

Paper 2 and Paper 3 Predictions

Edexcel - Higher
Very High Chance



Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You will need a calculator

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this test

www.corbettmaths.com/contents



Question	Topic	Video number
1	Currency	214a
2	Percentages	233, 235
3	Ratio	270, 271
4	Compound Interest	236
5	Error Intervals	377
6	Angles: Parallel Lines	25
7	Bearings	26, 27
8	Angles: Polygons	32
9	Circumference	60
10	Area of a Circle	40
11	Arc Length	58
12	Area of a Sector	48
13	Trigonometry	329, 330, 331
14	Translations	325
15	Rotations	275
16	Enlargements	104, 106, 107, 108
17	Reflections	272
18	Circle Theorems	64, 65, 66
19	Travel Graphs	171
20	Speed, Distance, Time	299
21	Density	384
22	Cumulative Frequency	153, 154
22	Box Plots	149
23	Estimated Mean	55
24	Tree Diagrams	252
25	Capture Recapture	391
26	Venn Diagrams	380
27	Histograms	157, 158, 159
28	Similar Shapes (Area/Volume)	293a, 293b
29	Limits of Accuracy	183, 184

Question	Topic	Video number
30	Factorising	117
31	Factorising Quadratics	118, 119, 120
32	Solving Quadratics	266
33	Quadratic Formula	267
34	nth Term	288
35	Quadratic nth term	388
36	Equations	110, 113, 114, 115
37	Inequalities	177, 178, 179
38	Graphical Inequalities	182
39	Quadratic inequalities	378
40	Equation of a Circle	12
41	Rates of Change	309a, 309b
42	Algebraic Fractions	21, 22, 23, 24
43	Functions	369, 370
44	Trigonometric Graphs	338, 339
45	Transformations of Graphs	323
46	Completing the Square	10, 371
47	Iteration	373

1. Kevin is going on holiday to Japan.
He wants to change some money into yen.

The bank only stocks ¥1000 notes.
James wants to change up to £300 into yen.
He wants as many ¥1000 notes as possible.

The exchange rate is £1 = ¥168

How many ¥1000 notes should he get?

2. In 2000 the price of a house was £72,600.
By 2010 the price of the house had increased to £125,598

Find the percentage increase in the price of the house from 2000 to 2010.

.....%
(3)

3. Charlene and Danielle share some money in ratio 7 : 9
Danielle gets £48 more than Charlie.

How much does each woman receive?

Charlene £.....
Danielle £.....
(3)

4. £5200 is invested at 2.8% compound interest per annum.
How many years will it take for the investment to exceed £7000.

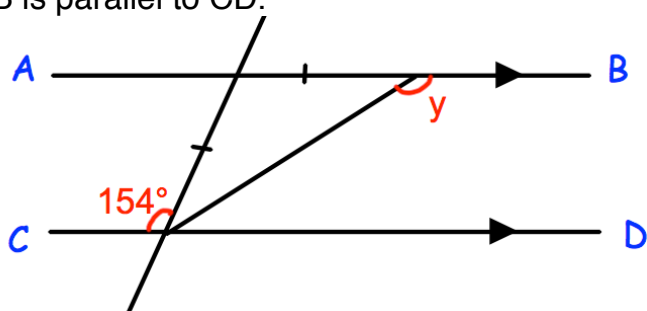
.....years
(3)

5. Nigel measures the time, t seconds, to complete a race as 14.8 seconds correct to the nearest tenth of a second.

Write down the error interval for t .

.....
(2)

6. AB is parallel to CD.



Work out the size of angle y .
Give reasons for your answer.

.....°
(4)

7. The diagram shows the position of two people, A and B, who are on their Duke of Edinburgh expedition.

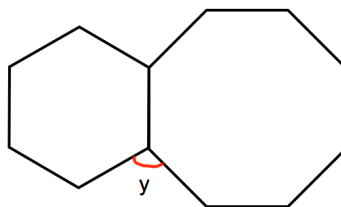


The bearing of person C from person A is 062°
 The bearing of person C from person B is 275°

In the space above, mark the position of person C with a cross (x). Label it C.

(3)

8. Shown is a regular hexagon and a regular octagon.



Calculate the size of angle y .

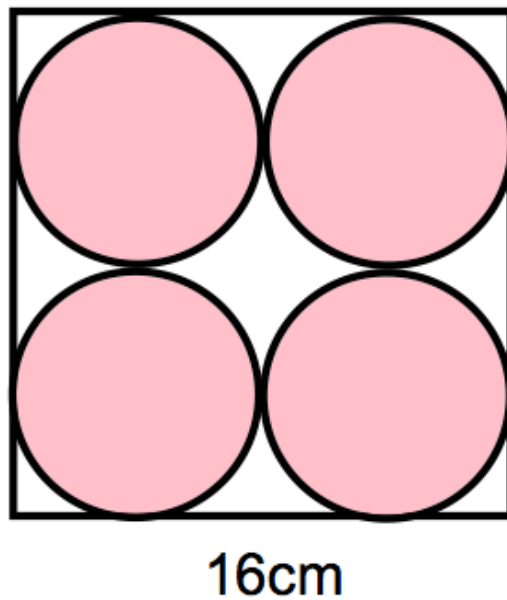
$y = \dots\dots\dots^\circ$
(3)

9. A circular wheel has a diameter of 30cm.
The wheel rolls a distance of 60m.

Calculate the number of complete revolutions completed.

.....
(4)

10. A logo is designed that has four pink circles within a white square.

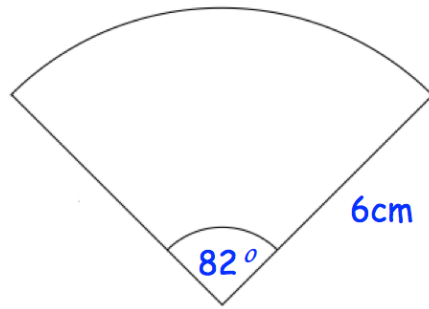


The square has side length 16cm.

Find the percentage of the logo that is white.

.....%
(5)

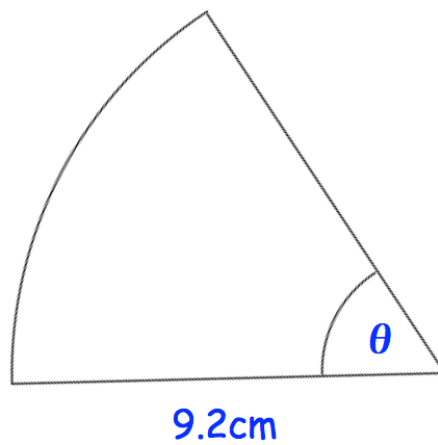
11.



Calculate the perimeter of the sector.
Give your answer to 2 decimal places.

.....cm
(3)

12. Shown is a sector of a circle with radius 9.2cm .

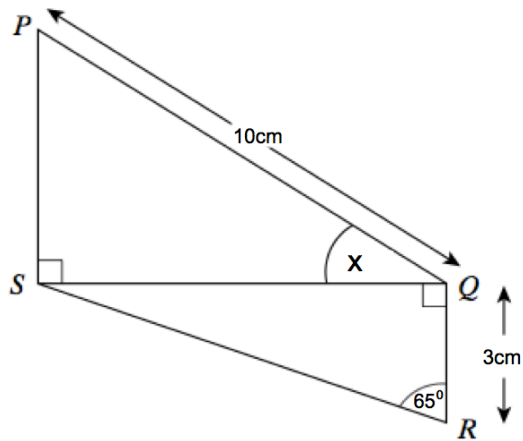


The area of the sector is 38.4cm^2

Find the size of angle θ
Give your answer to 2 significant figures.

.....^o
(3)

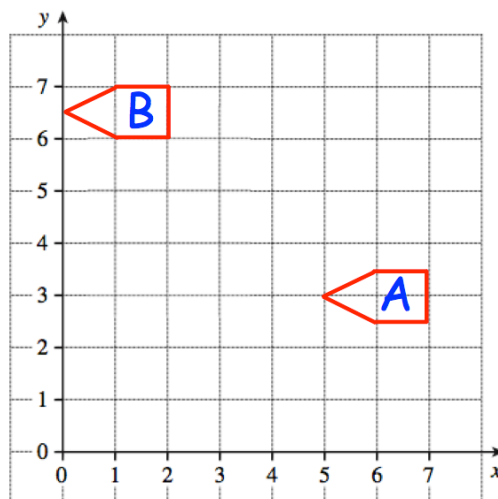
13. Two right-angled triangles are shown below.
 PQ is 10cm.
 QR is 3cm.
 Angle QRS is 65°



Calculate the size of angle PQS

.....⁰
(5)

- 14.

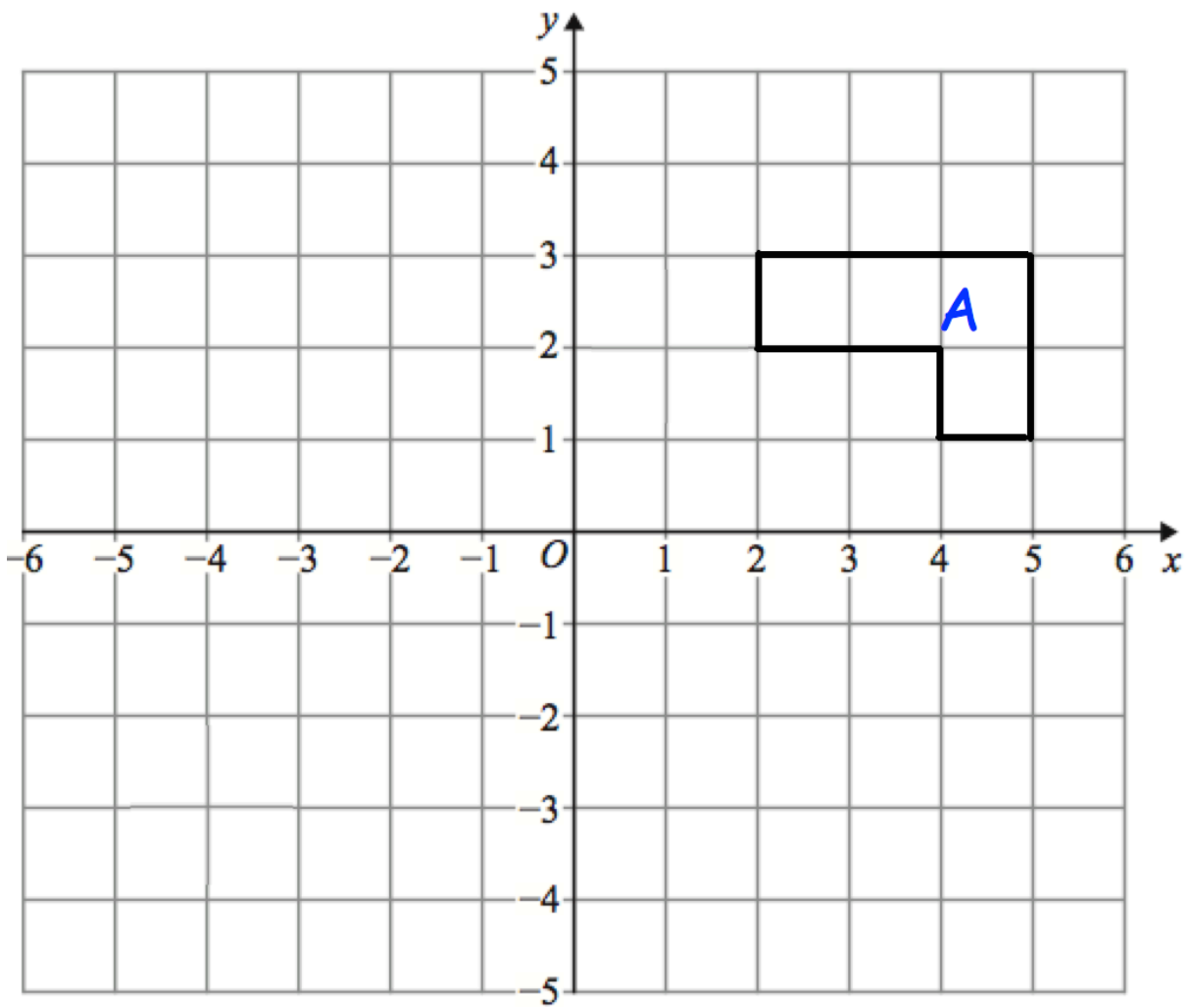


Describe fully the single transformation that maps shape A onto shape B.

.....

(2)

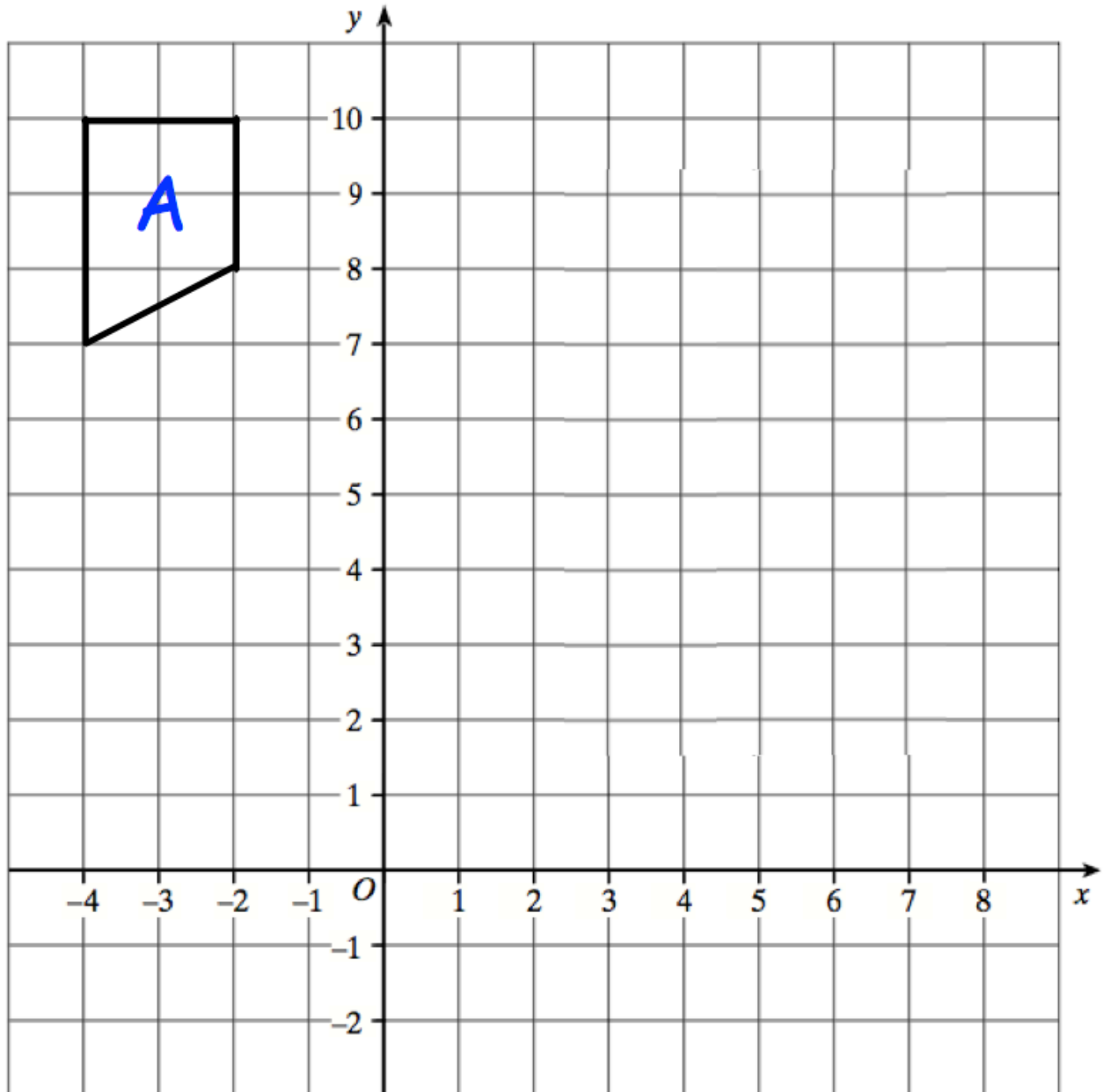
15.



Rotate shape A 90° anti-clockwise about centre (5, -1)

(3)

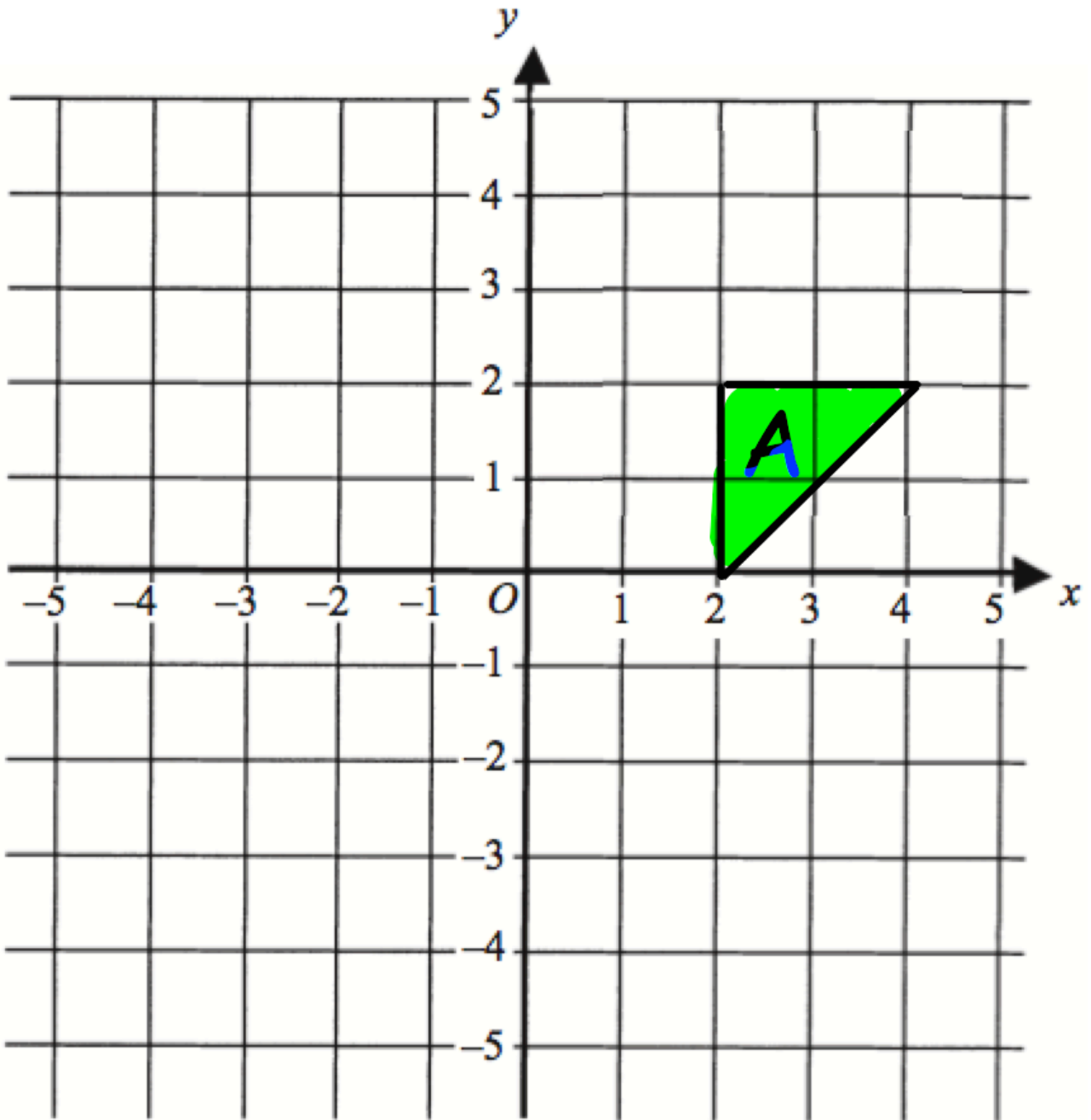
16.



Enlarge the triangle by scale factor -2 , using centre of enlargement $(0, 6)$

(3)

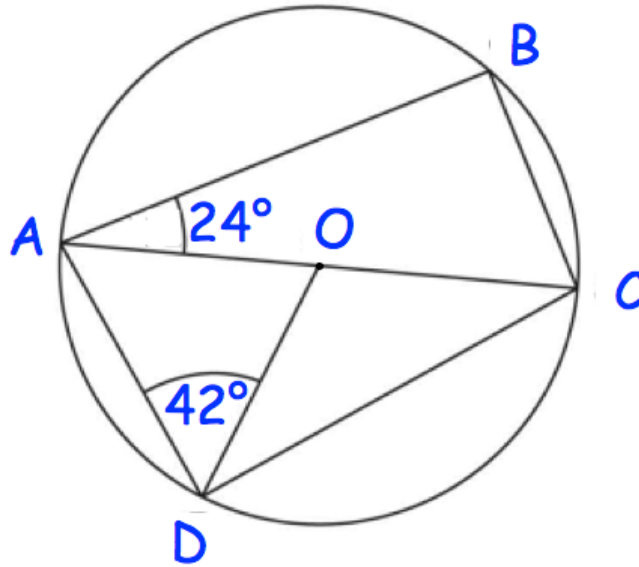
17.



Reflect the triangle in the line $y = -x$
Label the new triangle B.

(2)

18.



In the diagram O is the centre of the circle.
AOC is a straight line.
Angle BAO is 24° and Angle ADO is 42°

(a) Find the size of angle CAD.

.....°
(1)

(b) Find the size of angle ACB.

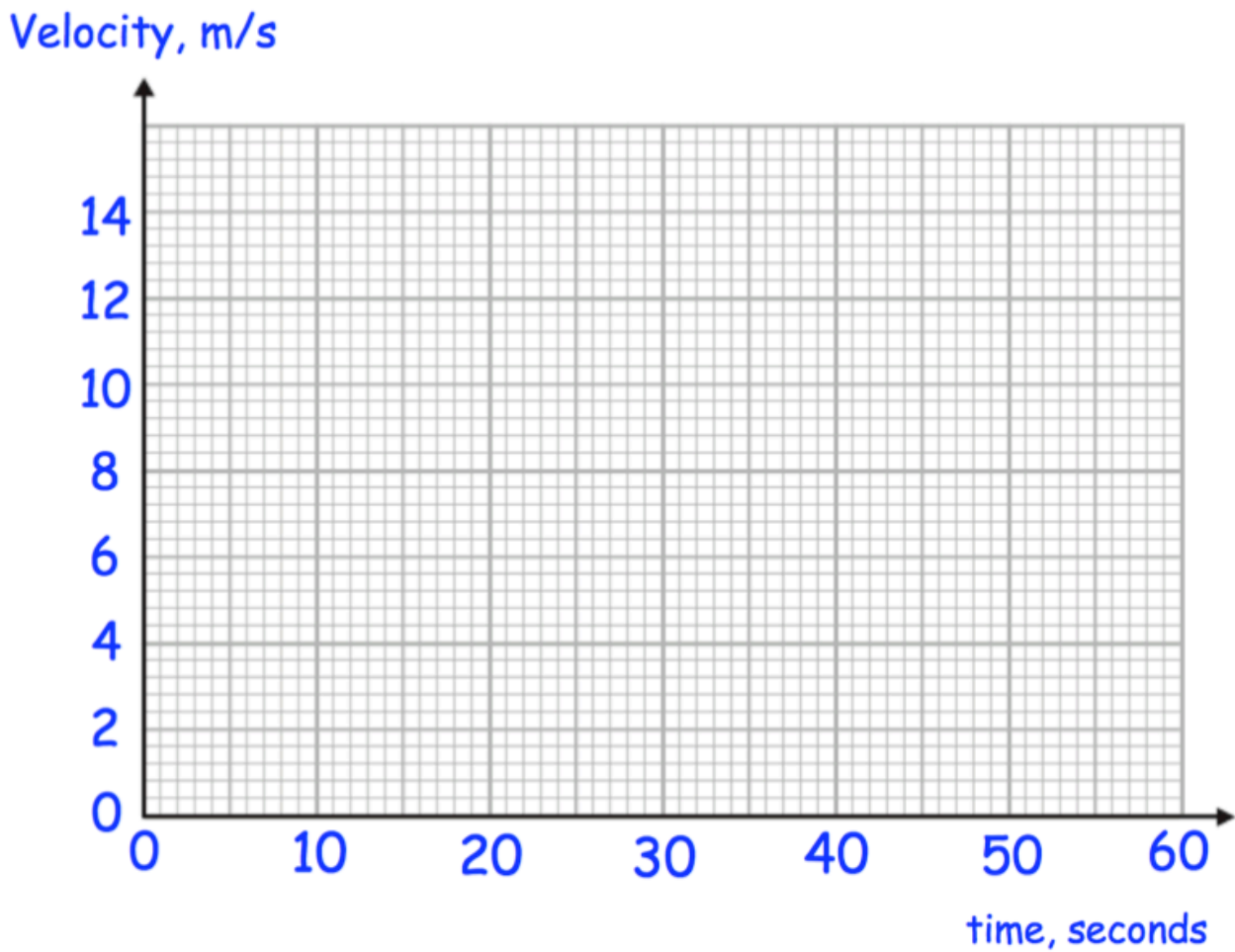
.....°
(1)

(c) Find the size of angle BCD.

.....°
(1)

19. A remote control car drives in a straight line.
 It starts from rest and travels with constant acceleration for 15 seconds reaching a velocity of 10m/s.
 It then travels at a constant speed for 5 seconds.
 It then slows down with constant deceleration of 0.5m/s^2 .

(a) Draw a velocity time graph



(b) Using your velocity-time graph, work out the total distance travelled.

.....m
 (2)

20.

(a) Convert 5km/h into m/s.

.....m/s
(3)

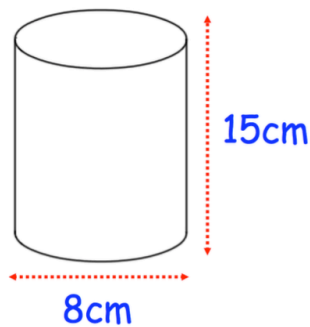
(b) A car travels 240 kilometres in 3 hours 20 minutes.

Calculate the average speed, in km/h, of the car.

.....km/h
(3)

21.

The diagram shows a solid cylinder.

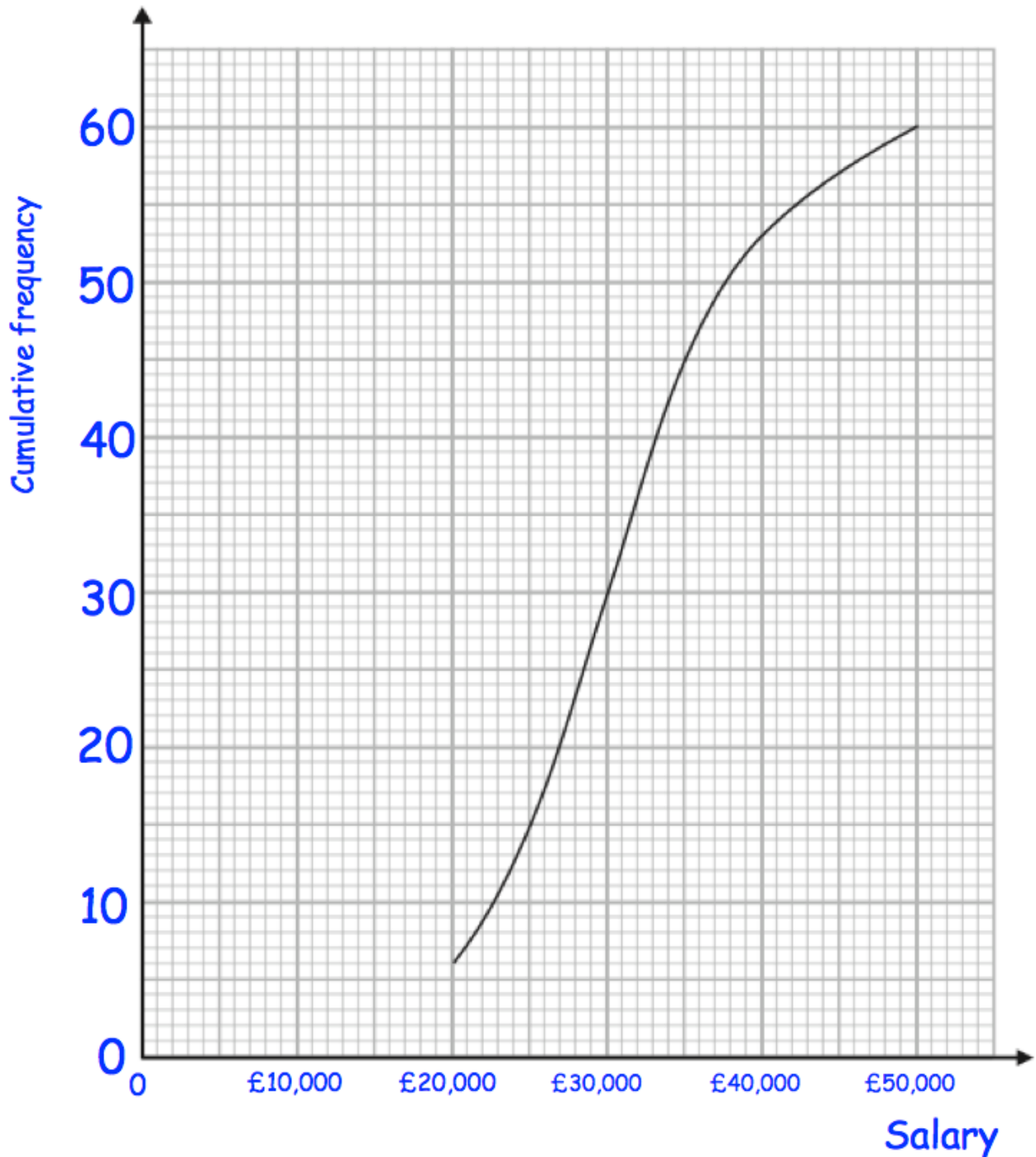


The cylinder is made from titanium.
The density of titanium is 4.43g/cm^3

Calculate the mass of the cylinder.

.....g
(3)

22. A university surveyed 60 mathematics graduates on their starting salary. The cumulative frequency graph shows some information about the salaries.

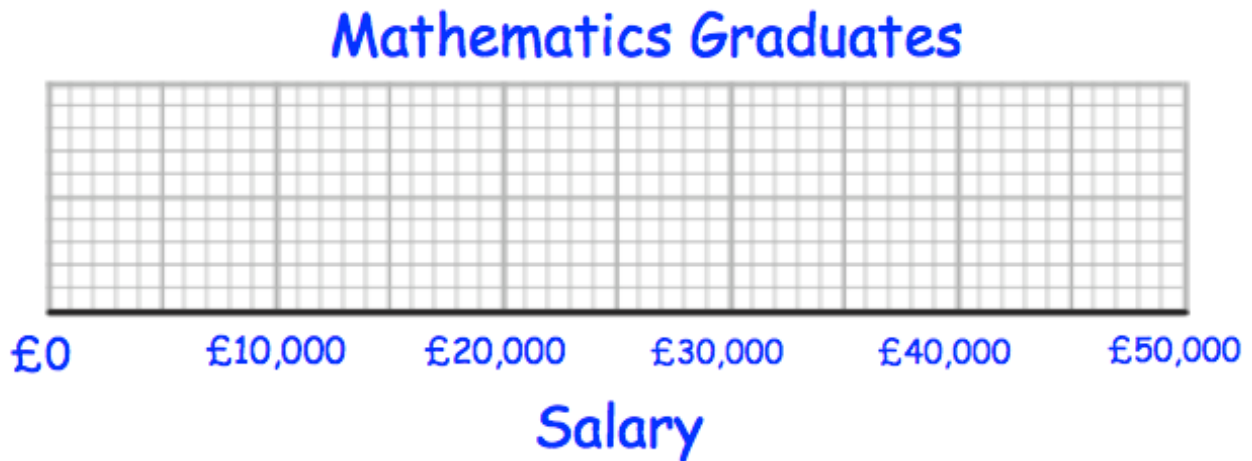


- (a) Use the graph to find an estimate for the median salary.

£.....
(1)

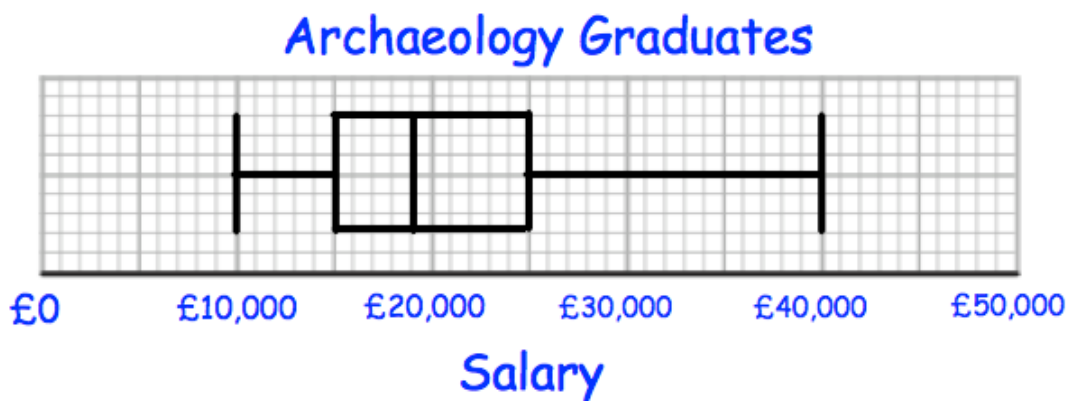
The 60 mathematics graduates
 had a minimum salary of £16,000
 and a maximum salary of £48,000.

(b) Use this information and the cumulative frequency curve to draw a box plot for the 60 mathematics graduates.



(3)

The university also surveyed 60 archaeology graduates.
 The box plot below shows information about their salaries.



(c) Compare the distribution of the salaries of the mathematics graduates with the distribution of the salaries of the archaeology graduates.

.....

.....

.....

(2)

23. Timothy asked 30 people how long it takes them to get to school.

The table shows some information about his results.

Time (t minutes)	Frequency
$0 < t \leq 10$	2
$10 < t \leq 20$	8
$20 < t \leq 30$	12
$30 < t \leq 40$	7
$40 < t \leq 50$	1

Work out an estimate for the mean time taken.

.....minutes
(4)

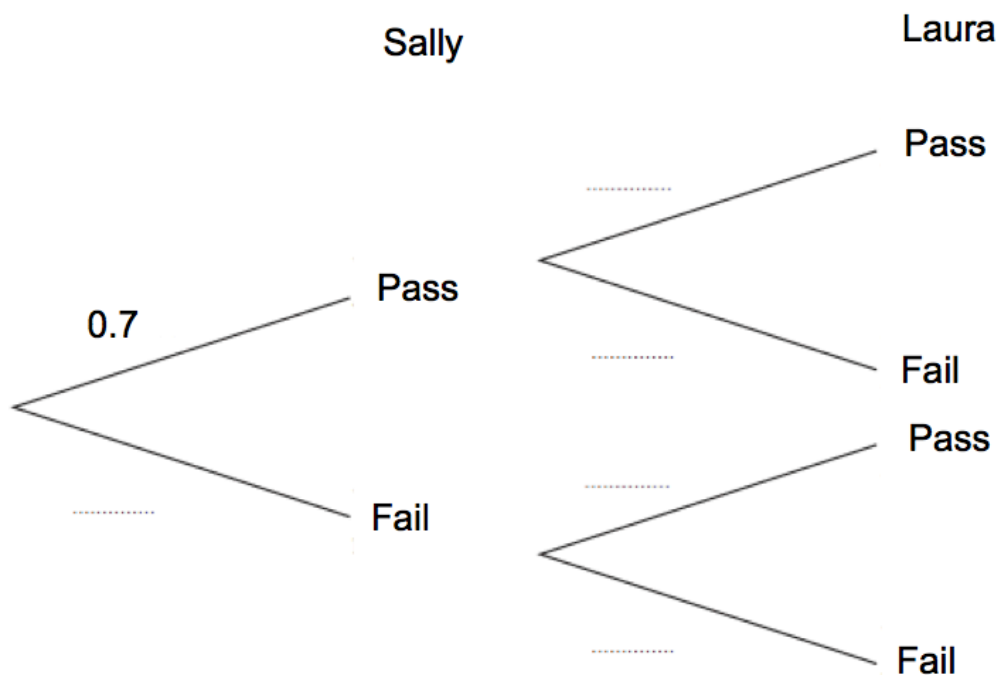
24. Sally and Laura sit their driving tests.

The probability of Sally passing her driving test is 0.7
The probability of both Sally and Laura passing is 0.56

(a) Work out the probability of Laura passing her driving test.

.....
(2)

(b) Complete the tree diagram.



(2)

(c) Find the probability of both women failing.

.....
(2)

25. A group of scientists want to estimate the number of squirrels in a wood.
They catch and ring 20 squirrels.
They return the 20 squirrels to the wood.
They then catch 50 squirrels and 13 are ringed.

Estimate the number of squirrels in the wood.

.....
(2)

26. A PE test has two sections, theory and practical.

Everyone in a class who took the PE test passed at least one section.
62% passes the theory section and 83% passed the practical section.

- (a) Represent this information on a Venn diagram



(3)

A student is selected at random.

Work out the probability that this person

- (a) passed the theory section, given they passed the practical section.

.....
(2)

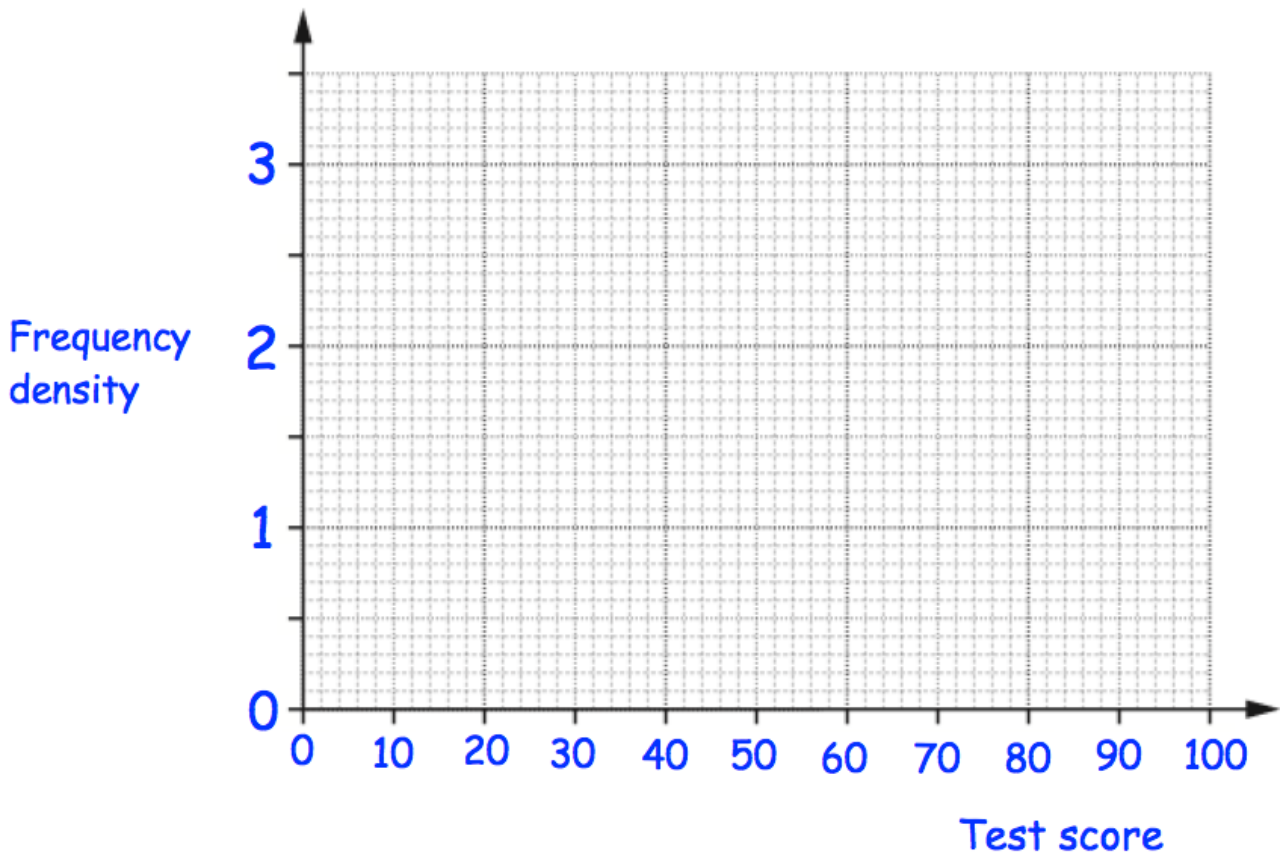
- (b) passed the practical section, given they passed only one section.

.....
(2)

27. The test scores from the students in a school are summarised in the table.

Test score, x	Frequency
$0 < x \leq 30$	15
$30 < x \leq 40$	22
$40 < x \leq 50$	28
$50 < x \leq 70$	30
$70 < x \leq 100$	9

Draw a histogram for this data.



(3)

28. Mrs Hampton is potting plants.
She is using two mathematically similar pots, the smaller is 10cm tall and the larger 14cm tall.

She has two bags of soil, each containing 30 litres of soil.

With the first bag, Mrs Hampton fills 20 small pots using all of the soil in the bag.



How many large pots can be filled completely using the second bag of soil?

.....
(5)

29. Sophie estimated that the distance between Bristol and Newcastle is about 290 miles and that her average driving speed would be 60 mph.

She estimated the distance to the nearest 10 miles and the speed to the nearest 10 mph.

Calculate the lower bound of the time the journey should take.

Give your answer in hours and minutes.

Give your answer to the nearest minute.

.....hoursminutes
(4)

30. Factorise fully

$$9m^2 - 12mp$$

.....
(2)

31. (a) Factorise $y^2 - 12y - 64$

.....
(2)

- (b) Factorise $2y^2 + 7y - 15$

.....
(2)

(c) Factorise fully $4y^2 - 49$

.....
(2)

32. (a) Solve $m^2 + 24m + 63 = 0$

.....
(2)

(b) Solve $5y^2 + 8y - 100 = y^2 + 4y - 37$

.....
(2)

33, Solve the equation $4x^2 + x - 7 = 0$

Give your answers to two decimal places.

x = Or x =
(3)

34. The first 5 terms in a number sequence are

10 7 4 1 -2

(a) Work out the n th term of the sequence.

.....
(2)

(b) Find the 50th term of the sequence.

.....
(2)

35. Here are the first 5 terms of a quadratic sequence

4 10 18 28 40

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

.....
(3)

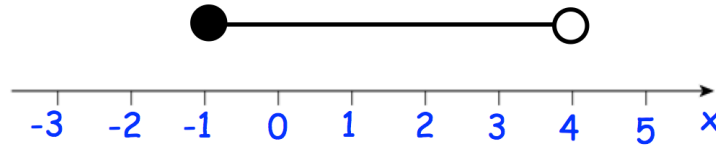
36. Solve $5(3c - 2) - 7c = 40 - 2c$

$c =$
(3)

37. (a) Solve the inequality $3(x - 4) \leq 15$

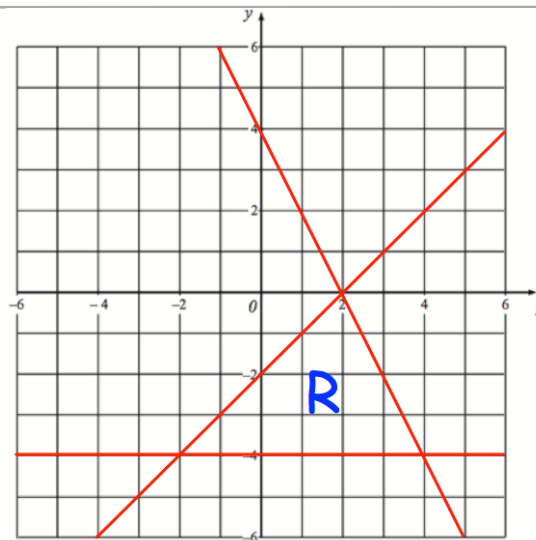
.....
(2)

(b) Write down the inequality shown by the diagram.



.....
(2)

38.



The region labelled R satisfies three inequalities.

State the three inequalities

.....
.....
.....
(3)

39. Solve the inequality $x^2 + 6x + 8 < 0$

.....
(3)

40. A circle has centre $(0, 0)$ and radius 6.

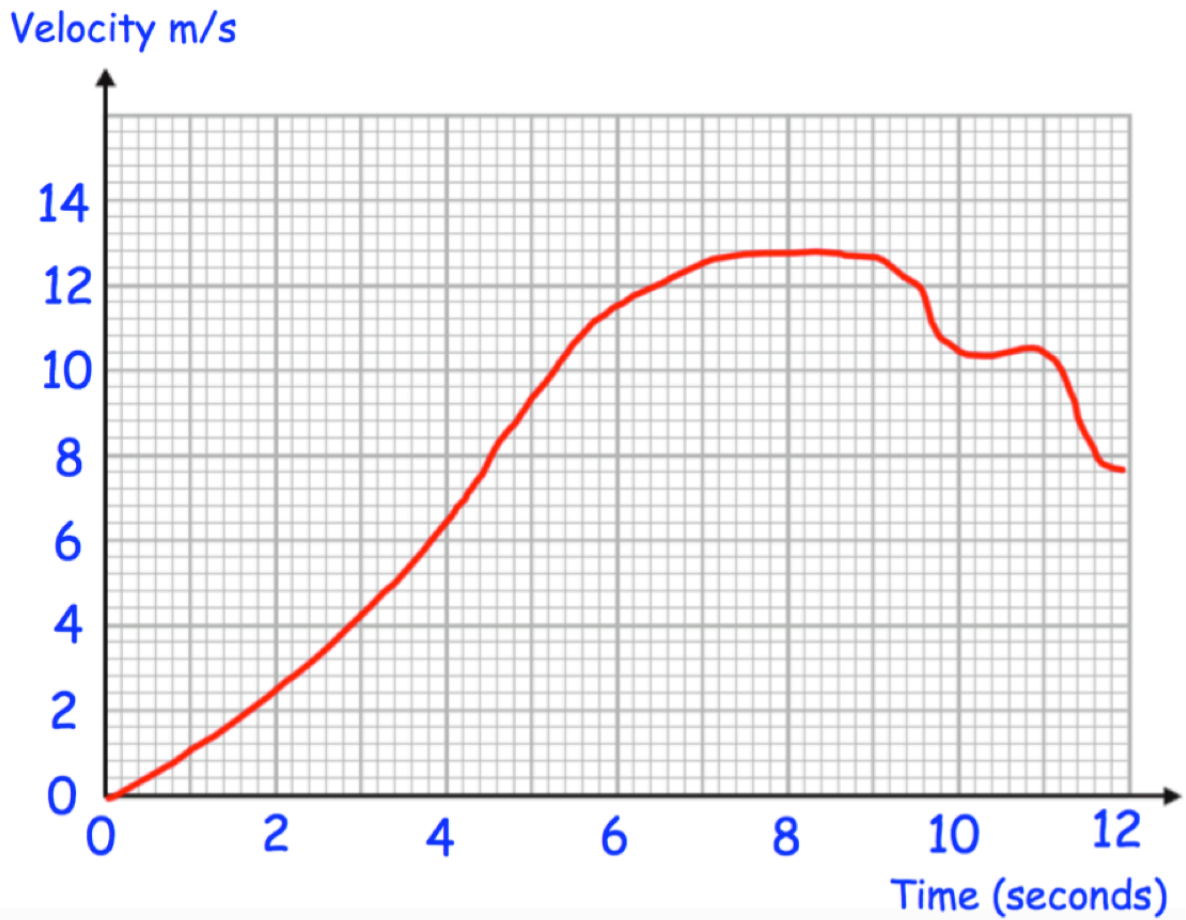
(a) Write down the equation of the circle.

.....
(2)

(b) Does the point $(-3, 5)$ lie on the circle?

.....
(2)

41.



Above is the velocity-time graph of a particle over 12 seconds.

Find an estimate of the particle's acceleration at 6 seconds
Include suitable units

.....
(3)

42. (a) Simplify

$$\frac{x^2 - 3x + 2}{x^2 + 5x - 6}$$

.....
(3)

(b) Simplify fully.

$$\frac{v + 3}{2} \div \frac{3v + 9}{5}$$

.....
(2)

(c) Solve

$$\frac{7}{x + 2} + \frac{10}{2x - 5} = 3$$

.....
(5)

43.

The functions $f(x)$ and $g(x)$ are given by the following:

$$f(x) = 3x - 1$$

$$g(x) = 2x + 4$$

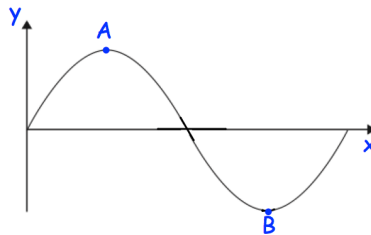
(a) Calculate the value of $fg(2)$

.....
(2)

(b) $f^{-1}(x)$

.....
(2)

44. Shown is part of the curve $y = \sin x$



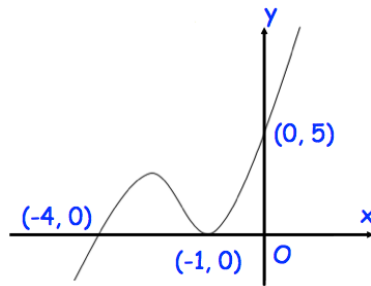
(a) Write down the coordinates of the point A.

(..... ,)
(1)

(b) Write down the coordinates of the point B.

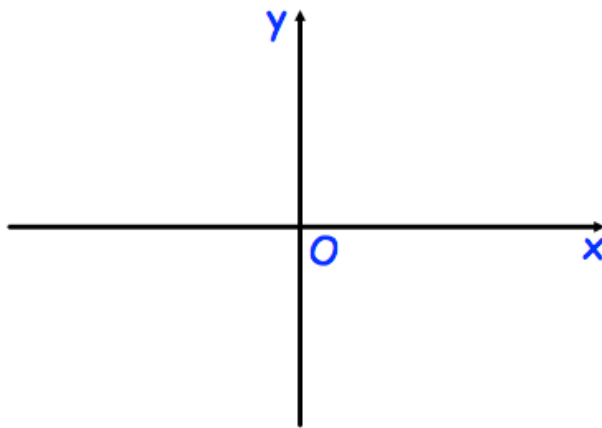
(..... ,)
(1)

45. Shown below is the curve with equation $y = f(x)$.
The curve passes through the points $(-4, 0)$, $(-1, 0)$ and $(0, 5)$



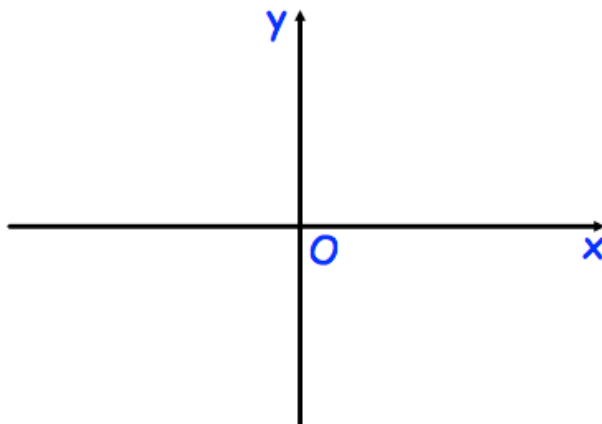
Sketch the curve with equation:

(a) $y = f(x - 1)$



(2)

(b) $y = f(-x)$



(2)

46. Write $x^2 + 8x + 6$ in the form $(x + a)^2 + b$, where a and b are constants.

.....
(3)

47. (a) Show the equation $3x^3 + 7x = 5$ has a solution between 0 and 1

(2)

(b) Show that $3x^3 + 7x = 5$ can be rearranged to give

$$x = \frac{5}{7} - \frac{3x^3}{7}$$

(2)

(c) Starting with $x_0 = 0$ use the iteration formula

$$x_{n+1} = \frac{5}{7} - \frac{3x_n^3}{7}$$

three times to find an estimate for the solution to $3x^3 + 7x = 5$

(2)