Exercise 3.5B Calculating pressure

1 A force of **20 N** acts on each (1) **cm²** of area.

2 $\text{pressure} = \frac{\text{force}}{\text{area}}$

$= \frac{15}{60}$

$= 0.25\ (\text{N/cm}^2)$

3 $\text{pressure} = \frac{\text{force}}{\text{area}}$

$\text{force} = \text{pressure} \times \text{area}$

$= 60 \times 0.5$

$= 30\ \text{N}$

4 pounds per square inch

Exercise 3.5C Variables affecting pressure

1 area (at end of thorn) is very small; pressure on skin will be large; pressure = $\frac{\text{force}}{\text{area}}$; other parts of stem would have larger area, so smaller pressure on skin

2 area in contact with ground is larger; so pressure is smaller; pressure = $\frac{\text{force}}{\text{area}}$

3 with sharp knife, area in contact with bread is smaller; so pressure is larger; pressure = $\frac{\text{force}}{\text{area}}$

4 End A has large area to decrease pressure on thumb when pushing, so less likely to be painful.

End B has small area to increase pressure on the surface, so more likely to go into surface.

Topic 3.6 Pressure in liquids and gases

Exercise 3.6A Trends in pressure 1

1 pressure increases

2 at sea level

3 pressure increases

4 pressure increases

Exercise 3.6B Trends in pressure 2

1 The pressure is equal in all directions.

2 Pressure increases with depth in a liquid.

3 a pressure decreases

b Particles move slower at lower temperature; collisions of particles with the inside wall of the balloon become less frequent and occur with less force.