Frequency is represented by area on a histogram

F.D. frequency density is always the vertical axis

Example

| Plant Height cm | Frequency |
|---|---|
| $0 < h \leq 10$ | 20 |
| $10 < h \leq 30$ | 30 |
| $30 < h \leq 40$ | 40 |
| $40 < h \leq 70$ | 15 |
| $70 < h \leq 80$ | 10 |

FD = Freq ÷ Width

$20 \div 10 = 2$
$30 \div 20 = 1.5$
$40 \div 10 = 4$
$15 \div 30 = 0.5$
$10 \div 10 = 1$



What is probability a random plant is more than 35cm tall?

Total Plants = 20 + 30 + 40 + 15 + 10 = 115

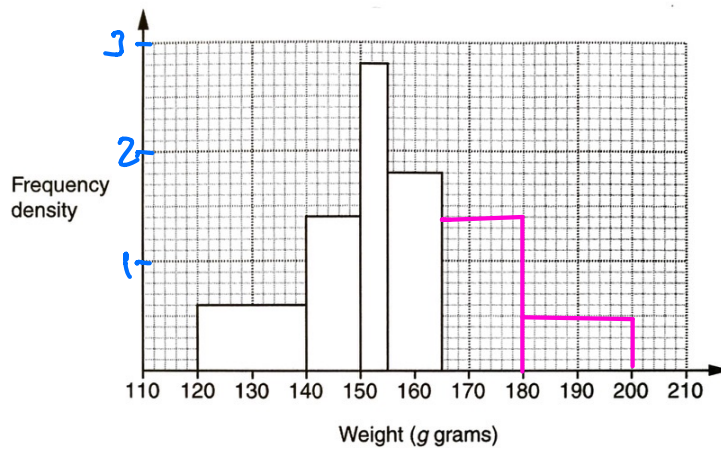Taller than 35cm    20 + 15 + 10 = 45

Prob (Taller than 35cm) = $\frac{45}{115}$

**16** William is drawing a histogram to show information about the weights of some pears.



**(a)** Complete the frequency table.

| Weight (g grams) | Frequency |
|---|---|
| $120 < g \leqslant 140$ | 12 |
| $140 < g \leqslant 150$ | 14 |
| $150 < g \leqslant 155$ | 14 |
| $155 < g \leqslant 165$ | 18 |
| $165 < g \leqslant 180$ | 21 |
| $180 < g \leqslant 200$ | 10 |

[2]

*Handwritten annotations (blue):*

Area = 5 × 2.8
Area = 10 × 1.8

*Handwritten annotations (magenta, right side):*

Allows FD scale to be determined

FD = Freq ÷ Weight Width
12 ÷ 20 = 0.6

FD = 21 ÷ 15 = 1.4
FD = 10 ÷ 20 = 0.5

**(b)** Complete the histogram, including a scale.

*The info about the bar for 120-140 allowed us to set the FD scale as we knew it was 0.6 high*

[3]