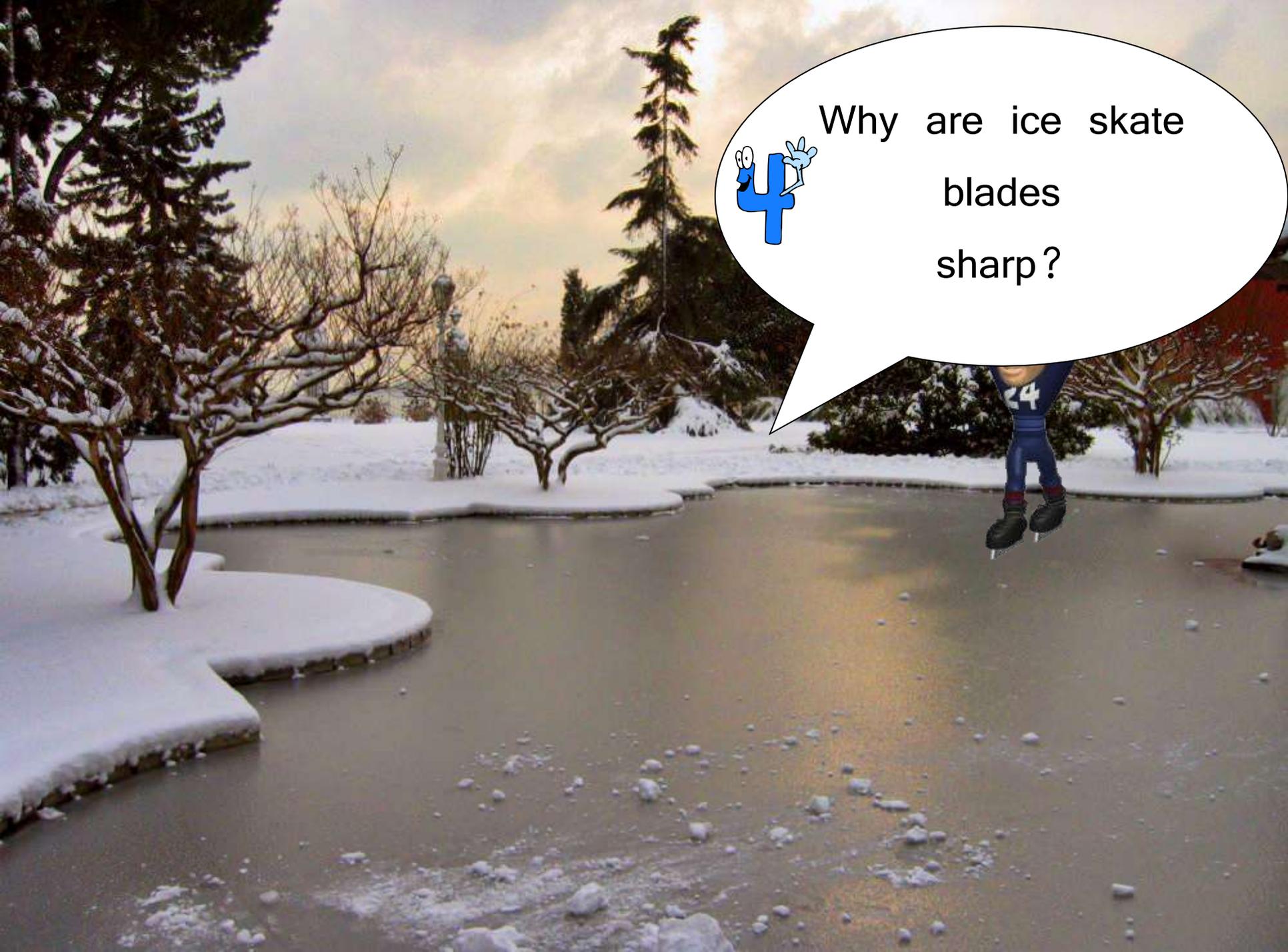
Why are snow shoes used for walking in really deep snow?



My skis are **flat** at the **bottom** to stop me sinking but they also have a **sharp edge** to dig into hard snow.

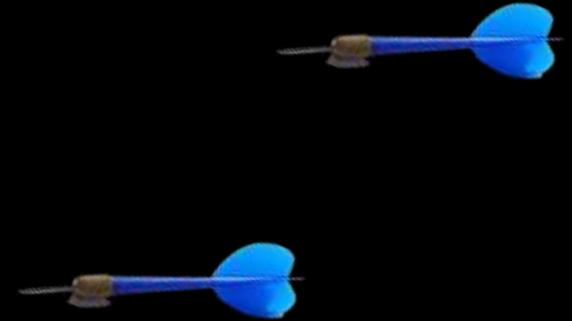
**Explain** how these **2 uses** of my skis work.





Why are ice skate  
blades  
sharp?





Why are dart tips pointed?

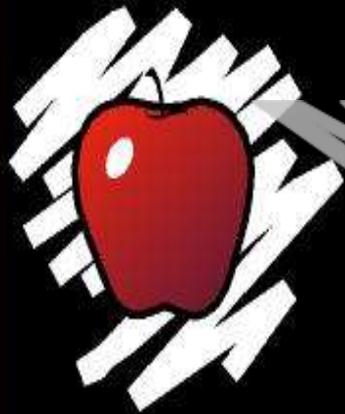


Why does a **sharp knife** cut better  
than a **blunt knife**?

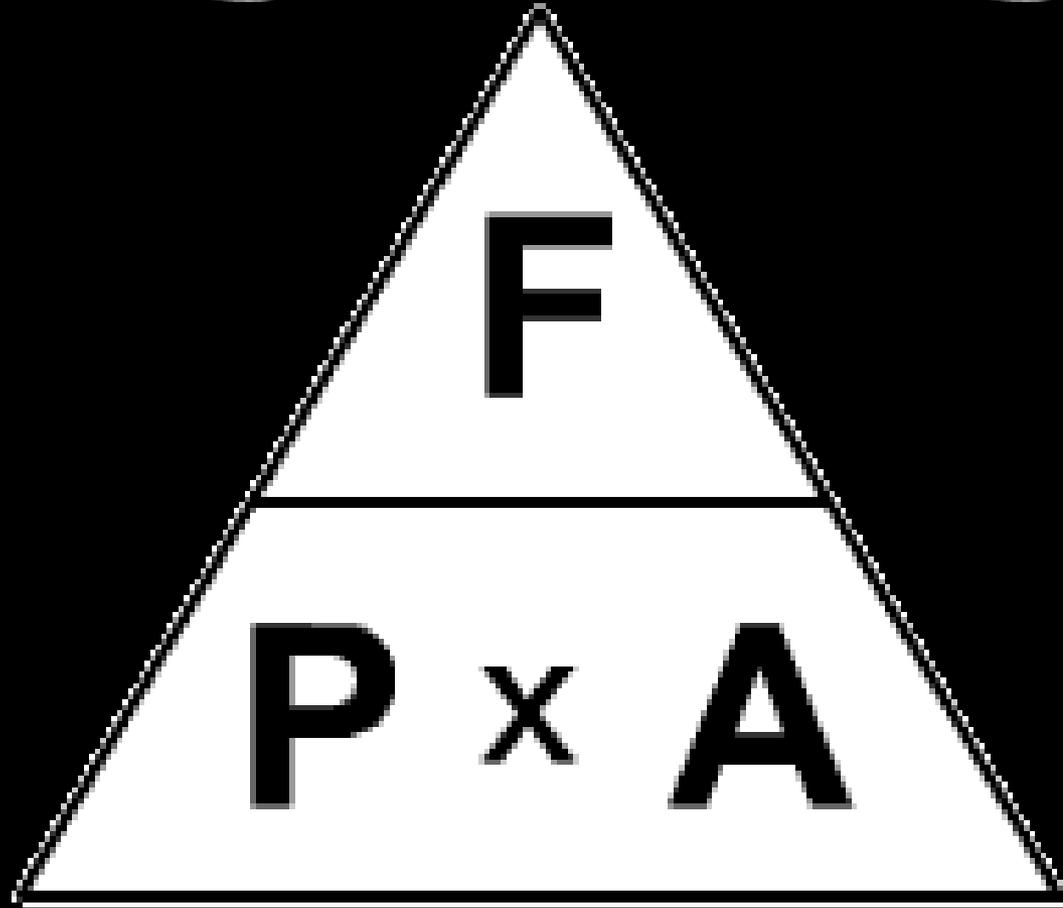


- Pressure =  $\frac{\text{Force (N)}}{\text{Area (m}^2\text{)}}$   
(N/m<sup>2</sup>)

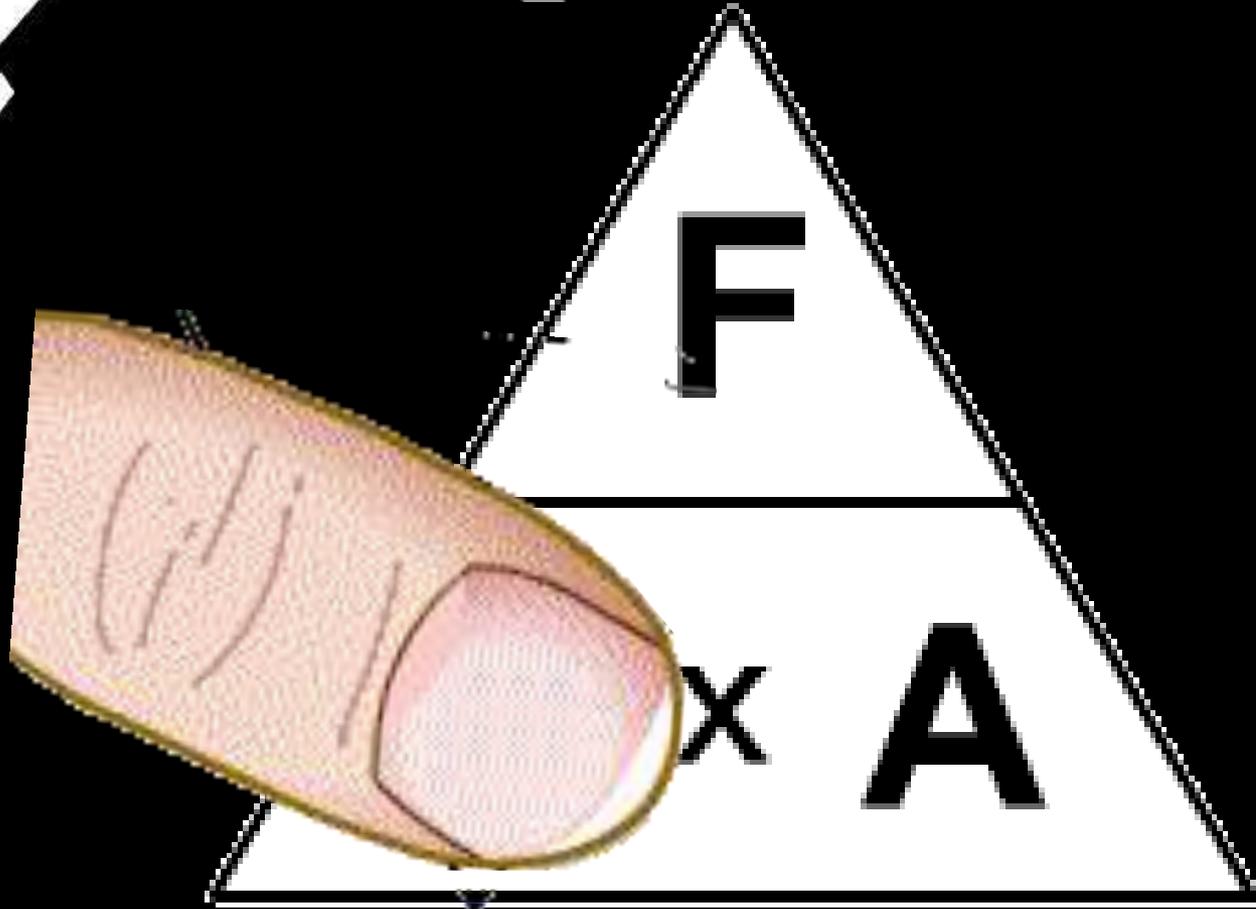
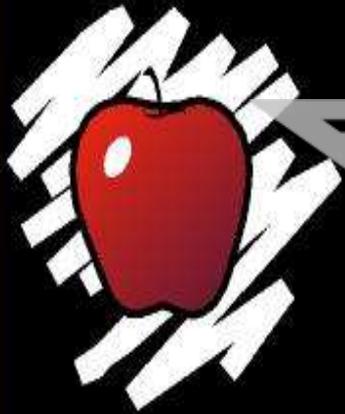
What will the triangle look like so that we can arrange it?

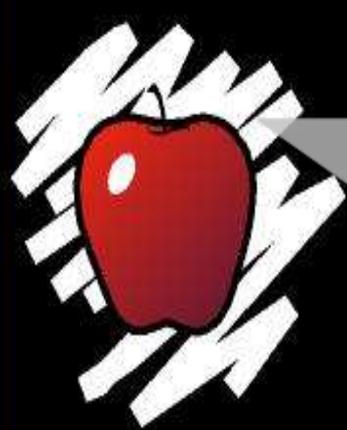


# Magic triangle

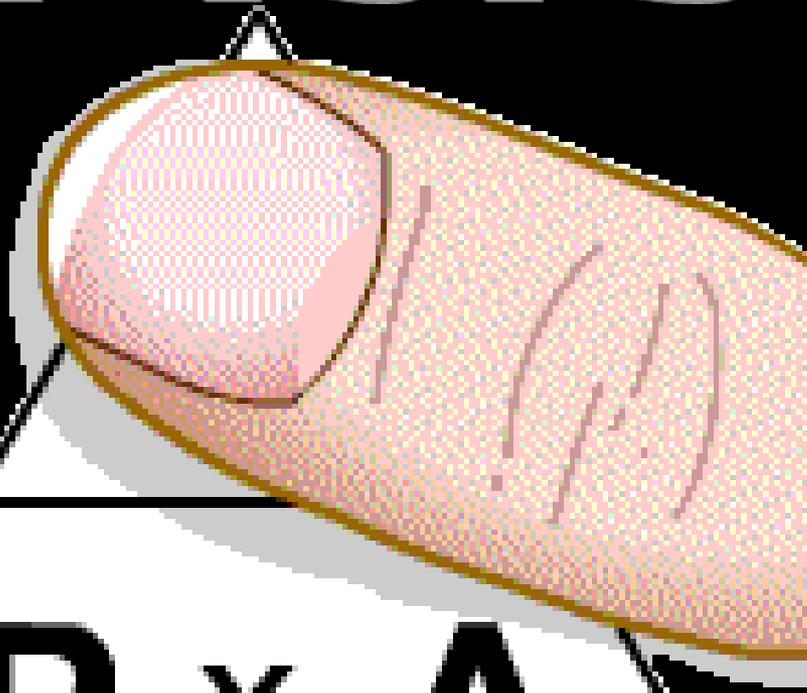


# For pressure





# For force



$$P \times A$$

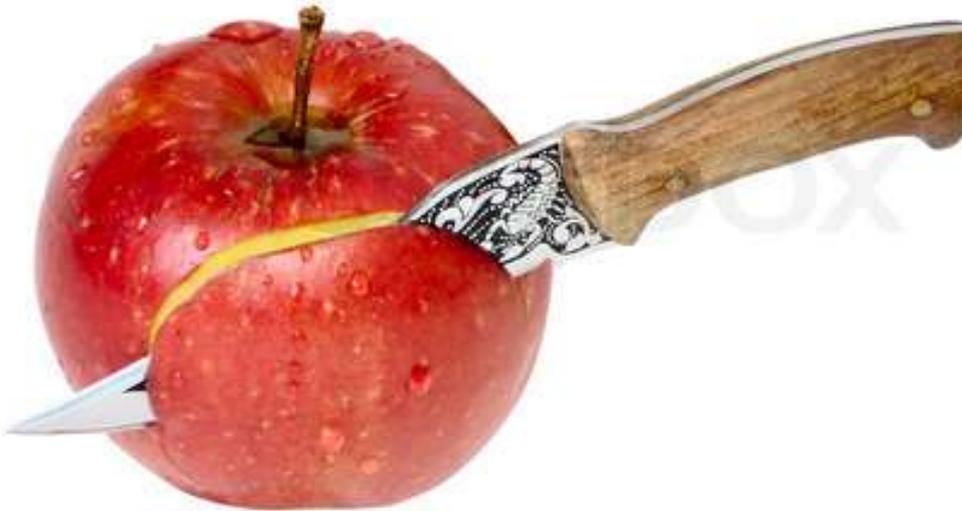
# Task

- Make up three example questions – including answers of your own in your books, showing all workings.
- Include at least one question that asks for force or area.

# Remember back to Forces

- Weight is a ..... and is calculated in .....
- If an object has a mass of 100g, how do we calculate its weight in N?

# Why is pressure relevant?



Spend 3 minutes writing down 1) why knives need to be sharp and 2) why camels' feet don't sink into sand. In each case you must include the words "pressure", "area" and "force" or "weight"

Now complete the following questions:



1. Why does the magician sit on the nails and he remains unhurt? (use words like “area” and “force” in your answer)
2. What do you think would happen if he sat on a single nail?
3. Why is it easy to push the thumb tuck or drawing pin in into a wooden board?
4. Following the illustrations above can you suggest any five useful applications of pressure exerted by solid surfaces in daily life? (see p. 394 for help)

1. Olivia weighs 500N and is wearing stiletto heels which together have an area of  $0.0001\text{m}^2$ .  
What pressure does she exert?



2. Dumbo the elephant weighs 50 000N. His 4 feet are on the ground and cover a total area of  $0.8\text{m}^2$ .  
What is the pressure under an elephants feet?

3a) Who exerts the larger force and who exerts the larger pressure? Olivia or Dumbo. Explain how you know.  
3b) Who would sink further into the ground. Olivia or Dumbo?

4. A Christmas present weighs 100N and its base has an area of  $2\text{m}^2$ . What pressure does it exert on the ground?



5. If atmospheric pressure is  $100\ 000\text{n/m}^2$  what force is exerted on a wall of area  $100\text{m}^2$ ?

**When you are finished,  
complete the sheet  
handout.**