Pearson Edexcel

International GCSE

Mathematics A

Higher Tier

Paper 1

Mock Examination — Set 4

Paper Reference	**4MA1/1H**
Time	**2 hours**
Total Marks	**100**

Instructions

- Use black ink or ball-point pen.
- Fill in the boxes at the top of this page with your name, centre number and candidate number.
- Answer all questions.
- Without sufficient working, correct answers may be awarded no marks.
- Answer the questions in the spaces provided — there may be more space than you need.
- Calculators may be used.
- You must NOT write anything on the formulae page. Anything you write on the formulae page will gain NO credit.

Information

- The total mark for this paper is 100.
- The marks for each question are shown in brackets — use this as a guide as to how much time to spend on each question.

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

1 **(3 marks)**

In a sale, normal prices are reduced by 15%.

The sale price of a TV is £680.

Work out the normal price of the TV.

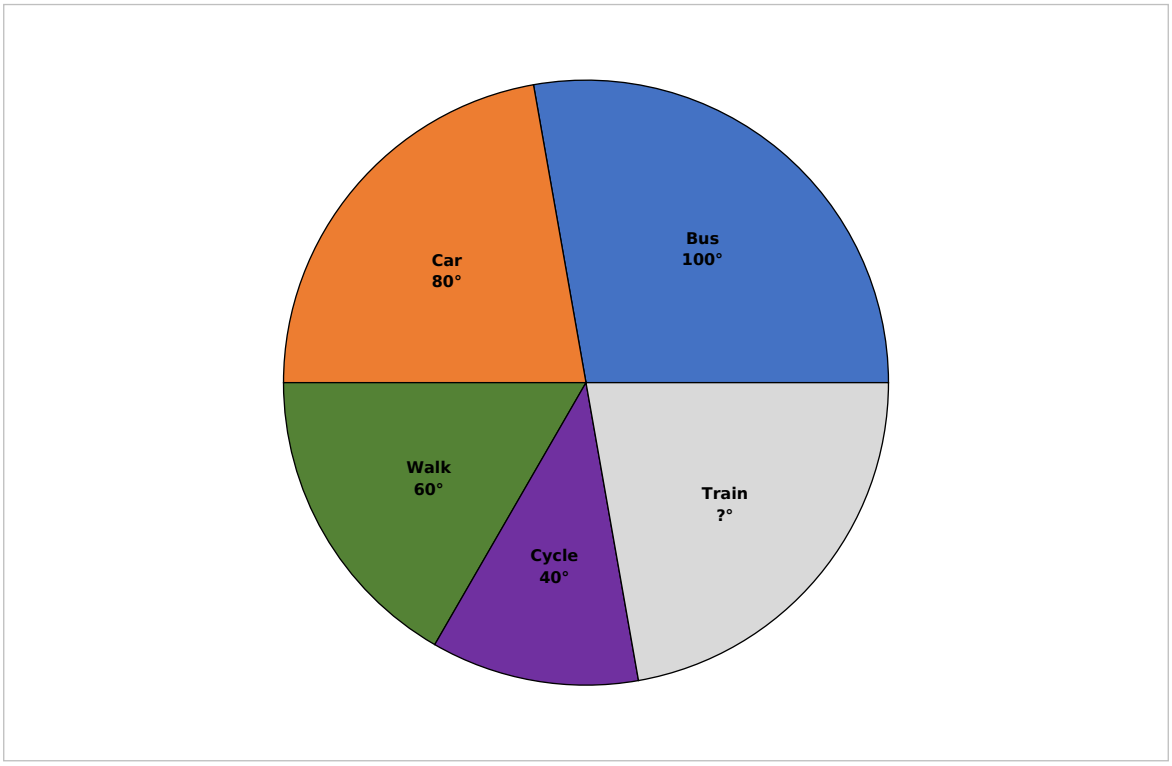
2 **(4 marks)**

The pie chart shows the favourite colours of 90 students.

(a) Find the angle for the sector representing Green.

(b) How many students chose Red as their favourite colour?

Figure 2: Transport to School



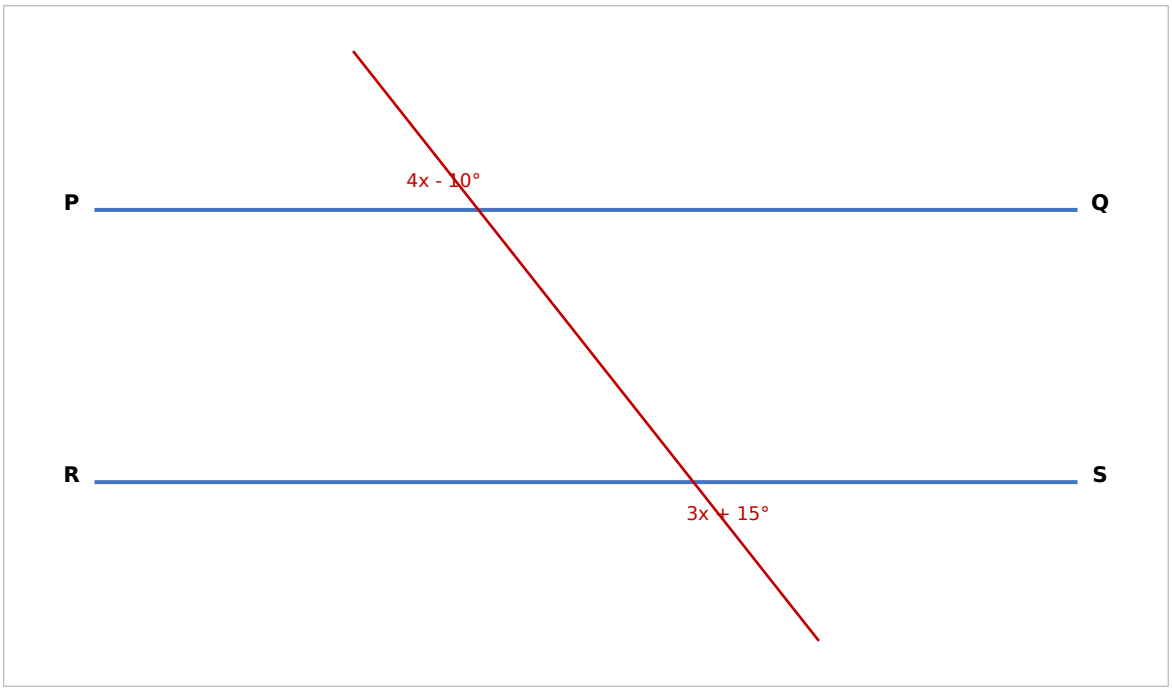
3 **(3 marks)**

The diagram shows two parallel lines and a transversal.

Find the values of x and y.

Give reasons for your answers.

Figure 3: Parallel Lines



4 **(4 marks)**

Solve the simultaneous equations:

$3x + 2y = 1$

$2x - 3y = 18$

5 **(4 marks)**

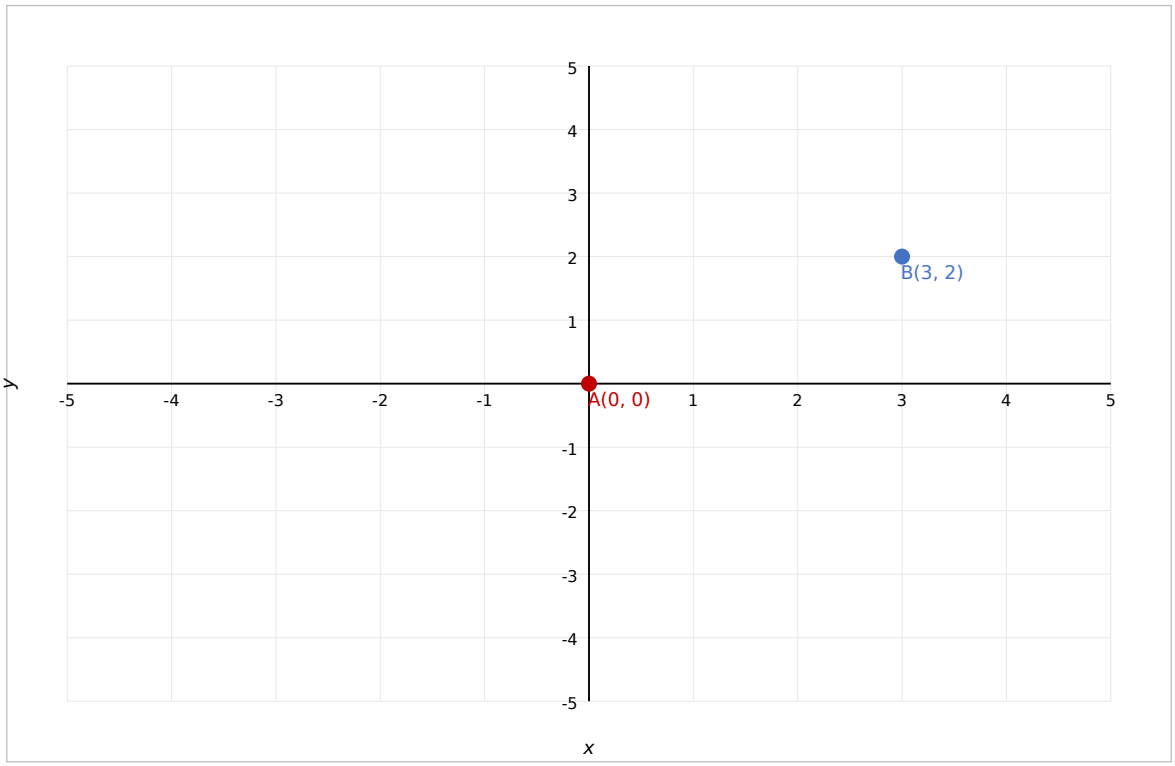
The diagram shows a field ABCD.

A goat is tied to a post at point B with a rope of length 5m.

The scale is 1cm to 2m.

Shade the region that the goat can reach.

Figure 5: Locus



6 **(5 marks)**

The functions f and g are defined as:

$f(x) = 2x - 5$

$g(x) = x^2 + 3$

(a) Find f(7).

(b) Find fg(x). Give your answer in its simplest form.

(c) Solve f(x) = g(x).

7 **(4 marks)**

A rectangle has length 12.5 cm and width 8.4 cm, both correct to 1 decimal place.

Calculate the upper bound for the area of the rectangle.

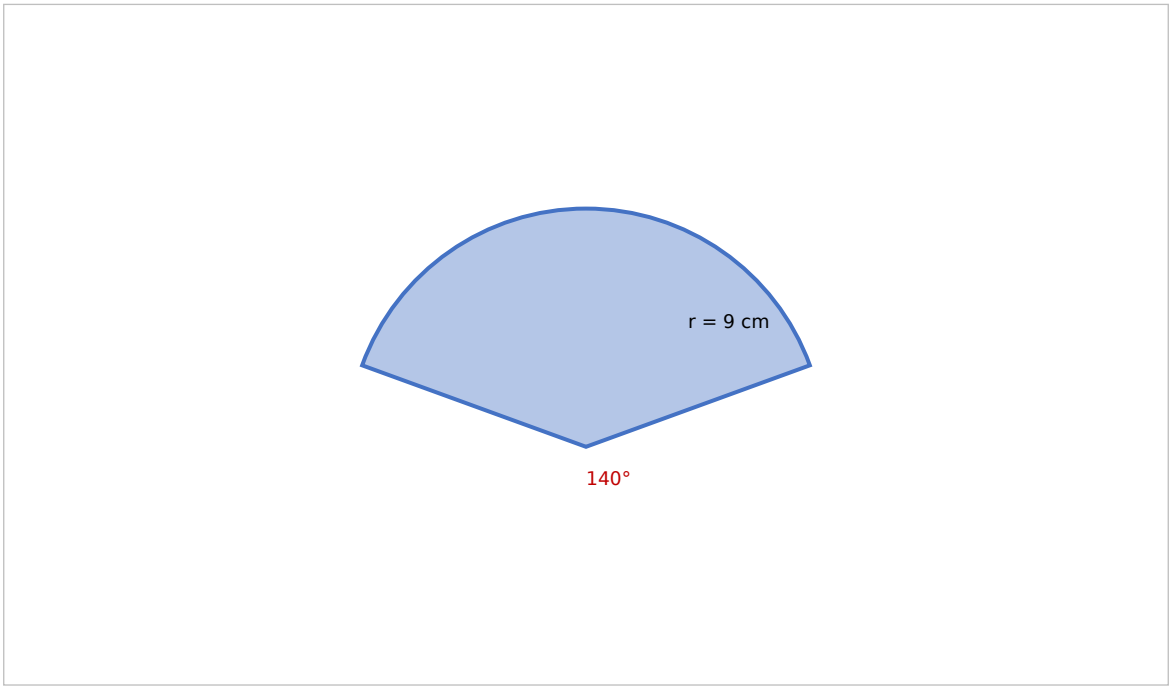
8 **(3 marks)**

The diagram shows a sector of a circle with radius 9 cm and angle 140°.

Calculate the area of the sector.

Give your answer correct to 3 significant figures.

Figure 8: Sector



9 **(5 marks)**

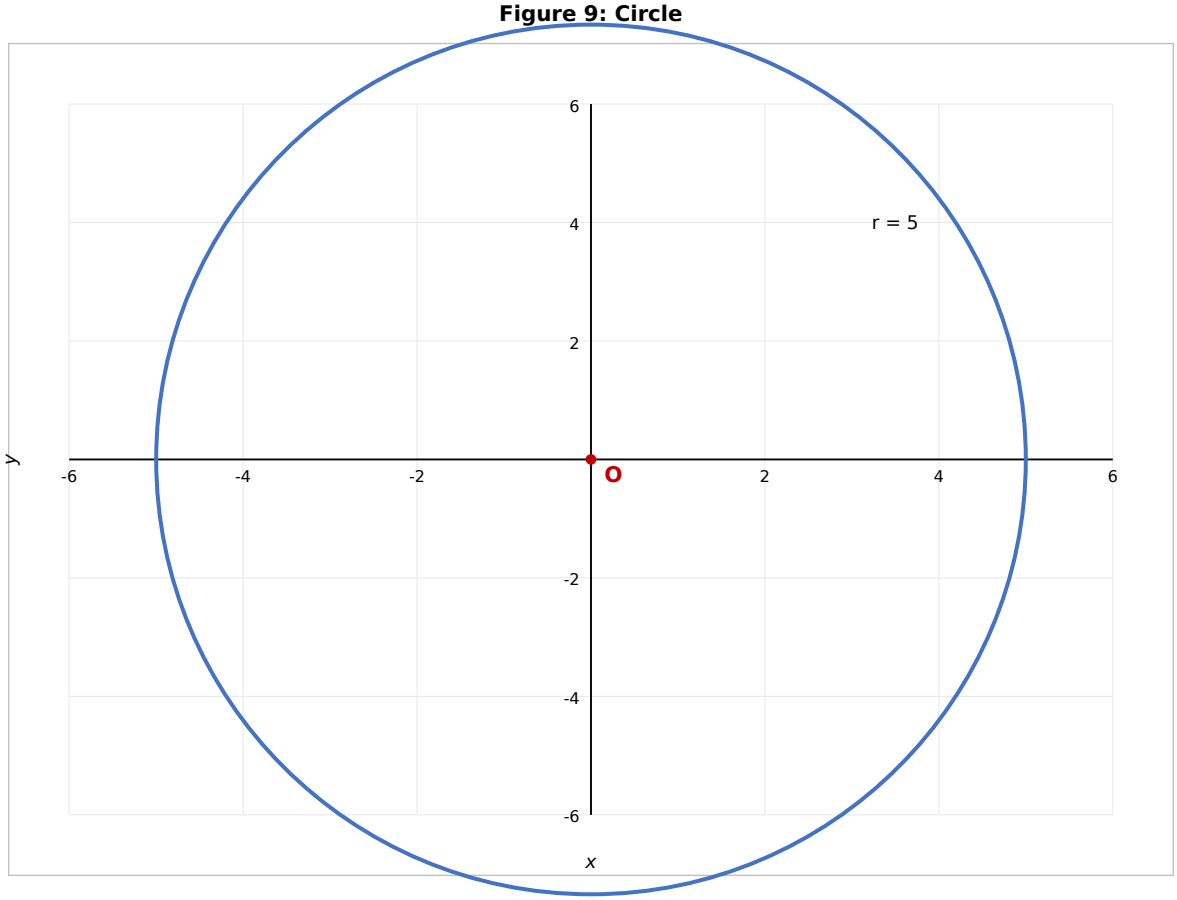
A circle has equation $x^2 + y^2 = 25$.

(a) Write down the coordinates of the centre of the circle.

(b) Write down the radius of the circle.

(c) The point P(3, k) is on the circle. Find the two possible values of k.

Figure 9: Circle



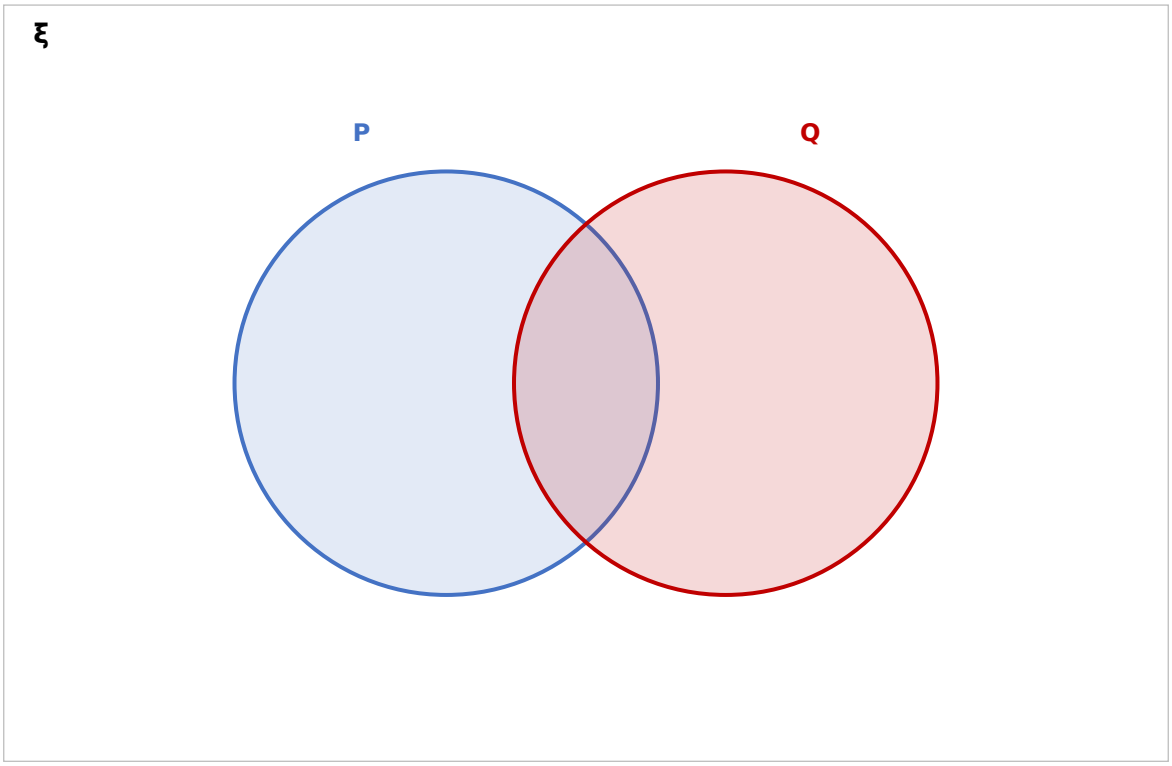
10 **(4 marks)**

In a group of 30 students, 18 study Physics, 15 study Chemistry and 7 study neither.

(a) Complete the Venn diagram.

(b) A student is chosen at random. Find the probability that they study both Physics and Chemistry.

Figure 10: Venn Diagram



11 **(5 marks)**

Simplify fully: $(3x^2 - 8x - 3) / (2x^2 - 18)$

12

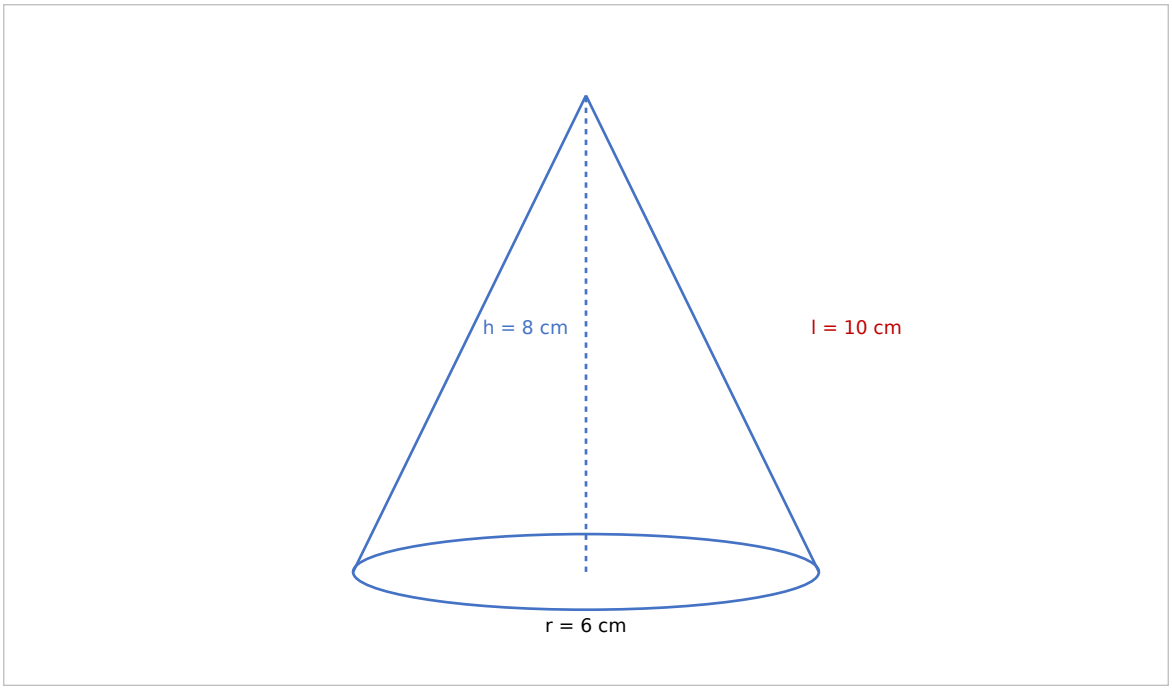
(4 marks)

A cone has a radius of 6 cm and a slant height of 10 cm.

Calculate the curved surface area of the cone.

Give your answer in terms of π.

Figure 12: Cone



13 **(5 marks)**

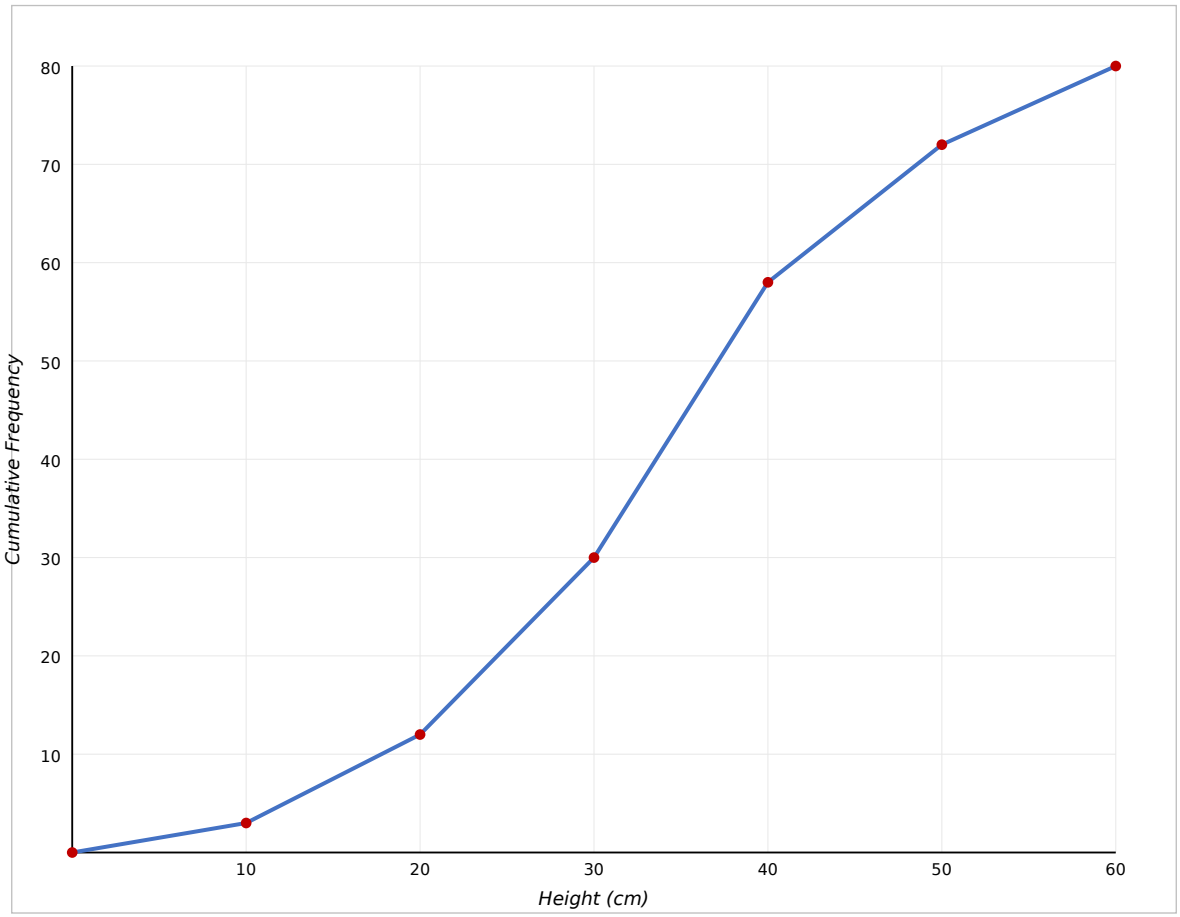
The table shows the time taken for 80 people to complete a puzzle.

(a) Complete the cumulative frequency table.

(b) Draw a cumulative frequency graph.

(c) Use your graph to estimate the median time.

Figure 13: Cumulative Frequency



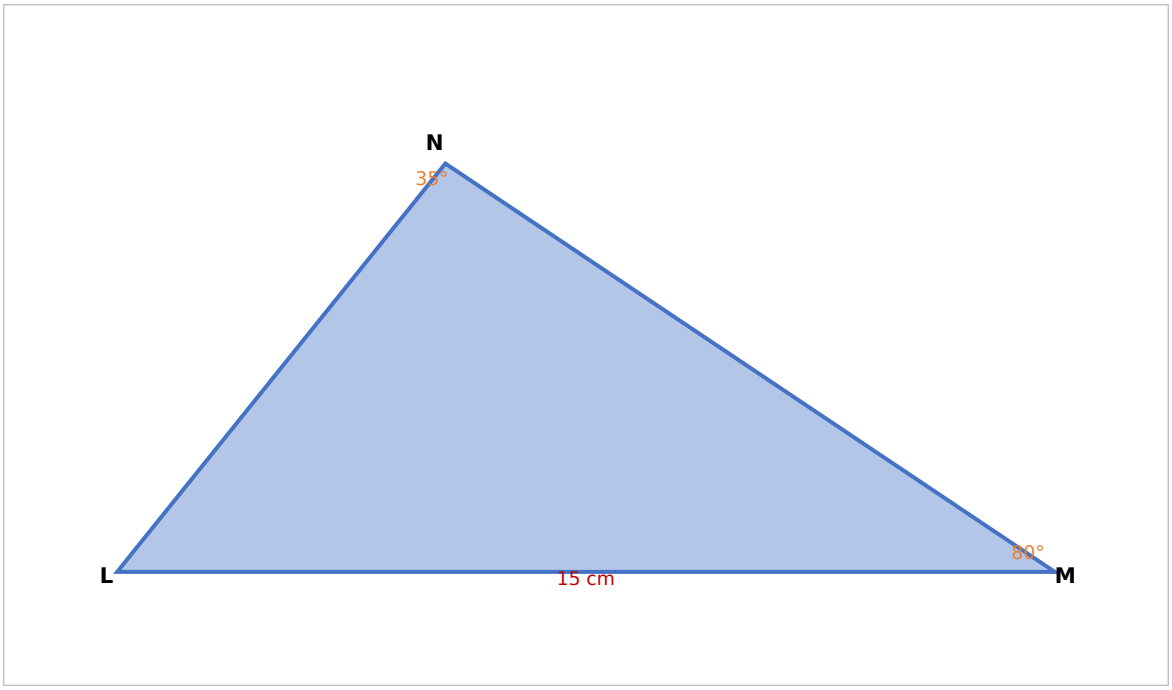
14 **(4 marks)**

In triangle LMN, LM = 15 cm, angle LNM = 35° and angle LMN = 80°.

Calculate the length of LN.

Give your answer correct to 3 significant figures.

Figure 14: Triangle LMN



15 **(5 marks)**

Solve the simultaneous equations:

$y = 2x + 1$

$x^2 + y^2 = 10$

16

(4 marks)

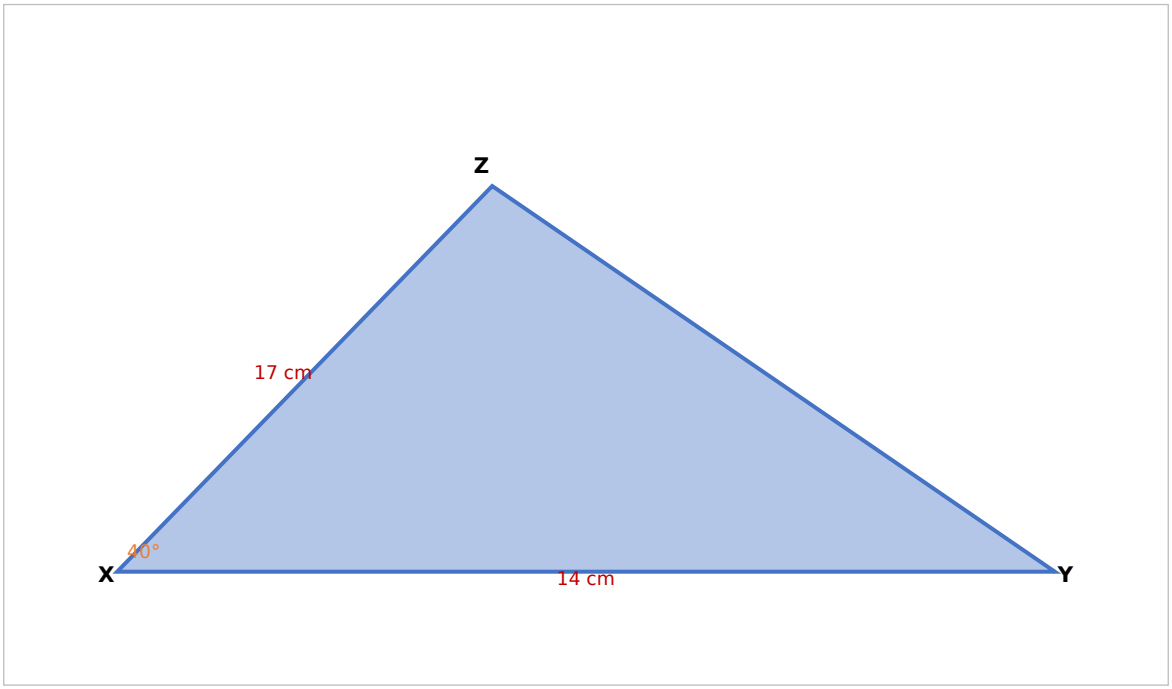
The diagram shows triangle XYZ.

XY = 14 cm, XZ = 17 cm and angle YXZ = 40°.

Calculate the area of triangle XYZ.

Give your answer correct to 3 significant figures.

Figure 16: Triangle



17 **(5 marks)**

The matrix M represents a reflection in the line y = -x.

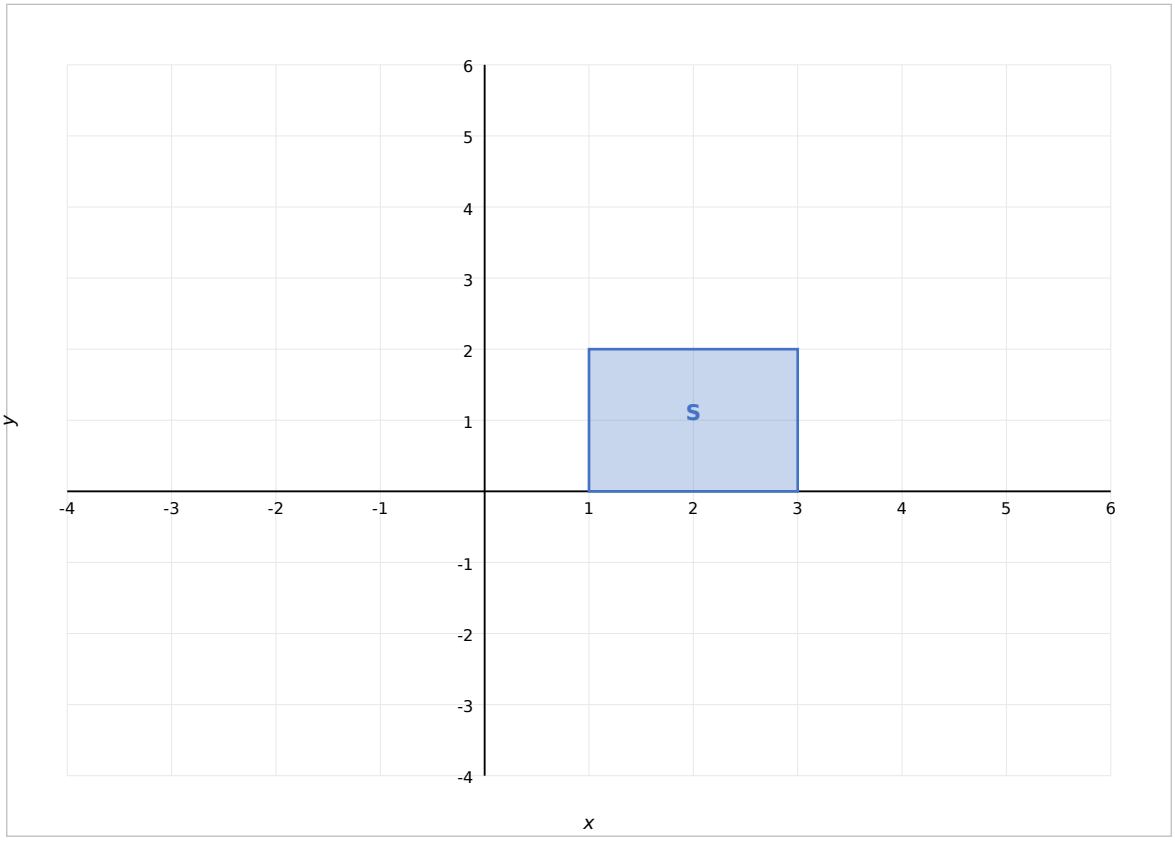
(a) Write down the matrix M.

(b) The point A(3, 5) is transformed to point B by the matrix M.

Find the coordinates of B.

(c) Describe the transformation represented by the matrix N = [[0, -1], [1, 0]].

Figure 17: Transformation



18 **(4 marks)**

y is directly proportional to the square of x.

When y = 50, x = 5.

Find the value of y when x = 3.

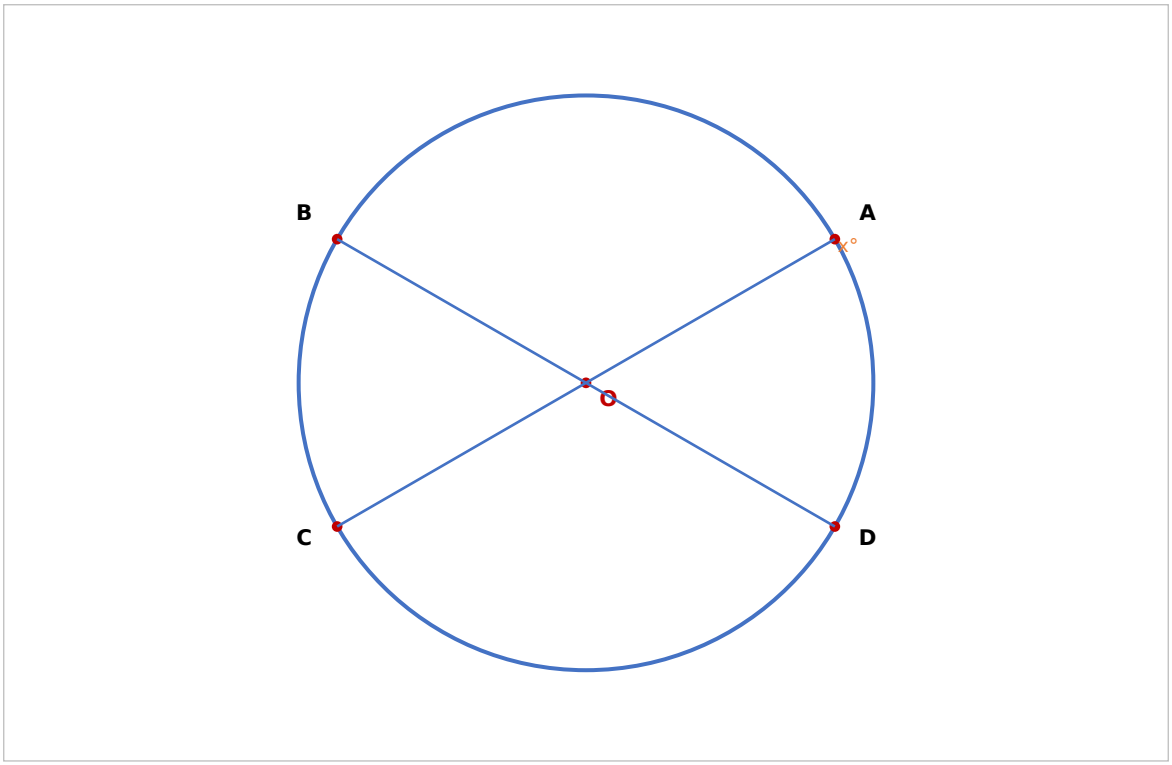
19 **(6 marks)**

The diagram shows two intersecting chords in a circle.

AE = 6 cm, BE = 8 cm, CE = 4 cm.

Find the length of DE.

Figure 19: Intersecting Chords



20 **(4 marks)**

The function f is defined as $f(x) = (3x - 1) / (x + 2)$.

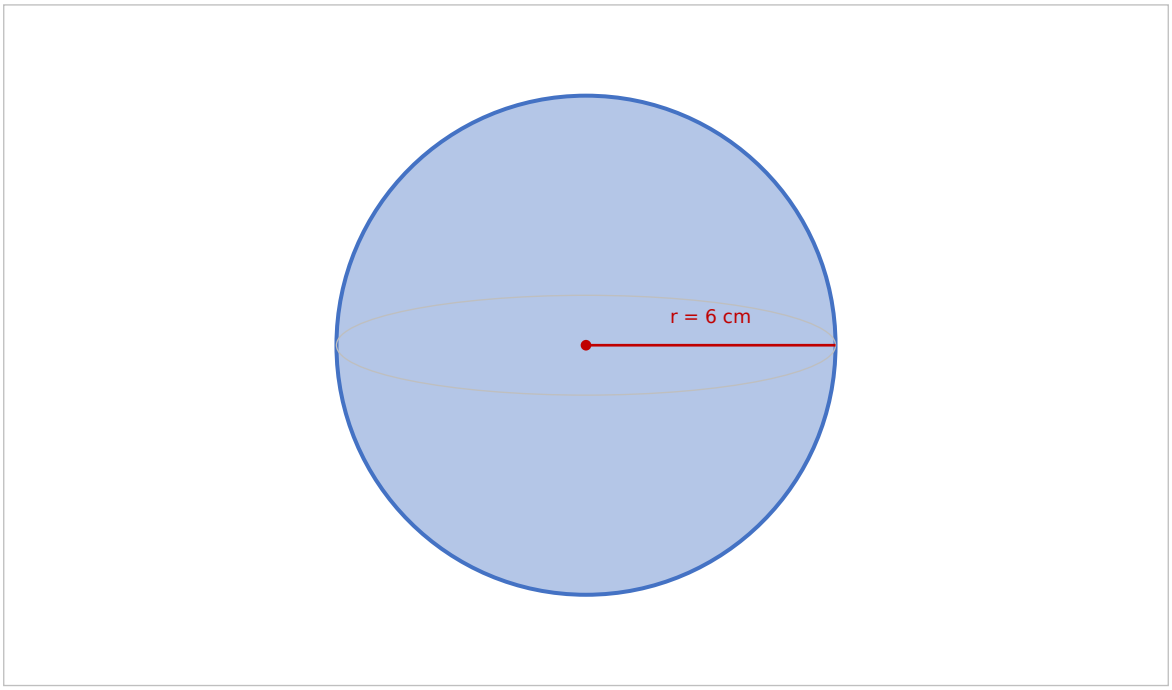
Find $f^{-1}(x)$.

21 **(3 marks)**

A sphere has a volume of 288π cm^3.

Find the radius of the sphere.

Figure 21: Sphere



22 **(6 marks)**

Find the coordinates of the stationary points on the curve $y = x^3 - 12x + 5$.

Determine the nature of each stationary point.

23

(6 marks)

OAB is a triangle.

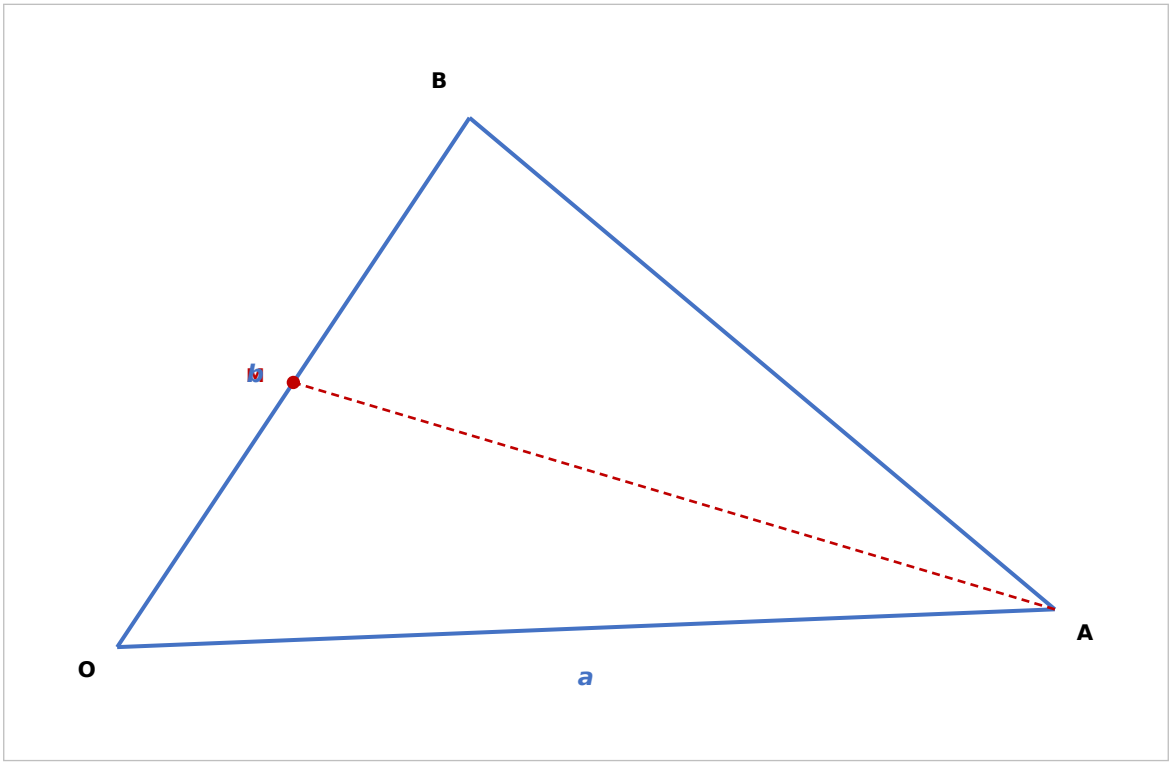
Vector OA = a, Vector OB = b.

P is the midpoint of OA.

Q is the point on AB such that AQ : QB = 2 : 1.

Find the vector PQ in terms of a and b.

Figure 23: Vectors



END OF QUESTIONS