



Practice Questions

for Edexcel iGCSE Maths A Paper 2 2026

Topics covered:

Geometry & Measure:

Angles in parallel lines
Angles in Polygons
Similar shapes including volume/area (so ratio linked)
Trigonometry (especially right angled trig – trig ratios including with exact (surd) answers)
Bearings and Construction
Circle theorems
Vectors

Stats/Probability:

Cumulative frequency
Quartiles, Interquartile range, comparison of distributions
Venn diagrams (probability)

Algebra:

Proofs (or 'show that's)
Harder algebraic fractions (could come as 'show that')
Functions and graphs, recognising types of graphs or transformation of functions/graphs.
Combining functions, inverse function
Inequalities graphically
Plotting quadratic or cubic
Sequence/ Series

Numbers:

Recurring decimal to fraction
Show that with mixed number, expect division or multiplication
Ratios

These are past exam questions on topics that were not covered much in Paper 1. This paper is not intended to be sat in one go! It has several questions on the same topics – it is not a predicted paper – rather practice on topics that may be more likely to come up as they were not covered much in paper 1!

All questions are taken from Edexcel iGCSE past papers.



Questions

Q1.

Prove that the difference between two consecutive square numbers is always an odd number. Show clear algebraic working.

(Total for question = 3 marks)

Q2.

Using algebra, prove that, given any 3 consecutive whole numbers, the sum of the square of the smallest number and the square of the largest number is always 2 more than twice the square of the middle number.

(Total for question = 3 marks)



Q3.

Prove algebraically that, for any three consecutive even numbers, the sum of the squares of the smallest even number and the largest even number is 8 more than twice the square of the middle even number.

(Total for question = 3 marks)

Q4.

Using algebra, prove that, given any 3 consecutive even numbers, the difference between the square of the largest number and the square of the smallest number is always 8 times the middle number.

(Total for question = 3 marks)



Q5.

Prove that when the sum of the squares of any two consecutive odd numbers is divided by 8, the remainder is always 2.

Show clear algebraic working.

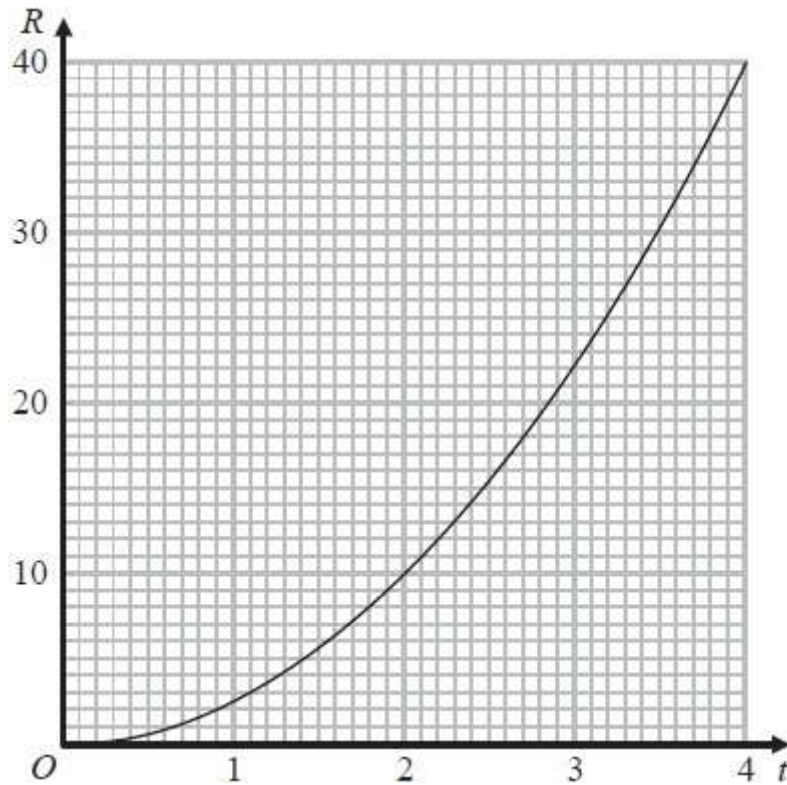
(Total for question = 3 marks)



Q6.

R is proportional to t^2

The graph shows the relationship between R and t for $0 \leq t \leq 4$



(a) Find a formula for R in terms of t.

.....

(3)

Given also that $R = \frac{8}{5x}$

(b) show that t is inversely proportional to \sqrt{x} for $t > 0$

(2)

(Total for question = 5 marks)



Q7.

Use algebra to show that $0.\dot{3}\dot{8}\dot{1} = \frac{21}{55}$

(Total for question = 2 marks)

Q8.

Mariana sells bags of bird food.

The bags that Mariana sold last week each contained 12 kg of seeds.

The bags that she is going to sell next week will each contain a mixture of nuts and seeds where for each bag

$$\text{weight of nuts} : \text{weight of seeds} = 4 : 5$$

The total weight of the nuts and the seeds in each bag will be 19.35 kg

The weight of seeds in each bag that Mariana sells next week will be less than the weight of seeds in each bag that Mariana sold last week.

Work out this decrease as a percentage of the weight of seeds in each bag that Mariana sold last week.

Give your answer correct to one decimal place.

..... %

(Total for question = 4 marks)

Q9.

A and B are two similar solids.

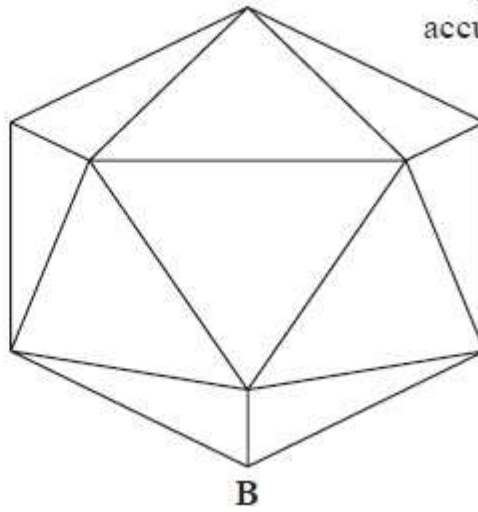
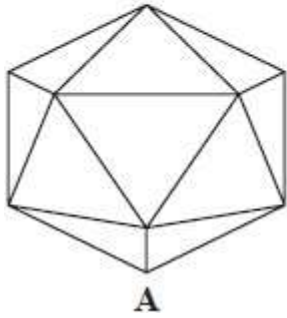


Diagram NOT
accurately drawn

A has a volume of 1836 cm^3

B has a volume of 4352 cm^3

B has a total surface area of 1120 cm^2

Work out the total surface area of A.

..... cm^2

(Total for question = 3 marks)

Q10.

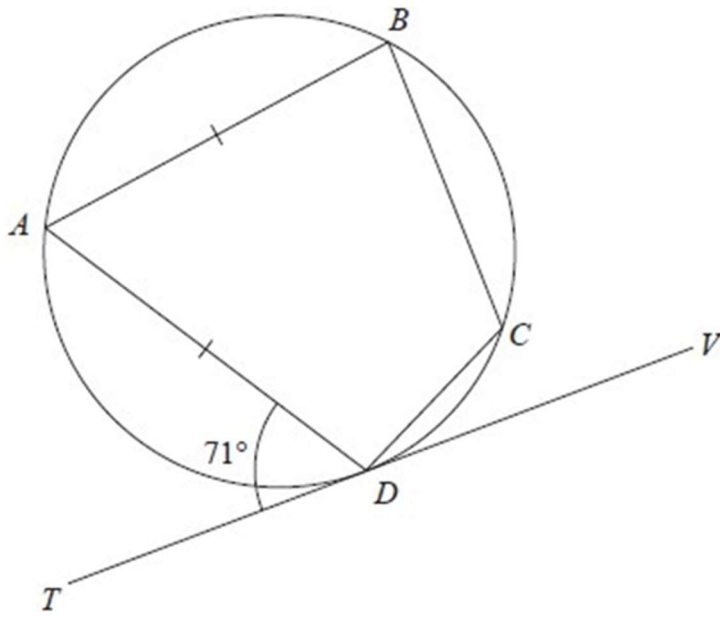


Diagram NOT accurately drawn

A, B, C and D are points on a circle. TDV is the tangent to the circle at D.

$AB = AD$

Angle $ADT = 71^\circ$

Work out the size of angle BCD.

Give a reason for each stage of your working.

.....^o

(Total for question = 5 marks)

Q11.

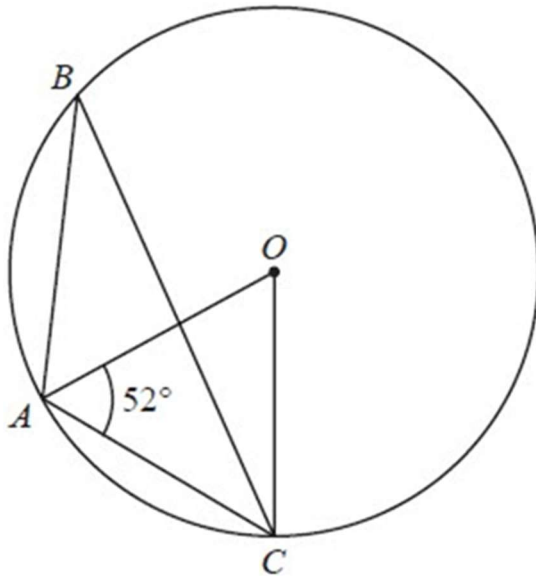


Diagram NOT
accurately drawn

A, B and C are points on a circle, centre O

Angle $OAC = 52^\circ$

Find the size of angle ABC

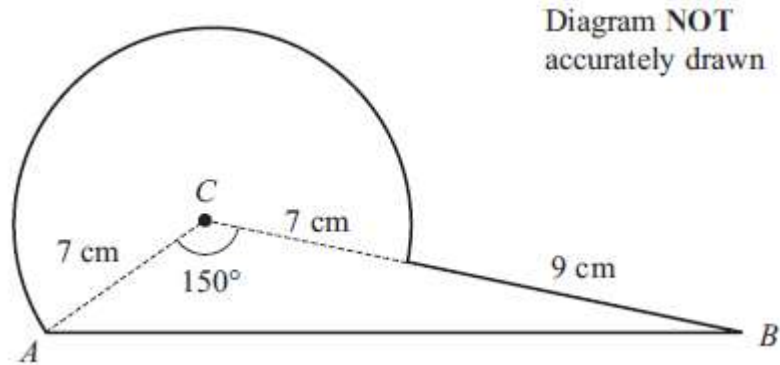
Give reasons for your working.

.....^o

(Total for question = 3 marks)

Q12.

Here is a shape.



The shape is made from triangle ABC and a sector of a circle, centre C and radius CA .

$CA = 7$ cm.

$CB = 16$ cm.

Angle $ACB = 150^\circ$

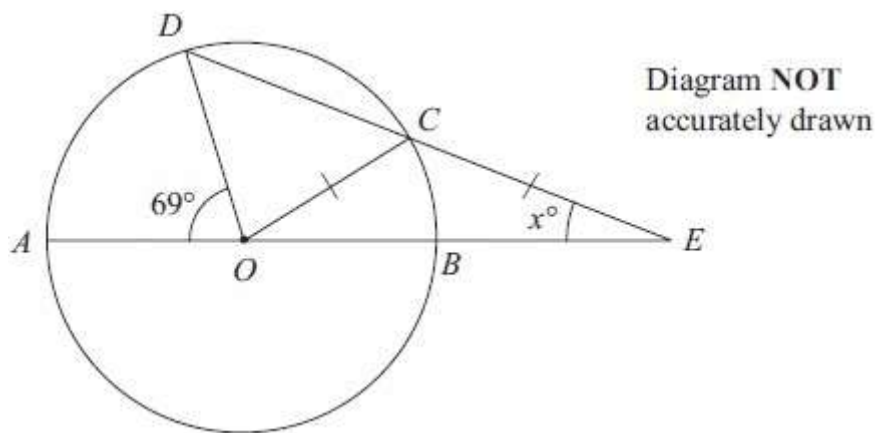
Calculate the area of the shape.

Give your answer correct to 3 significant figures.

.....cm²

(Total for question = 6 marks)

Q13.



A, B, C and D are points on a circle, centre O.
 AOB and DCE are straight lines.
 $CO = CE$.
 Angle $AOD = 69^\circ$
 Angle $CEO = x^\circ$
 Calculate the value of x .
 Show your working clearly.

$x = \dots\dots\dots$

(Total for question = 6 marks)

Q14.

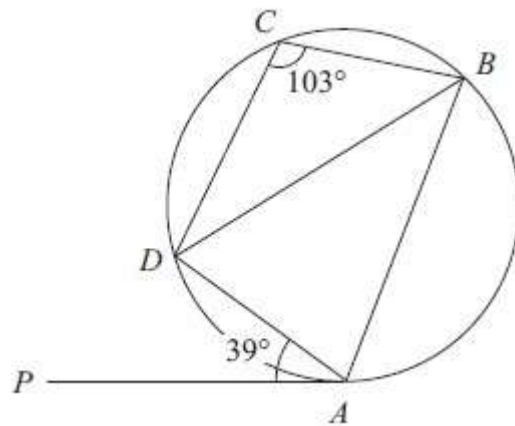


Diagram NOT accurately drawn

A, B, C and D are points on a circle.
 PA is a tangent to the circle.
 Angle PAD = 39°
 Angle BCD = 103°
 Calculate the size of angle ADB.

..... $^\circ$

(Total for question = 3 marks)

Q15.

[In this question 1 cm = 1 unit on the x -axis and 1 cm = 1 unit on the y -axis]

P is a point on a circle with centre $(0, 0)$

The coordinates of P are $(8, -10)$

The line L is the tangent to the circle at the point P

L crosses the x -axis at the point Q and crosses the y -axis at the point R

Work out the length of RQ

Give your answer correct to 3 significant figures.

..... cm

(Total for question = 6 marks)

Q16.

The sides of triangle PQR are tangents to a circle.
 The tangents touch the circle at the points S, T and U. QS = 6 cm. PS = 7 cm.

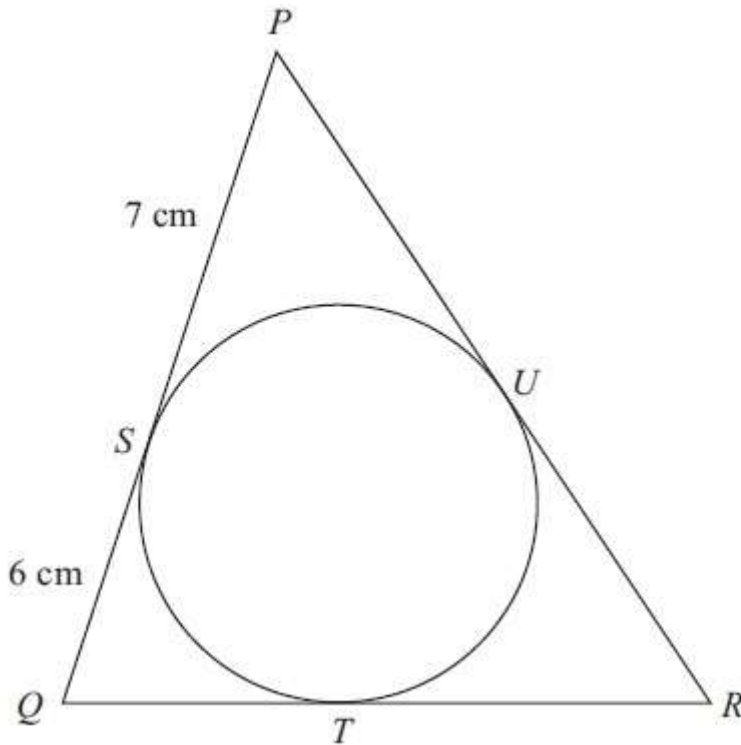


Diagram NOT accurately drawn

(a) (i) Write down the length of QT.

.....cm

(ii) Give a reason for your answer.

.....

(2)

The perimeter of triangle PQR is 42 cm.

(b) Calculate the size of angle PQR.

Give your answer correct to 1 decimal place.

.....°

(4)

(Total for question = 6 marks)

Q17.

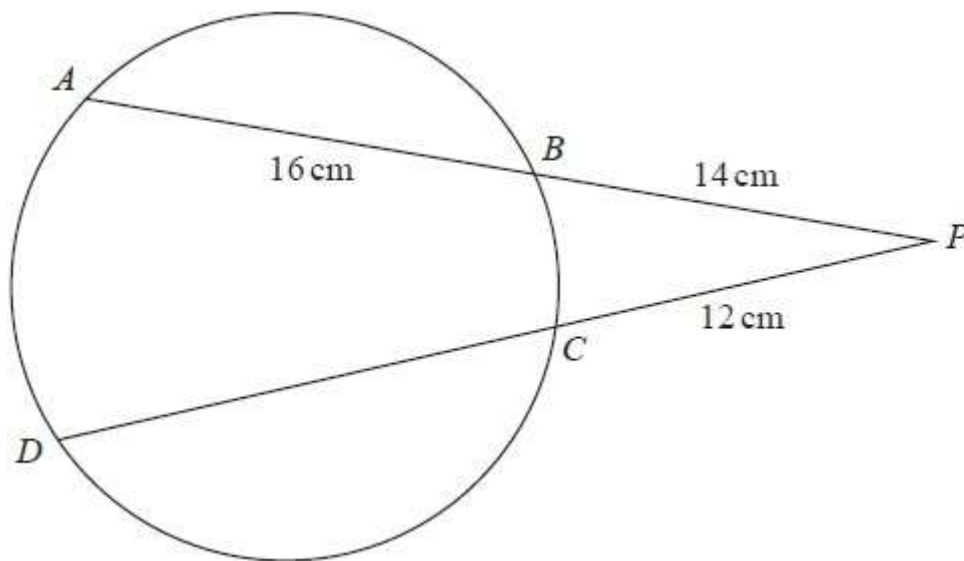


Diagram NOT accurately drawn

A, B, C and D are points on a circle.

ABP and DCP are straight lines.

AB = 16 cm, BP = 14 cm, CP = 12 cm Work out

the length of DC

..... cm

(Total for question = 3 marks)

Q18.

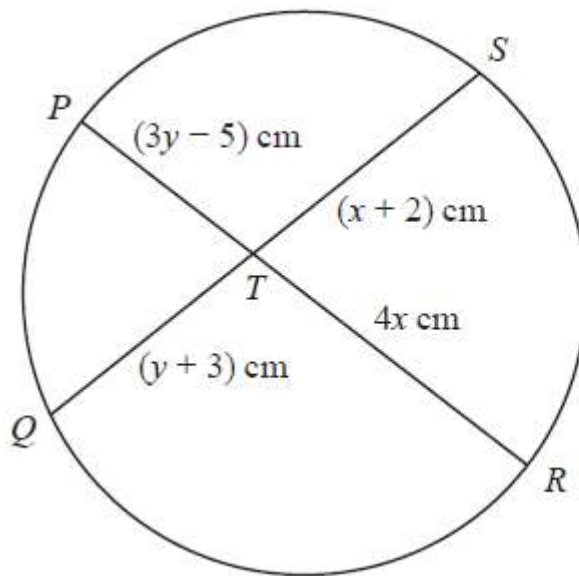


Diagram **NOT** accurately drawn

PTR and *QTS* are chords of a circle.

$$PT = (3y - 5) \text{ cm} \quad QT = (y + 3) \text{ cm} \quad RT = 4x \text{ cm} \quad ST = (x + 2) \text{ cm}$$

Find an expression for y in terms of x

$$y = \dots\dots\dots$$

(Total for question = 5 marks)



Q19.

A particle is moving in a straight line which passes through a fixed point O.

The displacement, s metres, of the particle from O at time t seconds is given by

$$s = 10 + 9t^2 - t^3$$

(a) Find an expression for the velocity, v m/s, of the particle at time t seconds.

$$v = \dots\dots\dots (2)$$

(b) Find the time at which the acceleration of the particle is zero.

$$\dots\dots\dots \text{seconds} (2)$$

(Total for question = 4 marks)

Q20.

Two particles, P and Q, move along a straight line. The fixed-point O lies on this line.

The displacement of P from O at time t seconds is s metres, where $s = t^3 - 4t^2 + 5t$ for $t > 1$

The displacement of Q from O at time t seconds is x metres, where $x = t^2 - 4t + 4$ for $t > 1$

Find the range of values of t where $t > 1$ for which both particles are moving in the same direction along the straight line.

$$\dots\dots\dots$$

(Total for question = 6 marks)



Q21.

The curve C has equation $y = 4x^3 + x^2 - 20x$

(a) Find $\frac{dy}{dx}$

$\frac{dy}{dx} = \dots\dots\dots$

(2)

(b) Find the x coordinates of the points on C where the gradient is 4 Show clear algebraic working.

$\dots\dots\dots$
(4)

(Total for question = 6 marks)

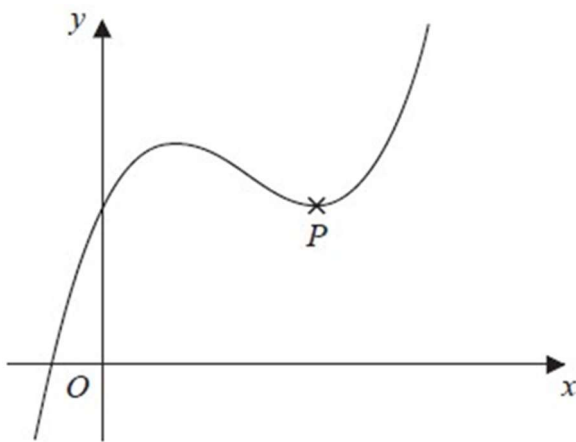


Q22.

$$y = x^3 - 4x^2 + 4x + 3$$

(a) Find $\frac{dy}{dx}$

.....
(2)



The diagram shows a sketch of the curve with equation $y = x^3 - 4x^2 + 4x + 3$

The point P is a turning point on the curve.

(b) Work out the coordinates of P. Show clear algebraic working.

(..... ,)
(4)

(c) Write down the range of values of x for which the curve has a negative gradient.

.....
(2)

(Total for question = 8 marks)



Q23.

(a) Write $\frac{x+3}{5} + \frac{x-2}{3}$ as a single fraction in its simplest form.

.....
(3)

(b) Simplify $(8a^9e^6)^{\frac{1}{3}}$

.....
(2)

(c) Solve $\frac{2}{3}y + \frac{3}{8}y = 5$

Show clear algebraic working.

y =
(3)

(Total for question = 8 marks)



Q24.

(a) Solve $\frac{9a - 7}{5} - \frac{3a - 7}{4} = 4.55$

Show clear algebraic working.

a =

(3)

(b) Make c the subject of the formula

$$p = \sqrt{\frac{ac + 8}{3 + c}}$$

.....

(4)

(Total for question = 7 marks)



Q25.

Express $\frac{3}{x+2} - \frac{6}{2x+5}$ as a single fraction.

Simplify your answer.

.....

(Total for question = 3 marks)

Q26.

Write $5 - (x + 2) \div \left(\frac{x^2-4}{x-3}\right)$ as a single fraction.

Simplify your answer fully.

.....

(Total for question = 4 marks)



Q27.

Express

$$\left(\frac{4}{2x-5} - \frac{3}{2x-3} \right) \div \frac{9x-4x^3}{6x^2-17x+5}$$

as a single fraction in its simplest form.

.....

(Total for question = 4 marks)

Q28.

Simplify fully $\frac{4x^2-25}{6x^2+13x-5}$

.....

(Total for question = 3 marks)



Q29.

Simplify fully $\frac{6x^2 + x - 15}{12x^2 - 27}$

Show clear algebraic working.

.....

(Total for question = 4 marks)

Q30.

a) Write 250 000 in standard form.

.....

(1)

The radius of the planet Jupiter is 6.99×10^7 metres.

The radius of the Earth is 6.37×10^6 metres.

The volume of Jupiter is k times the volume of the Earth.

(b) Assuming that both planets are spheres, calculate the value of k .

Give your answer correct to 3 significant figures.

.....

(3)

(Total for question = 4 marks)

Q31.

The diagram shows a circular pond, of radius r metres, surrounded by a circular path. The circular path has a constant width of 1.5 metres.

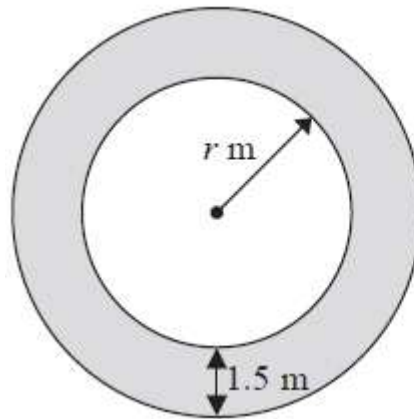


Diagram **NOT** accurately drawn

The area of the path is $\frac{1}{10}$ the area of the pond.

(a) Show that $2r^2 - 60r - 45 = 0$

(3)

(b) Calculate the area of the pond.
 Show your working clearly.
 Give your answer correct to 3 significant figures.

..... m²
 (5)

(Total for question = 8 marks)

Q32.

The diagram shows a sphere and a cone.

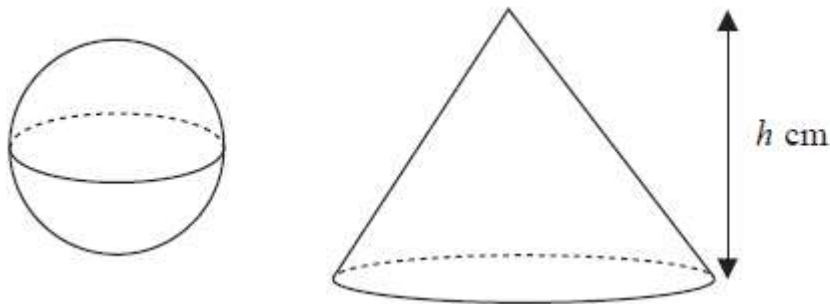


Diagram NOT
accurately drawn

The cone has height h cm.

The radius of the base of the cone is 3 times the radius of the sphere.

Given that the volume of the sphere is equal to the volume of the cone, find an expression for the radius of the sphere in terms of h .

Give your expression in its simplest form.

.....

(Total for question = 3 marks)



Q33.

The table gives information about the times taken, in minutes, for 80 taxi journeys.

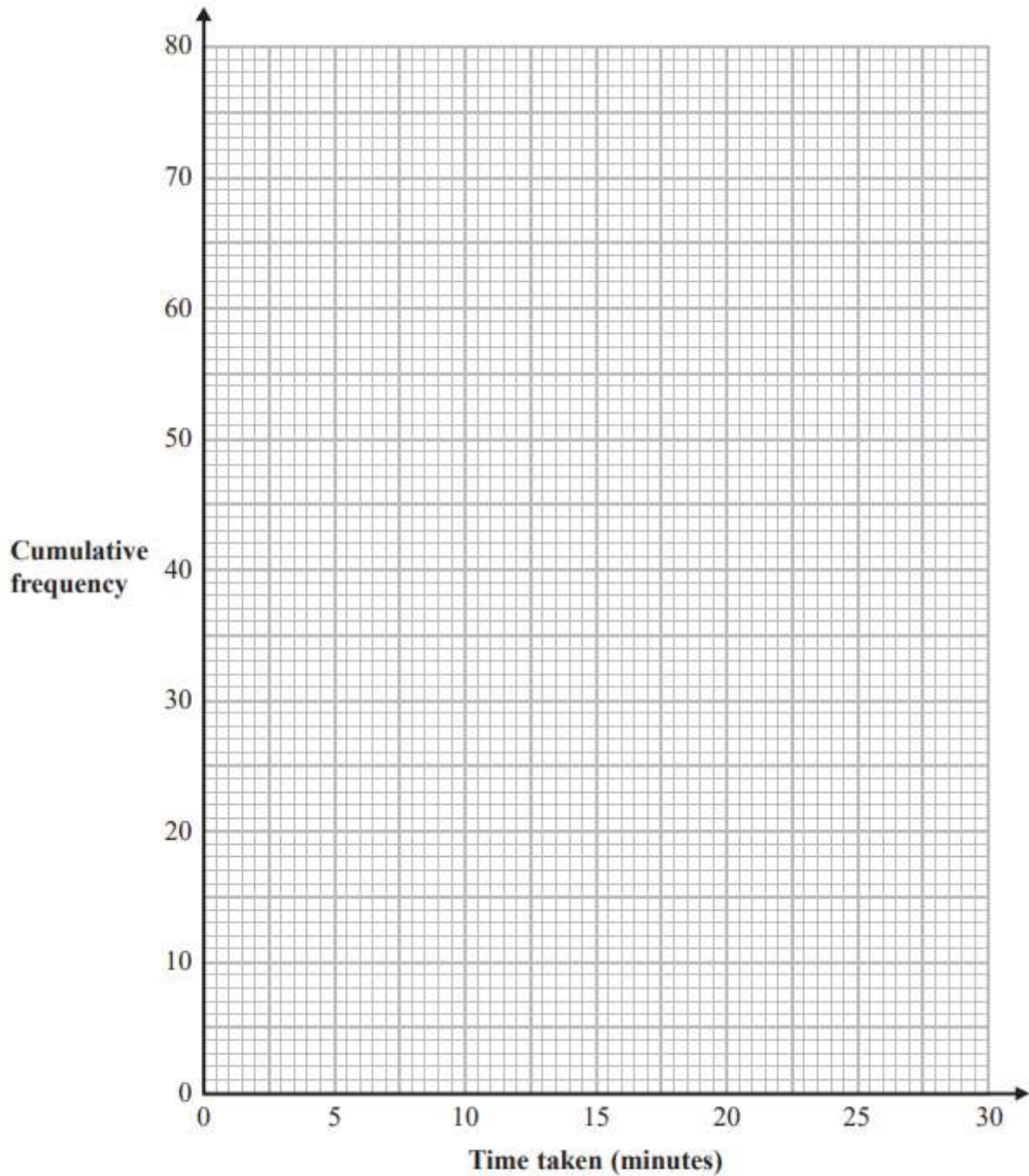
Time taken (t minutes)	Frequency
$0 < t \leq 5$	7
$5 < t \leq 10$	10
$10 < t \leq 15$	12
$15 < t \leq 20$	19
$20 < t \leq 25$	18
$25 < t \leq 30$	14

(a) Complete the cumulative frequency table.

Time taken (t minutes)	Cumulative frequency
$0 < t \leq 5$	
$0 < t \leq 10$	
$0 < t \leq 15$	
$0 < t \leq 20$	
$0 < t \leq 25$	
$0 < t \leq 30$	

(1)

(b) On the grid opposite, draw a cumulative frequency graph for your table.



(2)

(c) Use your graph to find an estimate for the median.

..... minutes

(1)

(d) Use your graph to find an estimate for the interquartile range.

..... minutes

(2)

(Total for question = 6 marks)



Q34.

The table shows information about the number of minutes each of 120 buses was late last Monday.

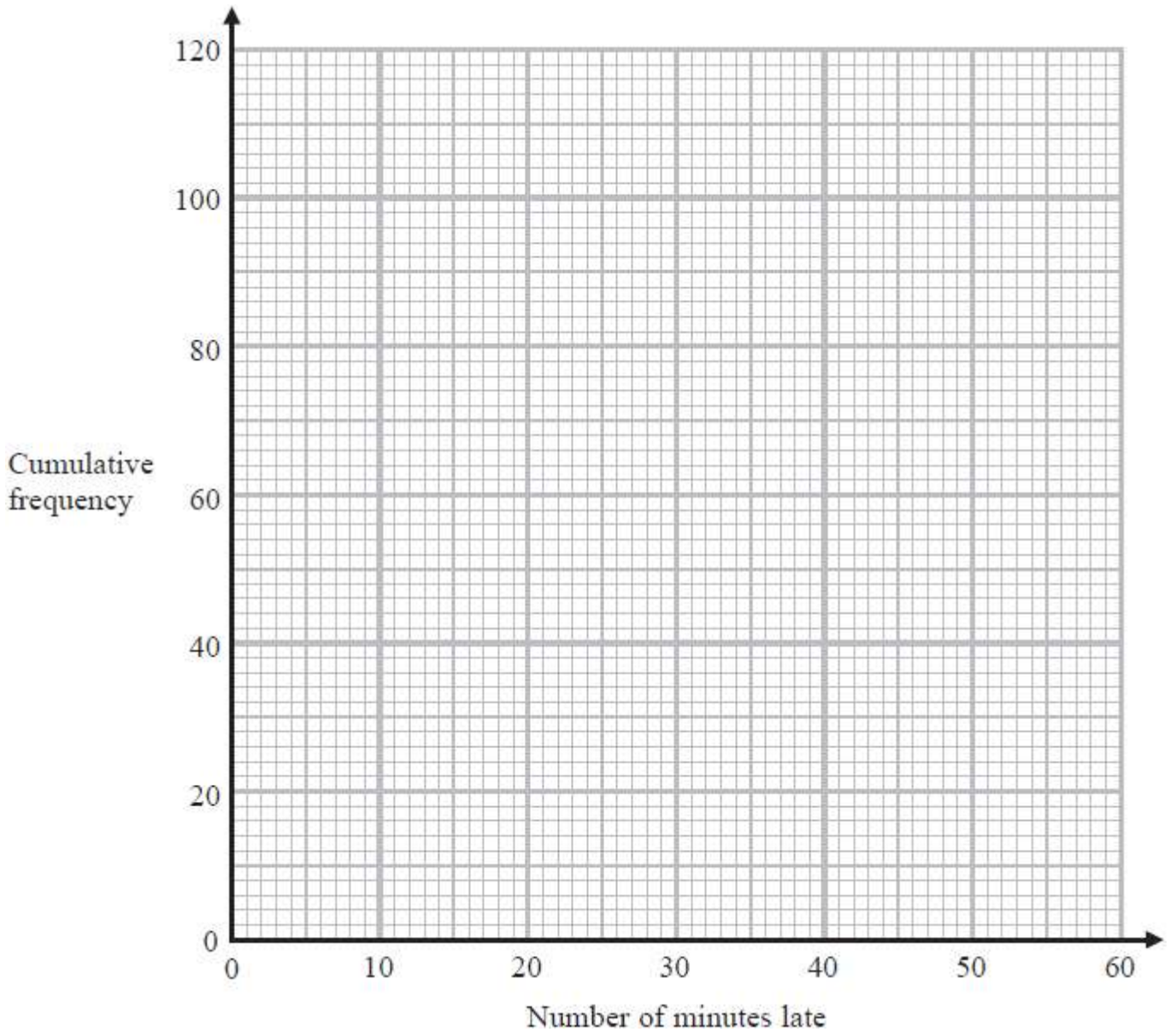
Number of minutes late (L)	Frequency
$0 < L \leq 10$	10
$10 < L \leq 20$	16
$20 < L \leq 30$	44
$30 < L \leq 40$	29
$40 < L \leq 50$	15
$50 < L \leq 60$	6

(a) Complete the cumulative frequency table below.

Number of minutes late (L)	Cumulative frequency
$0 < L \leq 10$	
$0 < L \leq 20$	
$0 < L \leq 30$	
$0 < L \leq 40$	
$0 < L \leq 50$	
$0 < L \leq 60$	

(1)

(b) On the grid, draw a cumulative frequency graph for your table.



(2)

(c) Use your graph to find an estimate for the interquartile range.

..... minutes

(2)

(d) Use your graph to find an estimate for the number of buses that were more than 48 minutes late last Monday.

.....

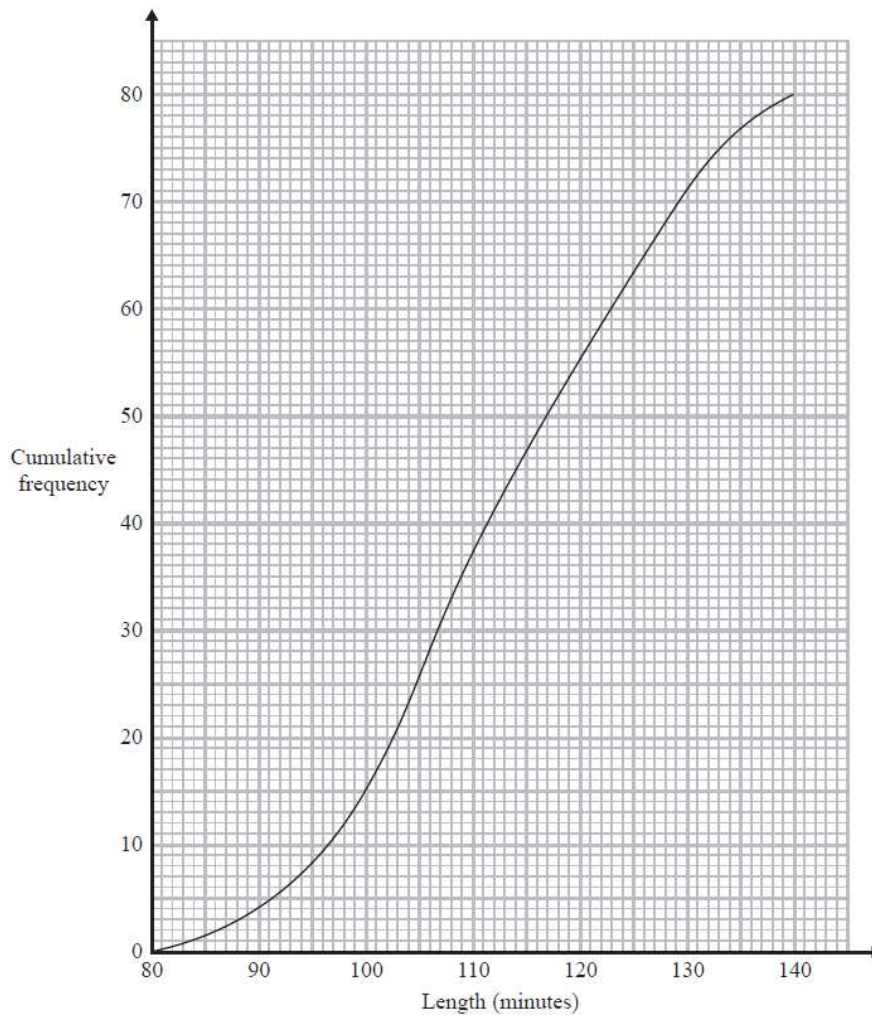
(2)

(Total for question = 7 marks)



Q35.

The cumulative frequency graph shows information about the length, in minutes, of each of 80 films.



(a) Use the graph to find an estimate for the interquartile range.

..... minutes

(2)

Clare says,

"More than 35% of these films are over 120 minutes long."

(b) Is Clare correct?

Give a reason for your answer.

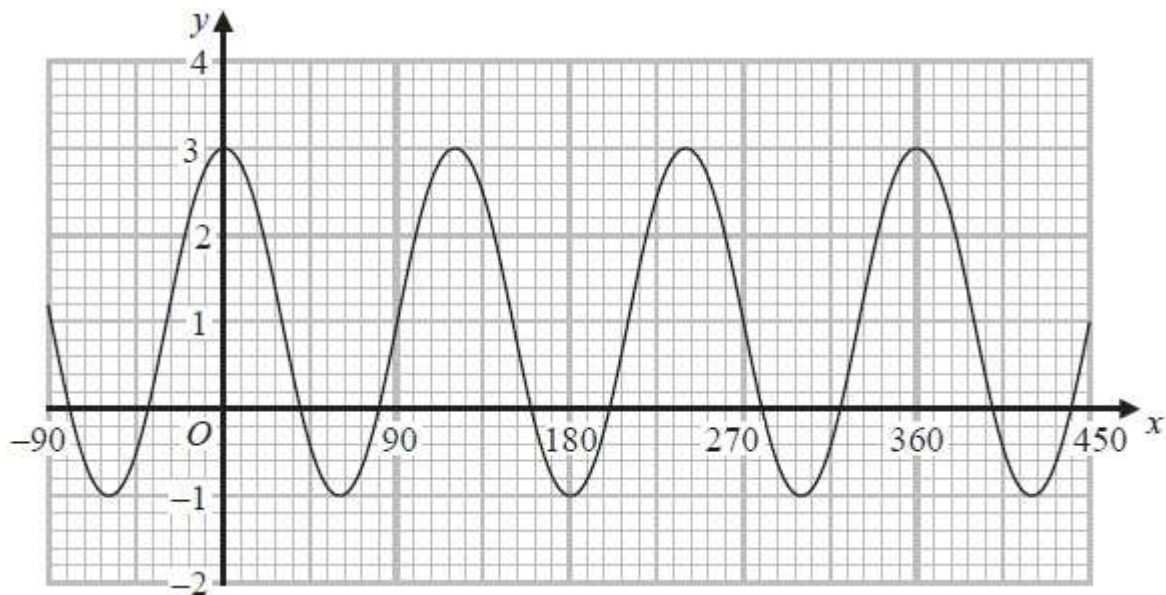
.....

(3)

(Total for question = 5 marks)

Q36.

Here is a sketch of the curve with equation $y = a \cos bx^\circ + c$ where $-90 \leq x \leq 450$



Find the value of a , the value of b and the value of c

$a = \dots\dots\dots$

$b = \dots\dots\dots$

$c = \dots\dots\dots$

(Total for question = 3 marks)

Q37.

For $y = x^3 - 6x^2 + 20$

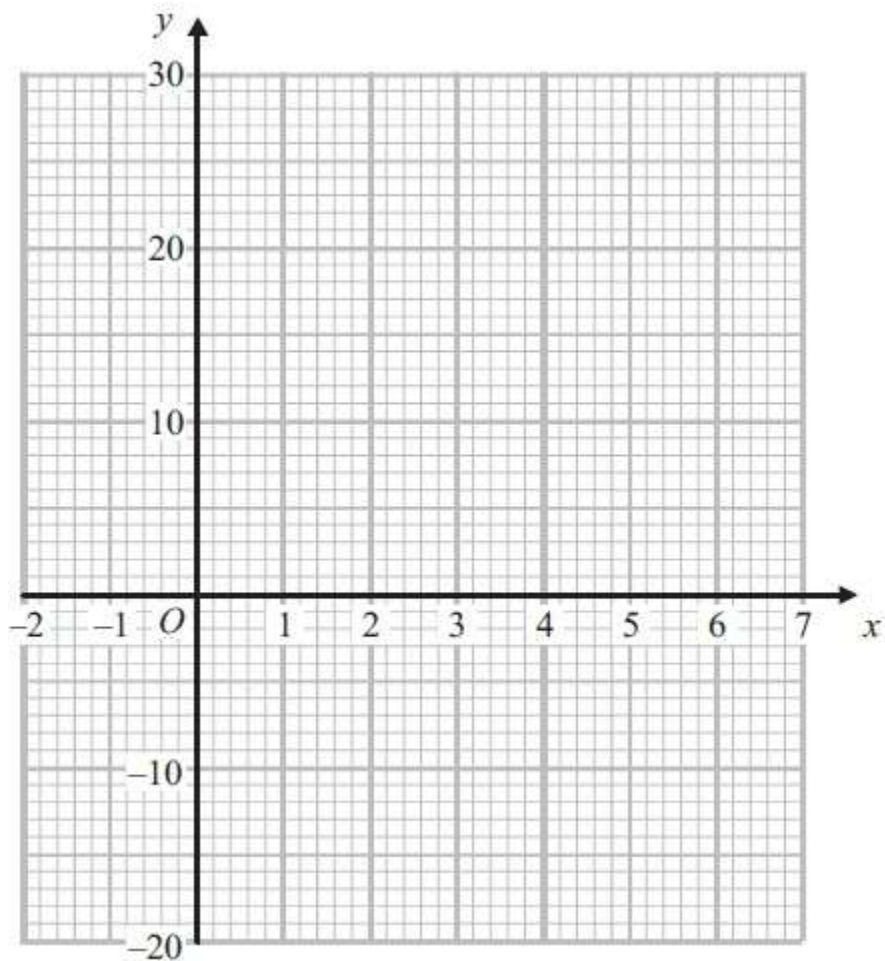
(a) (i) show that $y = 4$ when $x = 2$

(ii) complete the table of values

x	-1	0	1	2	3	4	5	6
y		20	15		-7	-12		20

(2)

b) On the grid, draw the graph of $y = x^3 - 6x^2 + 20$ for values of x from -1 to 6



(2)



(c) For the curve with equation $y = x^3 - 6x^2 + 20$

(i) find $\frac{dy}{dx}$

(ii) find the gradient of the curve at $x = -3$

.....

.....

(4)

(Total for question = 8 marks)

Q38.

A , B and C are three towns.

The bearing of B from A is 105°

The bearing of C from B is 230°

The distance of C from A is 180 km.

The distance of C from B is 95 km.

Calculate the distance of B from A .

Give your answer correct to 3 significant figures.

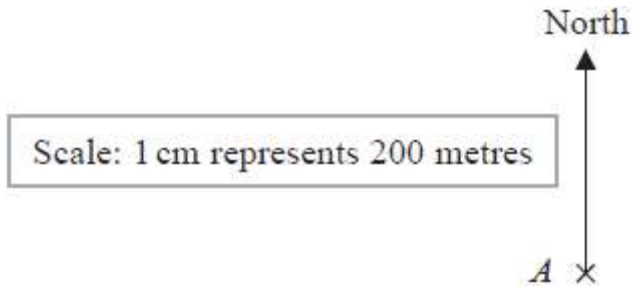
..... km

(Total for question = 5 marks)



Q39.

The scale diagram shows the position on a map of a house, *A*



House *C* is on a bearing of 110° from *A*
The distance from *A* to *C* is 700 m

- (a) Mark the position of *C* on the diagram with a cross (×)
Label your cross *C*

(3)

- (b) Write the scale of the map in the form $1 : n$

1 :

(1)

(Total for question = 4 marks)



Q40.

Here are the first five terms of an arithmetic sequence.

$$8 \quad 15 \quad 22 \quad 29 \quad 36$$

Work out the sum of all the terms from the 50th term to the 100th term inclusive.

.....

(Total for question = 4 marks)

Q41.

$(2x + 23)$, $(8x + 2)$ and $(20x - 52)$ are three consecutive terms of an arithmetic sequence.

Prove that the common difference of the sequence is 12

(Total for question = 4 marks)



Q42.

Here are the first three terms of an arithmetic sequence.

$$(4x - 14) , (x + 2) , (7x - 9)$$

Find, as an integer, the sum of the first 40 terms of the sequence.
Show clear algebraic working.

.....

(Total for question = 4 marks)

Q43.

The sum of the first N terms of an arithmetic series, S , is 292

The 2nd term of S is 8.5

The 5th term of S is 13

Find the value of N .

Show clear algebraic working.

$N =$

(Total for question = 5 marks)



Q44.

An arithmetic series has first term a and common difference d

The sum of the first 30 terms of the arithmetic series is 4395

The sum of the 10th term and the 20th term is 284

Work out the sum of the first 45 terms of the arithmetic series.

Show clear algebraic working.

.....

(Total for question = 5 marks)

Q45.

Here are the first 4 terms of an arithmetic sequence.

85 79 73 67

Find an expression, in terms of n , for the n th term of the sequence.

.....

(Total for question = 2 marks)



Q46.

Here are the first five terms of an arithmetic sequence.

7 11 15 19 23

Write down an expression, in terms of n , for the n th term of this sequence.

(Total for question = 2 marks)

Q47.

An arithmetic sequence has first term 8 and common difference 11

The sequence has k terms, where $k > 21$

The sum of the last 20 terms of the sequence is 10 170

Find the value of k

Show clear algebraic working.

$k = \dots\dots\dots$

(Total for question = 5 marks)



Q48.

An arithmetic series has first term a and common difference d .

The sum of the first $2n$ terms of the series is four times the sum of the first n terms of the series.

Find an expression for a in terms of d .

Show your working clearly.

$a = \dots\dots\dots$

(Total for question = 4 marks)

Q49.

Solid **A** is similar to solid **B**

Here is some information about solid **A** and solid **B**

	solid A	solid B
Height (cm)	3^x	
Area (cm ²)	7776	486
Volume (cm ³)	8^x	2^{x+4}

Work out the height of solid **B**

Give your answer as a decimal.

$\dots\dots\dots$ cm

(Total for question = 5 marks)

Q50.

Here are three similar quadrilaterals.

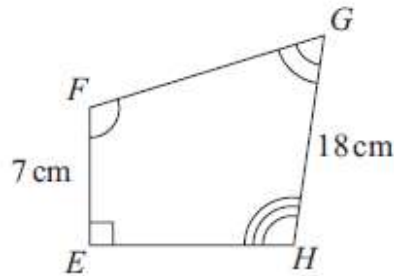
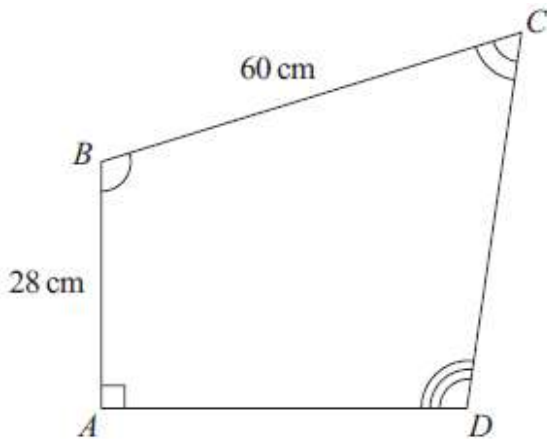
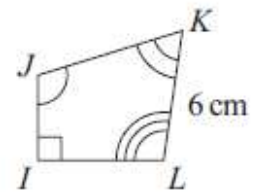


Diagram **NOT** accurately drawn



Work out the length of JK

..... cm

(Total for question = 3 marks)

Q51.

Mathematically similar wooden blocks are made in a workshop.

There are small blocks and there are large blocks.

The volume of each small block is 300 cm^3

Given that the surface area of each small block : the surface area of each large block = $25 : 36$

work out the volume of each large block.

..... cm^3

(Total for question = 3 marks)

Q52.

The three solids **A**, **B** and **C** are similar such that the surface area of **A** : the surface area of **B** = 4 : 9

And the volume of **B** : the volume of **C** = 125 : 343

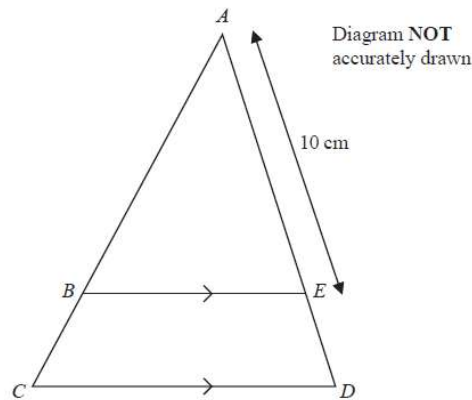
Work out the ratio

the height of **A** : the height of **C**

Give your ratio in its simplest form.

.....
(Total for question = 4 marks)

Q53.



In the diagram, *ABC* and *AED* are straight lines.

BE is parallel to *CD*

AE = 10 cm and $CD = 1.5 \times BE$

(a) Work out the length of *ED*

..... cm
(2)

AB = $(2x + 5)$ cm and *BC* = $(3x - 5)$ cm

(b) Work out the value of *x*

x =
(2)

(Total for question = 4 marks)



Q54.

y is inversely proportional to \sqrt{x}

$y = c^4$ when $x = c^2$ where c is a positive constant.

Find a formula for y in terms of x and c

Give your answer in its simplest form.

.....

(Total for question = 3 marks)

Q55.

A is inversely proportional to the square of r

$A = 5$ when $r = 0.3$

(a) Find a formula for A in terms of r

.....

(3)

(b) Find the value of A when $r = 7.5A$

$A =$

(3)

(Total for question = 6 marks)



Q56.

A is inversely proportional to C^2

$A = 40$ when $C = 1.5$

Calculate the value of C when $A = 1000$

$C = \dots\dots\dots$

(Total for question = 3 marks)

Q57.

y is directly proportional to the cube of x

$y = 20 h$ when $x = h$ ($h \neq 0$)

(a) Find a formula for y in terms of x and h

$y = \dots\dots\dots$

(3)

(b) Find x in terms of h when $y = 67.5 h$

Give your answer in its simplest form.

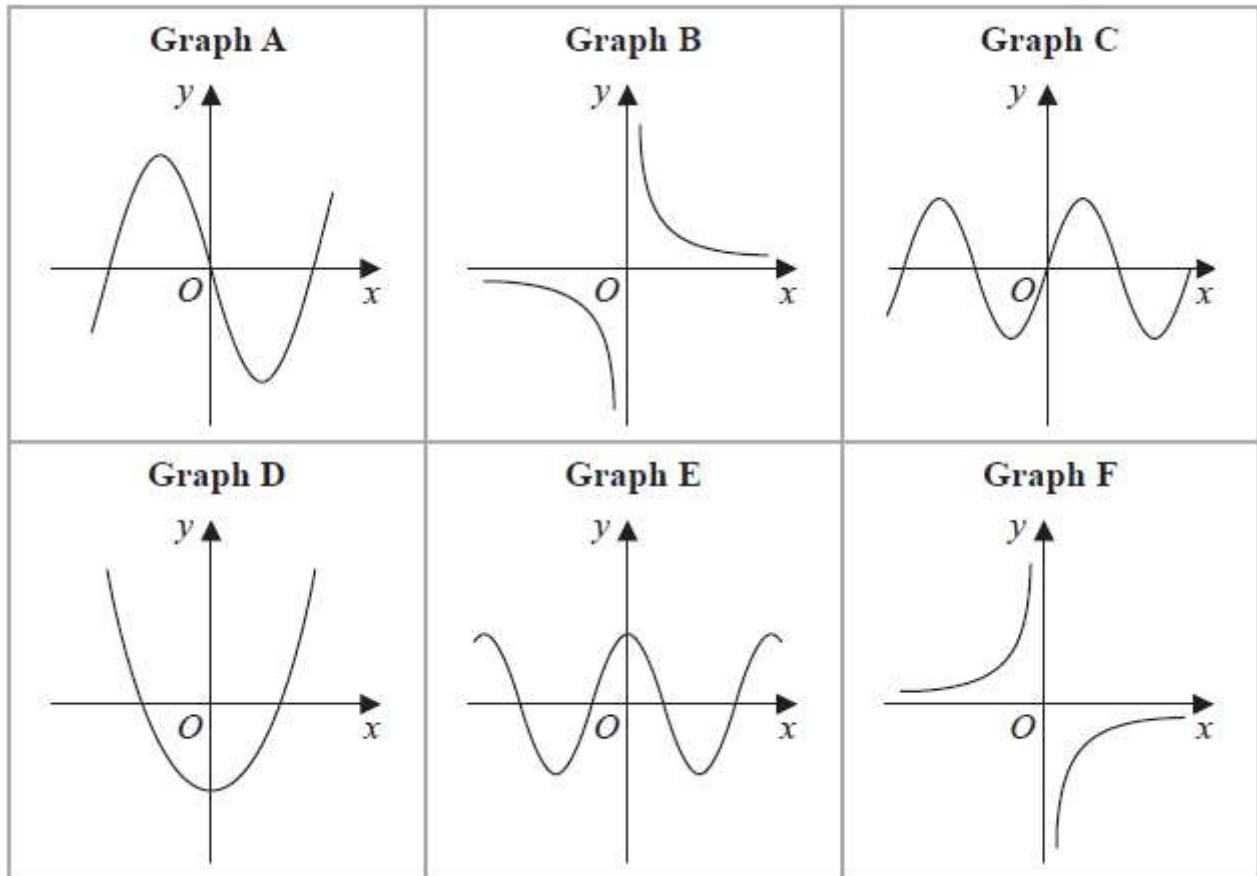
$x = \dots\dots\dots$

(2)

(Total for question = 5 marks)

Q58.

Here are 6 graphs.



Complete the table below with the letter of the graph that could represent each given equation.

Write your answers on the dotted lines.

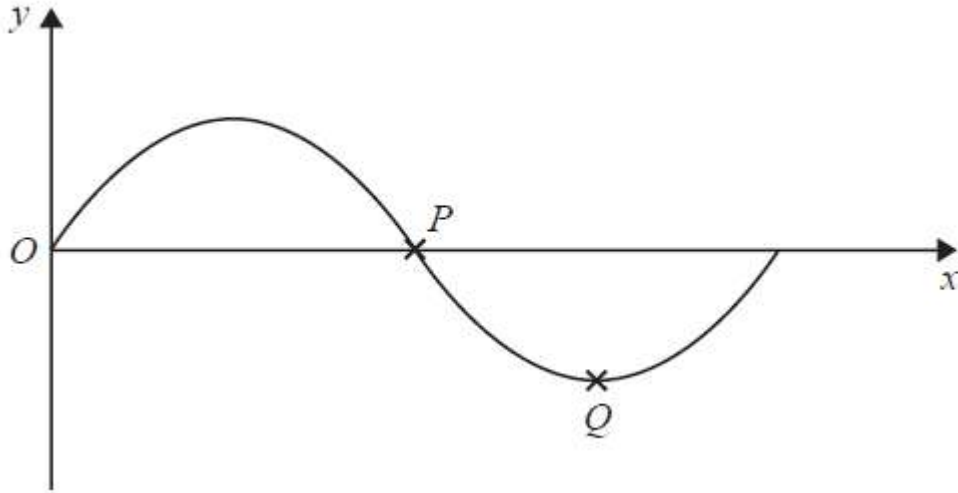
Equation	Graph
$y = \sin x$
$y = -\frac{3}{x}$
$y = 4x^3 - 5x$

(Total for question = 3 marks)



Q59.

The diagram shows part of a sketch of the curve $y = \sin x^\circ$



(a) Write down the coordinates of

(i) the point P

(..... ,)

(ii) the point Q

(..... ,)

(2)

(b) Sketch the graph of $y = \tan x$ for $0^\circ \leq x \leq 360^\circ$

Show the coordinates of any points of intersection with the coordinate axes.

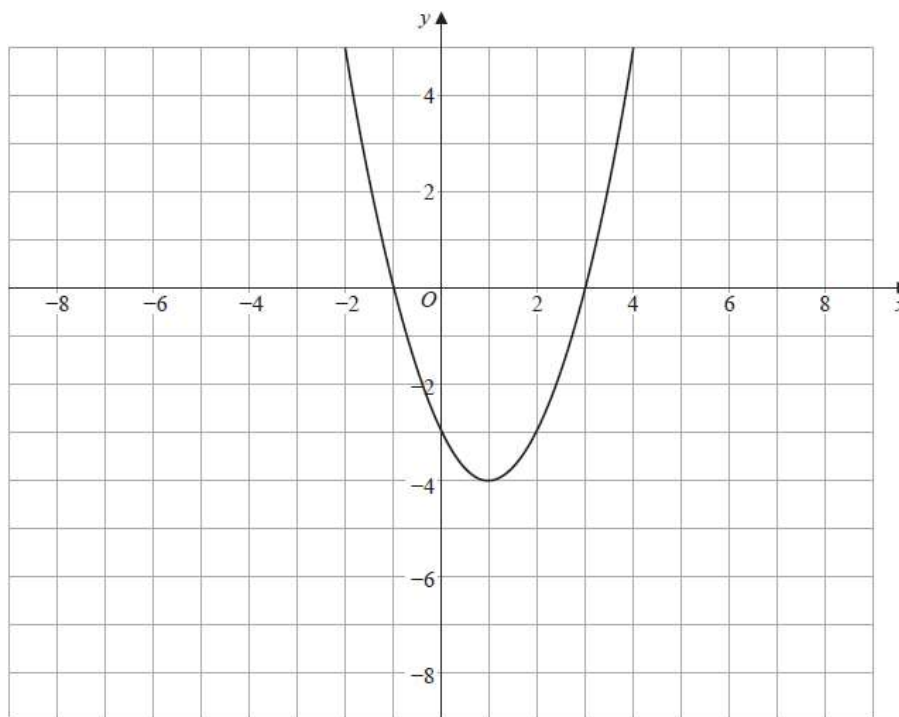


(2)

(Total for question = 4 marks)

Q60.

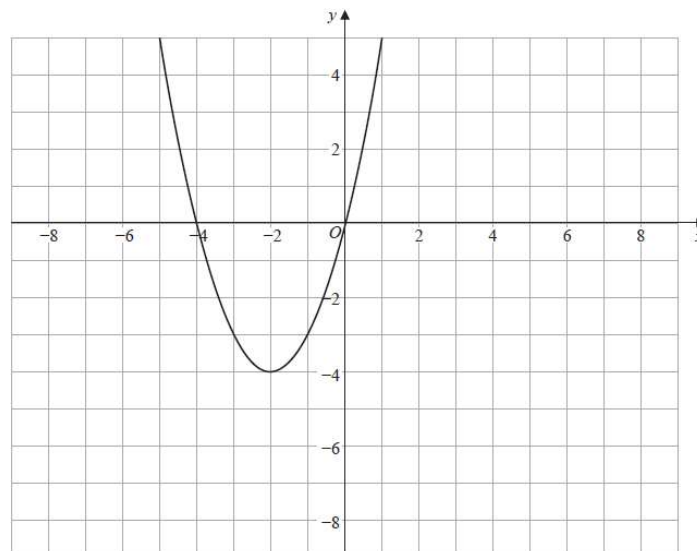
The graph of $y = f(x)$ is shown on the grid.



(a) On the grid above, sketch the graph of $y = f\left(\frac{1}{2}x\right)$

(2)

The graph of $y = f(x + k)$ is shown on the grid below.



(b) Write down the value of k

(1)

(Total for question = 3 marks)

Q61.

The diagram shows part of the curve with equation $y = f(x)$

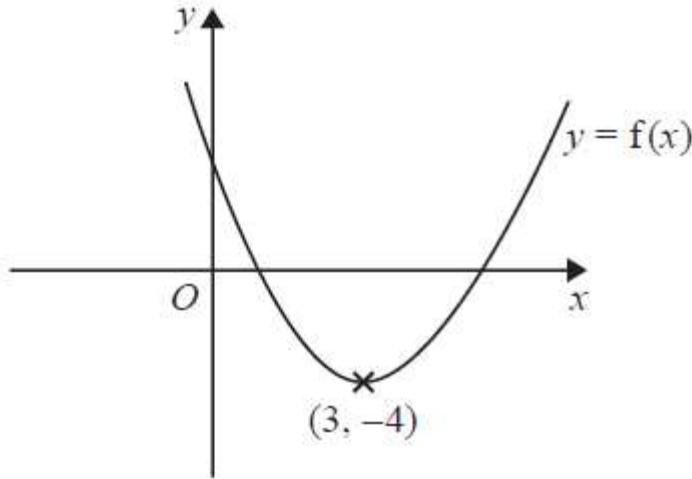


Diagram **NOT** accurately drawn

The coordinates of the minimum point on this curve are $(3, -4)$

(a) Write down the coordinates of the minimum point on the curve with equation

(i) $y = f(x - 4)$

(..... ,)

(ii) $y = 3f(x)$

(..... ,)

(iii) $y = f\left(\frac{1}{2}x\right)$

(..... ,)

(3)

The curve with equation $y = f(x)$ is translated to give curve C .

C has a minimum at the point with coordinates $(3, 5)$

The equation of C is $y = f(x) + k$

(b) Write down the value of k

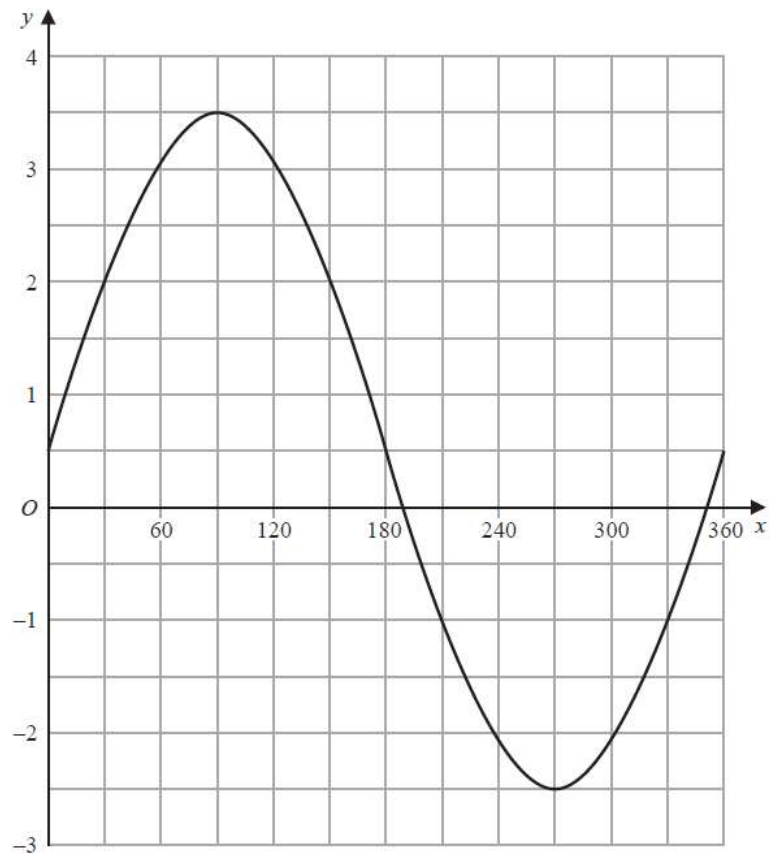
$k = \dots\dots\dots$

(1)

(Total for question = 4 marks)

Q62.

The graph of $y = a \sin x^\circ + b$ is drawn on the grid.



Find the value of a and the value of b

$a = \dots\dots\dots$
 $b = \dots\dots\dots$

(Total for question = 2 marks)



Q63.

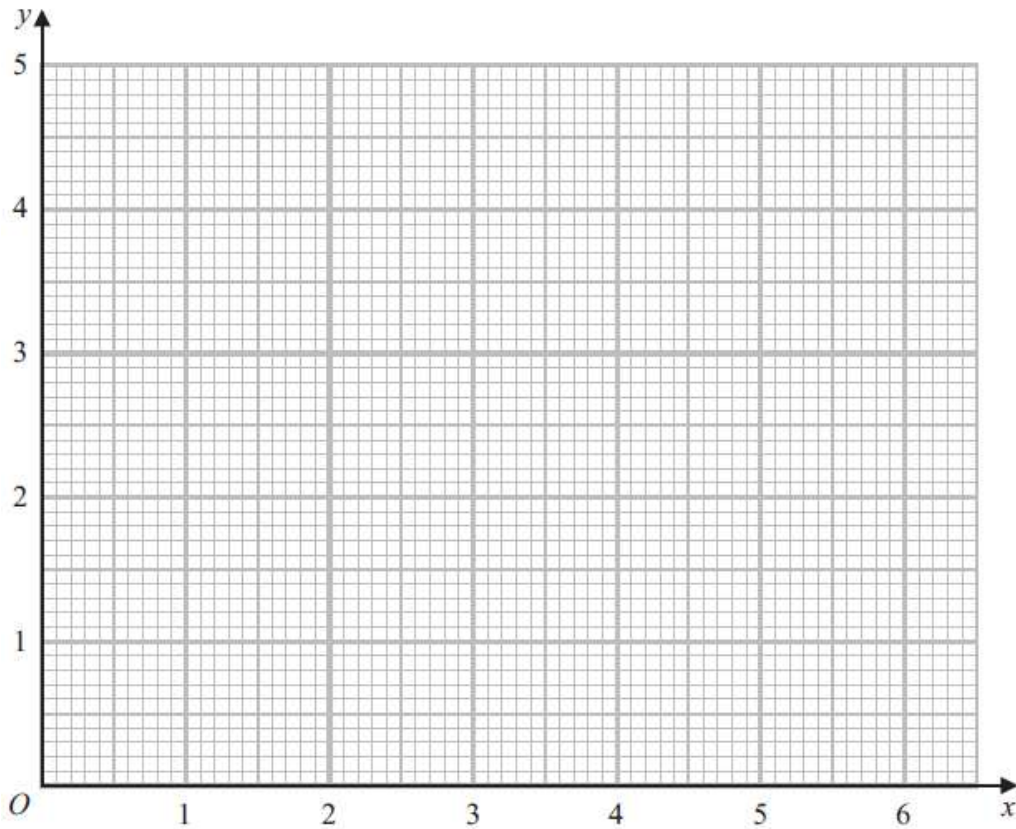
$$y = \frac{1}{2} \left(x + \frac{4}{x} \right)$$

(a) Complete the table of values for

x	0.5	1	2	3	4	5	6
y	4.25			2.17	2.5	2.9	3.33

(1)

(b) Draw the graph of $y = \frac{1}{2} \left(x + \frac{4}{x} \right)$ for $0.5 \leq x \leq 6$



(2)

(c) By drawing a suitable line on the grid, find estimates for the solutions of the equation $x + \frac{4}{x} = 6$

Give your answers correct to one decimal place.

.....

(2)

(Total for question = 5 marks)

Q64.

OAB is a triangle.

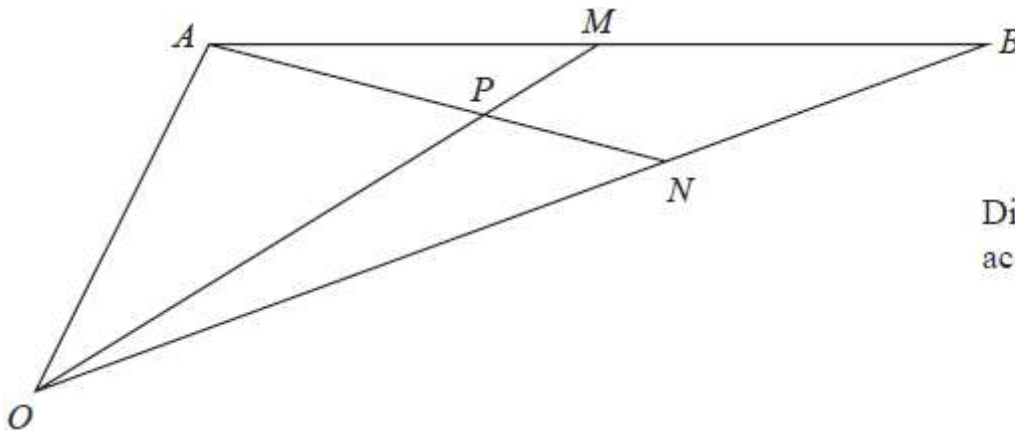


Diagram **NOT**
accurately drawn

$$\vec{OA} = 2\mathbf{a} \text{ and } \vec{OB} = 2\mathbf{b}$$

M is the midpoint of AB .

N is the point on OB such that $ON : NB = 2 : 1$

P is the point on AN such that OPM is a straight line.

Use a vector method to find $OP : PM$

Show your working clearly.

.....

(Total for question = 6 marks)

Q65.

$ABCDE$ and $AFGHJ$ are regular pentagons.

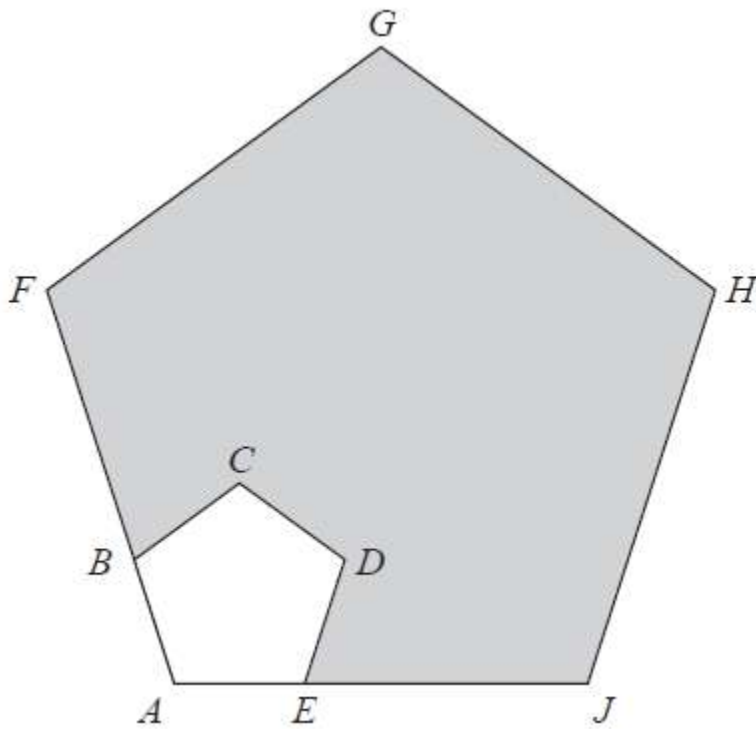


Diagram **NOT** accurately drawn

AEJ and ABF are straight lines.

$$EJ = 4AE$$

The area of $ABCDE$ is 8 cm^2

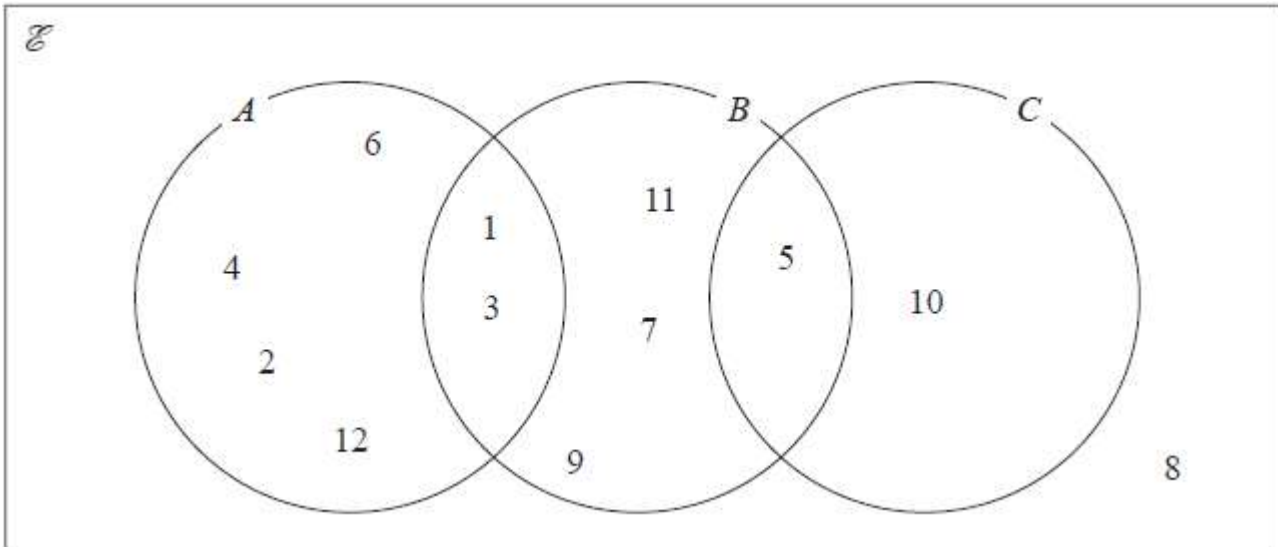
Calculate the area of the shaded region.

..... cm^2

(Total for question = 3 marks)

Q66.

Here is a Venn diagram.



(a) Write down the numbers that are in the set

(i) A

.....

(ii) $B \cup C$

.....

(2)

Brian writes down the statement $A \cap C = \emptyset$

(b) Is Brian's statement correct?

You must give a reason for your answer.

.....

(1)

One of the numbers in the Venn diagram is picked at random.

(c) Find the probability that this number is in set C'

.....

(2)

(Total for question = 5 marks)

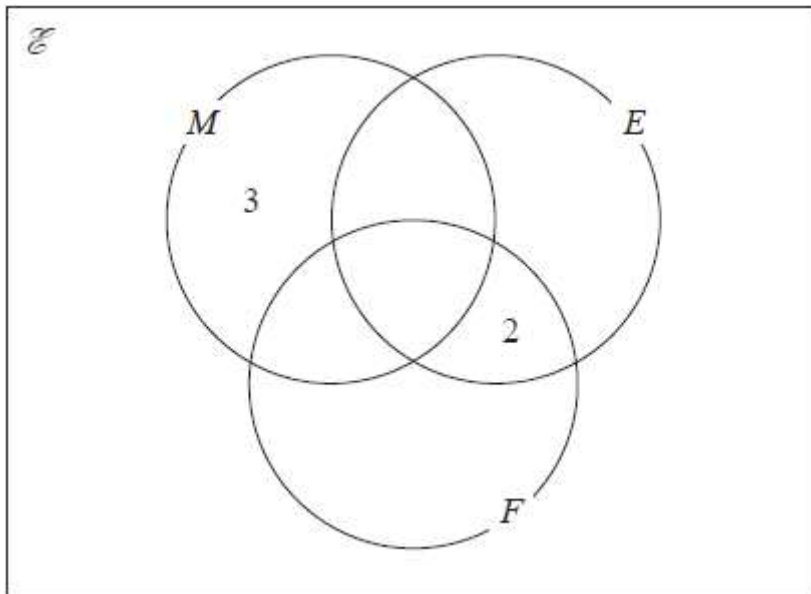
Q67.

There are 32 students in a class.

In one term these 32 students each took a test in Maths (M), in English (E) and in French (F).

- 25 students passed the test in Maths.
- 20 students passed the test in English.
- 14 students passed the test in French.
- 18 students passed the tests in Maths and English.
- 11 students passed the tests in Maths and French.
- 4 students failed all three tests.
- x students passed all three tests.

The incomplete Venn diagram gives some more information about the results of the 32 students.

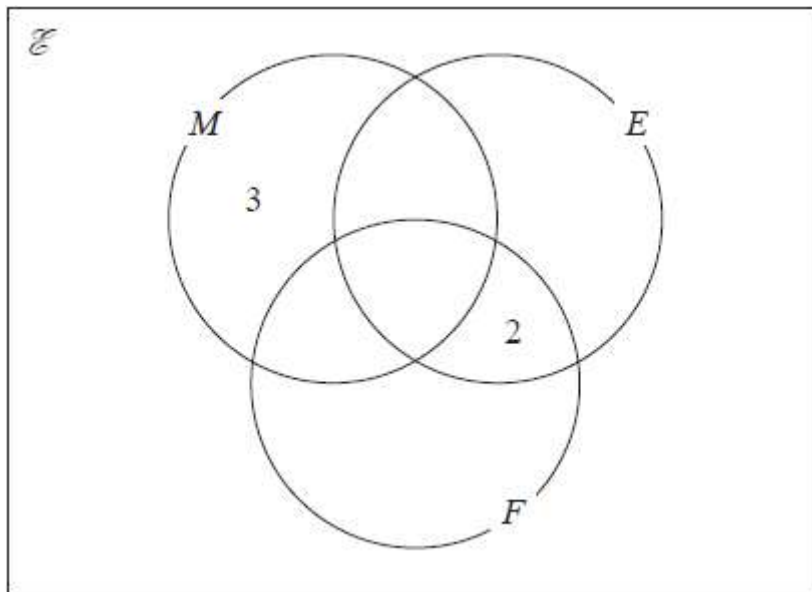


(a) Use all the given information about the results of students who passed the test in Maths to find the value of x .

$x = \dots\dots\dots$

(2)

(b) Use your value of x to complete the Venn diagram to show the number of students in each subset.



(2)

A student who passed the test in Maths is chosen at random.

(c) Find the probability that this student failed the test in French.

.....

(1)

(Total for question = 5 marks)

Q68.

$OAED$ is a quadrilateral.

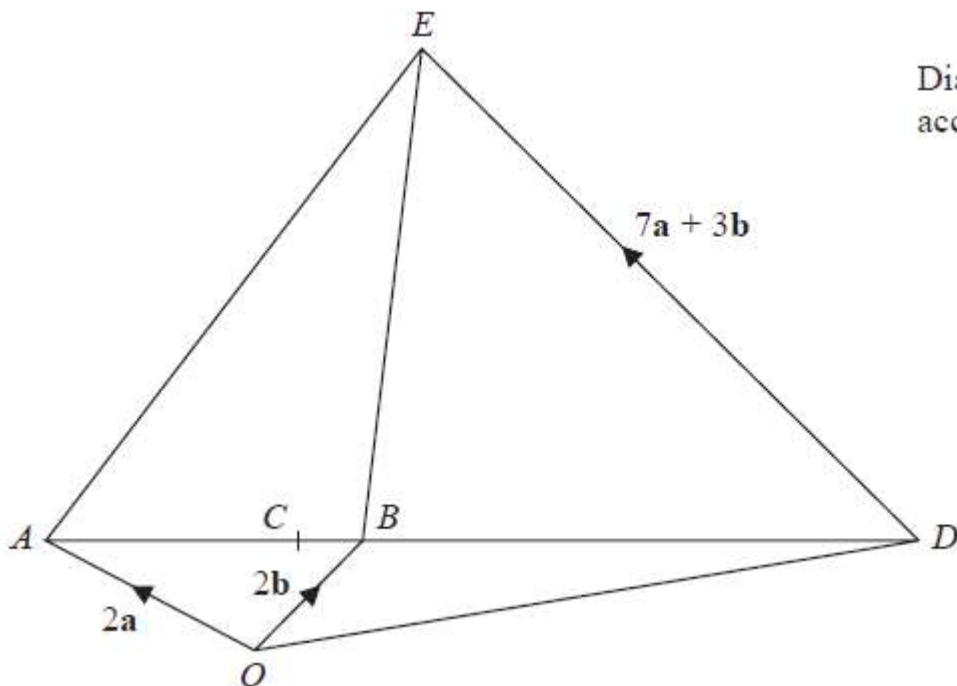


Diagram **NOT** accurately drawn

$$\vec{OA} = 2\mathbf{a} \quad \vec{OB} = 2\mathbf{b} \quad \vec{DE} = 7\mathbf{a} + 3\mathbf{b}$$

$$AB : BD = 1 : 2$$

The point C on AB is such that OCE is a straight line.

Use a vector method to find the ratio of $OC : CE$

.....

(Total for question = 5 marks)



Q69.

Here are some integers where $a < b < c < d$

$a \quad b \quad c \quad d \quad d \quad d$

The mode of the integers is 9

The median of the integers is 8

The range of the integers is 4

Work out the value of a , the value of b , the value of c and the value of d

$a =$

$b =$

$c =$

$d =$

(Total for question = 3 marks)

Q70.

15 people were asked how long, in minutes, they had been waiting for a bus.

Here are the results.

2 3 3 4 5 6 6 8 9 10 11 13 14 15 18

Find the interquartile range of these times.

..... minutes

(Total for question = 2 marks)



Q71.

$$f(x) = x^2 - 4$$

$$g(x) = 2x + 1$$

Solve $fg(x) > 0$

Show clear algebraic working.

.....

(Total for question = 4 marks)

Q72.

$$f(x) = \frac{x}{2x-4}$$

$$g(x) = 3x + 7$$

Given that $fg(k) = 2$

work out the value of k

$k =$

(Total for question = 3 marks)



Q73.

The functions f and g are defined as

$$\begin{aligned} f(x) &= 5x^2 - 10x + 7 && \text{where } x \geq 1 \\ g(x) &= 7x - 6 \end{aligned}$$

(a) Find $fg(2)$

.....
(2)

(b) Express the inverse function f^{-1} in the form $f^{-1}(x) = \dots$

$f^{-1}(x) = \dots$
(4)

(Total for question = 6 marks)