Defects in Timber
Defects in timber can affect its:

- strength,
- appearance,
- and durability.

Defects in timber are either:

1. Natural: defects that may be present in the growing tree.

1. Artificial: defects caused by the seasoning, conversion and felling process.
Natural Defects - Knots

- Caused when the branches of a tree are cut off or stop growing.
- There are more knots in softwood as the branches are low to the ground.
- The grain of the timber around knots is twisted which reduces its strength
Two types of knots

Dead Knots

- Result of a branch that stopped growing before the tree is felled.
- Dark in colour and shows sign of decay
- Weaken the timber and often become loose and fall out.

Live Knots

- These branches are still growing before the tree is felled.
- Light in colour and do not generally fall out.
Natural Defects

Heart rot

Occurrences when fungus attacks and rots the pith of the heartwood.

Spiral Grain

Caused by the twisting of the tree during growth.
Natural Defects

Resin canals

- Some trees which are exposed to high winds, develop internal splits.
- These splits fill with resin or gum to make the wood resinous.
Natural / Felling Defects

- Cracks or splits in the wood are called shakes
- These occur when adjacent (beside each other) layers of fibres separate in the end grain of wood

**Types of Shakes**

1. Heart and Star shakes

- Deep, wide cracks which radiate out from the centre of the log
- Caused by shrinkage through old age or by rapid drying after felling
Types of Shakes

Cup and ring shakes

- Gaps between growth rings are known as cup or ring shakes.

- They can be very deep

- Caused by;
  - Old age,
Types of Shakes

Frost shake

- This is where the wood splits inwards towards the centre and is caused by very cold weather.

Radial shakes

- A split along the outside of the wood caused by rapid drying (shrinkage) of the log before conversion.
Types of Shakes

Cross thunder shakes

- Where the wood splits across the grain

- Caused by severe shock during felling or by lighting attack on the tree while living
Seasoning Defects

Cupping

- When you look at the end of the board it appears as a curve.
- Caused by unequal amounts of shrinkage along the growth rings.

Bowing

- When you look at the edge of the wood it appears curved.
- Caused by poor stacking.
- Not enough stickers!
Seasoning Defects

Twisting/warping

- When the ends of the boards are twisted in opposite direction.
- Caused by shrinkage along spiral or interlocking grain.

Springing

- When the face of the board remains flat and the edge bends inwards to form a curve.
- Caused by shrinkage longitudinally along irregular grain.
Seasoning Defects

End splits

- Occurs at the exposed end of the board.
- Caused by rapid drying out from the sun
- Prevented by painting the ends of the timber with bitumous paint (water proof)
Seasoning Defects

Surface splits/checks

- Usually lie along the grain.
- If there not too deep they can be planed off.
- Caused by rapid drying out on the surface of the wood.

Honeycomb splits/checks

- Occur inside the board.
- Reduces strength.
Seasoning Defects

Case hardening

- Where the outside of the board is dry and hard but moisture is trapped in the centre cells of the wood.
- Caused by rapid drying.

Collapse or wash boarding

- Where the cells of the wood collapse due to high temperatures and too rapid drying.
- Prevented by using a low temperature schedule when kiln seasoning.
CONVERSION DEFECTS

Waney Edge

- Occurs when the bark is left on during conversion
- Often used as a decorative feature in furniture making.

Sloping grain/short grain

- Grain does not run parallel to the edge of the board because of bad conversion
- Seriously weakens the timber