Wood Manufacturing & Finishing Percentage Waste

Phase 4

Lecturer Jennifer Byrne

Percentages

- **Percent means per 1 hundred**
- **The symbol used is %**
- To find the percentage we put the number over 100
- 50% = $\frac{50}{100}$ $\frac{5}{10}$ $\frac{1}{2}$ or 0.5

- 200 + 50% = 200 ÷ 100 = 2
- 2 x 50 = 100 200 + 100 = 300
- on your calculator type in
- 200 + 50% = 300 or 200 x 0.5 = 100
- 200 + 100 = 300

Percentage Waste

- **Eg.** Calculate the percentage waste when 21 circular stool seats, 325mm in diameter, are cut from a sheet of MDF measuring 1.220m x 2.440m. Formula for the area of a circle = πr^2

  Formula for percentage waste = $\frac{\text{Waste x 100}}{\text{Material}}$

- Area of MDF sheet = 1.220 x 2.440 = 2.9768m²
- Area of stool seat = 3.14 x 0.1625 x 0.1625 = 0.0829m²
- Area of 21 stool seats = 0.0829 x 21 = 1.7409m²
- Sheet Area - 21 stool seats = Waste
- 2.9768 - 1.7409 = 1.2359m²
- Waste ÷ Sheet Area = Percentage waste
- 1.2359 ÷ 2.9768 = 0.415, 0.415 x 100 = 41.5%
- Percentage waste = 41.5%

Percentage Waste

- **Q1.**Calculate the percentage waste when the material for 2 Lockers are cut from a sheet of MDF measuring 1.220m x 2.00m. Each Locker uses 0.922m²
- Area of MDF sheet = 1.220 x 2.00 = 2.44m²
- Area of 1 locker = 0.922m²
- Area of 2 lockers = 0.922 x 2 = 1.844m²
- Sheet Area – 2 lockers = Waste
- 2.44 - 1.844 = 0.596m²
- Waste ÷ Sheet Area = Percentage waste
- 0.596 ÷ 2.44 = 0.244 (x 100)
- Percentage waste = 24%

Percentage Waste

- **Q2.** Calculate the percentage waste when 8 Squares, 400mm in width are cut from a sheet of MDF measuring 1.220m x 2.00m.
- Area of MDF sheet = 1.220 x 2.00 = 2.44m²
- Area of 1 square = 0.40 x 0.40 = 0.16m²
- Area of 8 squares = 0.16 x 8 = 1.28m²
- Sheet Area – 8 Squares = Waste
- 2.44 - 1.28 = 1.16m²
- Waste ÷ Sheet Area = Percentage waste
- 1.16 ÷ 2.44 = 0.475 (x 100)
- Percentage waste = 47.5%

Percentage Waste

- **Q3.**Calculate the percentage waste when 7 Tops, 400mm x 300mm are cut from a sheet of MDF measuring 1.220m x 950m.
- Area of MDF sheet = 1.220 x 0.950 = 1.159m²
- Area of 1 top = 0.40 x 0.30 = 0.12m²
- Area of 7 tops = 0.12 x 7 = 0.84m²
- Sheet Area – 7 Tops = Waste
- 1.159 - 0.84 = 0.319m²
- Waste ÷ Sheet Area = Percentage waste
- 0.319 ÷ 1.159 = 0.275 (x 100)
- Percentage waste = 27.5%

Percentage Waste

- **Q4.** Calculate the percentage waste when 12 Tops, 330mm x 350mm are cut from a sheet of MDF measuring 1.220m x 1.450m.
- Area of MDF sheet = 1.220 x 1.450 = 1.769m²
- Area of 1 top = 0.330 x 0.350 = 0.1155m²
- Area of 12 tops = 0.1155 x 12 = 1.386m²
- Sheet Area – 12 Tops = Waste
- 1.769 - 1.386 = 0.383m²
- Waste ÷ Sheet Area = Percentage waste
- 0.383 ÷ 1.769 = 0.2165 (x 100)
- Percentage waste = 21.65%

Percentage Waste

- **Q5**.Calculate the percentage waste when 16 Triangles, 400mm in width x 600 in height are cut from a sheet of MDF measuring 1.220m x 2.100m.
- Area of MDF sheet = 1.220 x 2.10 = 2.562m²
- Area of 1 Triangle = 0.20 x 0.60 = 0.12m²
- Area of 16 Triangles = 0.12 x 16 = 01.92m²
- Sheet Area – 16 Triangles = Waste
- 2.562 - 1.92 = 0.642m²
- Waste ÷ Sheet Area = Percentage waste
- 0.642 ÷ 2.562 = 0.250 (x 100)
- Percentage waste = 25%

Percentage Waste

- **Q6**.Calculate the percentage waste when 7 Triangles, 450mm in width x 500 in height are cut from a sheet of MDF measuring 1.220m x 2.100m.
- Area of MDF sheet = 1.220 x 2.10 = 2.562m²
- Area of Triangle = 0.225 x 0.50 = 0.1125m²
- Area of 7 Triangles = 0.1125 x 7 = 0.7875m²
- Sheet Area – 7 Triangles = Waste
- 2.562 - 0.7875 = 1.7745m²
- Waste ÷ Sheet Area = Percentage waste
- 1.7745 ÷ 2.562 = 0.692 (x 100)
- Percentage waste = 69.2%

Percentage Waste

- **Q7.** Calculate the percentage waste when 16 circular stool seats, 400mm in diameter, are cut from a sheet of MDF measuring 1.220m x 2.440m.
- Area of MDF sheet = 1.220 x 2.440 = 2.976m²
- Area of 1 stool seat = 3.14 x 0.20 x 0.20 = 0.1256m²
- Area of 16 stool seats = 0.1256 x 16 = 2.0096m²
- Sheet Area - 16 stool seats = Waste
- 2.976 - 2.0096 = 0.9664m²
- Waste ÷ Sheet Area = Percentage waste
- 0.9664 ÷ 2.976 = 0.324 (x 100)
- Percentage waste = 32.4%

Percentage Waste

- **Q8.** Calculate the percentage waste when 8 half round table tops, 500mm in diameter, are cut from a sheet of pine measuring 1.220m x 2.440m.
- Area of MDF sheet = 1.220 x 2.440 = 2.976m²
- Area of 1 half round top = ½ (3.14 x 0.25 x 0.25) = 0.098m²
- Area of 8 half round tops = 0.098 x 8 = 0.785m²
- Sheet Area - 8 half round tops = Waste
- 2.976 - 0.785 = 2.191m²
- Waste ÷ Sheet Area = Percentage waste
- 2.191 ÷ 2.976 = 0.7365 (x 100)
- Percentage waste = 73.65%