

Name: _____

GCSE Maths November 2022
AQA Higher
Advance Information Paper



Equipment

1. A black ink ball-point pen.
2. A pencil.
3. An eraser.
4. A ruler.
5. A pair of compasses.
6. A protractor.
7. A calculator

Guidance

1. Read each question carefully.
2. Check your answers seem right.
3. Always show your workings

Information

1. This paper has been created based on topics in the Advance Information.
2. Also see Corbettmaths for the checklist for the entire GCSE as these topics may still be useful
3. There is one question per topic - this paper is designed to give an opportunity to practice each topic rather than replicate the actual paper.
4. The marks for questions are shown in brackets

[GCSE 2022 Resources](#)



Question	Topic	Video number	Paper
1	Negative Numbers	205 to 209	1
2	Adding Fractions	133	1
3	Multiplying Fractions	142	1
4	Dividing Fractions	134	1
5	Reciprocals	145	1
6	Fractions, Decimals, Percentages	121 to 129	1
7	Indices	172	1, 3
8	Square Root	212	1
9	Laws of Indices	174	1, 3
10	Negative Indices	175	1, 3
11	Fractional Indices	173	1, 3
12	Recurring Decimals to Fraction	96	1
13	Surds	305, 306, 308	1
14	Rationalising Denominators	307	1
15	Identities	367	1
16	Solving Equations	110, 113	1, 2, 3
17	Forming Equations	114, 115	1, 2, 3
18	Inequalities on a Number Line	177, 178, 179	1
19	Quadratic Inequality	378	1
20	Quadratic - Problem	266	1
21	Quadratic Formula	267	1, 2
22	Completing the Square	10, 371	1, 2
23	Collecting Like Terms	9	1, 2
24	Expanding Brackets	13, 14, 15	1, 3
25	Quadratic Graphs	264	1, 2
26	Sketching Quadratics	265	1, 2, 3
27	Ratio n:1	270, 271, 272	1
28	Ratio - Sharing a Total	270, 271, 272	1, 3
29	Ratio and Fractions	270, 271, 272	1
30	Circle Theorems	64, 65	1, 3

Question	Topic	Video number	Paper
31	Invariant Points	392	1
32	Reflections	272	1
33	Rotations	275	1
34	Equation of a Tangent to a Circle	372	1
35	Exact Trig Values	341	1
36	Column Vectors	353a	1
37	Geometric Proof	366	1
38	Cumulative Frequency Graphs	153, 154	1
39	Frequency Tables: Median	51, 52	1, 2
40	Frequency Tables: Mode	56a	1
41	Quartiles	57a	1, 2
42	Frequency Tables: Mean	54	1, 3
43	Venn Diagrams	380	1
44	Cube Root	214	2
45	HCF	218, 219	2
46	Standard Form	300 to 303	2, 3
47	Product Rule for Counting	383	2
48	Use of a Calculator	352	2
49	Solving Quadratics	266	2
50	Changing the Subject	7, 8	2, 3
51	Difference Between 2 Squares	120	2
52	Factorisation	117, 118, 119	2
53	Drawing Linear Graphs	186	2
54	$y = mx + c$	191, 189, 194	2, 3
55	Real-life Graphs	171a	2, 3
56	Travel Graphs	171	2
57	Speed, Distance, Time	299	2, 3
58	Recognising Graphs	338, 339, 344, 346, 345	2
59	Functions	369, 370	2
60	Linear Sequences	288, 289	2, 3

Question	Topic	Video number	Paper
61	Triangular Numbers	229	2
62	Metric Units: Area	350, 351	2
63	Iteration	373, 373a, 373b	2
64	Rates of Change	390a, 390b	2, 3
65	Vectors	353, 353a	2
66	Percentages of Amounts	234, 235, 238	2, 3
67	Reverse Percentages	240	2
68	Perimeter	241	2
69	Surface Area	311	2
70	Area of a Trapezium	48	2, 3
71	Sine Rule	333	2
72	Cosine Rule	335, 336	2
73	3D Trigonometry	259, 332	2
74	Pythagoras	257	2
75	Similar Shapes	292, 293a, 293b	2, 3
76	Bearings	26, 27	2
77	Volume of a Cuboid	356	2, 3
78	Box Plot	149	2
79	Histograms	157, 158, 159	2
80	Estimated Mean	55	2, 3
81	Composite Bar Chart	148a	2
82	Independent Events	249	2, 3
83	Conditional Probability	247	2, 3
84	Fractions of Amount	137	3
85	Limits of Accuracy	183, 184	3
86	Inequalities	177, 178, 179	3
87	Significant Figures	279a	3
88	Equation of a Circle	12	3
89	Algebraic Fractions	21 to 24	3
90	Gradient	189	3

Question	Topic	Video number	Paper
91	Fibonacci	287a	3
92	Density	384	3
93	Inverse Proportion	255	3
94	Ratio Problem Solving	270, 271, 272	3
95	Compound Interest	236	3
96	Relative Frequency	248	3
97	Area: Compound Shapes	41	3
98	Area: Triangle	49	3
99	$\frac{1}{2}ab\sin C$	337	3
100	Volume of a Cone	359	3
101	Volume of a Sphere	360	3
102	Arc Length	58	3
103	Congruent Triangles	67	3
104	Enlargement	104, 106 to 108	3
105	Translations	325	3
106	Angles in a Triangle	37	3
107	Combined Mean	53a	3
108	Two-Way Table	319	3
109	Probability	250, 249, 246	3

1. Ballymena Rovers started a football season on -14 points

Each win is worth 5 points.

Each draw is worth 1 point

Each loss is worth -2 points.

Over the season, Ballymena Rovers won 15 matches, drew 3 matches & lost 7.

How many points did they finish with at the end of the season?

.....
(2)

2.

$$3\frac{2}{3} + 1\frac{7}{10}$$

Give your answer as a mixed number.

.....
(2)

3. Work out

$$1\frac{1}{3} \times 2\frac{2}{5}$$

Give your answer as a mixed number.

.....
(3)

4. Work out

$$\frac{2}{17} \div \frac{2}{5}$$

Give your answer as a fraction in its simplest form.

.....
(2)

5. What is the reciprocal of 4?

Circle the correct answer.

4

0.4

$\frac{1}{4}$

-4

(1)

6. Complete the table.

Fraction	Decimal	Percentage
		85%
	0.12	
$\frac{23}{25}$		

(3)

7. Simplify

$$(2m^4)^3$$

.....
(2)

8. Estimate $\sqrt{90}$

.....
(1)

9. Simplify fully $\frac{a^8}{a^3 \times a^{-9}}$

.....
(2)

10. Work out

$$5^{-3}$$

.....
(1)

11. Work out

$$27^{2/3}$$

.....
(2)

12. Write $1.\dot{3}2\dot{5}$ as a fraction.

Give your answer in its simplest form.

(3)

13. (a) Simplify $2\sqrt{3} \times 3\sqrt{5}$

.....
(2)

(b) Express $\sqrt{32}$ in its simplest form.

.....
(1)

(c) $\sqrt{200} - \sqrt{72}$

.....
(2)

(d) Expand and simplify $(3 + \sqrt{8})(4 + \sqrt{2})$

Give your answer in the form $a + b\sqrt{2}$ where a and b are integers.

.....
(4)

14. Rationalise the denominator of

$$\frac{15}{\sqrt{5}}$$

.....
(2)

15. Work out the values of a and b

$$9(2x + 3) + 4(2x + b) \equiv ax + 5$$

a = b =
(3)

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

c =
(3)

17. James has x pence.
Hannah has 5 pence more than James.
Liam has 2 pence less than James.

The total amount of money they have is 75 pence.

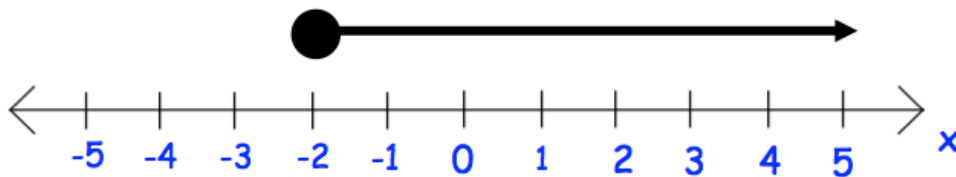
- (a) Use this information to write down an equation in x .

.....
(2)

- (b) Solve the equation to find out how much money James has.

.....pence
(2)

-
18. Write down the inequality shown by the diagram.

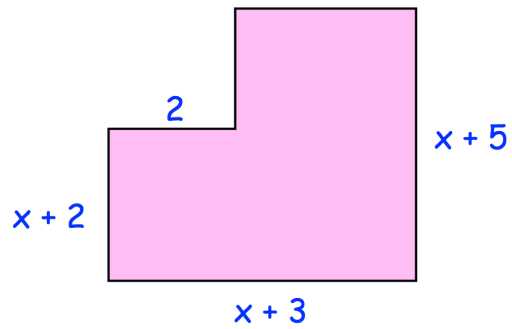


.....
(1)

19. Solve the inequality $x^2 - x - 30 \geq 0$

.....
(3)

20.



(a) Writing an algebraic expression for the area of the shape

.....
(2)

(b) Given that the area of the shape is 74cm^2 , form an equation and solve it to find x .

.....
(2)

21. Solve $x^2 - x - 11 = 0$

Give your answers to 1 decimal place.

.....
(3)

22. Write $x^2 + 10x + 7$ in the form $(x + a)^2 + b$, where a and b are constants.

.....
(3)

23. Simplify $13a + 2c - 3(3c + 7a)$

.....
(2)

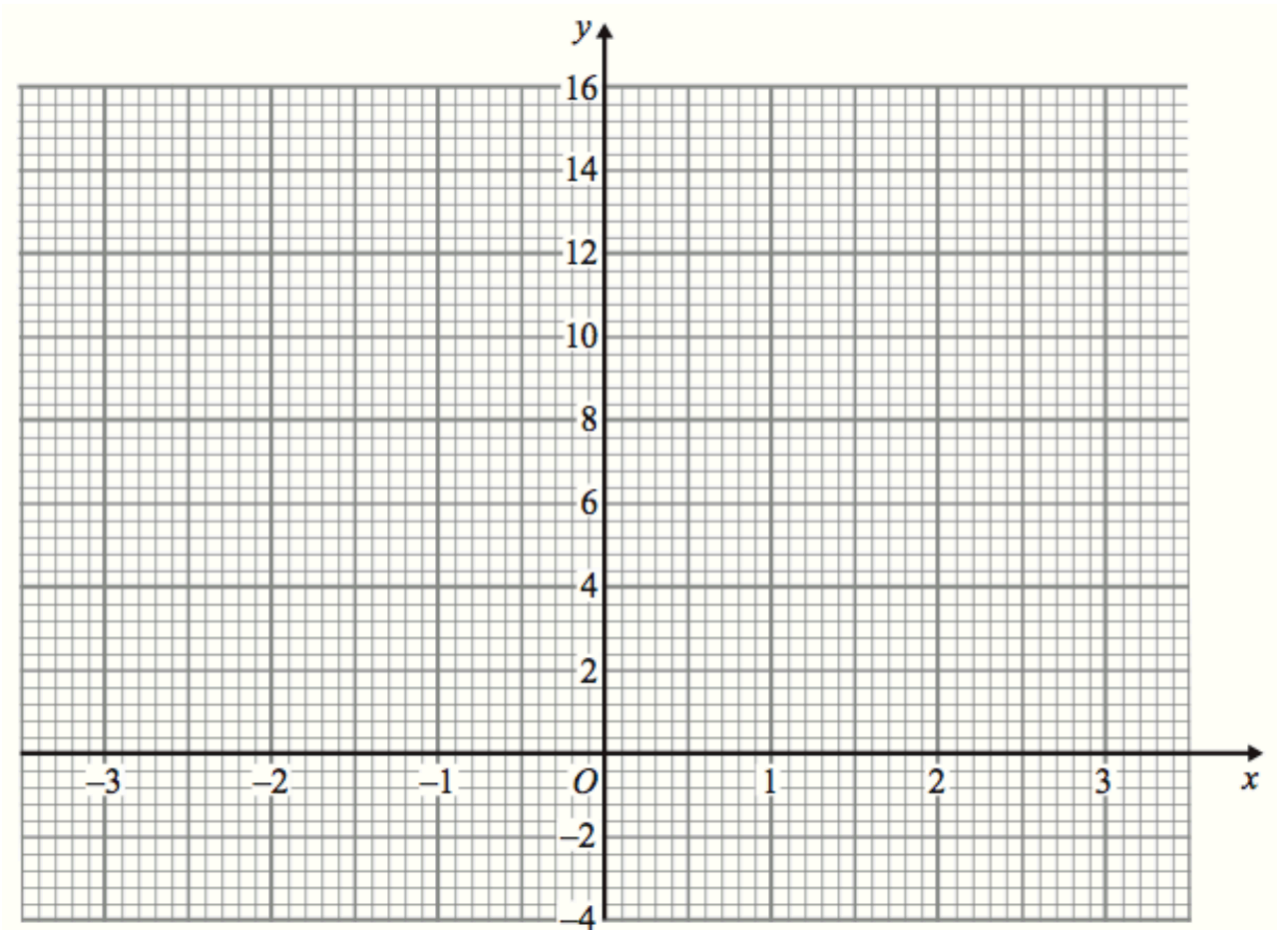
24. (a) Expand and simplify $(3y - 2)(y + 3)$

.....
(2)

(b) Expand and simplify $(y - 1)(y + 2)(y + 7)$

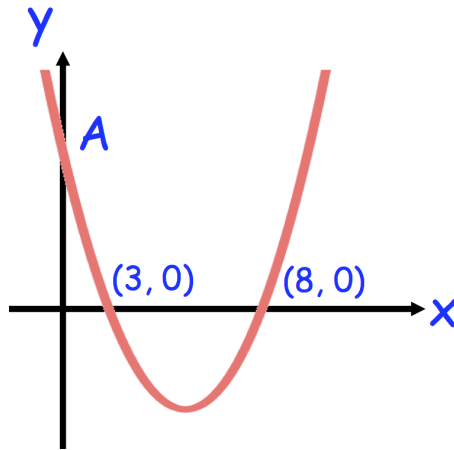
.....
(2)

25. Draw the graph of $y = x^2 + 2x + 1$



(2)

26. Shown is the graph of $y = x^2 + bx + c$



(a) Find the values of b and c

.....
(2)

(b) Find the coordinates of point A

.....
(2)

27. Jim is making green paint by mixing blue paint and yellow paint in the ratio 8:3

Write the ratio of blue paint to yellow paint in the form 1:n

.....
(1)

28. Charlotte and Melissa booked theatre tickets costing £400.
They have a voucher that entitles them to 20% off the total price.
Charlotte and Melissa share the total cost of the tickets in the ratio 1:4

Work out how much more Melissa pays than Charlotte.

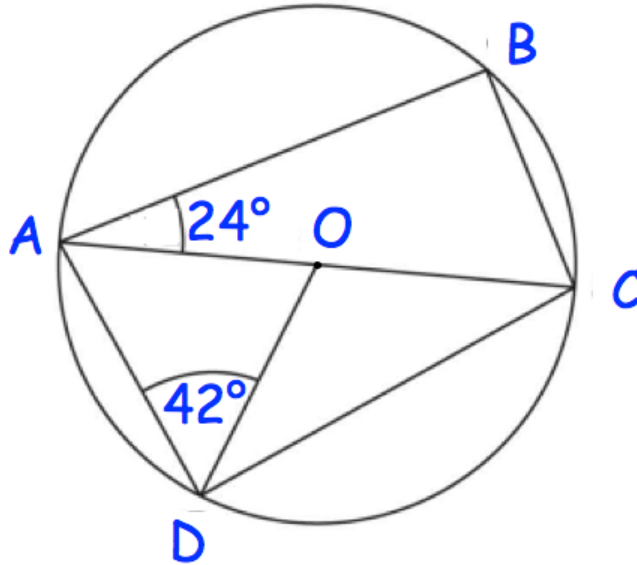
.....
(5)

29. There are red and yellow sweets in a bag.
The ratio of red sweets to yellow sweets is 3:5

What fraction of the sweets in the bag are yellow?

.....
(2)

30.



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)

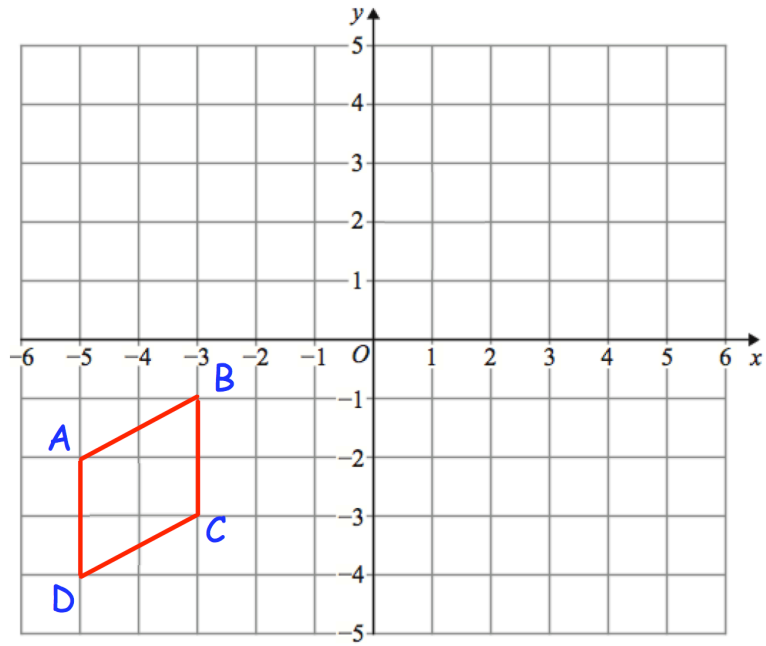
(b) Find the size of angle ACB.

.....°
(1)

(c) Find the size of angle BCD.

.....°
(1)

31. Here is quadrilateral ABCD



ABCD is reflected in the line $x = -1$

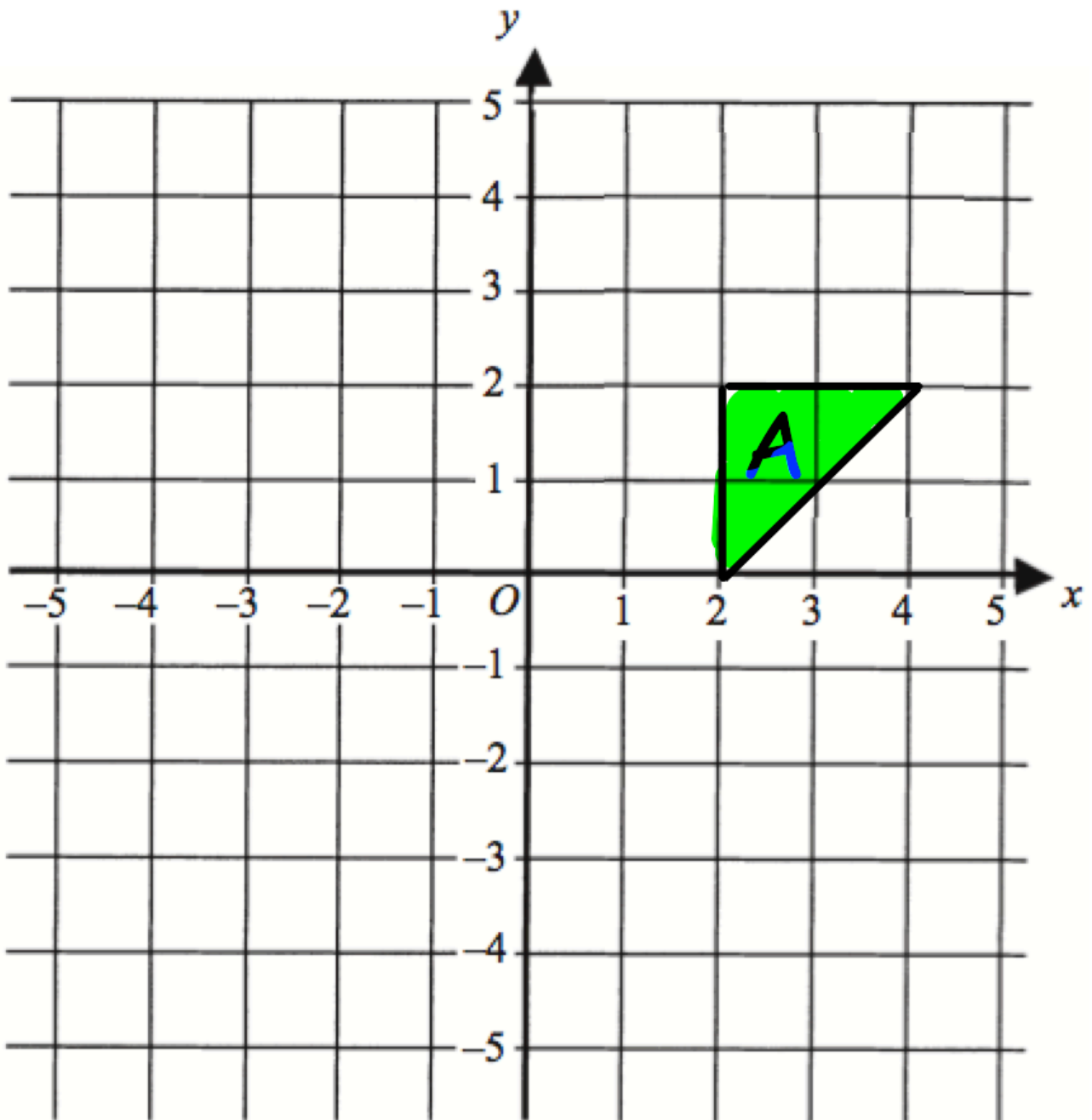
followed by a reflection in the line $y = -x$

followed by a rotation of 180° about $(-1, -1)$

Which of the vertices are invariant?

.....
(3)

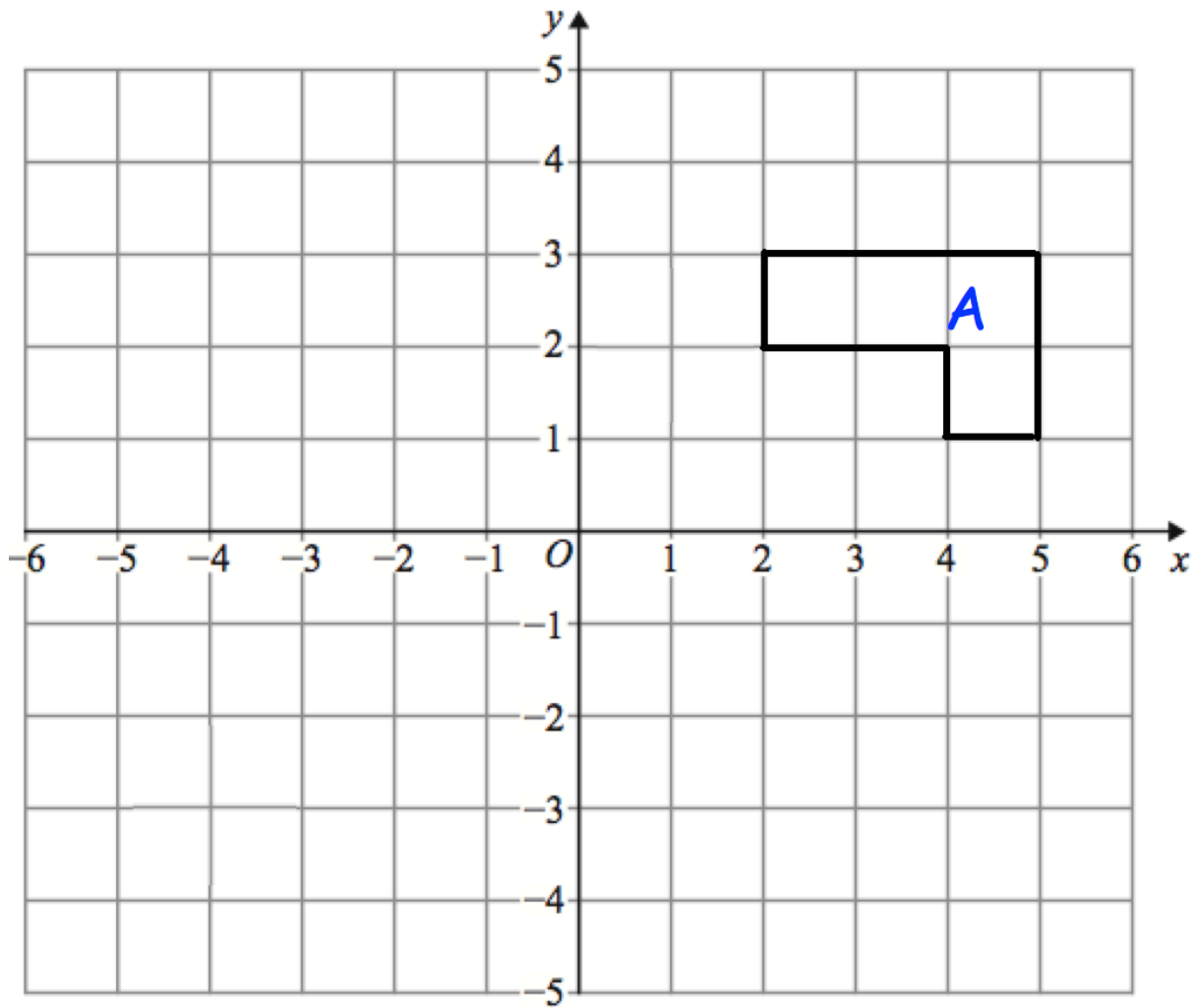
32.



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

(2)

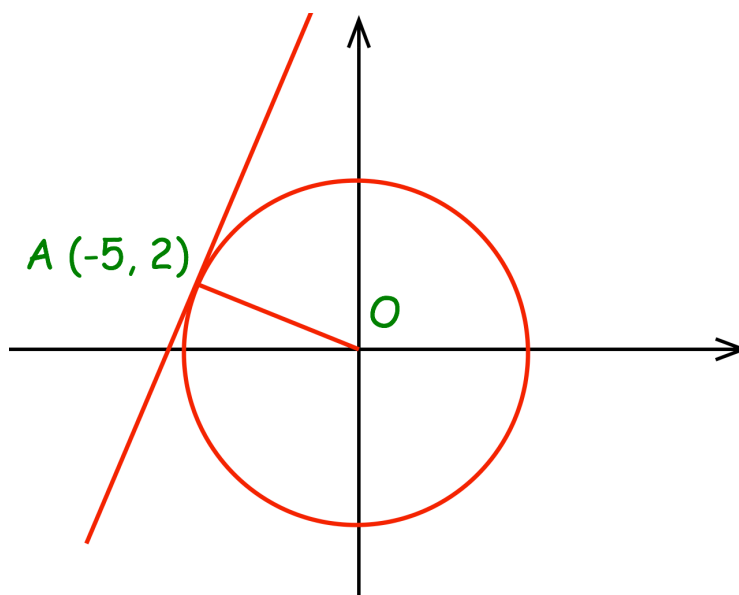
33.



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

(3)

34. The diagram shows the circle $x^2 + y^2 = 29$ with a tangent at the point $(-5, 2)$



(a) Find the gradient of the line AO.

.....
(1)

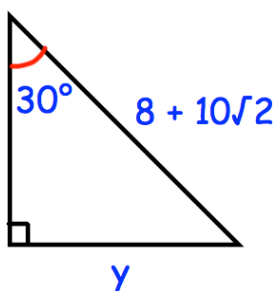
(b) Find the gradient of the tangent

.....
(1)

(c) Find the equation of the tangent

.....
(2)

35. Shown below is a right angled triangle.



Find the exact length of the side labelled y .

.....
(3)

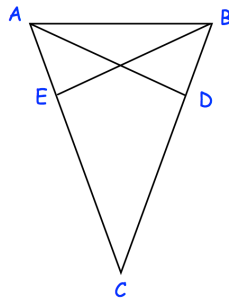
36. $\mathbf{c} = \begin{pmatrix} -2 \\ q \end{pmatrix}$ $\mathbf{d} = \begin{pmatrix} p \\ 3 \end{pmatrix}$

Given $6\mathbf{d} - \mathbf{c} = \begin{pmatrix} 26 \\ 22 \end{pmatrix}$

Work out the values of p and q .

$p = \dots\dots\dots$ $q = \dots\dots\dots$
(2)

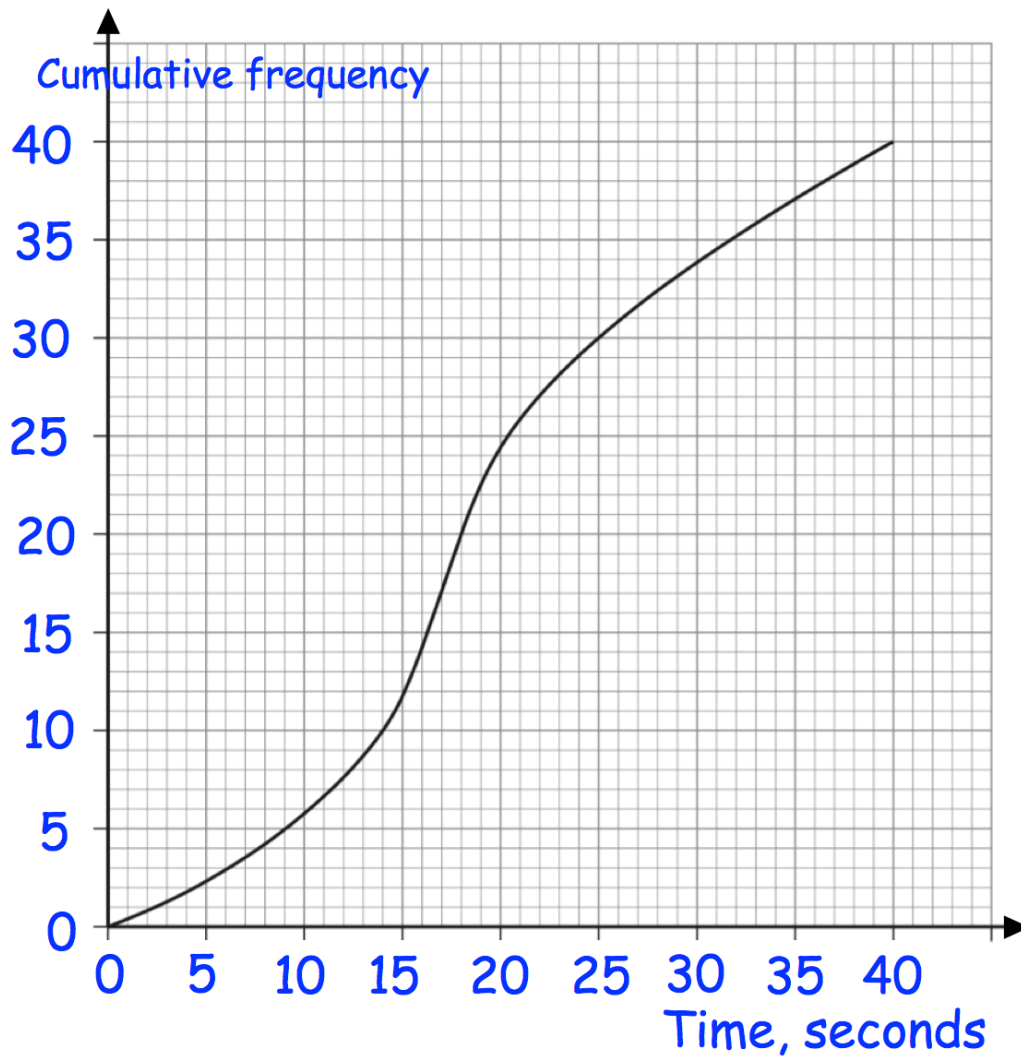
37. ABC is an isosceles triangle in which $AC = BC$.
D and E are points on BC and AC such that $CE = CD$.



Prove triangles ACD and BCE are congruent.

(4)

38. The graph shows information about the time taken by 40 children to solve a puzzle.



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

.....
(1)

- (b) Show that less than 20% of the students took longer than 30 seconds.

.....
(2)

39. The frequency table shows the piano grade of 17 students in a class.

Grade	Frequency
2	3
3	3
4	4
5	3
6	2
7	2

3 new students, who are all Grade 6, join the class.

The teacher says the median piano grade will increase.

Is she correct?

You must explain your answer.

.....

.....

(3)

40. Mervyn plays six games of darts.
His scores are

120 71 80 14 90 117

(a) Work out the range of his scores.

.....
(2)

(b) Work out the median of his scores.

.....
(2)

(c) Work out the mean of his scores.

.....
(2)

41. Here are the hourly rates of pay for 7 workers

£8.50 £9.25 £8.70 £14.10 £9.50 £10.75 £8.80

(a) Find the lower quartile

.....
(2)

(b) Find the upper quartile

.....
(2)

42. The table shows information about the amounts of money withdrawn from an ATM.

Money Withdrawn	Frequency
£10	16
£20	19
£30	4
£40	3
£50	6
£60	2

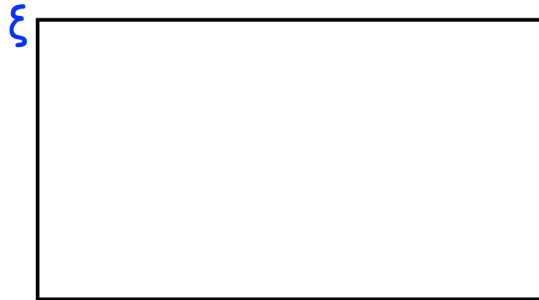
Calculate the mean withdrawal amount.

.....
(3)

43. 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)

44. Work out the cube root of 64

.....
(1)

45. The Highest Common Factor (HCF) of two numbers is 6.
The Lowest Common Multiple (LCM) of the same numbers is 60.

What are the two numbers?

..... and

(2)

46. The number of visitors to some tourist attractions is shown in the table below.

The King's Palace	5.4 million
Castle	923,840
Theme Park	1.43×10^7
Science Museum	4,192,900

(a) Write the number of visitors to the Theme Park as an ordinary number.

.....
(1)

(b) Write the number of visitors to the Castle in standard form.

.....
(1)

(c) How many more people visited the Theme Park than the Science.

.....
(2)

Work out, giving each answer in standard form.

(d)

$$(4 \times 10^5) \times (2 \times 10^4)$$

.....
(2)

(e)

$$(5 \times 10^6) \times (7 \times 10^8)$$

.....
(2)

47. Jim picks a five digit odd number.
The second digit is less than 5.
The fourth digit is a positive cube number
The first digit is a prime number.

How many different numbers could he pick?

.....
(3)

-
48. Use your calculator to work out

$$\frac{\sqrt{39.75 + 24.44}}{0.55 \times \sqrt[3]{1.2 \times 1.9}}$$

- (a) Write down all the figures on your calculator display

.....
(2)

- (b) Write your answer to (a) correct to 2 significant figures

.....
(1)

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

.....
(2)

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

.....
(2)

50. Make w the subject of the formula

$$g = \frac{w}{w - 5}$$

$w =$
(3)

51. Factorise $81 - 4y^2$

.....
(2)

52. Factorise fully

$$9m^2 - 12mp$$

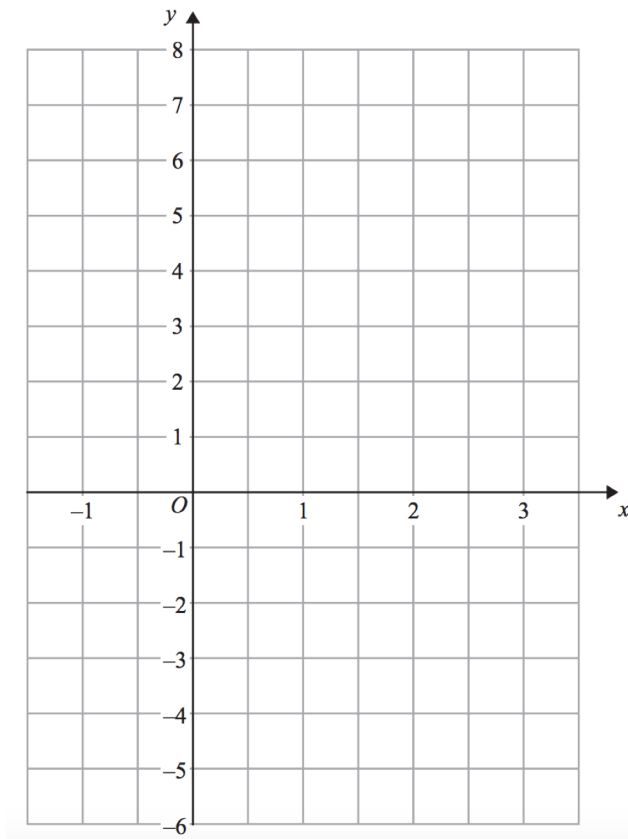
.....
(2)

53. (a) Complete the table of values for $y = 3x - 2$

x	-1	0	1	2	3
y					7

(2)

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

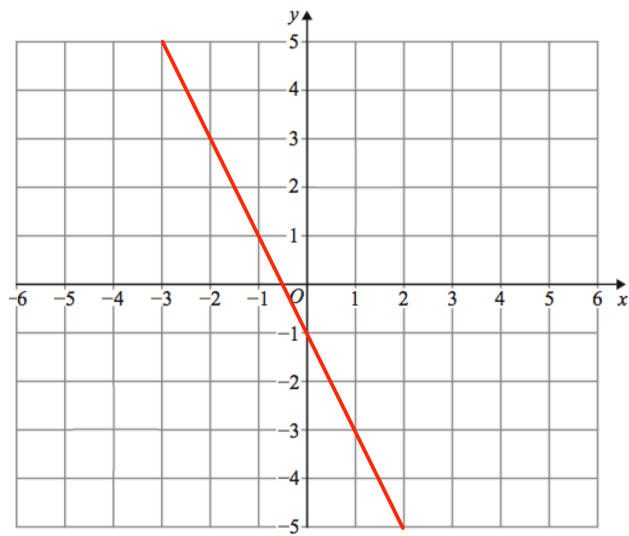


(2)

(c) Use your graph to estimate the value of x when $y = 5$

$x = \dots\dots\dots$
(1)

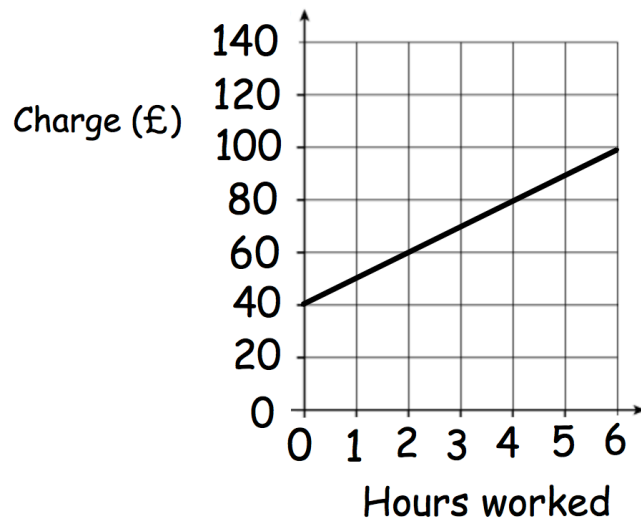
54. A straight line L is shown on the grid.



Work out the equation of line L

.....
(3)

55. Dara is a plumber.
The graph shows how much he charges for each job.



- (a) How much does Dara charge for a job lasting 3 hours?

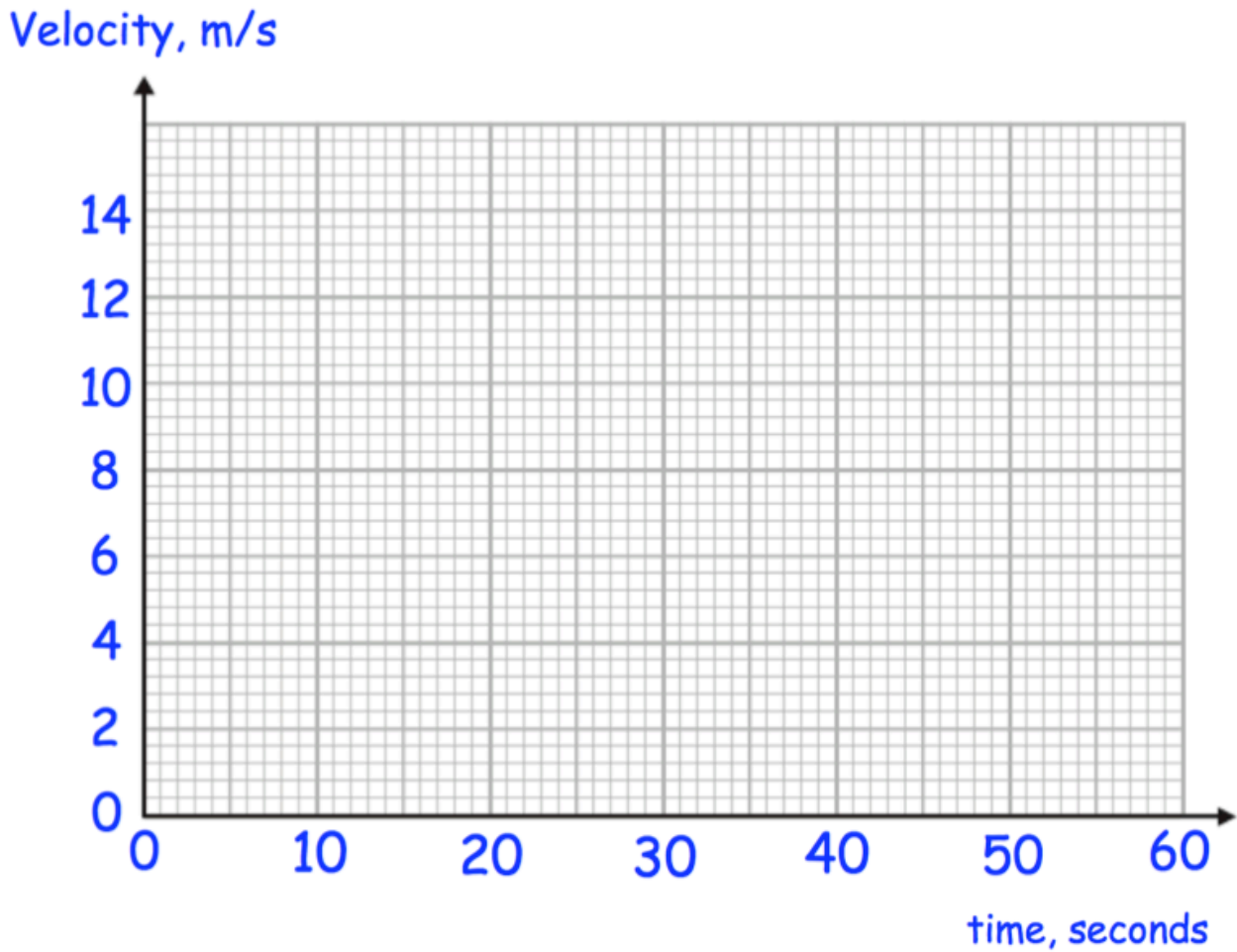
.....
(1)

- (b) How much does Dara for each hour?

.....
(1)

56. 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)

57.



A village is 20 miles from Belfast.

Conor drives from the village to Belfast at 40mph

Kelly drives from the village to Belfast at 50mph

Work out how much longer the journey takes Conor.

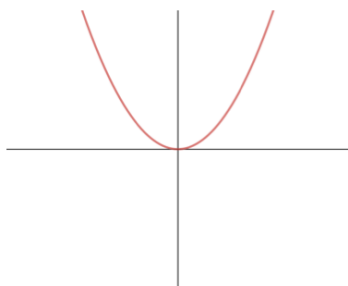
Give your answer in minutes.

.....minutes

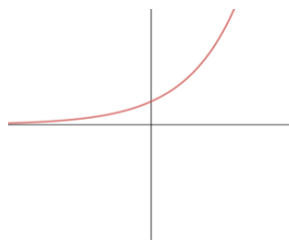
(3)

58. Match each graph to the correct equation

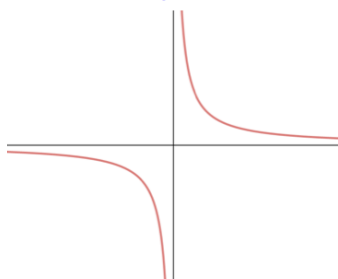
Graph A



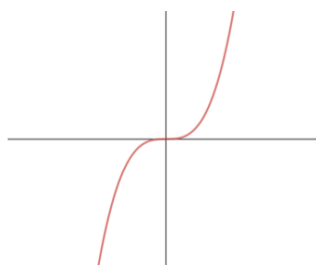
Graph B



Graph C



Graph D



$y = x^2$ is graph **A**

$y = x^3$ is graph

$y = 2^x$ is graph

$y = \frac{1}{x}$ is graph

(2)

59. (a) The function f is such that $f(x) = kx + 3$

The function g is such that $g(x) = 2x - 4$

Given that $gf(2) = 34$

work out the value of k

.....
(3)

(b) $f(x) = \frac{3x}{5} + 1$

Find $f^{-1}(350)$

.....
(3)

60. 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)

61. The triangular numbers are 1, 3, 6, 10,
The n th term of this sequence is $\frac{1}{2}n(n + 1)$

Find the 200th triangular number

.....
(2)

62. Convert 750cm² to m²

.....m²
(2)

63. (a) Show that the equation $20 - x^3 - 7x^2 = 0$ can be rearranged to give
$$x = \frac{20}{x^2} - 7$$

(2)

(b) Using $x_{n+1} = \frac{20}{x_n^2} - 7$ with $x_0 = -9$

find the values of x_1 , x_2 and x_3

$x_1 = \dots\dots\dots$

$x_2 = \dots\dots\dots$

$x_3 = \dots\dots\dots$

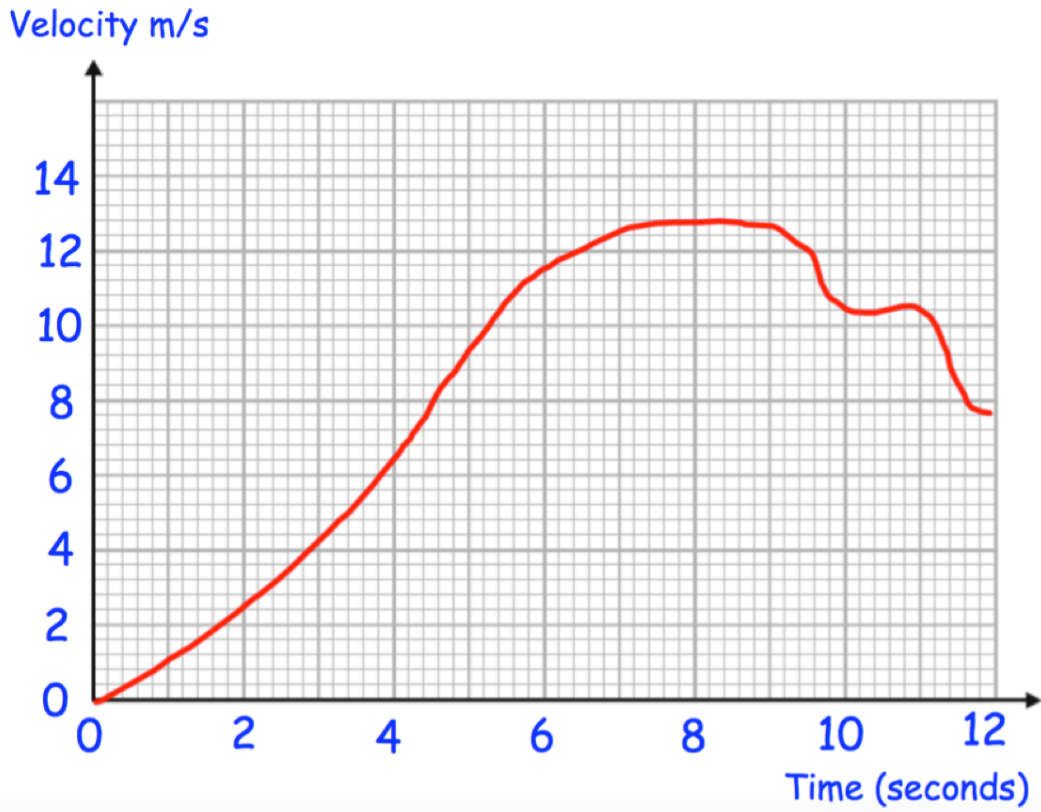
(3)

(b) Explain what the values of x_1 , x_2 and x_3 represent

.....
.....

(2)

64.

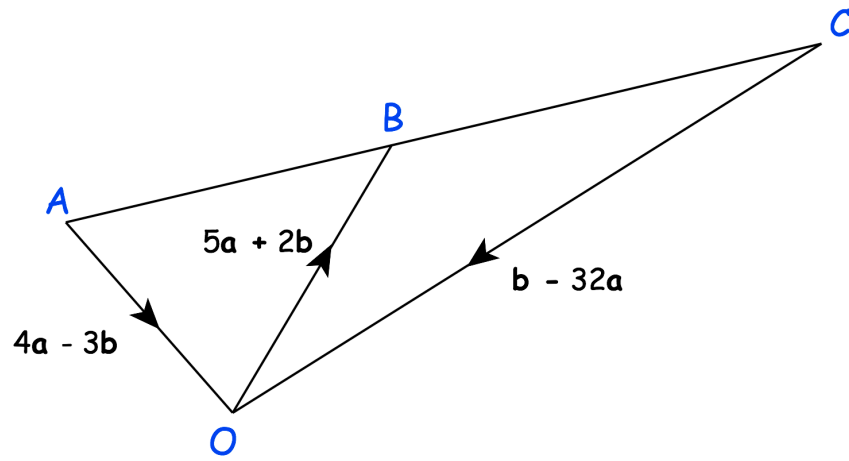


Above is the velocity-time graph of a particle over 12 seconds.

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

.....
(3)

65.



Is ABC a straight line?
Explain your answer

.....

.....

.....

(3)

66. Edward and his four friends go on holiday.
The total cost of the holiday is £3600.

Edward is going to stay longer than his friends and he is going to pay 35% of the total cost.

The rest of the total cost is to be shared equally between his four friends.

Edward says,

“I pay twice as much money for the holiday than each of my friends.”

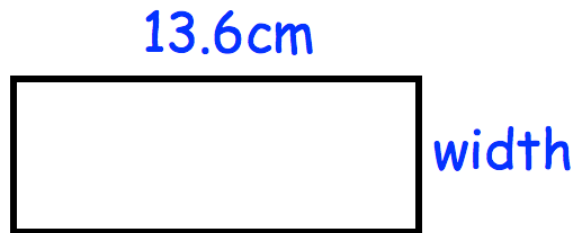
Is Edward correct?
Explain your answer.

67. Lauren is given a 12% pay rise.
Her new salary is £24,080

What was Lauren's salary before the pay rise?

£.....
(3)

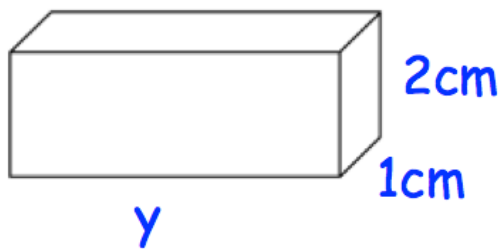
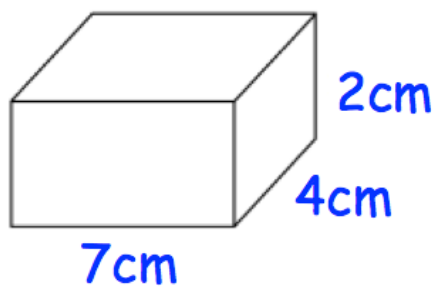
68. The length of a rectangle is 13.6 cm
The perimeter of the rectangle is 37.8cm



Calculate the width of the rectangle.

.....cm
(3)

69. Shown below are two cuboids.

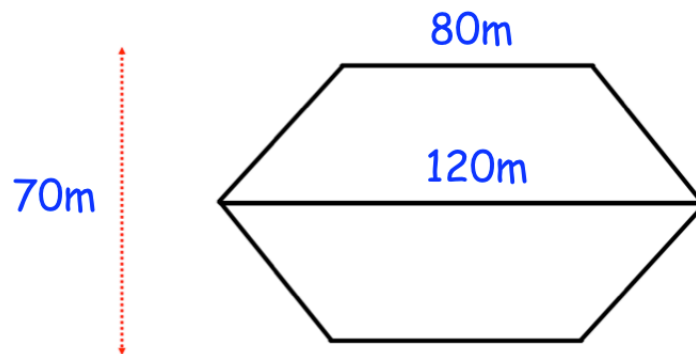


Both cuboids have the same surface area.

Find y .

.....cm
(5)

70. A farmer owns two identical fields.
Each field is a trapezium



The farmer is going to plant a crop.

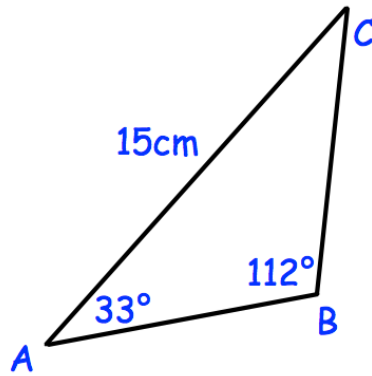
Each 8 kilogram bag of seed costs £19.99
60g of seed covers an area of 1m^2

The farmer has £1000 to spend on seed.

Has the farmer got enough money to buy all the seed he needs to cover both fields?

(5)

71.



In triangle ABC the length of AC is 15cm.

Angle ABC = 112°

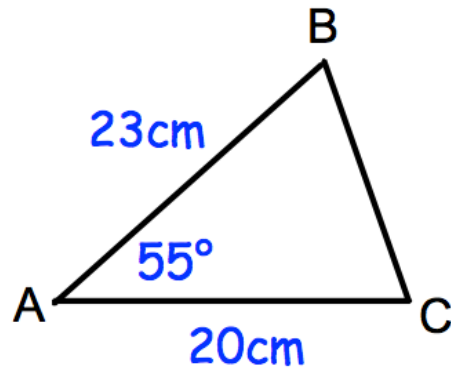
Angle BAC = 33°

Work out the length of BC.

.....cm

(3)

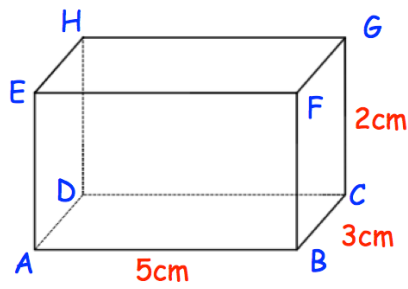
72.



Calculate the length of BC.

.....cm
(3)

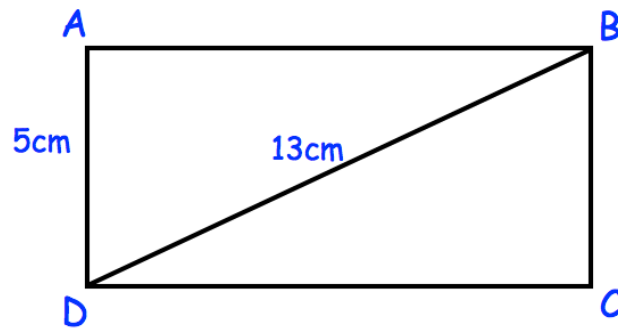
73. Shown below is a cuboid



Calculate the size of angle ACE.

.....
(4)

74. Below is rectangle, ABCD

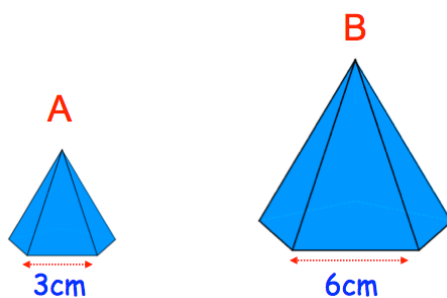


AD = 5cm
BD = 13cm

Calculate the perimeter of rectangle ABCD

.....cm
(3)

75. Below are two similar pyramids.



Pyramid A has a volume of 26cm^3

(a) Work out the volume of Pyramid B.

..... cm^3
(2)

Pyramid B has a total surface area of 224cm^2

(b) Work out the total surface area of Pyramid A.

..... cm^2
(2)

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

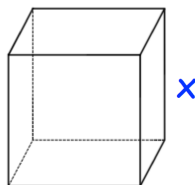


The bearing of person C from person A is 062°
 The bearing of person C from person B is 275°

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

(3)

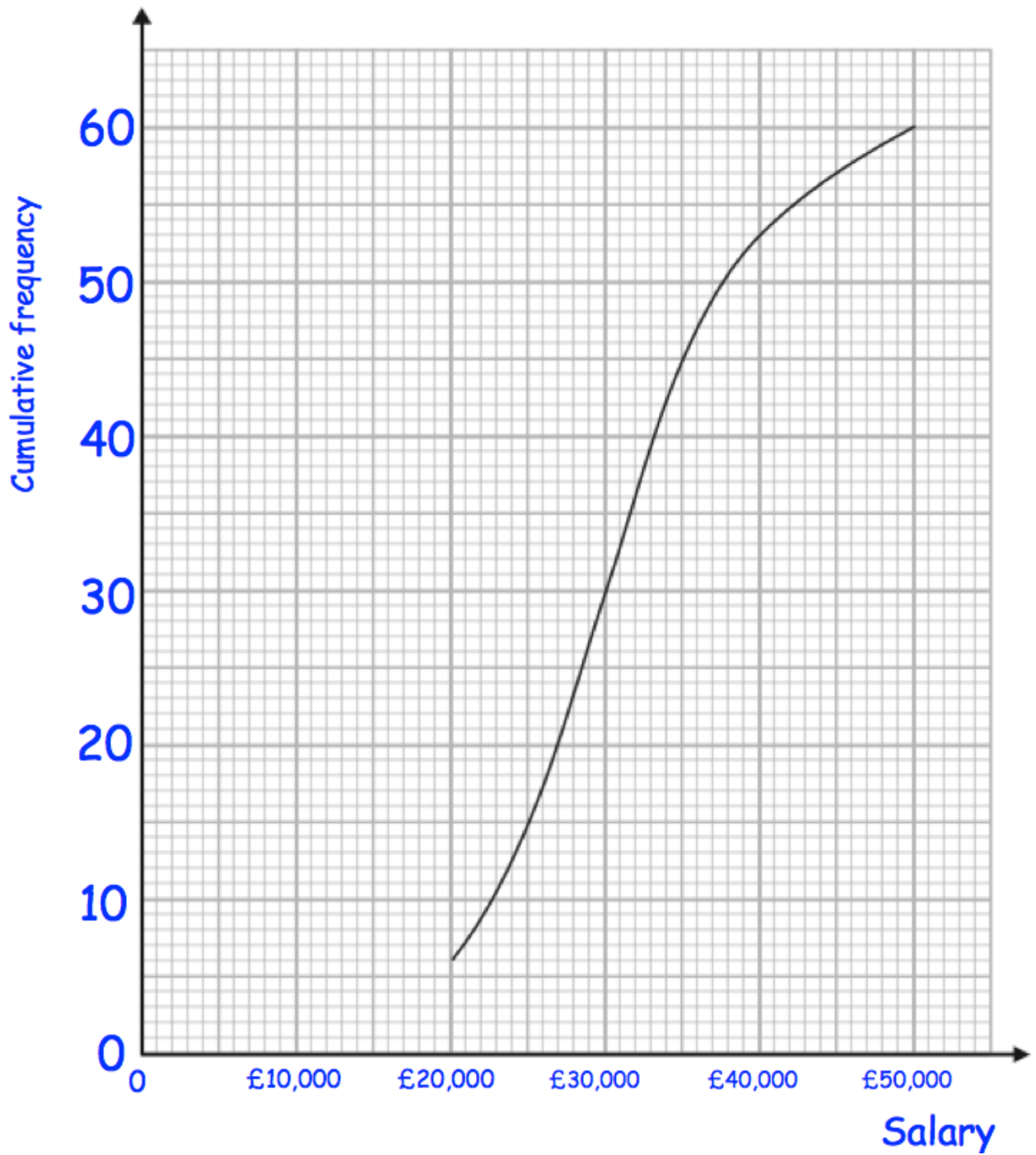
77. A cube is shown below.



The volume of the cube is 729cm^3 .
 Find x.

.....cm
(2)

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

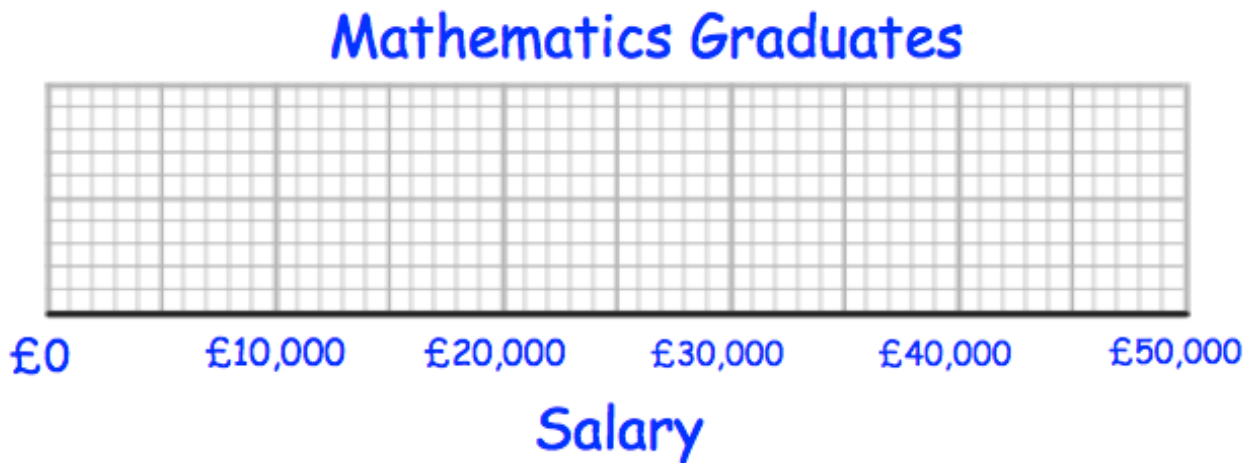


- (a) Use the graph to find an estimate for the median salary.

£.....
(1)

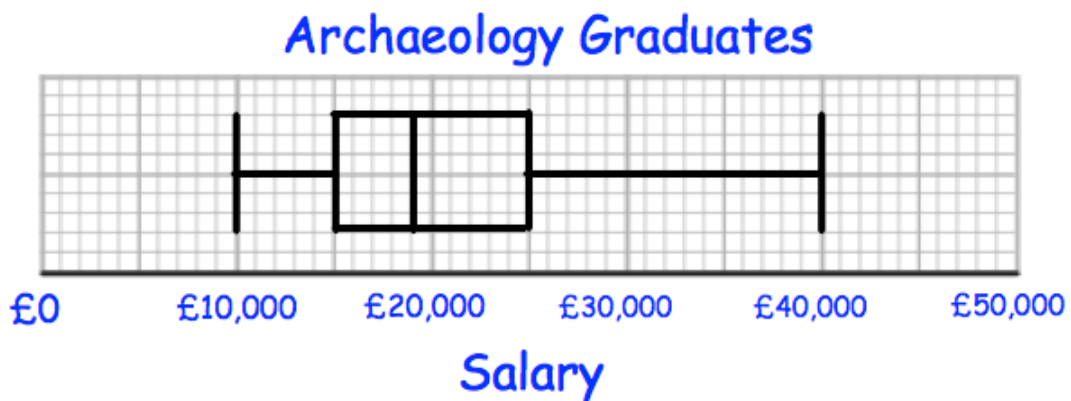
The 60 mathematics graduates
 had a minimum salary of £16,000
 and a maximum salary of £48,000.

(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.

.....

.....

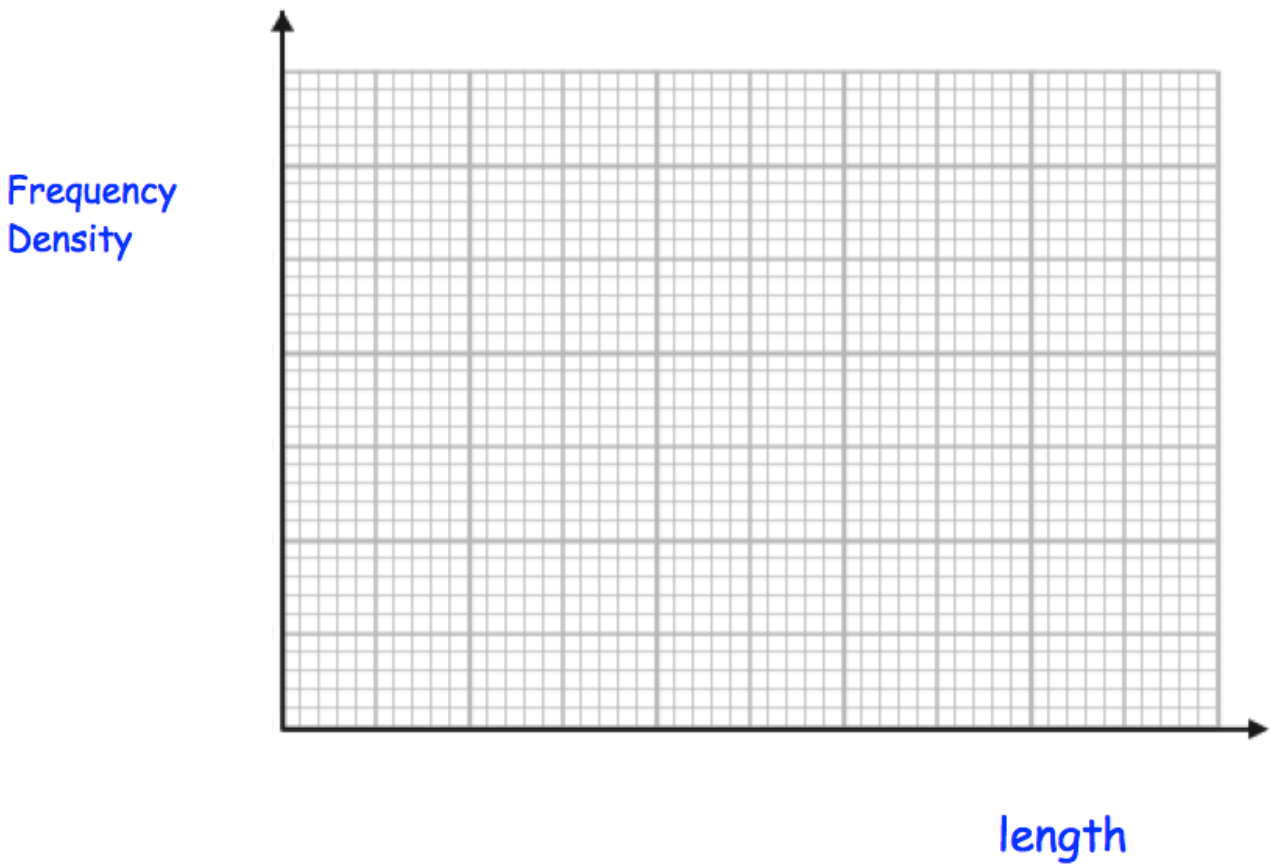
.....

(2)

79. The lengths of 200 fish in a pond, l centimetres, are recorded below.

Length, l	Frequency
$0 < l \leq 4$	36
$4 < l \leq 6$	40
$6 < l \leq 8$	48
$8 < l \leq 12$	44
$12 < l \leq 20$	32

(a) Draw a histogram for this data.



(3)

(b) Work out an estimate for the fraction of the fish that have a length between 5cm and 11cm.

.....
(2)

80. 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

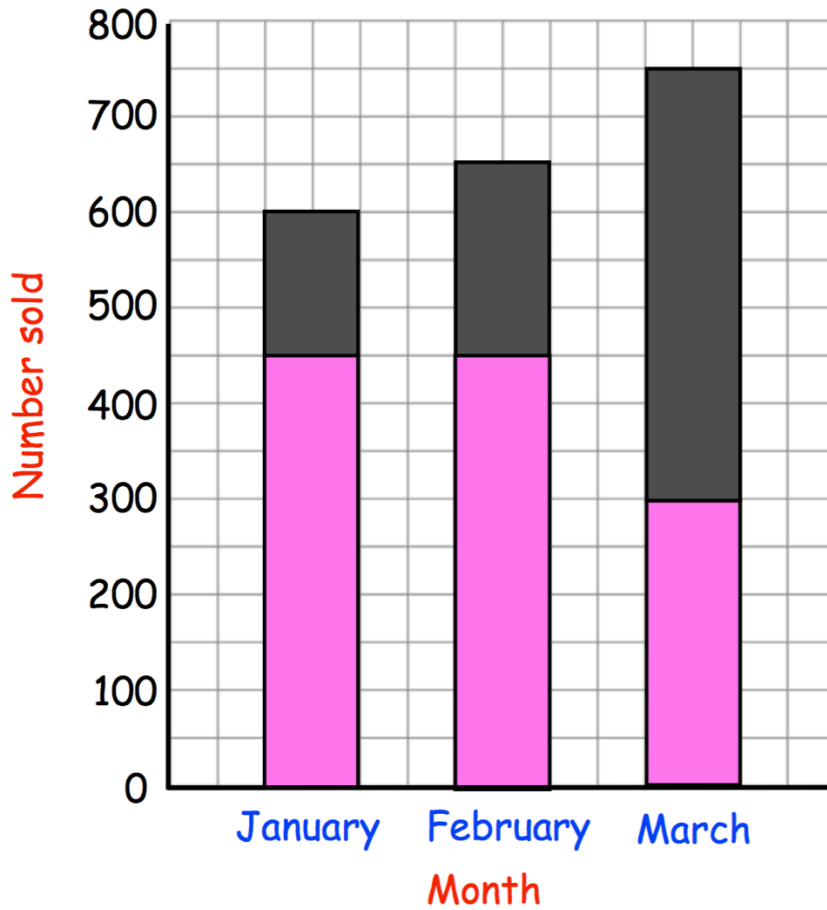
Work out an estimate for the mean time taken.

.....minutes

(4)

81.

Key Hot drinks
 Cold drinks



What percentage of the drinks sold were cold drinks?

.....%

(4)

82. Harry gets the train to work in the morning.
He works Monday to Friday.

The probability the train is late is 0.2

Find the probability the train is late exactly once.

.....
(4)

83. There are 8 sweets in a bag.
Three sweets are red, three sweets are blue and two sweets are green.

Three sweets are selected at random **without** replacement.

Calculate the probability that the sweets are **not** all the same colour.

.....
(4)

84. Bill is 80 years old.

His son Max is $\frac{5}{8}$ of his age.

His granddaughter Jayne is $\frac{1}{5}$ of his age.

How many years older than Jayne is Max?

.....
(4)

85. Anthony measured the length and width of a rectangle.
He measured the length to be 38cm correct to the nearest centimetre.
He measured the width to be 30cm correct to the nearest 10 centimetres.

Calculate the lower bound for the area of this rectangle.

.....cm²
(2)

86. Solve the inequality $4x + 6 \geq 8$

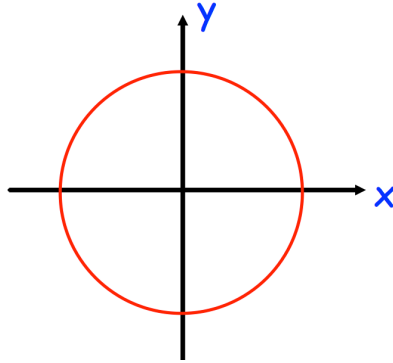
.....
(2)

87. Round 38.461834 to 3 significant figures.

.....
(1)

88. The circle shown has $x^2 + y^2 = 49$

Find the circumference of the circle.
Give your answer in terms of π



.....
(2)

89. (a) Simplify $\frac{x^2 + 3x - 4}{x^2 - 8x + 7}$

.....
(2)

(b) Simplify fully.

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

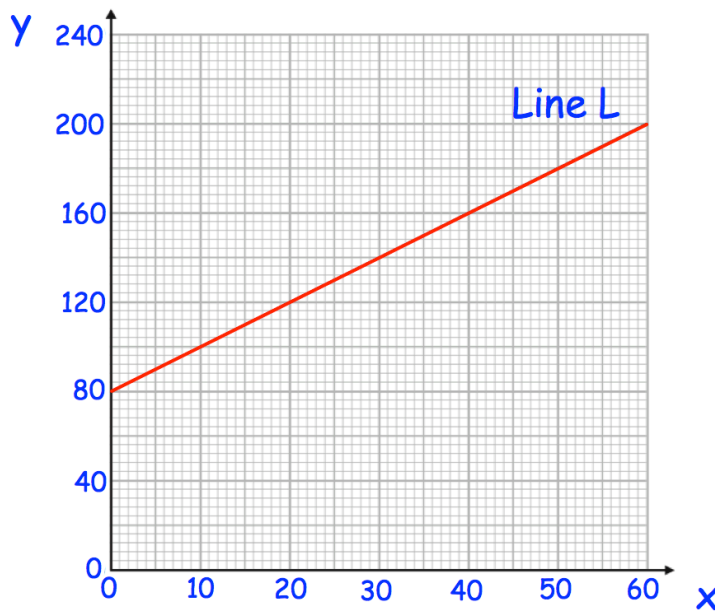
.....
(2)

(c) Solve

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

.....
(5)

90.



(a) Work out the gradient of Line L.

.....
(2)

(b) Work out the equation of Line L.

.....
(2)

91. The first three terms of a Fibonacci sequence are

$$x \quad y \quad x + y$$

Find the 5th term of the sequence.

.....
(3)

92. The mass of 3m^3 of tin is 21840kg.

(a) Work out the density of tin.

..... kg/m^3
(2)

The density of aluminium is 2712kg/m^3 .

(b) Work out the difference in mass between 5m^3 of tin and 5m^3 of aluminium.

..... kg
(3)

93. The force, F newtons, exerted by a magnet on a metal object is inversely proportional to the square of the distance d cm.

When $d = 2$ cm, $F = 50$ N.

(a) Express F in terms of d .

$$F = \dots\dots\dots$$

(3)

(b) Find the force when the distance between the magnet and metal object is 10cm

$$F = \dots\dots\dots\text{N}$$

(1)

(c) Find the distance between the magnet and metal object when the force is 8N.

$$d = \dots\dots\dots\text{cm}$$

(1)

(d) Explain what happens to F when d is halved.

.....

.....

.....

(1)

94. Bag A contains $5x$ coins.
Bag B contains $3x$ coins.
8 coins are taken from Bag B and put into Bag A
The ratio of coins in Bag A to Bag B is now 11:5

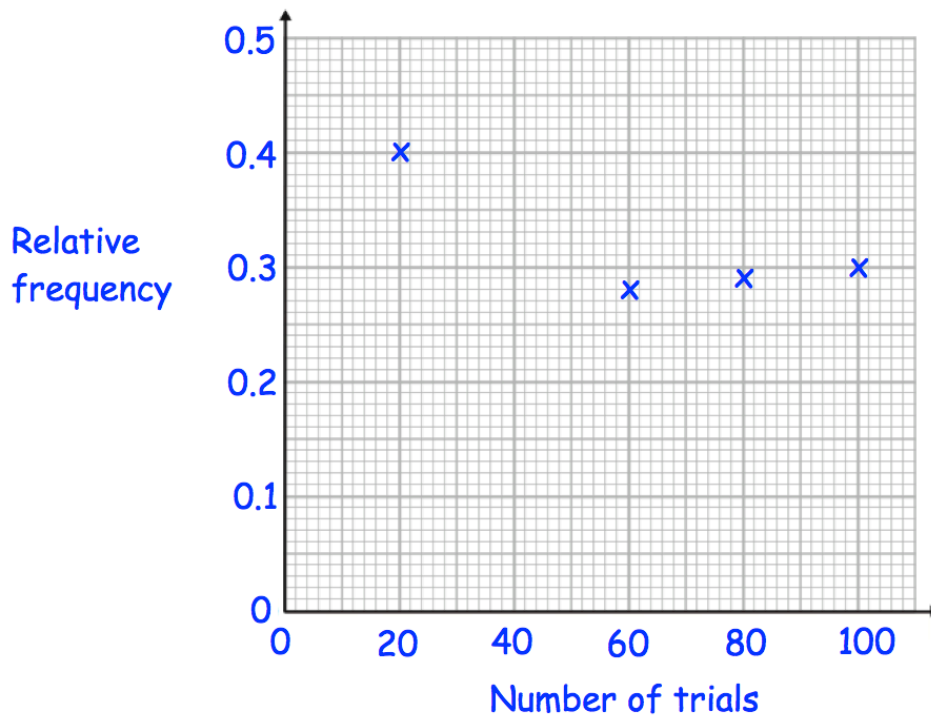
Work out the total number of coins.

.....
(3)

-
95. Natalie invests £600 for 5 years at 3% per year compound interest.
How much interest does she earn?

£.....
(2)

96. There are 50 sweets in a jar.
 In a trial, a sweet is chosen at random and then it is replaced.
 The results are recorded after every 20 trials.
 The graph shows the relative frequency of a blue sweet



In the first forty trials, ten blue sweets were chosen.

- (a) Plot this result on the graph.

(1)

- (b) What is the best estimate, from the graph, of the probability of choosing a blue sweet?
 Explain your answer.

.....

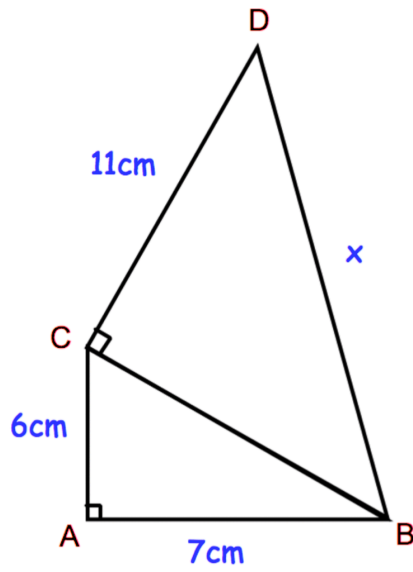
(2)

- (c) Use your answer to estimate the number of blue sweets in the jar.

.....

(2)

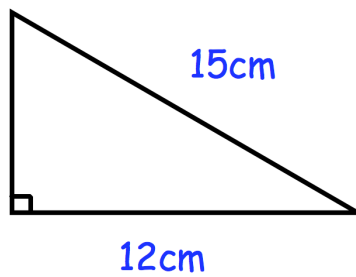
97. Quadrilateral ABCD is made by joining triangles ABC and BCD.



Find the area of ABCD.

.....cm²
(3)

98.

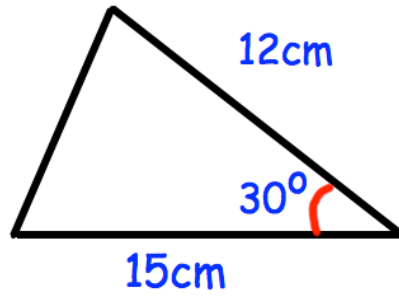


Shown is a right-angled triangle.

Work out the area of the triangle

.....
(4)

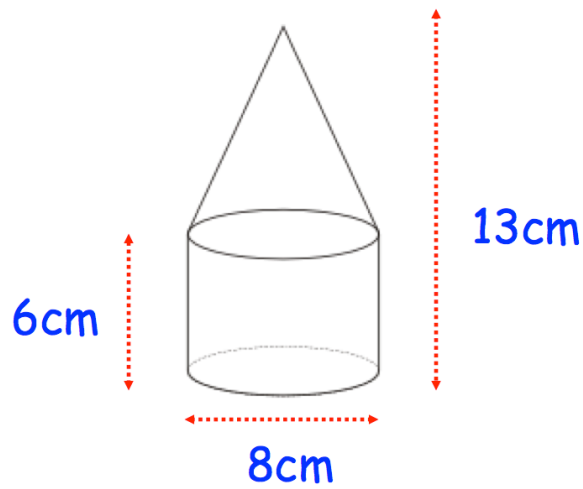
99.



Work out the area of the triangle.

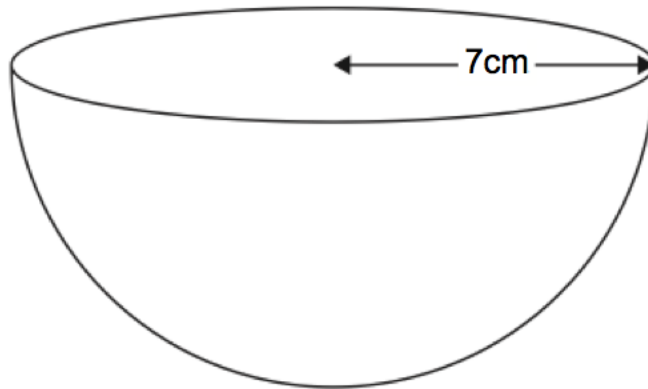
.....
(2)

100. A solid is formed from a cylinder and a cone.
Find the volume of the solid.



.....cm³
(3)

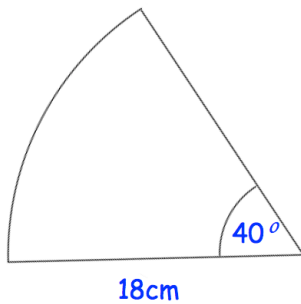
101. Shown below is a hemisphere.



Calculate the volume of the hemisphere.

.....cm³
(3)

102.

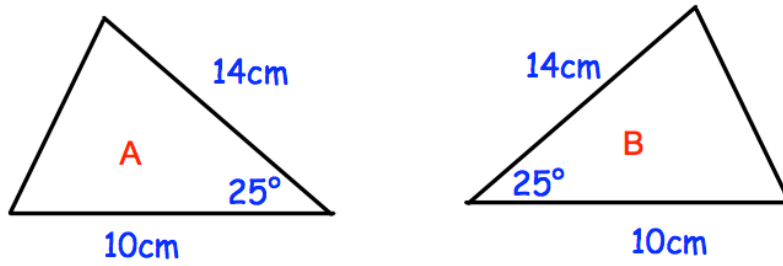


Find the perimeter, giving your answer to 1 decimal place.

.....cm
(3)

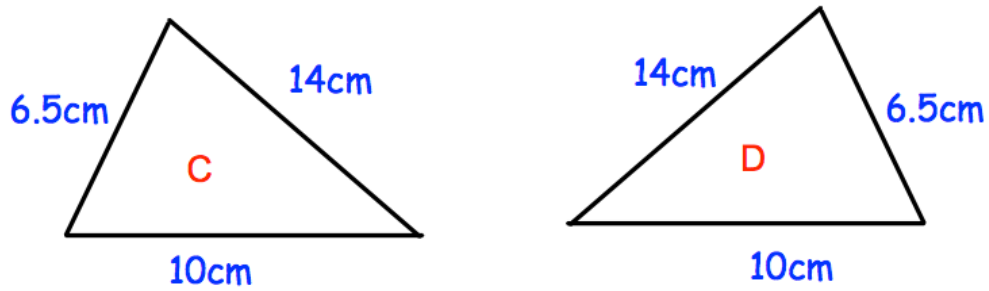
103. For each pair below, state the condition why they are congruent.

(a)



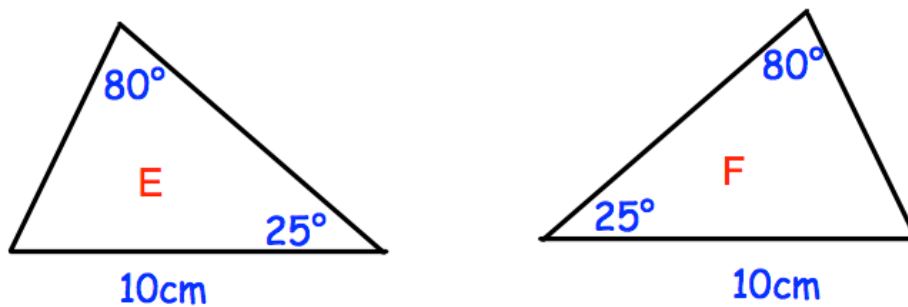
Condition:
(1)

(b)



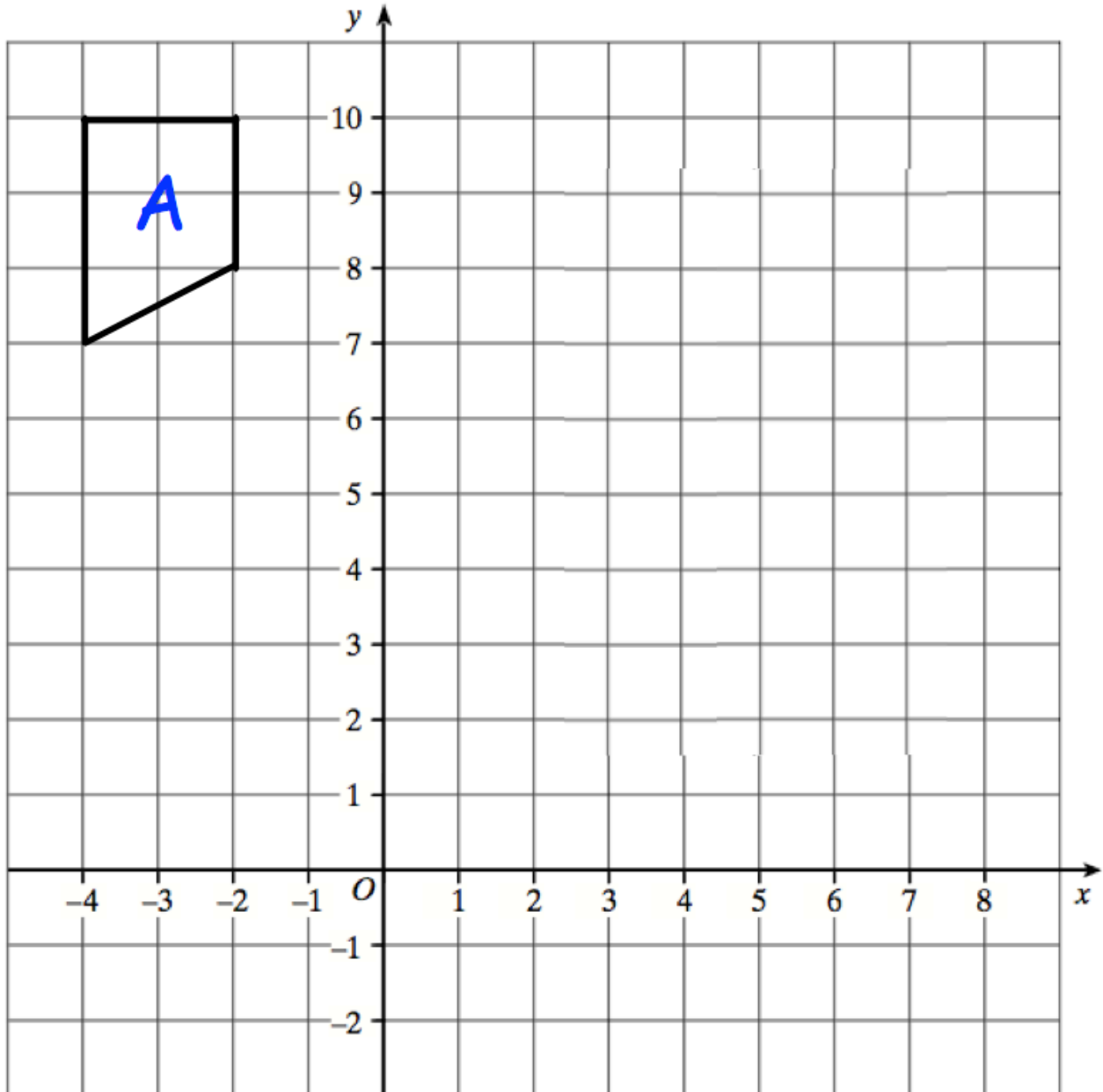
Condition:
(1)

(c)



Condition:
(1)

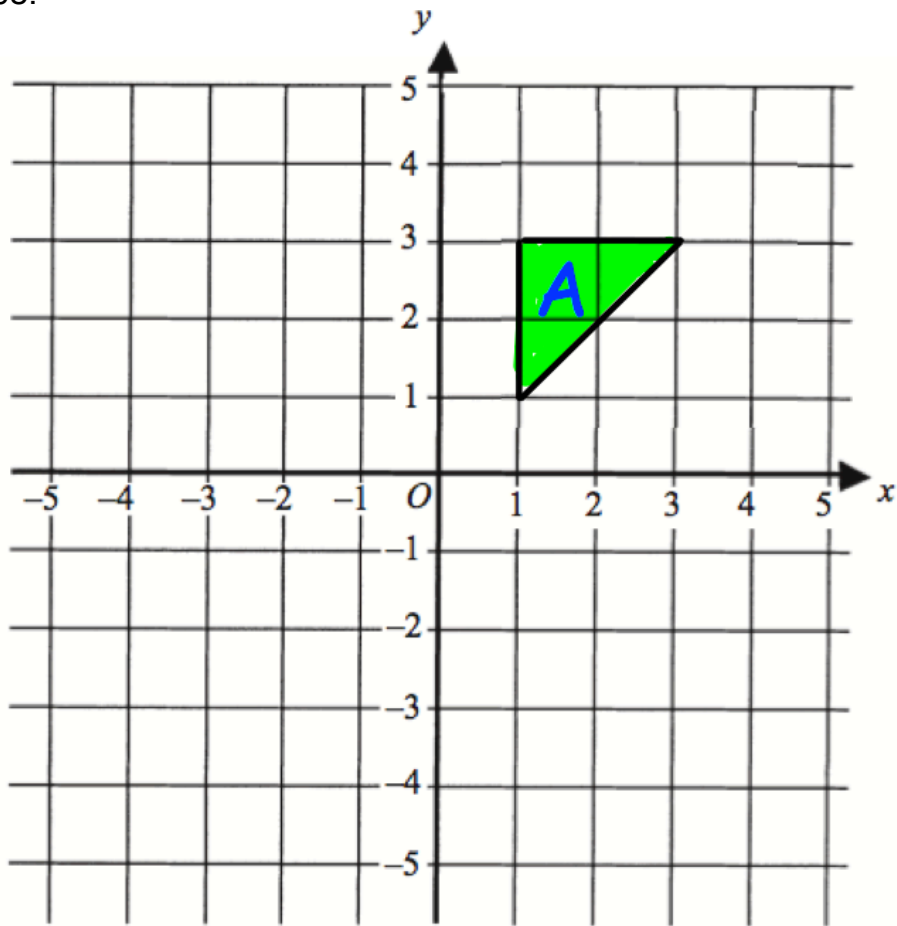
104.



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

(3)

105.

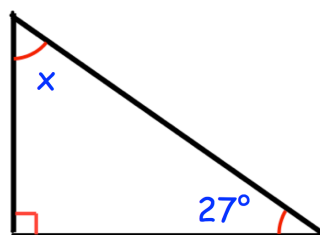


Translate triangle A by the vector $\begin{pmatrix} -3 \\ 1 \end{pmatrix}$

(2)

106.

Find x



.....⁰
(2)

107. The 10 students from class A and the 15 students from class B sit a test.

The mean mark for the class B is 70.

The mean mark for all 25 students is 77.

Work out the mean mark for the class A.

.....
(3)

108. The two-way table shows the grades students in Year 10 received in their exams.

		Physics			
		A	B	C	D
Maths	A	7	6	1	1
	B	3	5	3	0
	C	4	2	6	3
	D	0	0	1	0

(a) How many students received a B in maths?

.....
(2)

(b) How many students received a higher grade in physics than maths?

.....
(2)

109. There are red, green, pink and white counters in a box.

There are an equal number of red and white counters.

There are ten times more green than white counters.

There are twice as many red than pink counters.

Jim takes a counter at random from the box.

Work out the probability than Jim takes a green counter.

.....
(4)