1 Write $0.\dot{5}\dot{4}$ as a fraction in its lowest terms.

.... [3]

2

Not to scale

$\sqrt{5}+2$
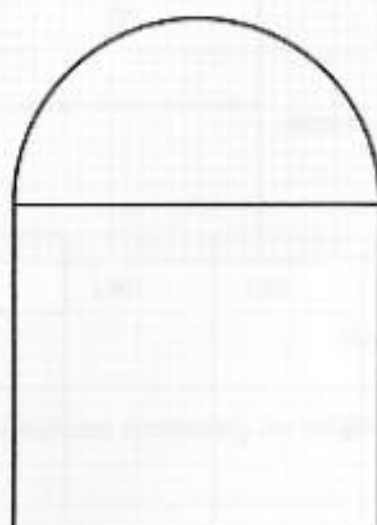
$\sqrt{20}$

This shape is formed from a rectangle and a semi-circle.
The lengths are in centimetres.

Show that the total area of this shape is $10 + 4\sqrt{5} + \dfrac{5\pi}{2}$ square centimetres.

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.... [3]
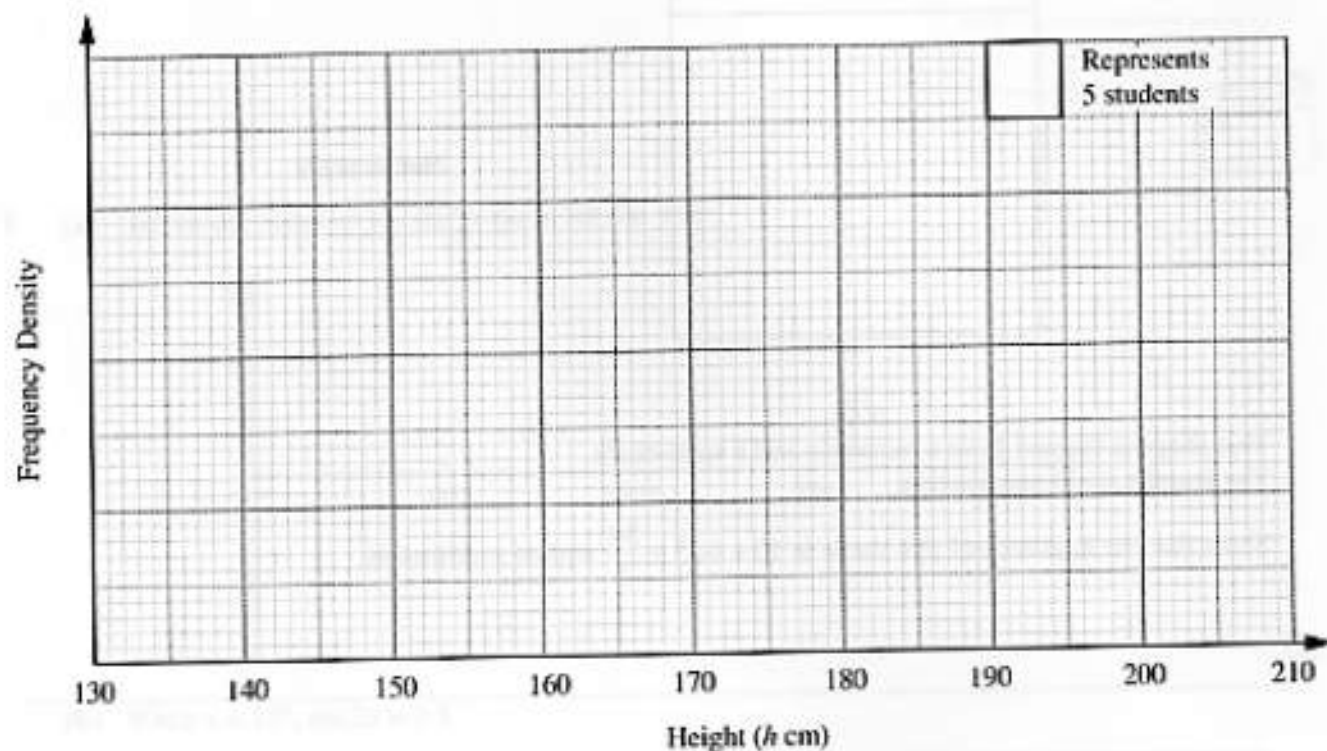
3 Asha did a Sports Studies project.

(a) He recorded the heights, in centimetres, of 200 students who do not play basketball.

Here are his results.

Heights (h cm)	Frequency
$130 \leqslant h < 140$	3
$140 \leqslant h < 160$	89
$160 \leqslant h < 170$	49
$170 \leqslant h < 180$	39
$180 \leqslant h < 210$	20

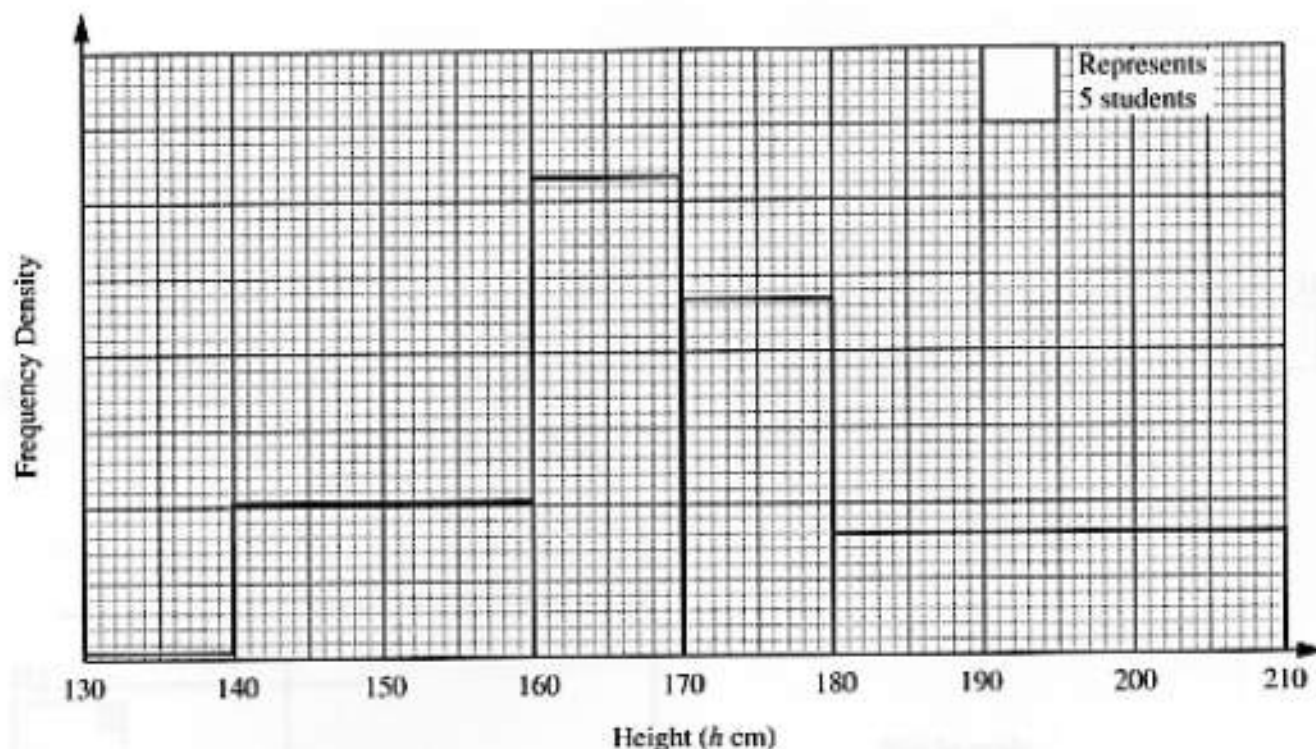Draw the histogram for the heights of these students.

[2]

(b) He also recorded the heights of 200 students who do play basketball.

Here is the histogram for the heights of those students.

Make two comments comparing the heights of the students who do and do not play basketball.

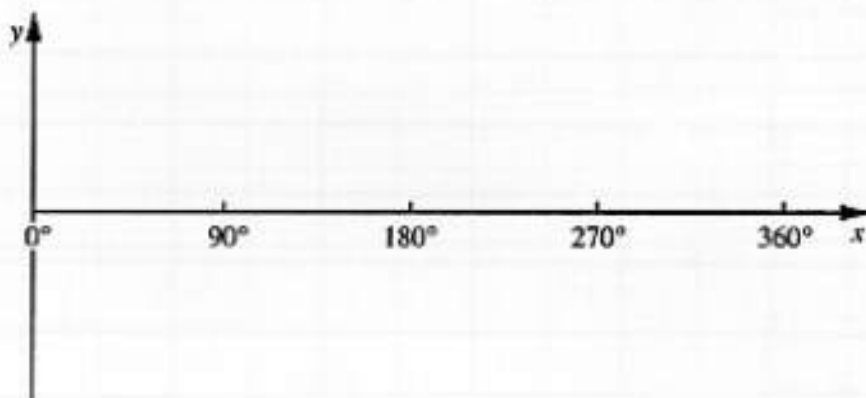...

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....[2]

4 Solve these simultaneous equations algebraically.

$$y = x - 2$$
$$x^2 + y^2 = 100$$

....

.... **[5]**

[5]

5 (a) Sketch the curve of $y = \sin 2x$ for $0° \leqslant x \leqslant 360°$.

[3]

(b) When $x = 15°$, $\sin 2x = 0.5$.

Use your graph to find another value of x which is a solution of $\sin 2x = 0.5$.

(b) ....° **[1]**

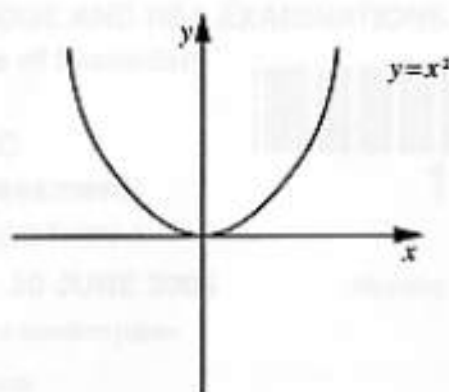**[4]**

6 This is the graph of $y = x^2$.

(a) On the diagram sketch the graph of $y = x^2 - 5$.

[1]

(b) Describe the transformation that maps the graph of $y = x^2$ onto $y = (x-4)^2$.

....

....[2]

3

7 Prove that $\dfrac{2}{x+2} - \dfrac{1}{3x} = \dfrac{5x-2}{3x(x+2)}$.

[3]

3