

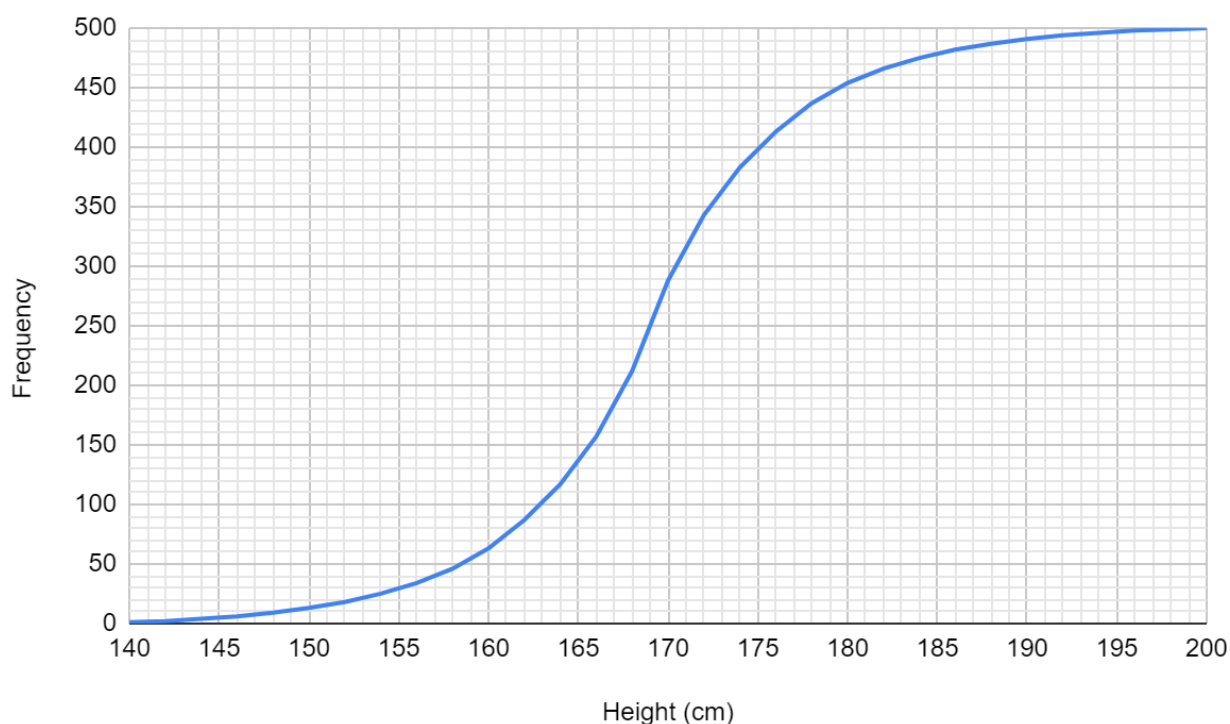


1. A long distance runner is training for a race. She runs for 2 hours at a constant speed of 6.5 kph, then speeds up for the final 8 km, running at a speed of 10 kph. What is her average speed for the whole run? Give your answer to 1dp. [4]

2. Andrew and Bashir are friends. The probability that Andrew is on time for school on any given day is 0.9. The probability that **both** Andrew and Bashir are on time on any given day is 0.765.
 - a. Calculate the probability that both are late on any given day. [3]

 - b. The school term is 14 weeks. On how many days of the term would you expect both to be late? [2]

3. A school conducts a survey, measuring the height of its students on their 15th birthday. The results of the survey of the first 500 students is shown in the graph below.



- a. From the graph, estimate how many of the students in the survey were over 1.8m tall on their 15th birthday. [1]
- b. State the median height of the students in the sample. [1]
- c. In total there are 1680 students in the school. Estimate the percentage of the overall student body that is between 155 and 165cm tall. [2]

4. A rugby side has won its first 8 games scoring an average (mean) of 35 points per game. The median score for these 8 games was 32 points.

a. Tick which of the following **must** be true:

[1]

- ☐ The range of the scores is at least 35
- ☐ The number of games where they scored more than 32 points is equal to the number where they scored less than 32 points
- ☐ The highest score in a single game is at least double the lowest score
- ☐ There was at least one game in which they scored 32 points

b. After their 9th and final game of the season their average points per game dropped to 32. Calculate how many points they scored in their 9th match.

[3]

5. In the diagram below, lines BC and DE are parallel.

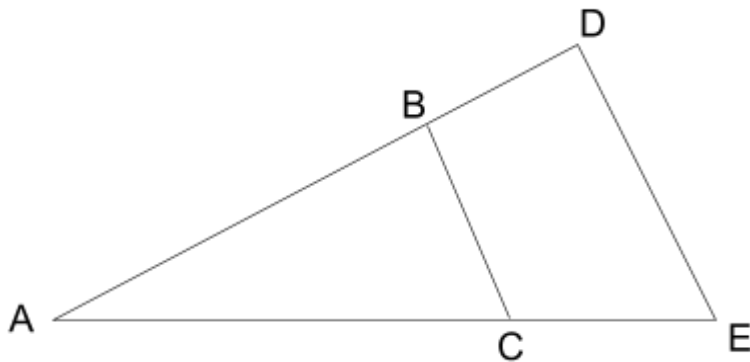
The lengths of the lines are:

AB = 8cm

BD = 4cm

CE = 3cm

Find the length of AC.



[3]

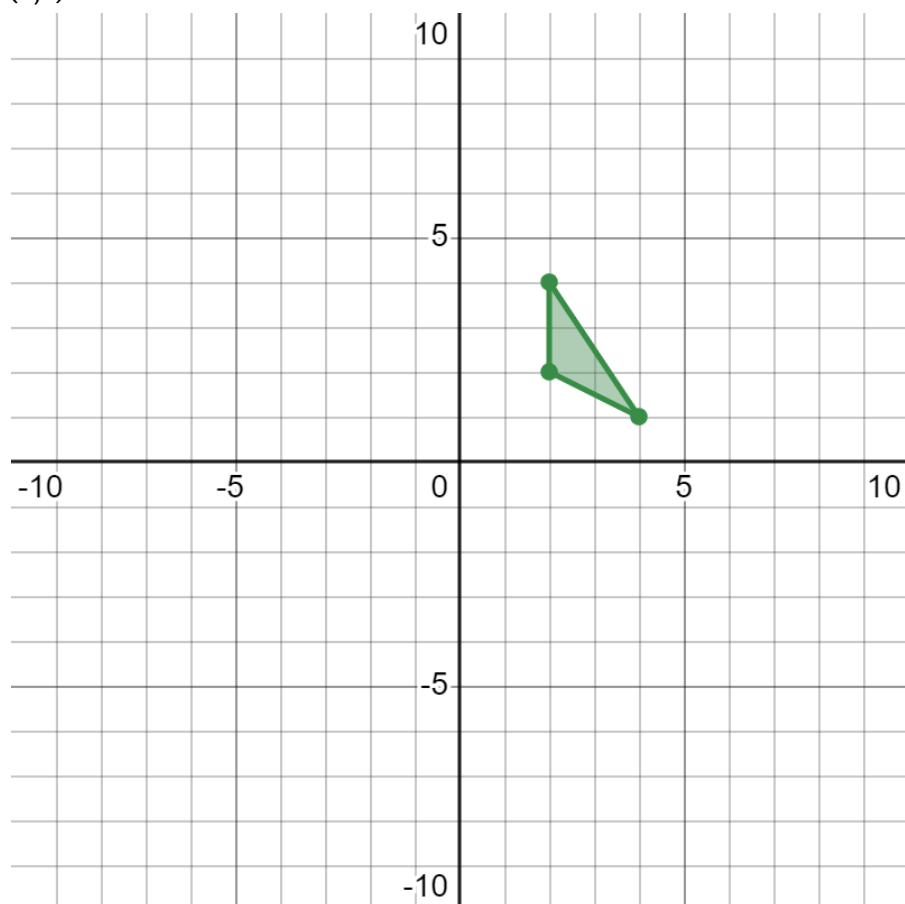
4. I have a cube of metal of side 1.5cm. I melt it down into a sphere. Calculate the diameter of the sphere. Give your answer to 3 significant figures. [4]

5. Write as a single fraction in its simplest form:

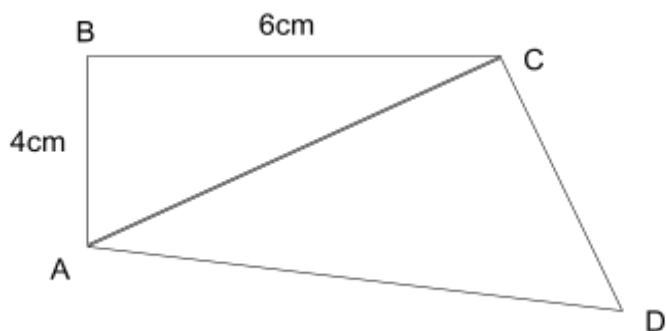
$$\frac{3}{x-4} - \frac{5}{2x+3}$$

[3]

6. On the diagram below, enlarge the triangle with scale factor 4 and centre of enlargement (4,3) [3]

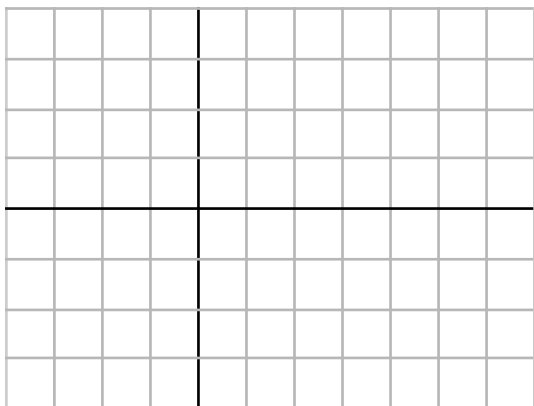


7. In the diagram below, angles ABC and ACD are right angles. Angle ADC is 50° . Calculate the length of side CD to 2 decimal places. [4]



8. a. Line L has equation $3y - 2x = 13$. Line M has equation $y = 1.5x - 3$. State whether lines L and M intersect. [1]

- b. On the axes below, plot the points A (6,-3) and B (-3,3) and draw the line AB.



c. Find the gradient of line AB [2]

d. Find the midpoint of line AB [2]

e. Find the equation of line AB [2]