KING EDWARD VI
HANDSWORTH GRAMMAR
SCHOOL FOR BOYS

KING EDWARD VI
ACADEMY TRUST
BIRMINGHAM

Year 10

2025 Mathematics 2026

Unit 20 Booklet – Part 1

HGS Maths

Tasks

Dr Frost Course

Name: _____

Class: _____

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Unit 20 Booklet – Part 2

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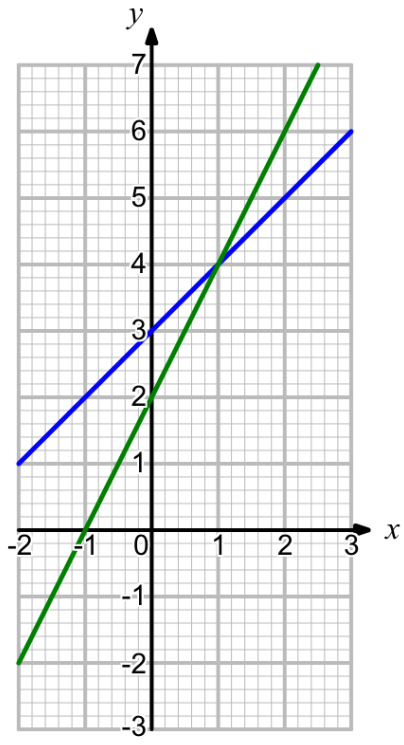
Contents Page

1 Graphical Simultaneous Equations

Worked Example

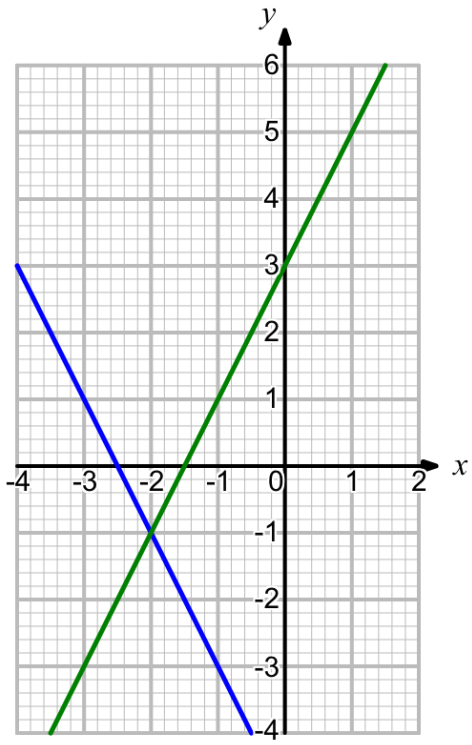
The diagram shows the graphs of $y = x + 3$ and $y = 2x + 2$



Use the graphs to find the solutions of the simultaneous equations $\begin{cases} y = x + 3 \\ y = 2x + 2 \end{cases}$

Worked Example

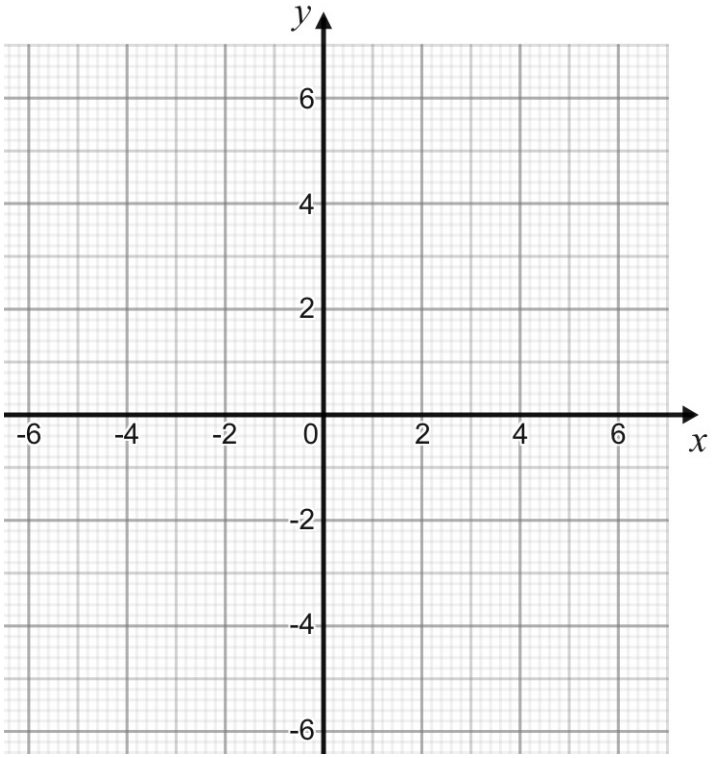
The diagram shows the graphs of $y = -2x - 5$ and $y = 2x + 3$



Use the graphs to find the solutions of the simultaneous equations $\begin{cases} y = -2x - 5 \\ y = 2x + 3 \end{cases}$

Worked Example

On the grid, draw the graphs of $y = \frac{1}{3}x - 4$ and $y = x - 2$

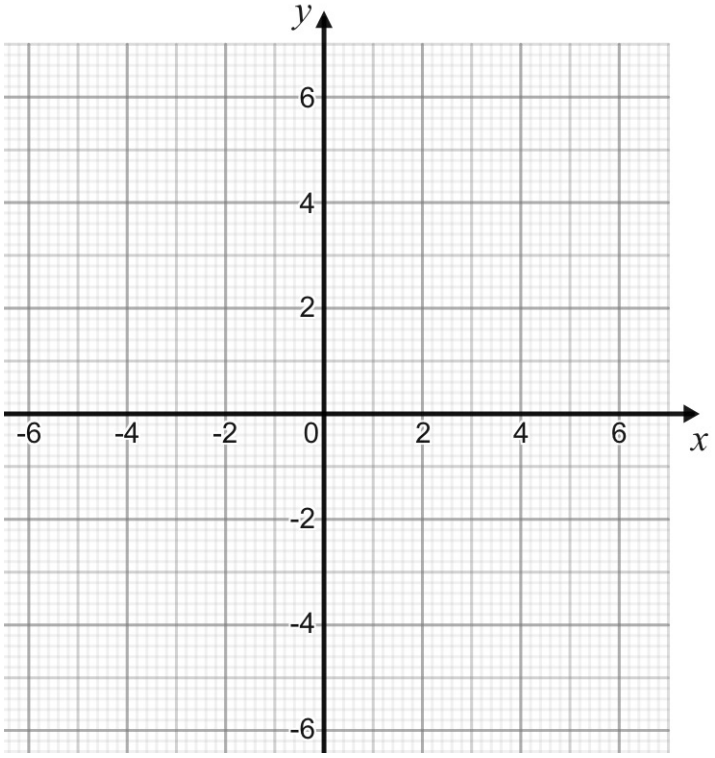


Use your diagram to solve the simultaneous equations

equations $\begin{cases} y = \frac{1}{3}x - 4 \\ y = x - 2 \end{cases}$

Worked Example

On the grid, draw the graphs of $y = 2x + 3$ and $y = -\frac{1}{3}x - 4$



Use your diagram to solve the simultaneous equations

equations $\begin{cases} y = 2x + 3 \\ y = -\frac{1}{3}x - 4 \end{cases}$

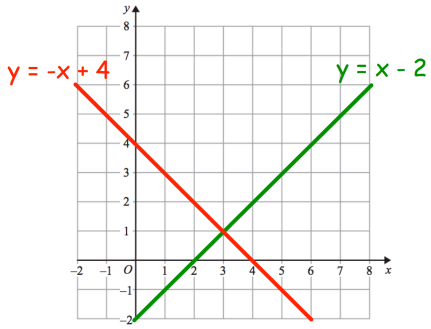
Question 1: Shown below are the graphs of $y = -x + 4$ and $y = x - 2$

(a) Write down the coordinates of the point where the graphs of $y = -x + 4$ and $y = x - 2$ intersect.

(b) Use your answer to (a) to solve the simultaneous equations.

$y = -x + 4$

$y = x - 2$



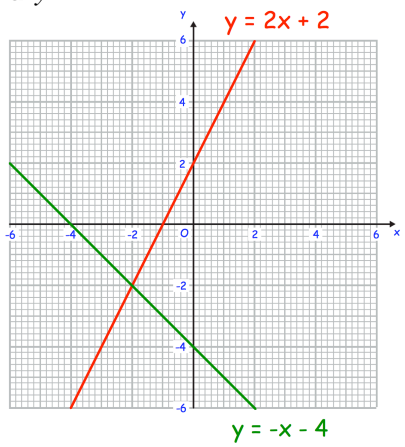
Question 2: Shown below are the graphs of $y = 2x + 2$ and $y = -x - 4$

(a) Write down the coordinates of the point where the graphs of $y = 2x + 2$ and $y = -x - 4$ intersect.

(b) Use your answer to (a) to solve the simultaneous equations.

$y = -x - 4$

$y = 2x + 2$



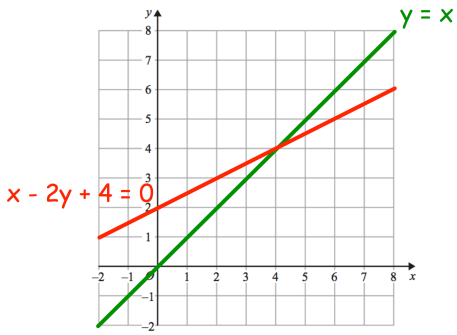
Question 3: Shown below are the graphs of $y = x$ and $x - 2y + 4 = 0$

(a) Write down the coordinates of the point where the graphs of $y = x$ and $x - 2y + 4 = 0$ intersect.

(b) Use your answer to (a) to solve the simultaneous equations.

$y = x$

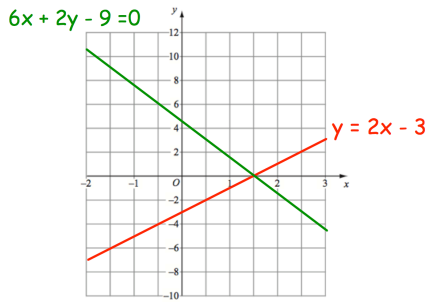
$x - 2y + 4 = 0$



Question 4: Shown below are the graphs of $6x + 2y - 9 = 0$ and $y = 2x - 3$

Use the graphs to solve the simultaneous equations

$6x + 2y - 9 = 0$
$y = 2x - 3$.

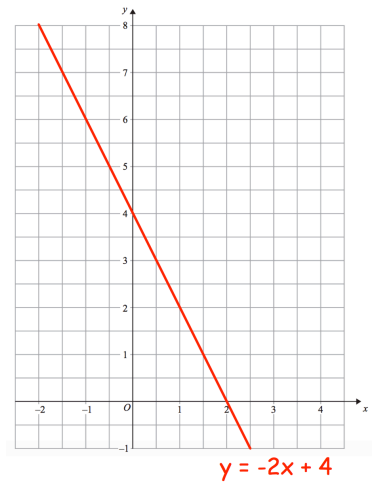


Question 5: The straight line $y + 2x = 4$ has been drawn on the grid.

(a) On the same grid, draw the graph of $y = x + 1$

(b) Use the graphs to solve the simultaneous equations

$y + 2x = 4$
$y = x + 1$.

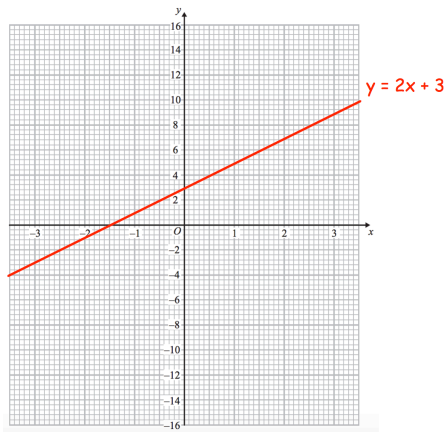


Question 6: The straight line $y = 2x + 3$ has been drawn on the grid.

(a) On the same grid, draw the graph of $y = -3x + 8$

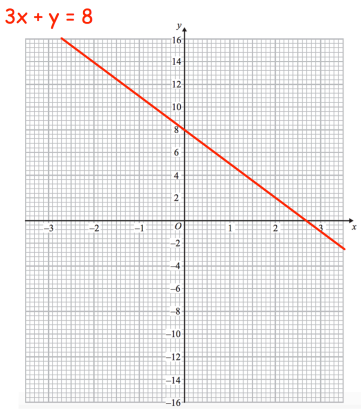
(b) Use the graphs to solve the simultaneous equations

$y = 2x + 3$
$y = -3x + 8$



Question 7: The straight line $3x + y = 8$ has been drawn on the grid.

(a) On the same grid, draw the graph of $x + y = 9$



(b) Use the graphs to solve the simultaneous equations

$3x + y = 8$
$x + y = 9$

Question 8: By drawing the graphs of $y = 3x + 1$ and $x + y = 7$

Solve the simultaneous equations
$y = 3x + 1$
$x + y = 7$

Question 9: By drawing the graphs of $y = 3x + 5$ and $x - 2y + 6 = 0$

Solve the simultaneous equations
$y = 3x + 5$
$x - 2y + 6 = 0$

Apply

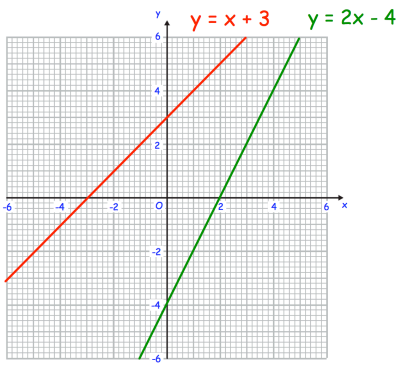
Question 1: Jesse has been asked to graphically solve the simultaneous equations

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

He has drawn the graph shown.

Jesse says that there is no answer to the simultaneous equations.

Explain why Jesse is incorrect.



Fluency Practice

Question 2: Harry and Trevor are trying to solve the simultaneous equations

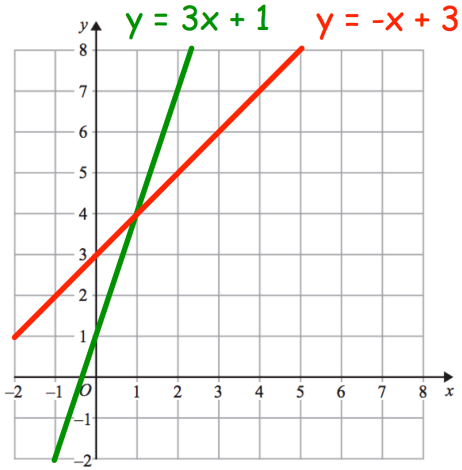
$$y = 3x + 1$$
$$y = -x + 3$$

Harry's answer is $x = 1$ and $y = 4$
Trevor's answer is $x = 0.5$ and $y = 2.5$

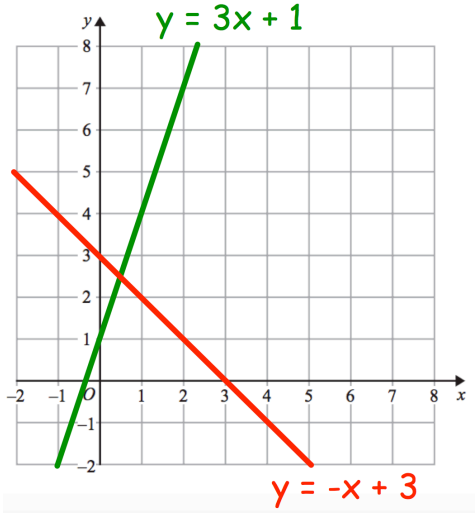
(a) By looking at the graphs below, decide who is correct

(b) What mistake was made by the other boy?

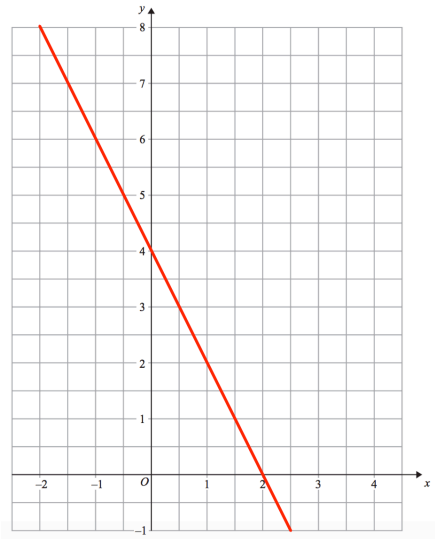
Harry



Trevor

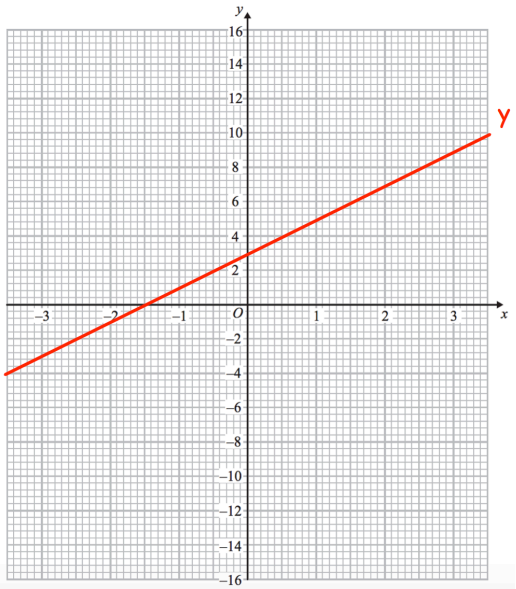


Question 5



y = -2x + 4

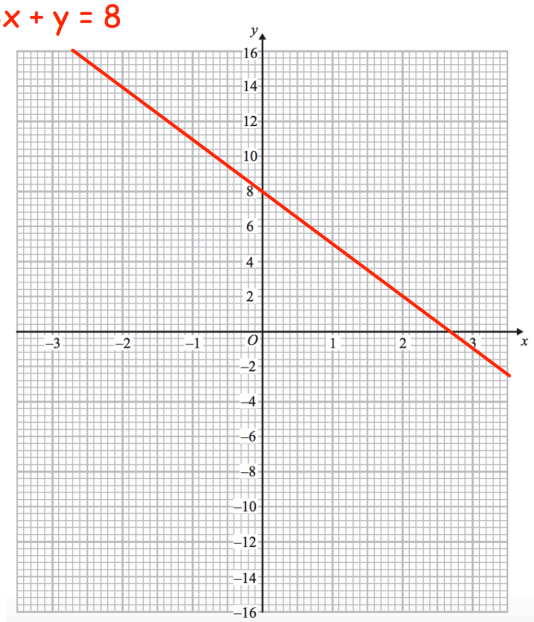
Question 6



y = 2x + 3

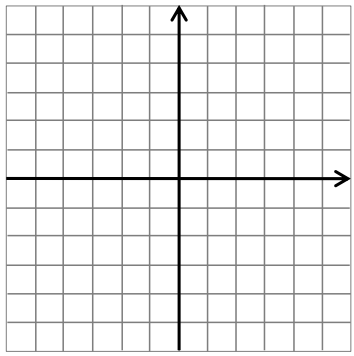
Question 7

3x + y = 8



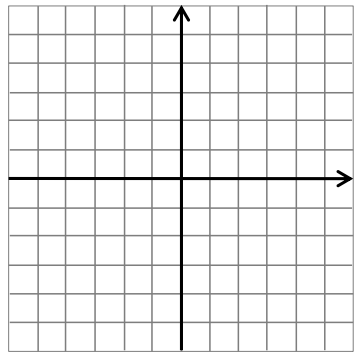
For each pair of equations draw the lines for each, the point of intersection represents the solution.

1. $y = 3x - 1$
   $y = 2x$



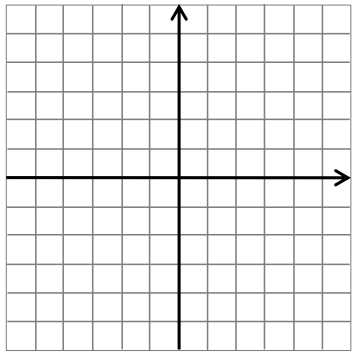
Point of intersection (____, ____) so x=____ & y=____

2. $y = 2x - 1$
   $y = x$



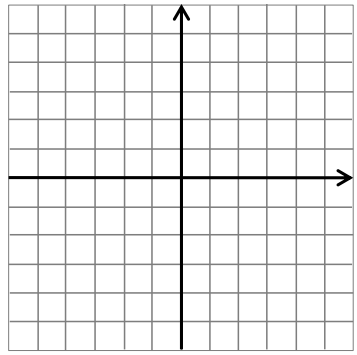
Point of intersection (____, ____) so x=____ & y=____

3. $y = 3x - 2$
   $y = x - 2$



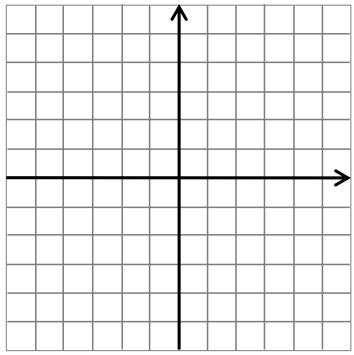
Point of intersection (____, ____) so x=____ & y=____

4. $y = 3 - 2x$
   $y = x$



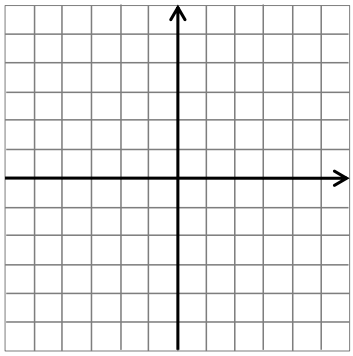
Point of intersection (____, ____) so x=____ & y=____

5. $x + y = 5$
   $y = 2x - 1$



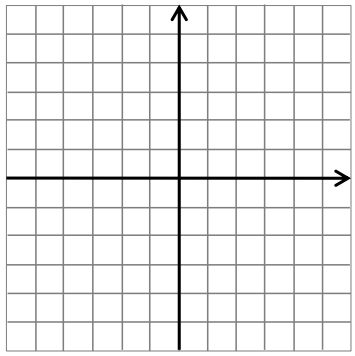
Point of intersection (____, ____) so x=____ & y=____

7. $x - y = 3$
   $x + y = 5$



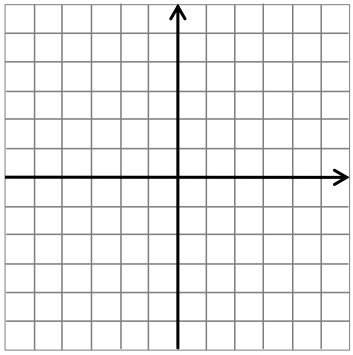
Point of intersection (____, ____) so x=____ & y=____

8. $x + y = -5$
   $y = 4x$



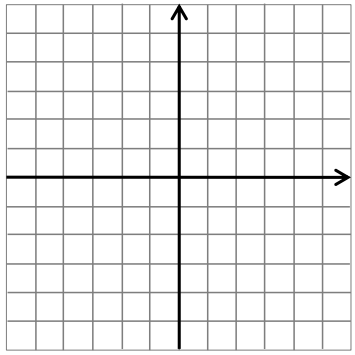
Point of intersection (____, ____) so x=____ & y=____

9. $y = 3x - 2$
   $x + y = 2$



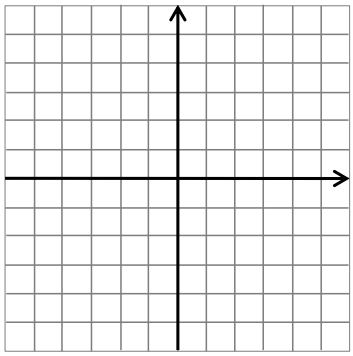
Point of intersection (____, ____) so x=____ & y=____

10. $2x - 3y = 6$
    $x + 3y = 3$



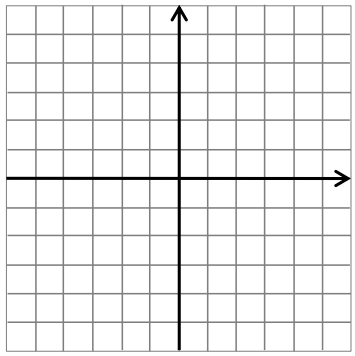
Point of intersection (____, ____) so x=____ & y=____

11. $x + 4y = 4$
    $x - 2y = 4$



Point of intersection (____, ____) so x=____ & y=____

12. $x + 3y = 6$
    $x + 2y = 5$



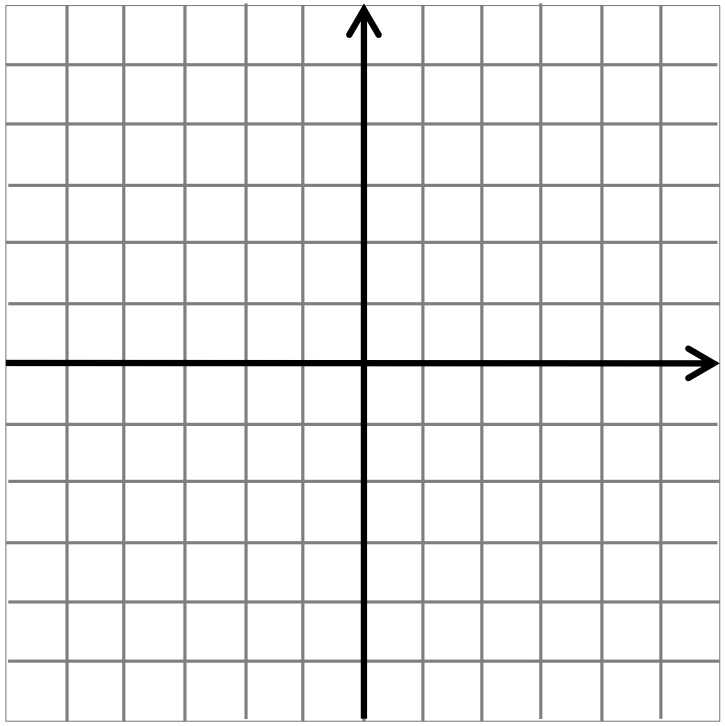
Point of intersection (____, ____) so x=____ & y=____

Worked Example

Solve graphically:

$y = x - 1$

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

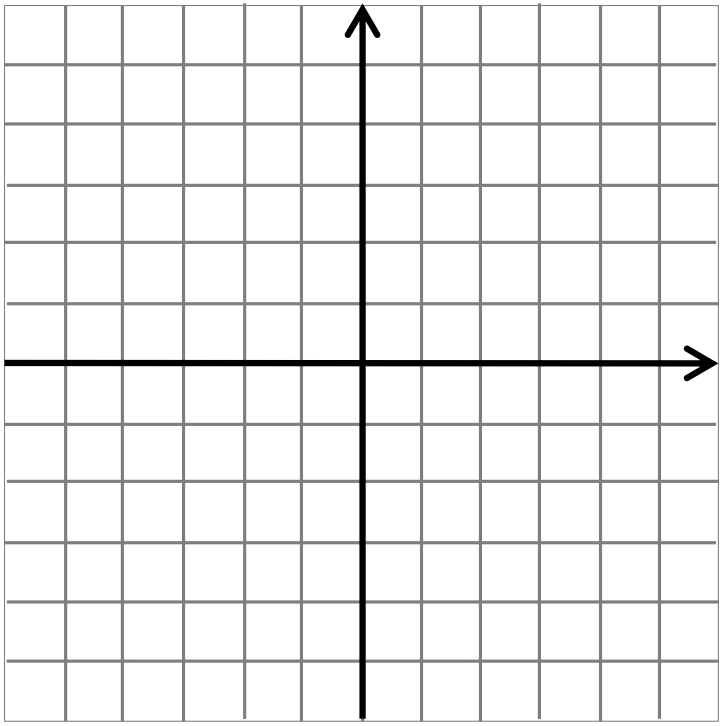


Worked Example

Solve graphically:

$y = 3 - x$

$y = x^2 + 2x + 5$



Solving Quadratic & Linear Simultaneous Equations by Plotting

① $y = x^2 - 3$
$y = x + 3$

② $y = x^2 + x$
$y = 2x + 2$

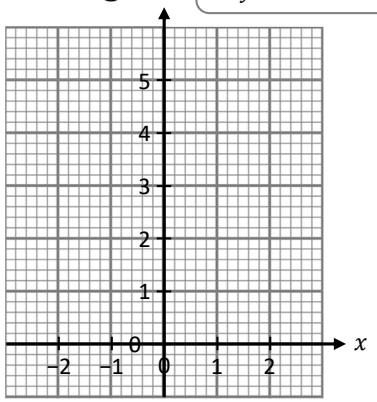
③ $y = x^2 - x - 1$
$y = 5 - 2x$

④ $y = x^2 - 3x + 2$
$y = 2x + 8$

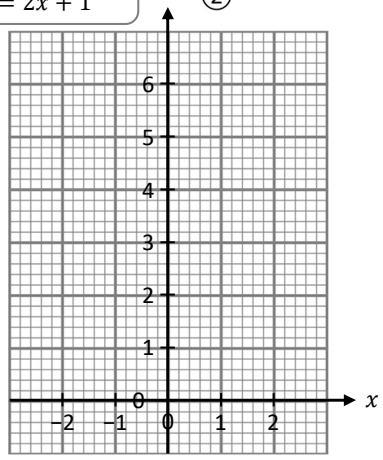
Fluency Practice

Estimating Solutions to Linear & Non-Linear Simultaneous Equations

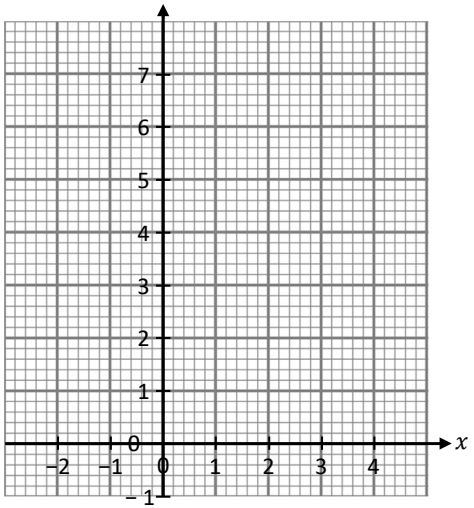
① $y = x^2 + 1$
$y = x + 2$



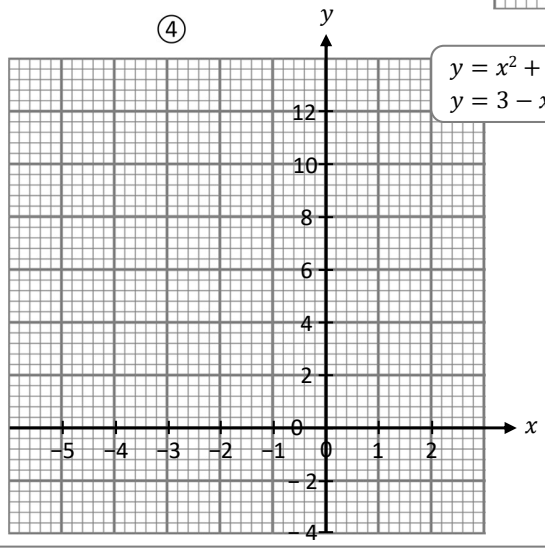
② $y = x^2 + x$
$y = 2x + 1$



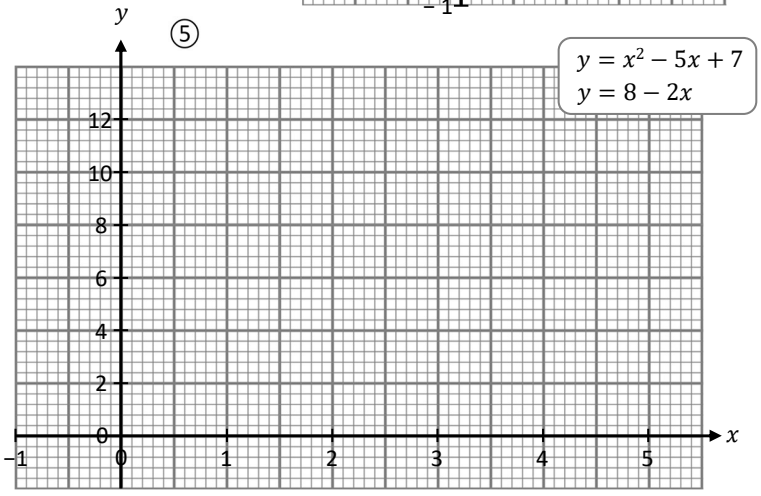
③ $y = x^2 - 2x$
$y = 0.5x + 4$



④ $y = x^2 + 2x - 3$
$y = 3 - x$



⑤ $y = x^2 - 5x + 7$
$y = 8 - 2x$



Extra Notes

2 Linear Simultaneous Equations

Worked Example	Your Turn
Solve: $4x + 3y = 23$ $2x + 3y = 19$	Solve: $8x + 3y = 31$ $2x + 3y = 19$

Dr Frost 276a and 276b

Worked Example	Your Turn
Solve: $4x - 3y = 23$ $2x + 3y = 19$	Solve: $8x + 3y = 31$ $2x - 3y = 19$

Fill in the Gaps

Question	Add or subtract?	Carry out addition or subtraction	Work out x	Substitute x into one equation	Work out y	Check using other equation	State both answers
$3x + y = 17$ $x + y = 7$	Subtract	$3x + y = 17$ $-\ \ x + y = 7$ $2x \quad\ = 10$	$x = 5$	$3x + y = 17$ $15 + y = 17$	$y = 2$	$x + y = 7$ $5 + 2 = 7$ ✓	$x = 5$ $y = 2$
$5x + 2y = 12$ $3x - 2y = 4$	Add	$5x + 2y = 12$ $+\ 3x - 2y = 4$ $8x \quad\ = 16$	$x = 2$	$5x + 2y = 12$ $10 + 2y = 12$ $2y = 2$			
$x - 2y = 2$ $4x + 2y = 18$	Add	$x - 2y = 2$ $+\ 4x + 2y = 18$					
$4x - 3y = 18$ $x - 3y = 9$							
$x + 4y = 19$ $3x + 4y = 17$							
$2x + y = 3$ $6x - y = 17$							

Worked Example	Your Turn
Solve: $2x - 5y = 16$ $2x + 3y = 0$	Solve: $3x + 5y = 2$ $3x - 2y = -5$

Fill in the Gaps

Question	Add or subtract?	Carry out addition or subtraction	Work out y	Substitute y into one equation	Work out x	Check using other equation	State both answers
$x + 3y = 13$ $x + y = 7$	Subtract	$x + 3y = 13$ $-x + y = 7$ $2y = 6$	$y = 3$	$x + 3y = 13$ $x + 9 = 13$	$x = 4$	$x + y = 7$ $4 + 3 = 7$ ✓	$x = 4$ $y = 3$
$3x + y = 19$ $3x - 4y = 14$	Subtract	$3x + y = 19$ $-3x - 4y = 14$ $5y = 5$	$y = 1$	$3x + y = 19$ $3x + 1 = 19$ $3x = 18$			
$x + 5y = 22$ $-x + 2y = 6$	Add	$x + 5y = 22$ $+ -x + 2y = 6$					
$2x - 5y = 25$ $2x + 3y = 1$	Subtract						
$-3x + y = 10$ $3x + 2y = 11$							
$x + 2y = -7$ $x - 6y = 5$							

Worked Example	Your Turn
Solve: $2x + 3y = 11$ $3x + y = 13$	Solve: $4x + 3y = 5$ $2x - 5y = 9$

Worked Example	Your Turn
Solve: $3x + 2y = 9$ $5x + 7y = 4$	Solve: $2x + 3y = 9$ $5x + 7y = 23$

Fill in the Gaps

Question	Multiply one or both equations	Add or subtract?	Carry out addition or subtraction	Work out x	Substitute x into one equation	Work out y	State both answers
$2x + y = 9$ $x + 2y = 6$	$4x + 2y = 18$ $x + 2y = 6$	Subtract	$4x + 2y = 18$ $-\ x + 2y = 6$ $3x \quad = 12$	$x = 4$	$2x + y = 9$ $8 + y = 9$	$y = 1$	$x = 4$ $y = 1$
$3x + y = 17$ $2x - 3y = 4$	$9x + 3y = 51$ $2x - 3y = 4$	Add	$9x + 3y = 51$ $+ 2x - 3y = 4$ $11x \quad = 55$				
$x - 5y = 9$ $4x + y = 15$	$x - 5y = 9$ $20x + 5y = 75$						
$4x + 3y = 1$ $x - 2y = -8$							
$2x - 5y = 13$ $4x - 2y = 10$							
$x + 6y = 3$ $2x + 9y = 4$							

Fill in the Gaps

Question	Multiply one or both equations	Add or subtract?	Carry out addition or subtraction	Work out y	Substitute y into one equation	Work out x	State both answers
$x + 2y = 5$ $3x + y = 10$	$3x + 6y = 15$ $3x + y = 10$	Subtract	$3x + 6y = 15$ $-\ 3x + y = 10$ $5y = 5$	$y = 1$	$x + 2y = 5$ $x + 2 = 5$	$x = 3$	$x = 3$ $y = 1$
$4x - y = 3$ $x + 3y = 17$	$4x - y = 3$ $4x + 12y = 68$	Subtract	$4x - y = 3$ $-\ 4x + 12y = 68$				
$x - 5y = 14$ $-2x - y = -6$	$2x - 10y = 28$ $-2x - y = -6$	Add					
$2x + 2y = 11$ $3x - 4y = 13$							
$5x + 7y = 6$ $-3x - 2y = 3$							
$4x + 3y = -3$ $6x + 5y = -6$							

Worked Example	Your Turn
Solve: $5x = -4y + 22$ $3x = 7y - 15$	Solve: $5x + 7y - 12 = 0$ $8x = -4y + 3$

Worked Example	Your Turn
Solve the following simultaneous equations: $2x + 5y = 25$ $y = 5x - 22$	Solve the following simultaneous equations: $5x + 4y = 30$ $y = 3x - 1$

Worked Example	Your Turn
Solve the following simultaneous equations: $b = (5 - a)^2 + 4$ $b = (a - 3)^2 - 5$	Solve the following simultaneous equations: $y = (x - 3)^2 - 8$ $y = (5 - x)^2 - 2$

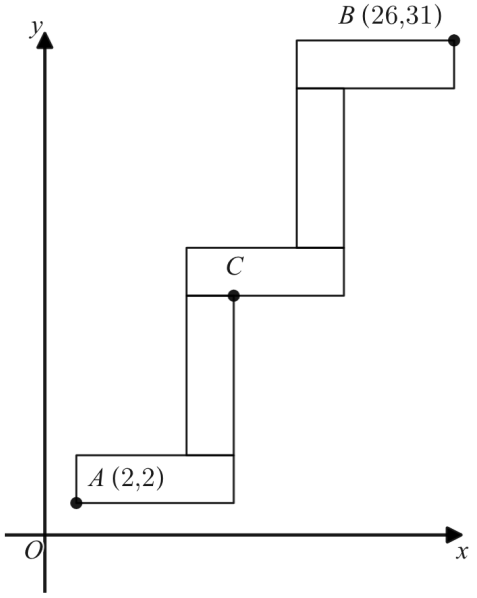
Worked Example	Your Turn
Two numbers have a sum of 45 and a difference of 13. Find the numbers.	Two numbers have a sum of 49 and a difference of 19. Find the numbers.

Worked Example	Your Turn
An aquarium specialises in octopuses and sea stars. Each octopus has 3 hearts and 8 limbs and each sea star has 1 heart and 5 limbs. At the aquarium, there are 165 limbs and 54 hearts from the octopuses and sea stars. Work out how many octopuses and sea stars there are.	On a nature walk Lucy looks for dragonflies and birds. Each dragonfly has 6 legs and 4 wings and each bird has 2 legs and 2 wings. In total, Lucy spots animals with a combined 76 legs and 60 wings. Work out how many dragonflies and birds there are.

Worked Example	Your Turn
Lucas is a pilot and in June he flew two different routes. During June, he flew on route A 3 times and route B 5 times and flew a total of 12850 km. Route A is 150 km longer than route B. Work out the length of route A and the length of route B.	Fatoumata is training for a marathon and has two routes she trains on. During July, she uses route A 5 times and route B 3 times and jogged a total of 84 km. Route A is 4 km longer than route B. Work out the length of route A and the length of route B.

Worked Example

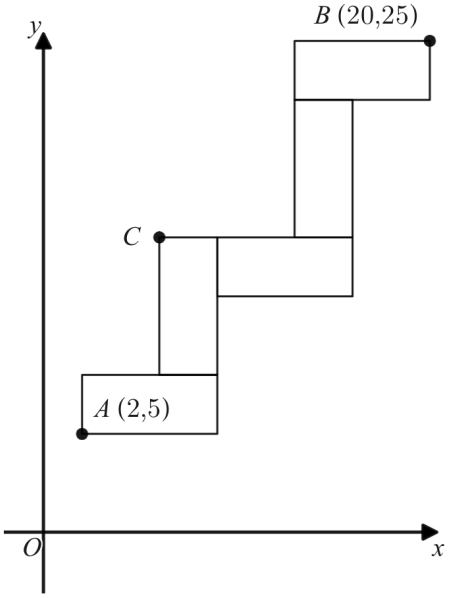
A pattern is made from 5 identical rectangles arranged parallel to the axes.



Point A has coordinates $(2, 2)$
Point B has coordinates $(26, 31)$
Work out the coordinates of point C.

Your Turn

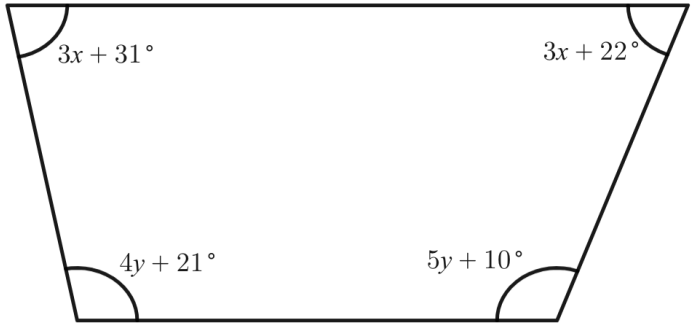
A pattern is made from 5 identical rectangles arranged parallel to the axes.



Point A has coordinates $(2, 5)$
Point B has coordinates $(20, 25)$
Work out the coordinates of point C.

Worked Example

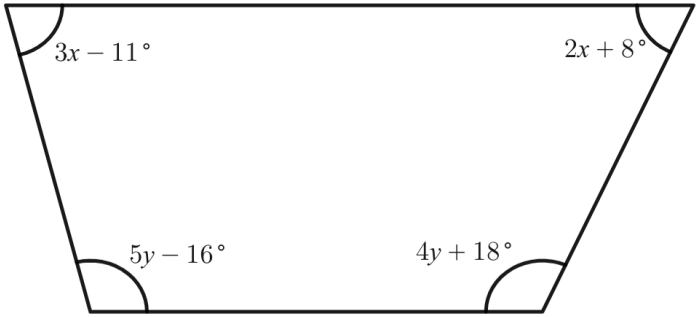
This diagram shows a trapezium.



Work out the values of x and y.

Your Turn

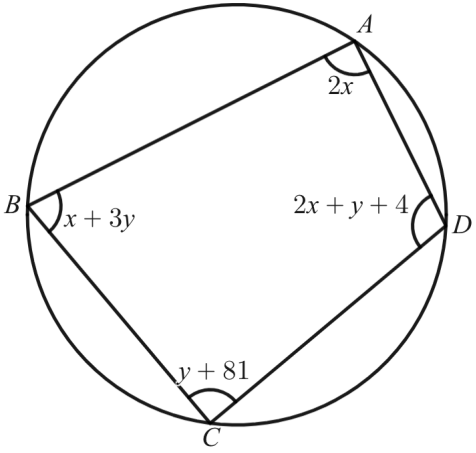
This diagram shows a trapezium.



Work out the values of x and y.

Worked Example

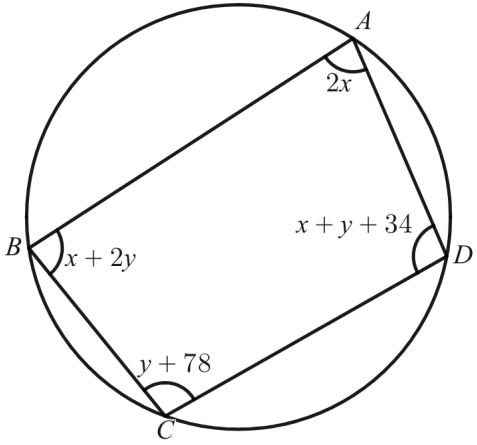
$ABCD$ is a cyclic quadrilateral.



Work out the values of x and y

Your Turn

$ABCD$ is a cyclic quadrilateral.

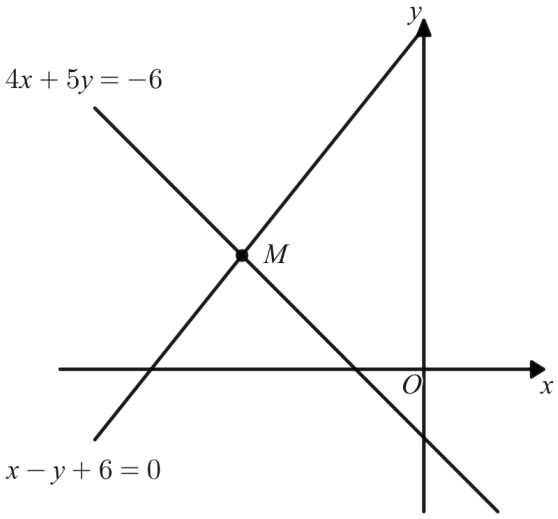


Work out the values of x and y

Worked Example

M is the point of intersection of the lines with equations $x - y + 6 = 0$ and $4x + 5y = -6$

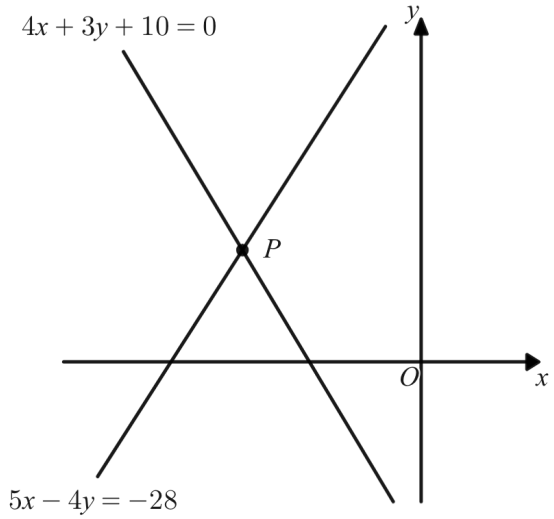
Write down the coordinates of M.



Your Turn

P is the point of intersection of the lines with equations $4x + 3y + 10 = 0$ and $5x - 4y = -28$

Write down the coordinates of P.



Worked Example	Your Turn
Given that: $a\begin{pmatrix}-5\\1\end{pmatrix}+b\begin{pmatrix}6\\-4\end{pmatrix}=\begin{pmatrix}10\\-16\end{pmatrix}$ Find the value of a and the value of b.	Given that: $m\begin{pmatrix}-1\\7\end{pmatrix}+n\begin{pmatrix}4\\-2\end{pmatrix}=\begin{pmatrix}-21\\43\end{pmatrix}$ Find the value of m and the value of n.

Extra Notes

3 Combinations and Permutations

Worked Example	Your Turn
In a school there are 25 teachers and 450 students. Of the students, 200 are boys and 250 are girls. One teacher, one girl and one boy are going to be chosen to represent the school. Work out the number of different ways there are to choose one teacher, one girl and one boy.	In a school there are 20 teachers and 300 students. Of the students, 200 are boys and 100 are girls. One teacher, one girl and one boy are going to be chosen to represent the school. Work out the number of different ways there are to choose one teacher, one girl and one boy.

Worked Example	Your Turn
Arthur is going to an ice-cream parlour. There are 10 flavours of ice-cream, 7 toppings, 3 types of flake and a number of sauces. The total number of ways Arthur can choose the flavours of ice-cream, toppings , types of flake and sauces is 1260. Work out how many sauces Arthur can choose from.	Emma is going to a clothing store selling three piece suits. There are 11 types of jacket, 9 types of shirt, 7 styles of trousers and a number of types of waistcoat. Emma is going to choose one each from the possible types of jacket, types of shirt, styles of trousers and types of waistcoat. She says there are 2772 different combinations. Work out how many different types of waistcoat Emma can choose from.

Worked Example	Your Turn
Diana is picking a password for her tablet. The password consists of three randomly chosen lowercase letters from the English alphabet, which contains 26 letters ranging from a to z. Note, she can repeat letters. Work out how many possible passwords Diana could pick.	Mia is picking a password for their computer. The password consists of five randomly chosen digits from 0 to 9. Note, they can repeat digits. Work out how many possible passwords Mia could pick.

Worked Example	Your Turn
In a restaurant there are 7 starters, 9 main courses and 3 desserts. Talula is going to choose either a starter and a main, a main and a dessert, or a starter, main and dessert. Work out how many possible choices Talula has.	In a restaurant there are 5 starters, 9 main courses and 7 desserts. Fatoumata is going to choose either a starter and a main, a main and a dessert, or a starter, main and dessert. Work out how many possible choices Fatoumata has.

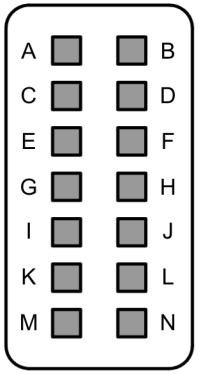
Worked Example	Your Turn
There are 73 girls and 67 boys in upper sixth at a sixth form college. One girl is going to be chosen for the role of Head Girl. A different girl is going to be chosen for the role of Deputy Head Girl. One boy is going to be chosen for the role of Head Boy. A different boy is going to be chosen for the role of Deputy Head Boy. Work out how many different ways this can be done.	There are 106 girls and 98 boys in upper sixth at a sixth form college One girl is going to be chosen for the role of Head Girl. A different girl is going to be chosen for the role of Deputy Head Girl. One boy is going to be chosen for the role of Head Boy. A different boy is going to be chosen for the role of Deputy Head Boy. Work out how many different ways this can be done.

Worked Example	Your Turn
In a football academy there are 20 different players. Two players are going to picked to go to a training camp. Work out how many different combinations of footballers they can pick.	In a choir there are 27 different singers. Two are going to be picked to sing a duet. Work out how many different ways they can pick two different singers.

Worked Example	Your Turn
Bruno makes 4 digit numbers using all of the cards below. $3, 5, 6, 7$ Work out how many different odd numbers Bruno can make greater than 5000	Bruno makes 4 digit numbers using all of the cards below. $2, 5, 7, 9$ Work out how many different odd numbers Bruno can make less than 7000

Worked Example

A warehouse has a security lock.
To open the warehouse you must press the correct four buttons in the correct order.

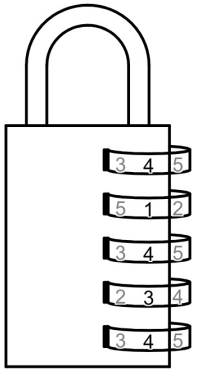


For example: $MBIM$

Work out what fraction of all the possible codes contain 4 different letters.

Your Turn

There are five dials on a combination lock.
Each dial can be set to any number between 1 and 5

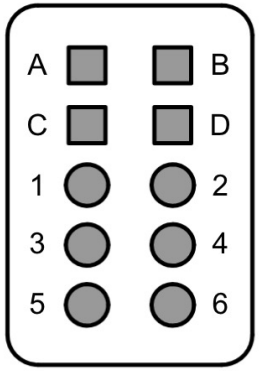


For example: 41434 is one way the dials can be set.

Work out what fraction off all possible codes involve 5 different numbers.

Worked Example

A bike shed has a security lock.
To open the bike shed you must press the correct buttons.



Determine the probability that a code chosen at random containing any 3 characters is in one of the following orders:

Your Turn

Erik is going stargazing with his telescope. He can potentially look at 5 planets and 11 moons.

He is going to pick three different celestial bodies at random to observe.

Determine the probability that the three objects he views will be in one of the following orders:

planet moon planet	OR	moon planet moon

Extra Notes

4 Advanced Statistics

Histograms

Fill in the Gaps

Group	Frequency	Group width	Frequency density
$8 \leq p < 12$	20		
$8 \leq p < 12$	10		
$8 \leq p <$	10		1.25
$\leq p < 28$	10	20	
$25 \leq p <$		20	0.6
$\leq p < 65$	12		0.24
$20 \leq p <$	120	50	
$200 \leq p < 250$			1.6
$\leq p < 250$		20	4
$\leq p < 175$	20	80	
$\leq p < 175$	20		0.333 …
$15 \leq p <$		60	0.3

Worked Example

Plot a histogram:

Height, x (cm)	Frequency
$140 < x \leq 155$	6
$155 < x \leq 175$	14
$175 < x \leq 185$	6
$185 < x \leq 190$	21

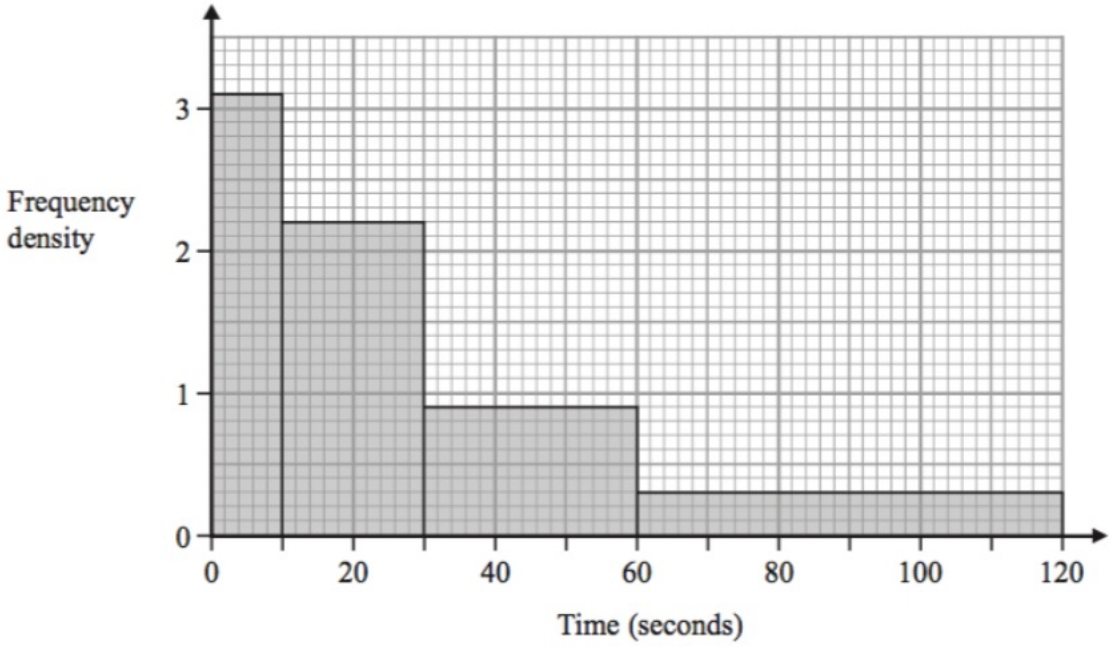
Your Turn

Plot a histogram:

Price, y (£)	Frequency
$0 < y \leq 10$	4
$10 < y \leq 20$	9
$20 < y \leq 25$	8
$25 < y \leq 35$	10
$35 < y \leq 50$	12

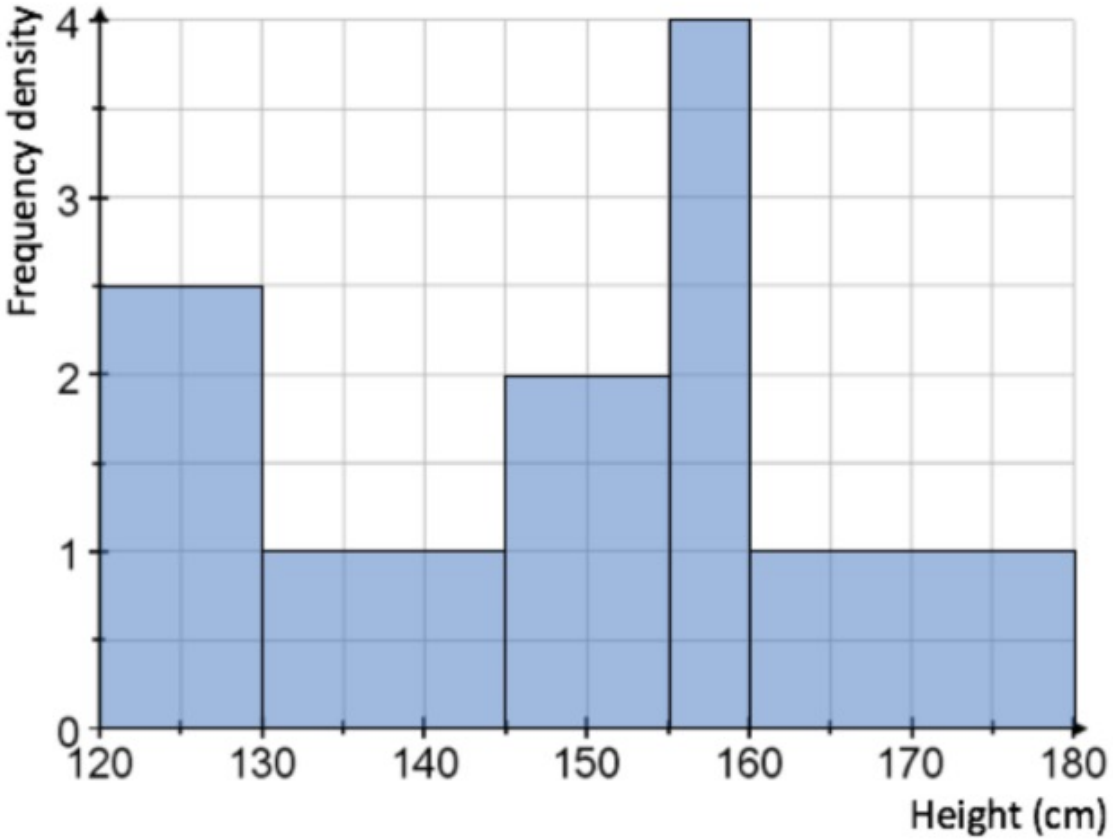
Worked Example

Draw a frequency table from the histogram:



Your Turn

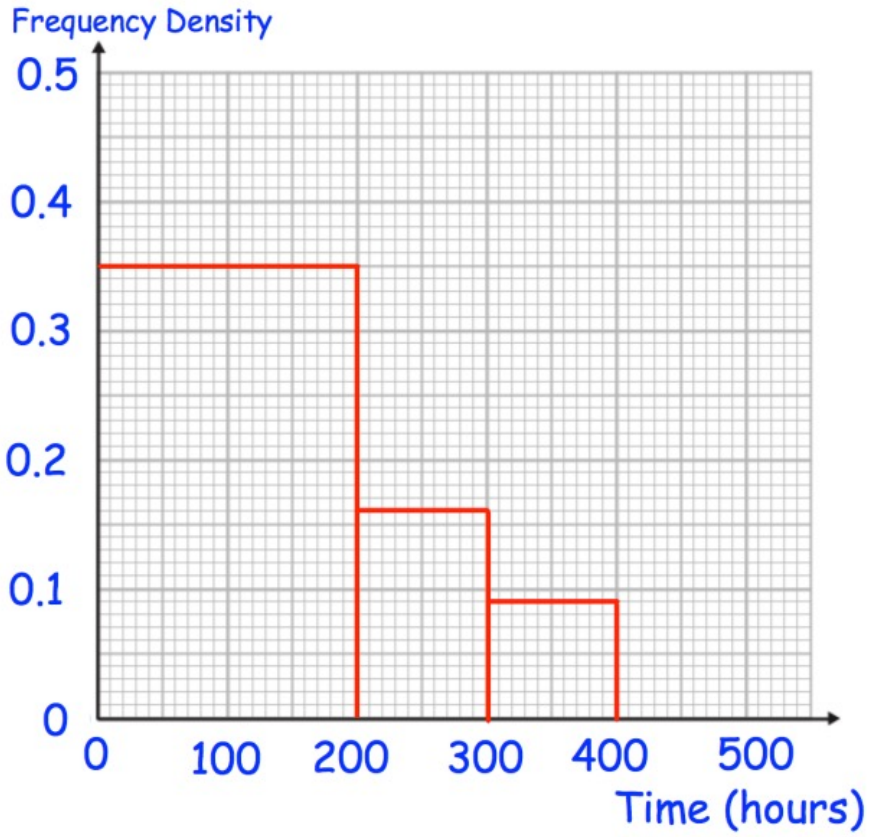
Draw a frequency table from the histogram:



Worked Example

a) Estimate the number of pilots who have flown under 350 hours.

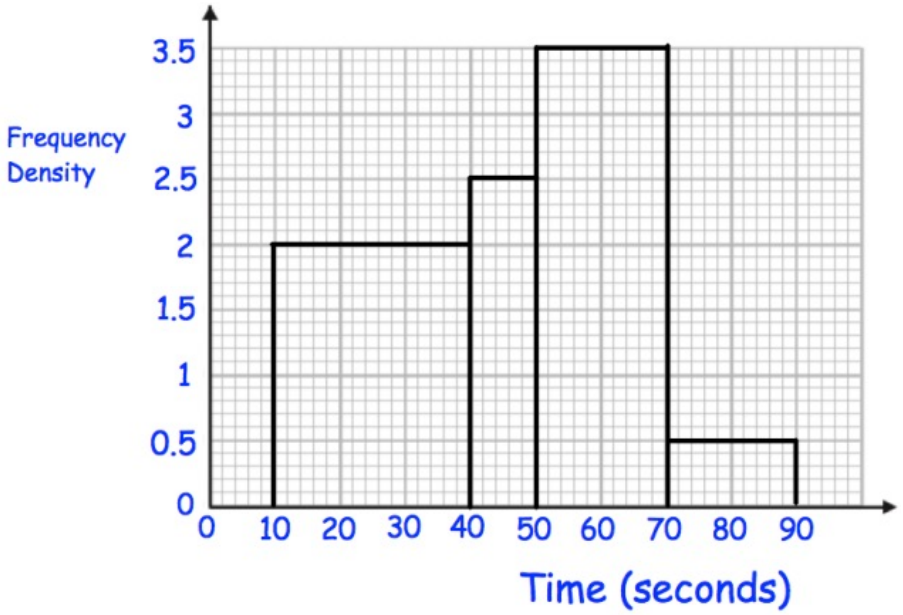
b) Work out the percentage of pilots who have flown under 350 hours.



Your Turn

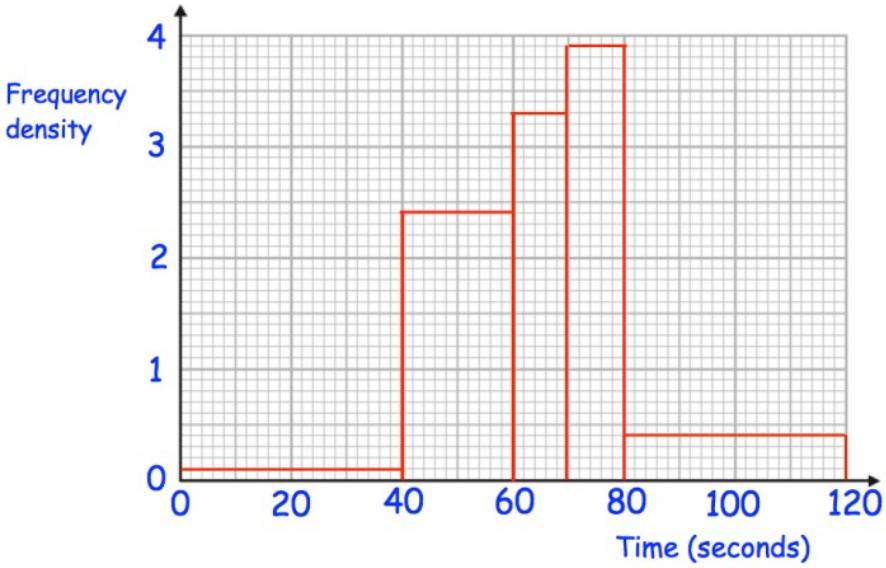
a) Estimate the number of students who took less than 60 seconds to complete the puzzle.

b) Work out the percentage of students who took less than 60 seconds to complete the puzzle.



Worked Example

Estimate the median time.

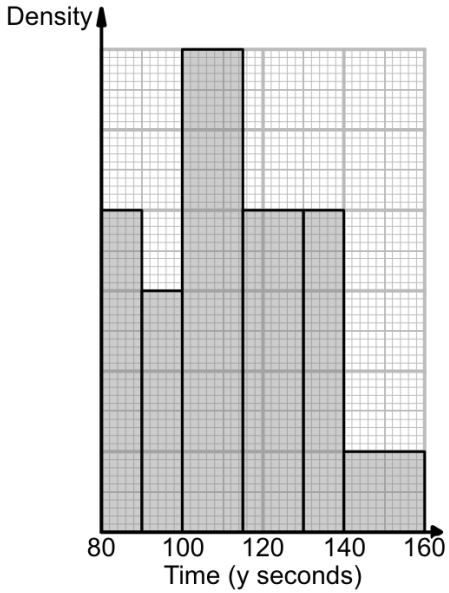


Your Turn

Estimate the median weight.

Worked Example

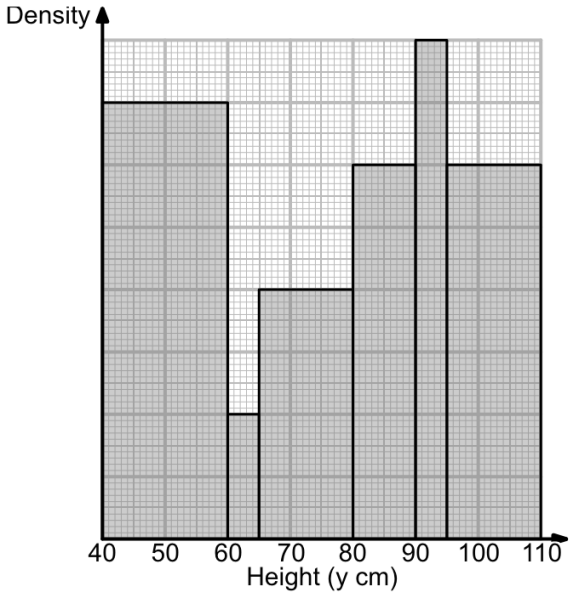
Lizzie collects the running times of some athletes and represents the data on the histogram drawn below.



There are 10 athletes with a time between 140 and 160 seconds.
Estimate how many athletes have a time between 100 and 115 seconds.

Your Turn

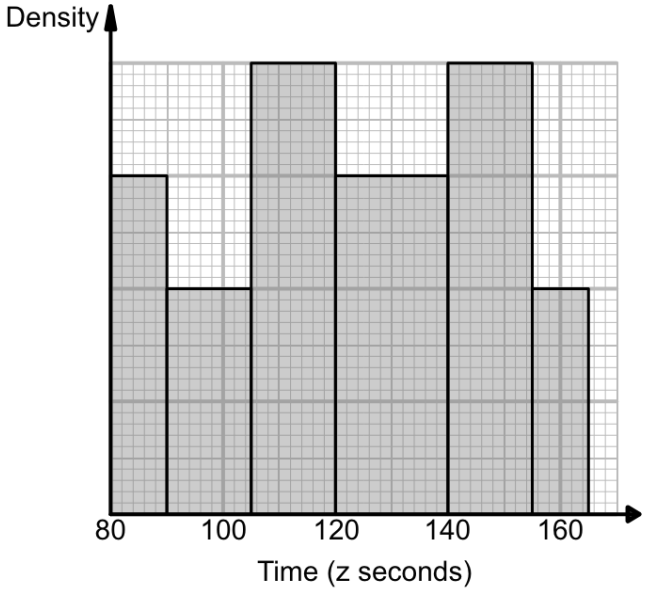
Lesley collects the heights of some plants and represents the data on the histogram drawn below.



There are 20 plants with a height between 90 and 95 cm.
Estimate how many plants have a height between 60 and 80 cm.

Worked Example

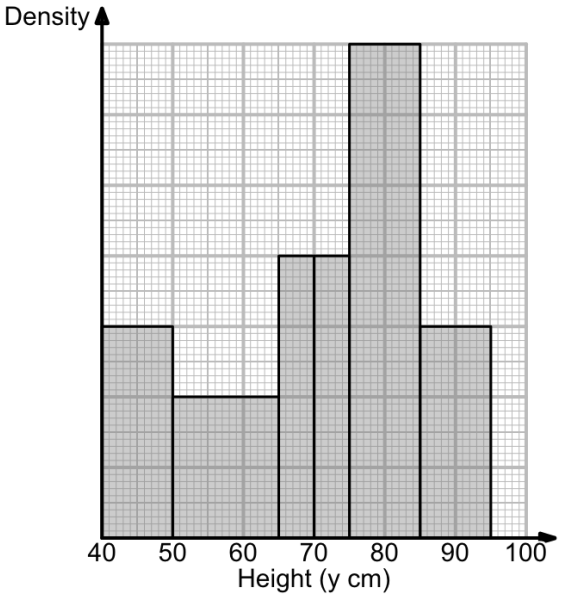
Lesley collects the running times of some athletes and represents the data on the histogram drawn below.



There are 15 athletes with a time between 80 and 90 seconds.
Find the total number of athletes included in Lesley's data.

Your Turn

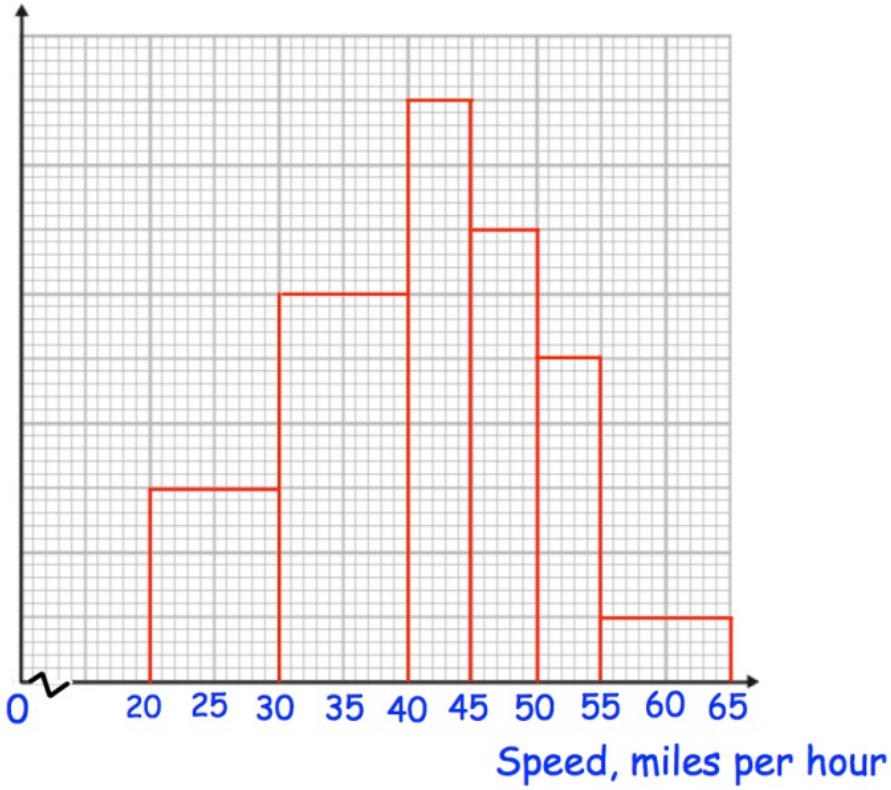
Lloyd collects the heights of some plants and represents the data on the histogram drawn below.



There are 15 plants with a height between 40 and 50 cm.
Find the total number of plants included in Lloyd's data.

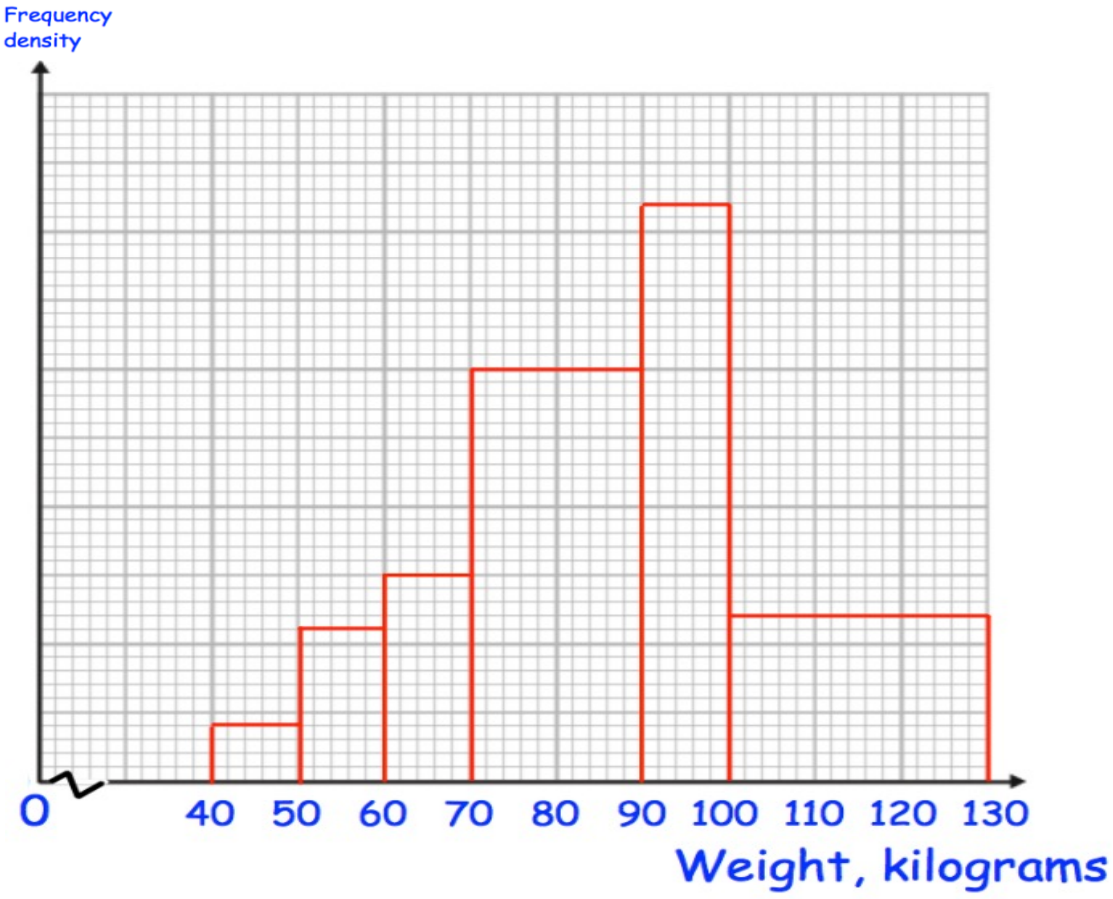
Worked Example

There were 82 cars on the road. 14 cars were travelling over 50 mph. Estimate the number of cars that were travelling between 40 and 49 mph.



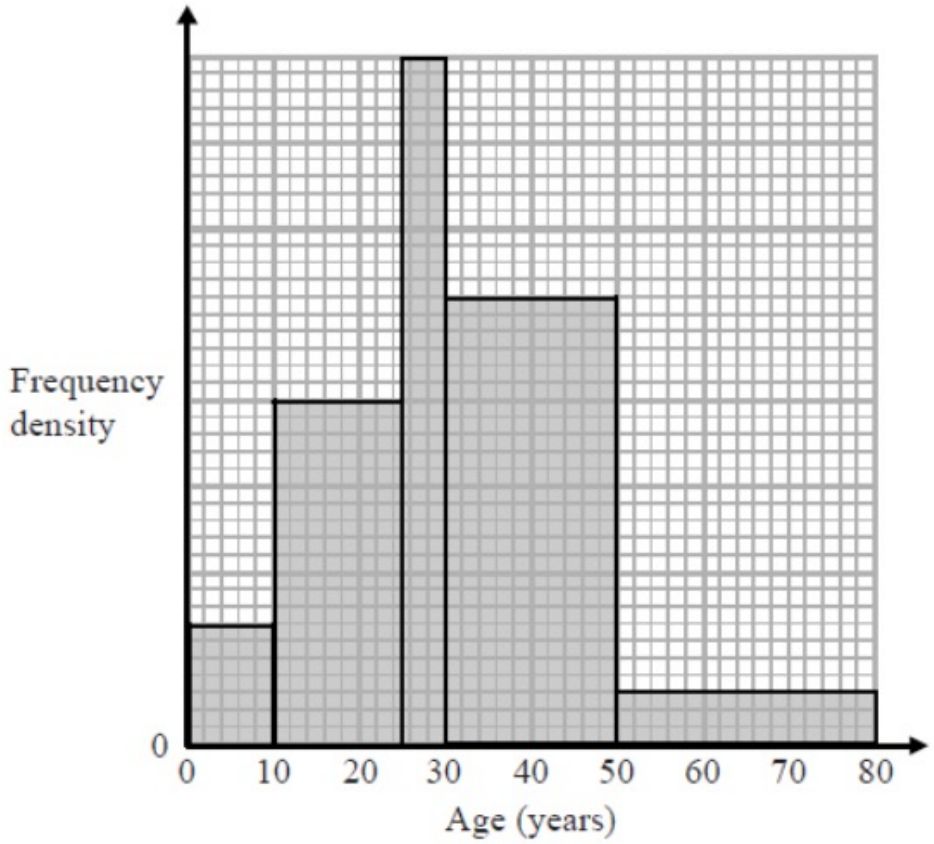
Your Turn

There were 504 athletes measured. 45 athletes weigh under 60 kg. Estimate the number of athletes between 70 and 95 kg.



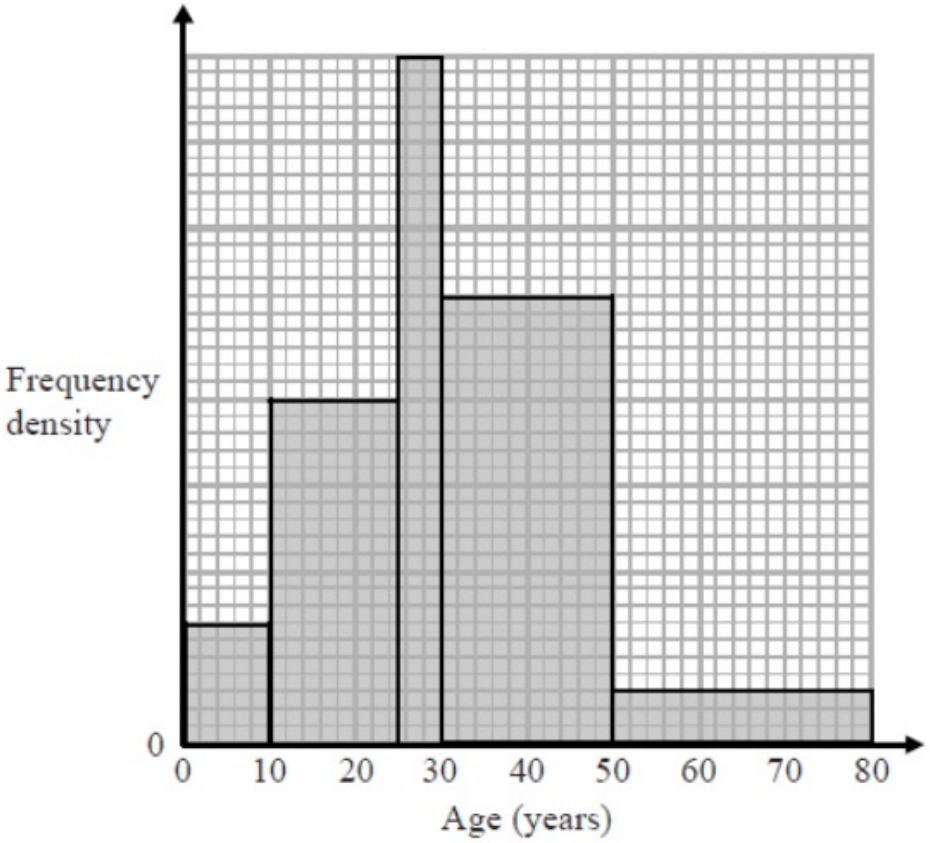
Worked Example

The histogram shows the ages of members of a club. There are 30 members aged between 10 and 25. A member of the club is chosen at random. What is the probability they are more than 25 years old?



Your Turn

The histogram shows the ages of members of a club. There are 20 members aged between 25 and 30. A member of the club is chosen at random. What is the probability they are more than 30 years old?



Question 1: Draw a histogram for each set of data below.

(a)

Time, t seconds	Frequency
$0 \le t < 2$	10
$2 \le t < 4$	13
$4 \le t < 6$	18
$6 \le t < 10$	16
$10 \le t < 14$	8
$14 \le t < 20$	6

(b)

Length (cm)	Frequency
$0 \le L < 20$	10
$20 \le L < 30$	35
$30 \le L < 40$	65
$40 \le L < 80$	40

(c)

Mass, m kg	Frequency
$40 \le m < 50$	4
$50 \le m < 60$	7
$60 \le m < 70$	13
$70 \le m < 85$	12
$85 \le m < 100$	3
$100 \le m < 120$	3

(d)

Volume, v ml	Frequency
$0 \le v < 100$	400
$100 \le v < 175$	900
$175 \le v < 250$	1275
$250 \le v < 300$	350
$300 \le v < 450$	450
$450 \le v < 600$	150

(e)

Cost, c pounds	Frequency
$0 \le c < 2$	5
$2 \le c < 3$	9
$3 \le c < 3.5$	8
$3.5 \le c < 4$	11
$4 \le c < 5.5$	6
$5.5 \le c < 8$	5

(f)

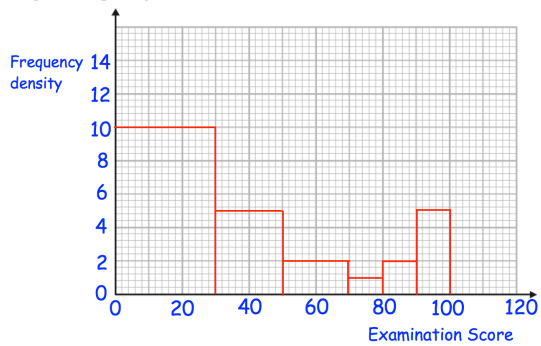
Force, f N	Frequency
$10 \le f < 19$	3
$19 \le f < 25$	12
$25 \le f < 28$	9
$28 \le f < 31$	4
$31 \le f < 34$	2

Apply

Question 1: Mr Smith has drawn a histogram to represent his classes' examination scores.

(a) Can you explain what Mr Smith has done wrong?
(b) Draw a correct histogram for Mr Smith

Examination score	Frequency
$0 < s \le 30$	3
$30 < s \le 50$	4
$50 < s \le 70$	10
$70 < s \le 80$	10
$80 < s \le 90$	5
$90 < s \le 100$	2



Question 2: The ages of the members of a snooker club are shown in the table below.

(a) Draw a histogram to represent the data.

Age, x years	Frequency
$20 < x \leq 24$	6
$24 < x \leq 28$	10
$28 < x \leq 34$	12
$34 < x \leq 40$	9
$40 < x \leq 50$	7
$50 < x \leq 65$	6

Ronnie, the manager of the snooker club, says that the average age of the members of the snooker club is under 32.

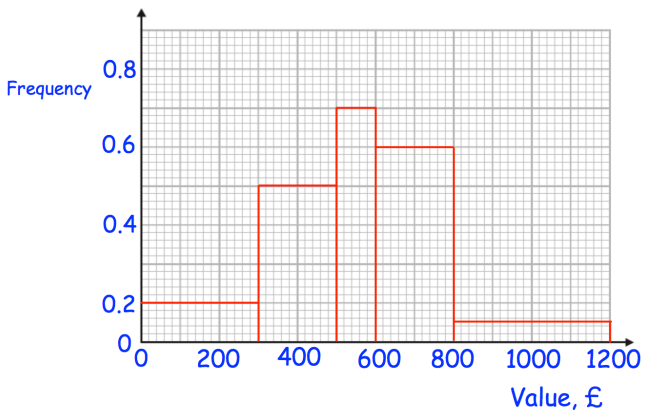
(b) Work out an estimate of the mean age of the members

(c) Do you agree with Ronnie?
Explain your answer.

Question 3: Christine has drawn a histogram to show the value of some antiques.
She has made some mistakes.

(a) Can you spot all the mistakes?

(b) Draw a correct histogram to represent the data.



Value, v pounds	Frequency
$0 \leq v < 300$	60
$300 \leq v < 500$	100
$500 \leq v < 600$	70
$600 \leq v < 800$	60
$800 \leq v < 1200$	40

Question 4: Henry has 20 apples in a crate.
The masses of the apples are shown in the table.

(a) Work out an estimate of the mean mass of an apple.

(b) Draw a histogram to represent the data.

(c) What fraction of the apples are over 85g?

Mass, m grams	Frequency
$50 < m \leq 70$	2
$70 < m \leq 80$	3
$80 < m \leq 85$	6
$85 < m \leq 90$	5
$90 < m \leq 110$	4

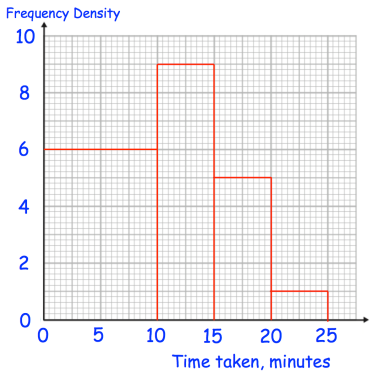
Henry takes two apples from the crate at random, without replacement.

(d) Work out the probability that both apples are over 90g.

Question 1: The histogram shows information about the time taken to travel to school by students.

Complete the frequency table.

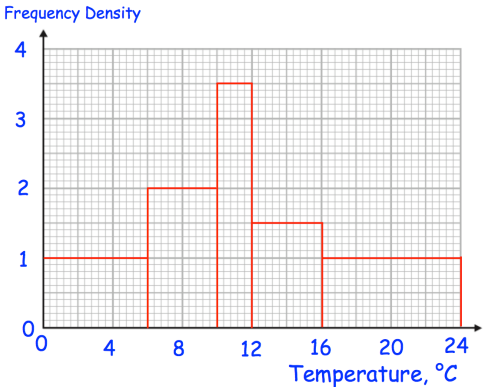
Time taken, minutes	Frequency
$0 < t \leq 10$	
$10 < t \leq 15$	
$15 < t \leq 20$	
$20 < t \leq 25$	



Question 2: The histogram shows information about the temperatures in various locations.

Complete the frequency table.

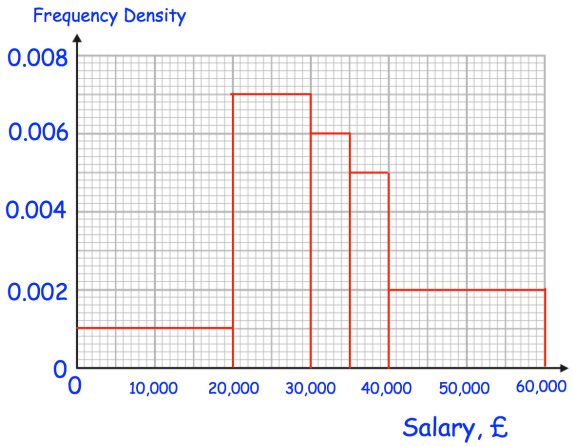
Temperature, °C	Frequency
$0 < t \leq 6$	
$6 < t \leq 10$	
$10 < t \leq 12$	
$12 < t \leq 16$	
$16 < t \leq 24$	



Question 3: The histogram shows information about the salaries of workers in a company.

Complete the frequency table.

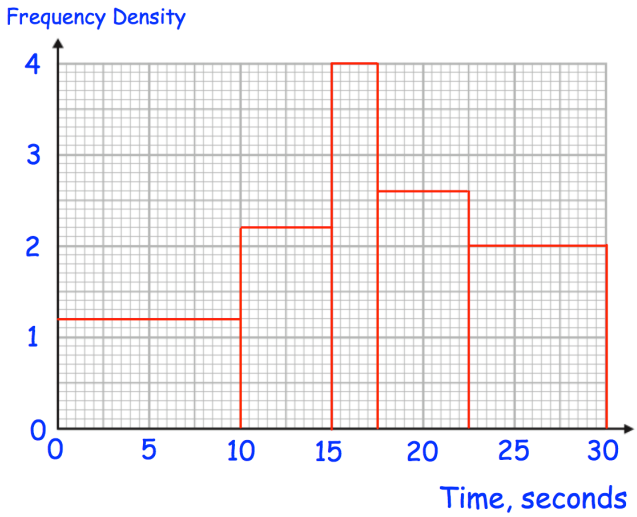
Salary, £	Frequency
$0 < s \leq 20000$	
$20000 < s \leq 30000$	
$30000 < s \leq 35000$	
$35000 < s \leq 40000$	
$40000 < s \leq 60000$	



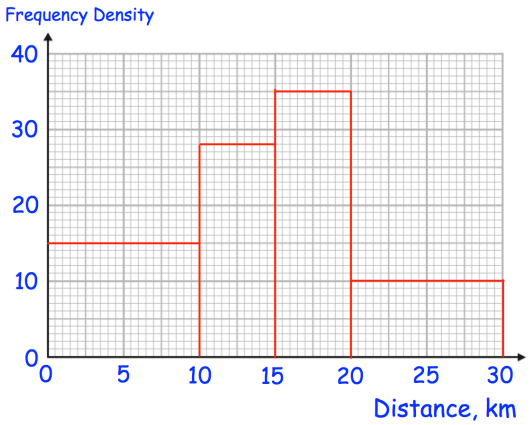
Question 4: The histogram shows information about ages of the people who live in a village.

Complete the frequency table.

Time, seconds	Frequency
$0 < t \leq 10$	
$10 < t \leq 15$	
$15 < t \leq 17.5$	
$17.5 < t \leq 22.5$	
$22.5 < t \leq 30$	



Question 5: The histogram shows information about distances students live from a college.



(a) How many students attend the college?

(b) How many students live less than 10km from the college?

(c) How many students live between 15km and 20km from the college?

(d) Estimate how many students live more than 25km from the college.

(e) Estimate how many students live less than 5km from the college.

(f) Estimate how many students live between 5km and 12.5km from the college.

(g) Estimate how many students live between 12.5km and 17.5km from the college.

(h) Estimate how many students live between 10km and 14km from the college.

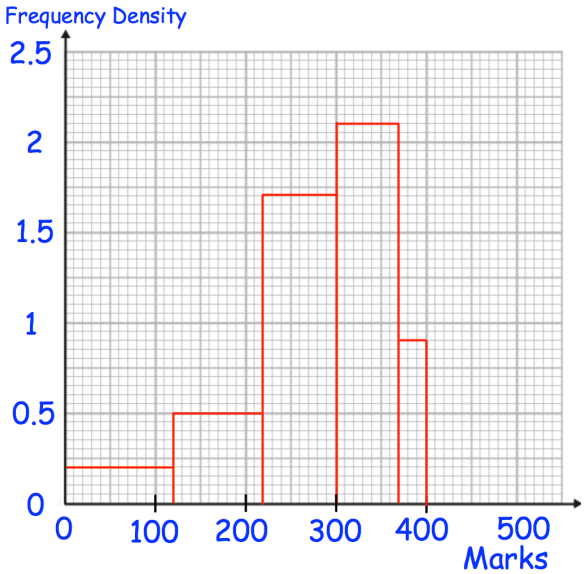
(i) Estimate how many students live between 8km and 16km from the college

(j) Estimate how many students live further than 16km from the college.

Question 1: An A-level course is marked out of 400 marks.
A teacher has created this histogram to represent the students' results in his college over the past 10 years.
The table shows the marks needed for each grade.

Work out an estimate of the number of students who achieved each grade.

Grade	Marks needed
A*	360
A	320
B	280
C	240
D	200
E	160
U	Below 160

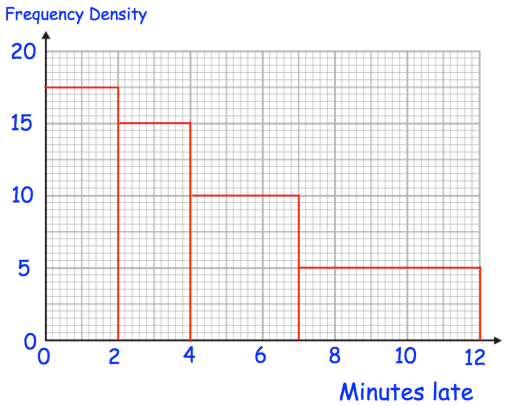


Question 2: There are road works in Antrim, so all the buses this week were late.
The histogram shows information about all the buses.

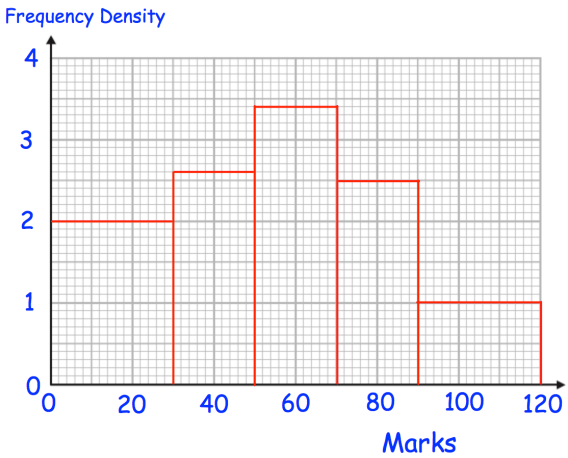
(a) Estimate what fraction of buses were less than 3 minutes late.

The bus company offers a full refund if the bus is more than 10 minutes late.

(b) Estimate what percentage of passengers will receive a full refund.
Give your answer to two decimal places.



Question 3: 260 people sit a driving theory test.
Their results are shown in this histogram.



10% of the people scored less than x marks.

(a) Find x.

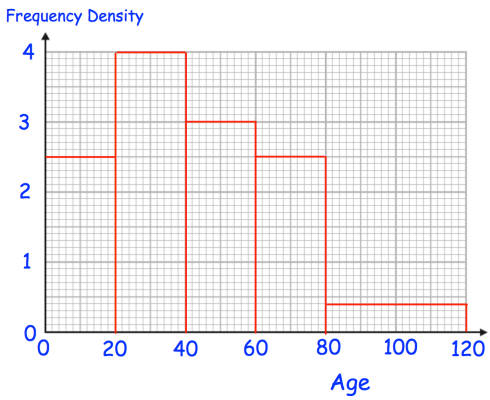
5% of people scored more than y marks.

(b) Find y

70% of people scored less than z marks.

(c) Find z

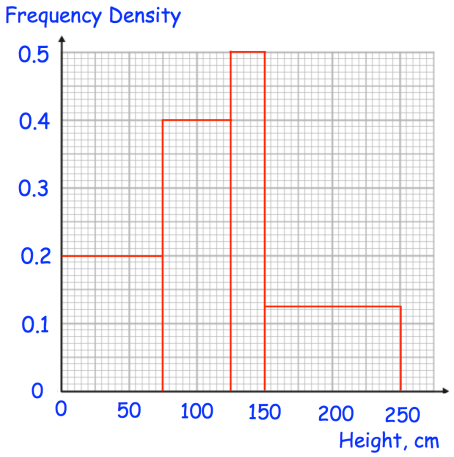
Question 4: The ages of the residents of a village are represented in this histogram



(a) How many people live in the village?

(b) Calculate an estimate of the mean age

Question 5: The heights of some sunflowers are represented in the histogram.



(a) Find an estimate of the median

(b) Find an estimate of the lower quartile

(c) Find an estimate of the upper quartile

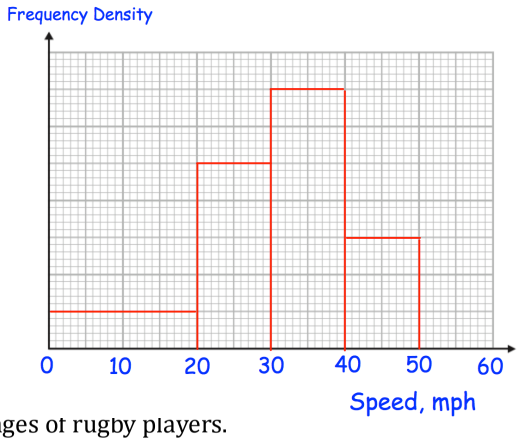
(d) Find an estimate of the interquartile range

Question 6: The histogram shows the speed, in miles per hour, of cars on a road over 1 hour. 24 cars travelled faster than 40mph.

(a) How many cars travelled slower than 20mph?

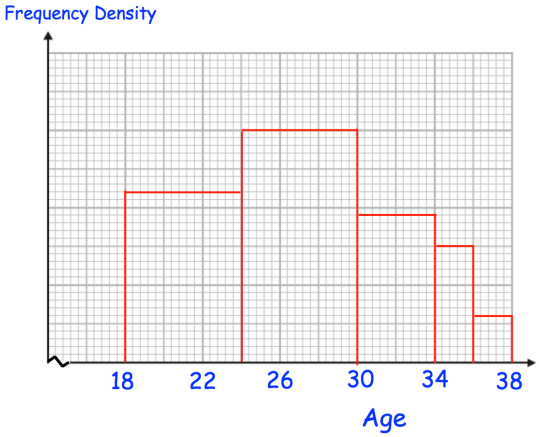
(b) How many cars travelled between 20mph and 40mph?

(c) Estimate how many cars travelled between 15mph and 35mph.



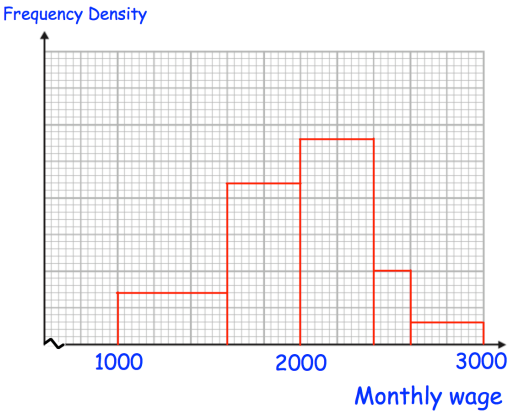
Question 7: The histogram below shows the ages of rugby players. There are 768 players that are under 26 years old.

Work out an estimate of how many players are over 32.



Question 8: The histogram below shows the monthly salaries of employees. There are 216 people who have a monthly salary of between £1800 and £2100.

Work out an estimate of how many employees have a salary of between £2300 and £2900



Worked Example

Lenny collects the heights of 111 plants and records the data in the table below.

Height (y cm)	Frequency
$50 < y \leq 65$	15
$65 < y \leq 85$	28
$85 < y \leq 105$	26
$105 < y \leq 120$	15
$120 < y \leq 125$	27

A histogram was drawn and the class $50 < y \leq 65$ was represented by a rectangle of width 6 cm and height 9 cm.
Calculate the width and the height of the rectangle representing the class $85 < y \leq 105$.

Your Turn

Liam collects the heights of 98 plants and records the data in the table below.

Height (x cm)	Frequency
$0 < x \leq 20$	22
$20 < x \leq 30$	23
$30 < x \leq 45$	15
$45 < x \leq 55$	14
$55 < x \leq 60$	17
$60 < x \leq 80$	7

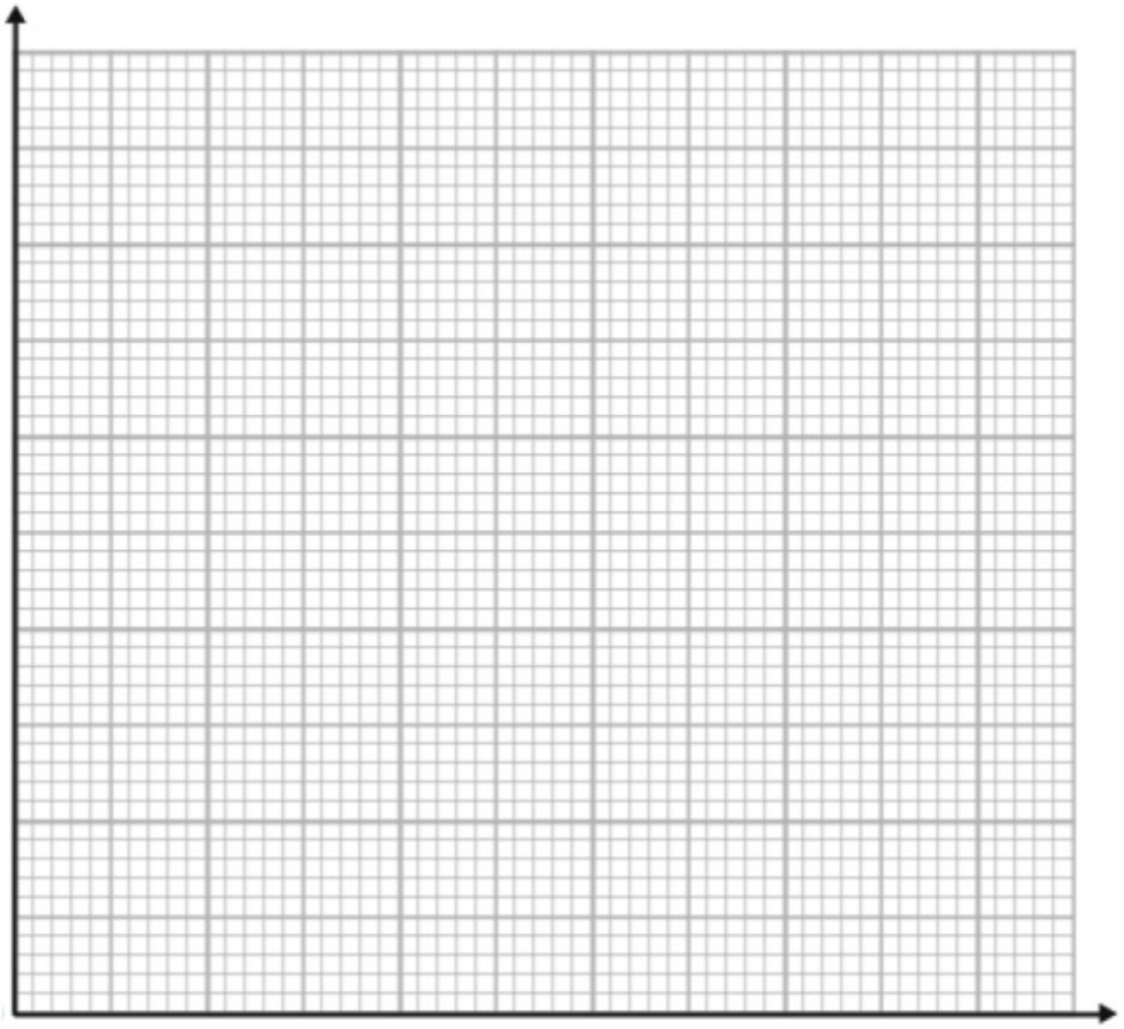
A histogram was drawn and the class $45 < x \leq 55$ was represented by a rectangle of width 1.5 cm and height 3.5 cm.
Calculate the width and the height of the rectangle representing the class $30 < x \leq 45$.

Frequency Polygons

Worked Example

Draw a frequency polygon for the information:

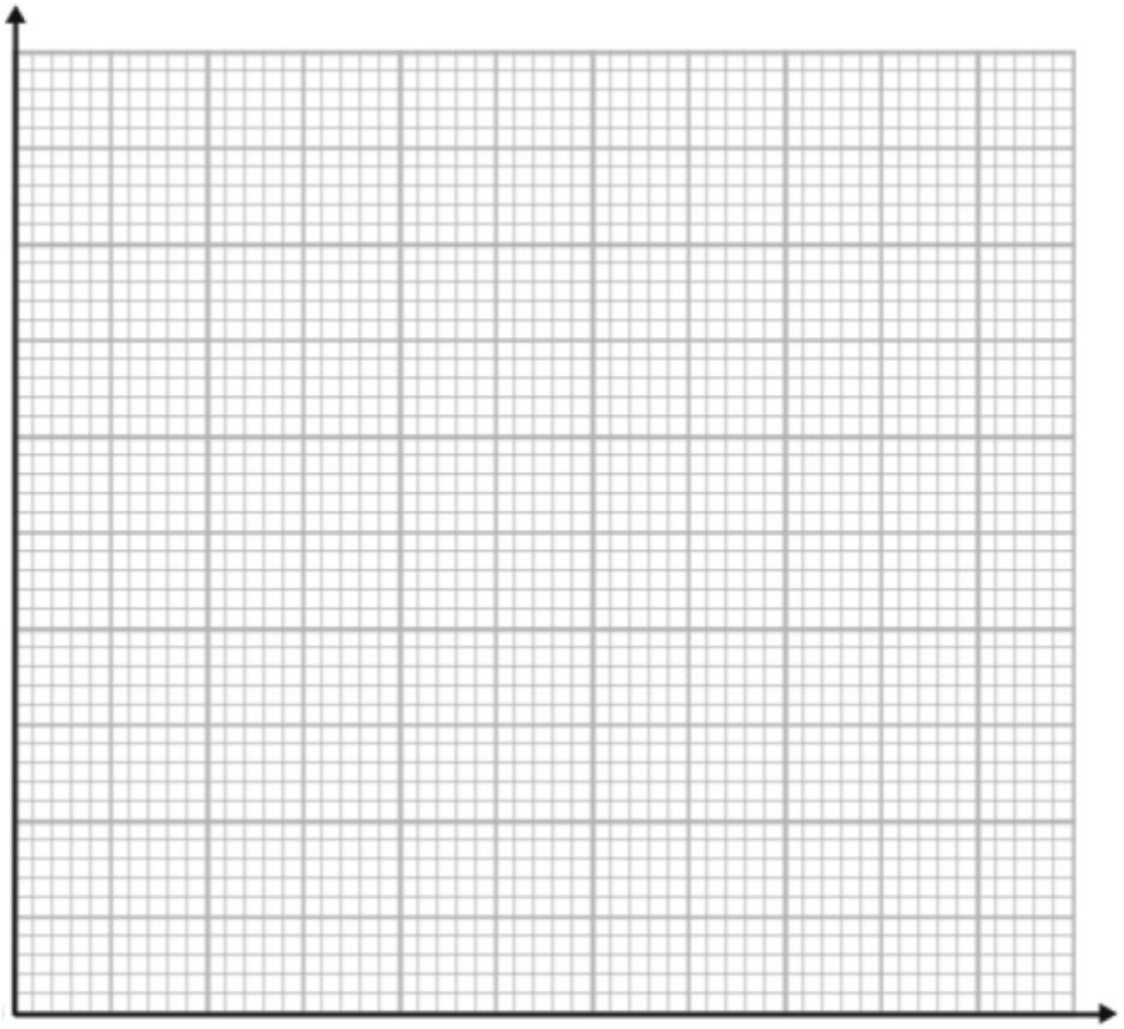
Lengths (cm)	Frequency
$0 < L \leq 0.5$	8
$0.5 < L \leq 1$	17
$1 < L \leq 1.5$	20
$1.5 < L \leq 2$	10
$2 < L \leq 2.5$	5



Your Turn

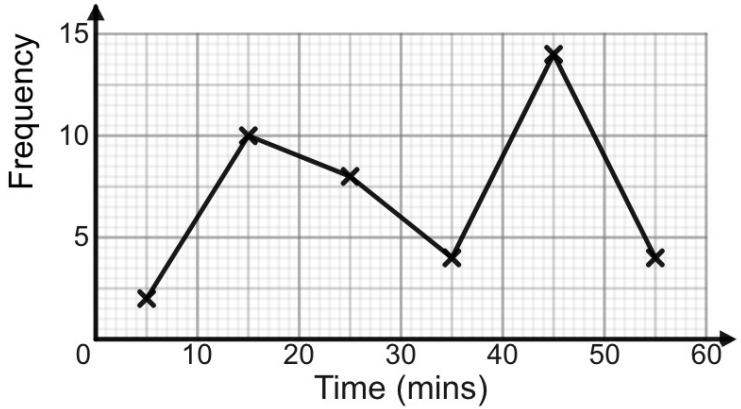
Draw a frequency polygon for the information:

Time (minutes)	Frequency
$0 < t \leq 10$	10
$10 < t \leq 20$	28
$20 < t \leq 30$	46
$30 < t \leq 40$	23
$40 < t \leq 50$	12



Worked Example

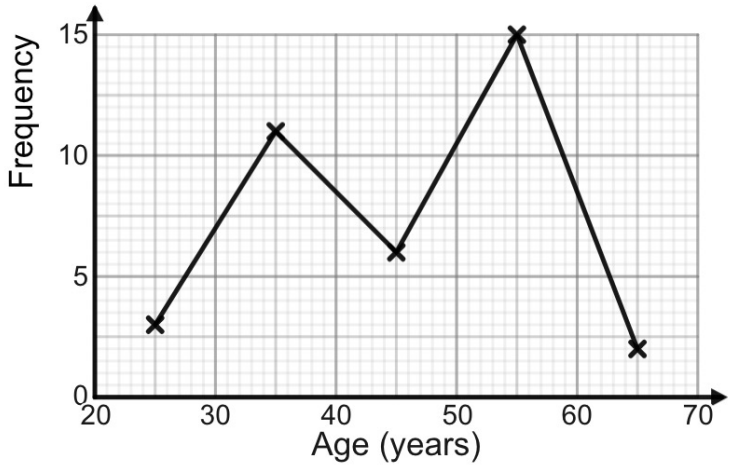
The frequency polygon shows the information for the amount of time spent by people in a gym.



Calculate how many people spent between 20 and 50 minutes in the gym.

Your Turn

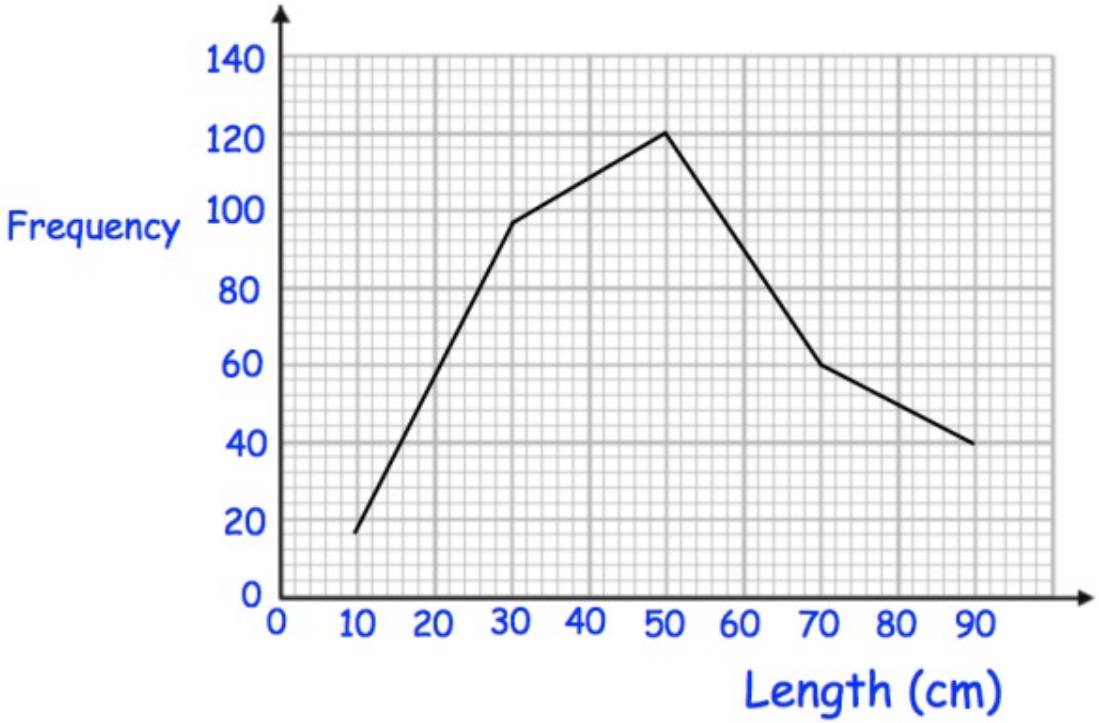
The frequency polygon shows the information for the age of people who are buying properties in a town.



Work out how many people are more than 50 years old in the sample.

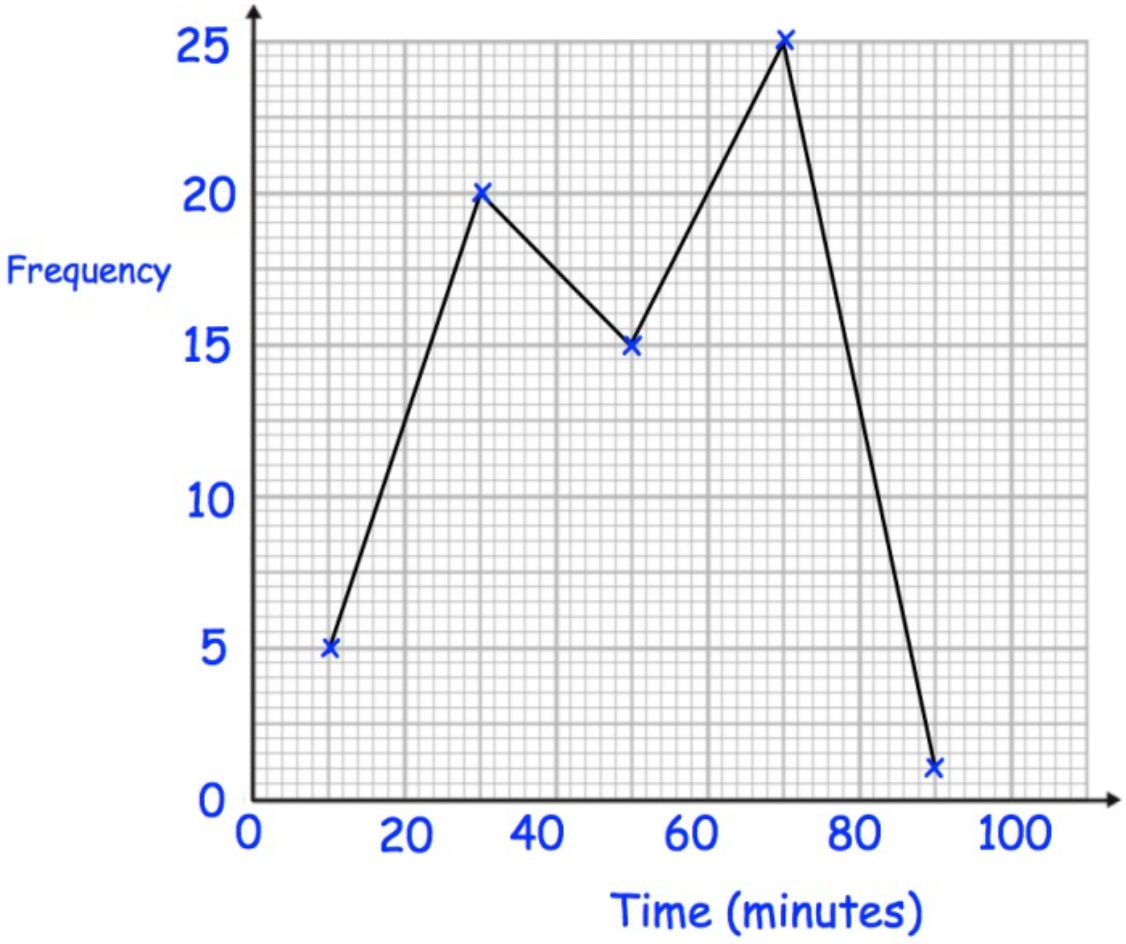
Worked Example

Estimate the mean length:



Your Turn

Estimate the mean length:



Question 1: Draw a frequency polygon for each table of information below.

(a)

Goals	Frequency
0	7
1	10
2	12
3	3
4	1

(b)

Days absent	Frequency
0	16
1	5
2	4
3	2
4	1
5	2

(c)

Day	Customers
Monday	14
Tuesday	12
Wednesday	16
Thursday	21
Friday	25
Saturday	8

Question 2: Draw a frequency polygon for each table of information below.

(a)

Marks	Frequency
$0 < m \leq 10$	8
$10 < m \leq 20$	11
$20 < m \leq 30$	23
$30 < m \leq 40$	19
$40 < m \leq 50$	15

(b)

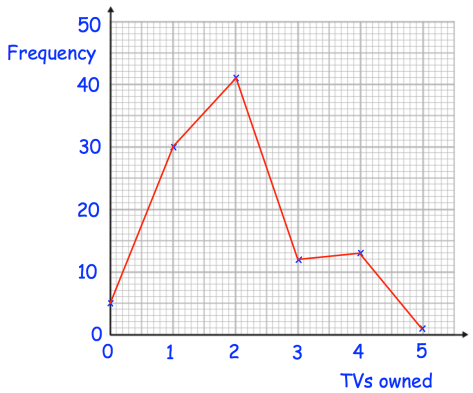
Time, seconds	Frequency
$0 < t \leq 5$	10
$5 < t \leq 10$	50
$10 < t \leq 15$	75
$15 < t \leq 20$	80
$20 < t \leq 25$	45
$25 < t \leq 30$	35

(c)

Mass, kg	Frequency
$0 < m \leq 1$	7
$1 < m \leq 2$	13
$2 < m \leq 3$	15
$3 < m \leq 4$	6
$4 < m \leq 5$	17
$5 < m \leq 6$	12

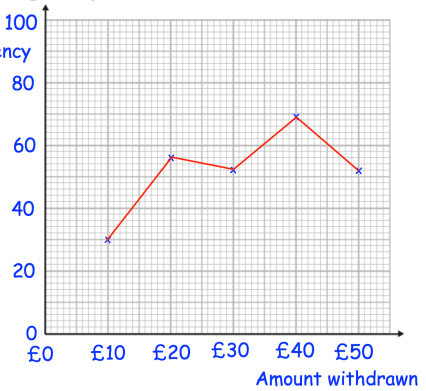
Question 3: For each frequency polygon, complete the frequency table.

(a)



TVs owned	Frequency
0	
1	
2	
3	
4	
5	

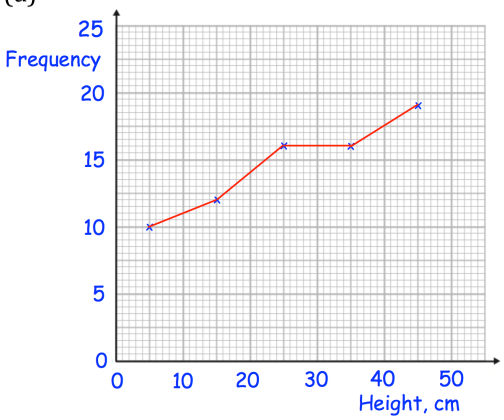
(b)



Amount Withdrawn	Frequency
£10	
£20	
£30	
£40	
£50	

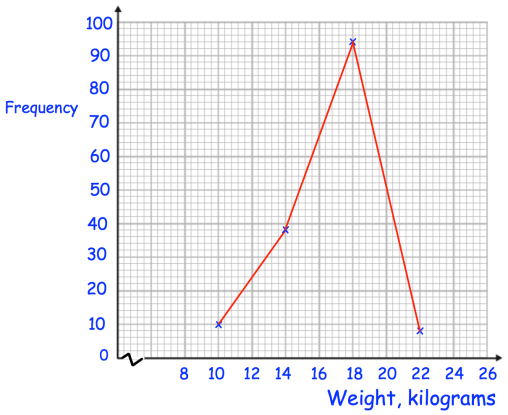
Question 4: For each frequency polygon, complete the frequency table.

(a)



Length, cm	Frequency
$0 < x \leq 10$	
$10 < x \leq 20$	
$20 < x \leq 30$	
$30 < x \leq 40$	
$40 < x \leq 50$	

(b)



Weight, kg	Frequency
$8 < w \leq 12$	
$12 < w \leq 16$	

Apply

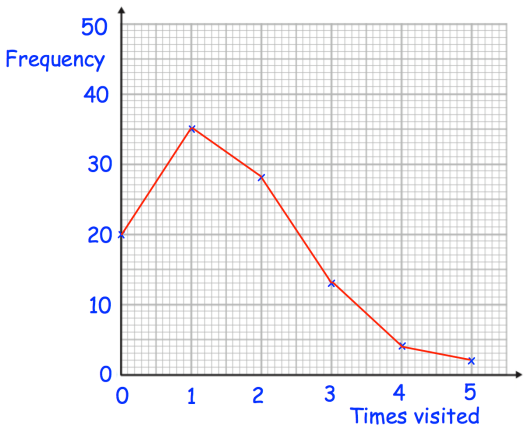
Question 1: Tia asked her friends how many times they visited the cinema last month. The frequency polygon shows her results.

(a) How many people visited the cinema twice?

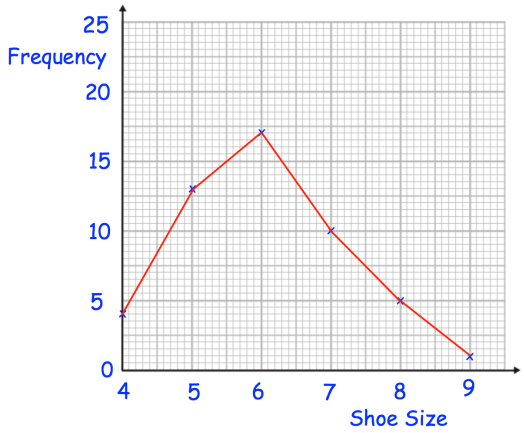
(b) What is most popular number of times that her friends visited the cinema?

(c) What is the most number of times that somebody visited the cinema?

(d) How many people did Tia survey in total?



Question 2: Henry surveyed 50 people.
This frequency polygon shows their shoe sizes.



(a) What is the modal shoe size?

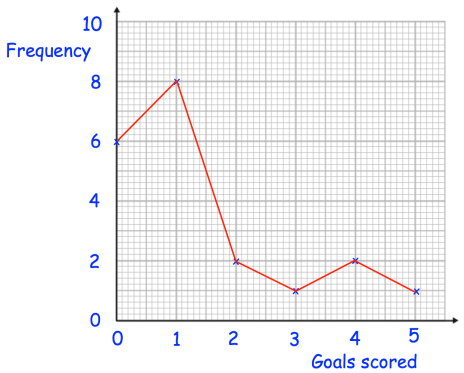
(b) What is the range of the shoe sizes?

(c) What fraction of the people surveyed have size 5 shoes?

(d) What percentage of the people surveyed have size 7 shoes?

(e) Henry picks somebody at random to win a prize.
Write down the probability that the winner has size 6 shoes.

Question 3: Roy is a striker for Rovers.
The frequency polygon shows the number of goals scored in each game over 20 games he has played.



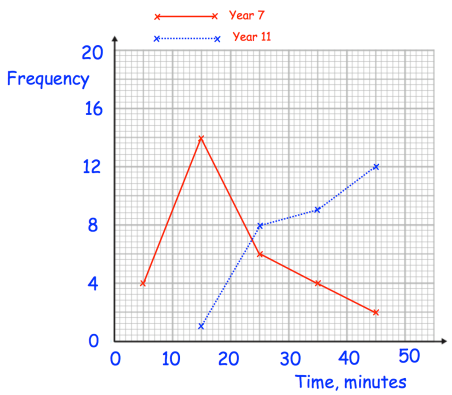
(a) Work out the median number of goals scored per game.

(b) Work out the mean number of goals scored per game.

(c) A journalist asks him for the "average" number of goals scored per game.
Which average should he use?

Question 4: The frequency polygons show the amount of time that 30 students in year 7 and 30 students in year 11 spent on their last maths homework.

Compare the time spent on homework by the year 7s and the year 11s.

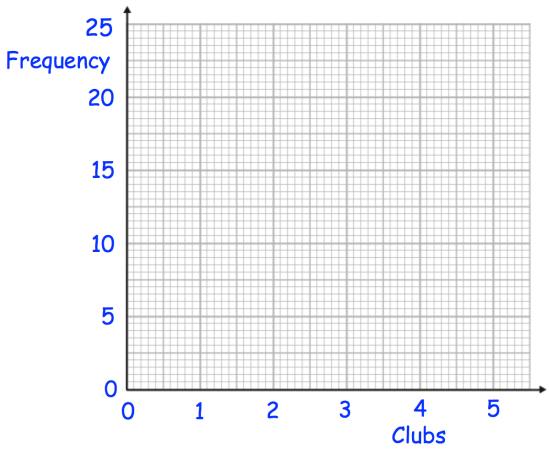


Question 5: 50 boys and 50 girls attend a primary school.
The table below shows how many clubs they attend.

(a) On the same grid, draw a frequency polygon for the boys and a frequency polygon for the girls.

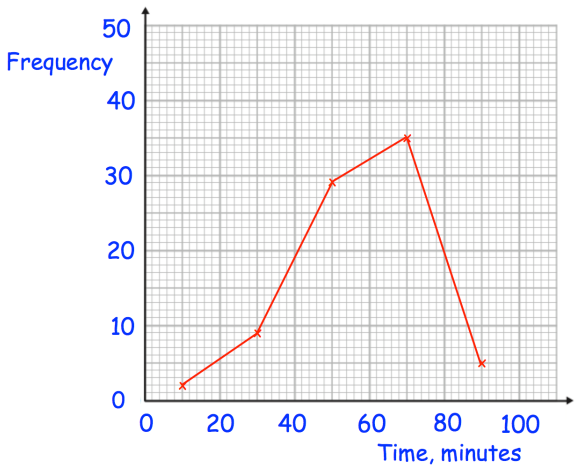
(b) Compare the distributions.

Clubs	Boys	Girls
0	5	2
1	20	18
2	14	22
3	9	7
4	2	1

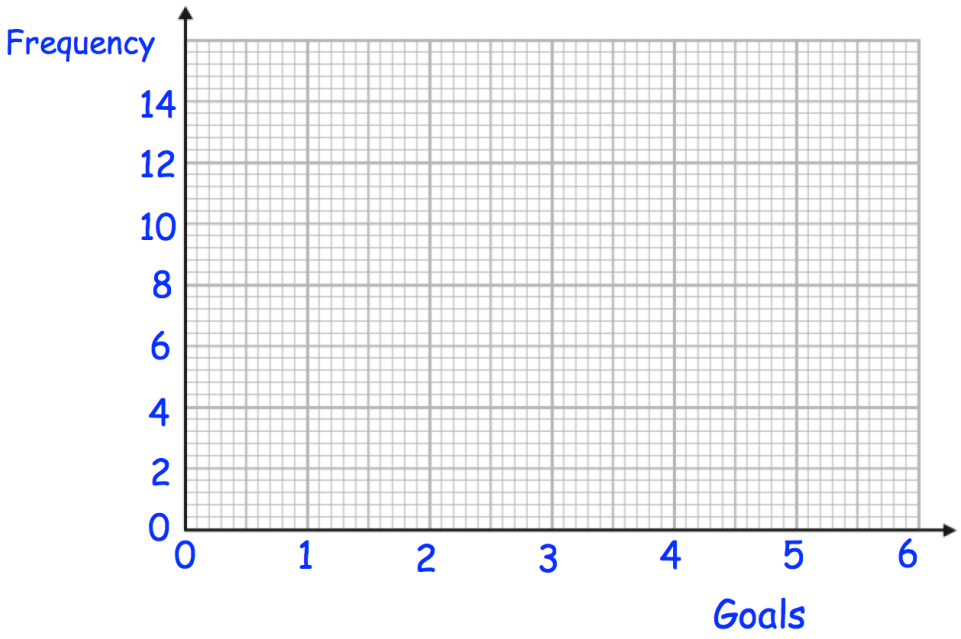


Question 6: The frequency polygon shows information about the amount of time people spend in the gym.

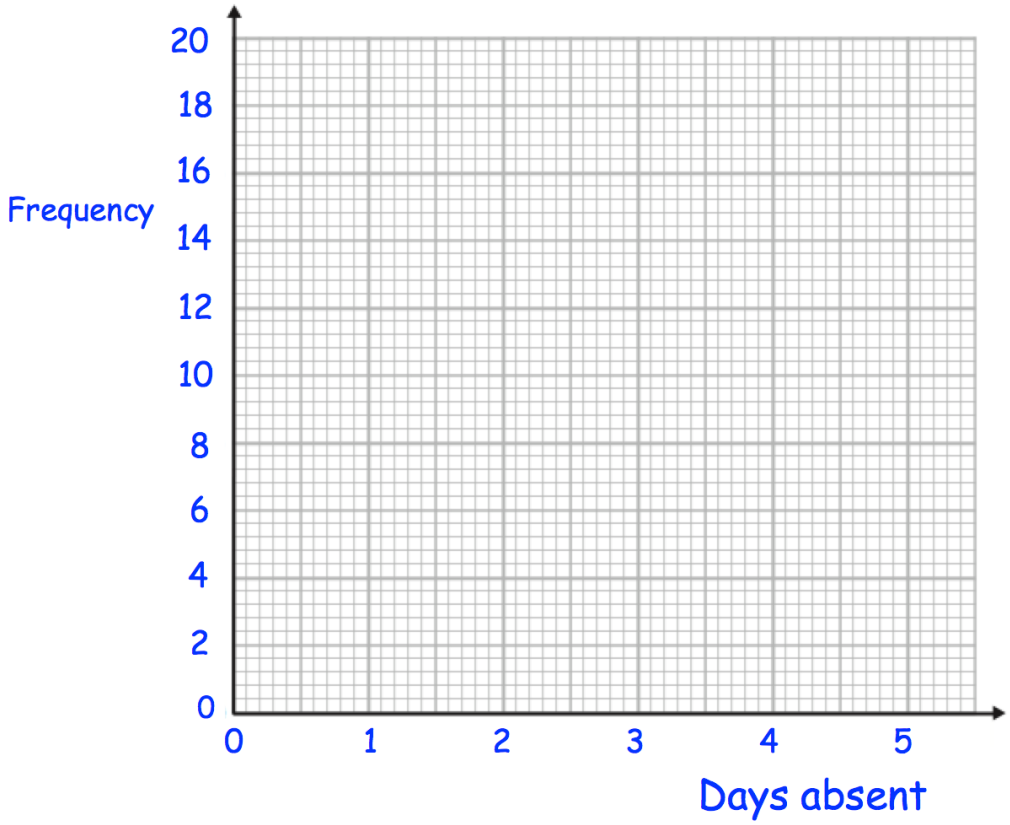
Calculate an estimate of the mean time spent in the gym.



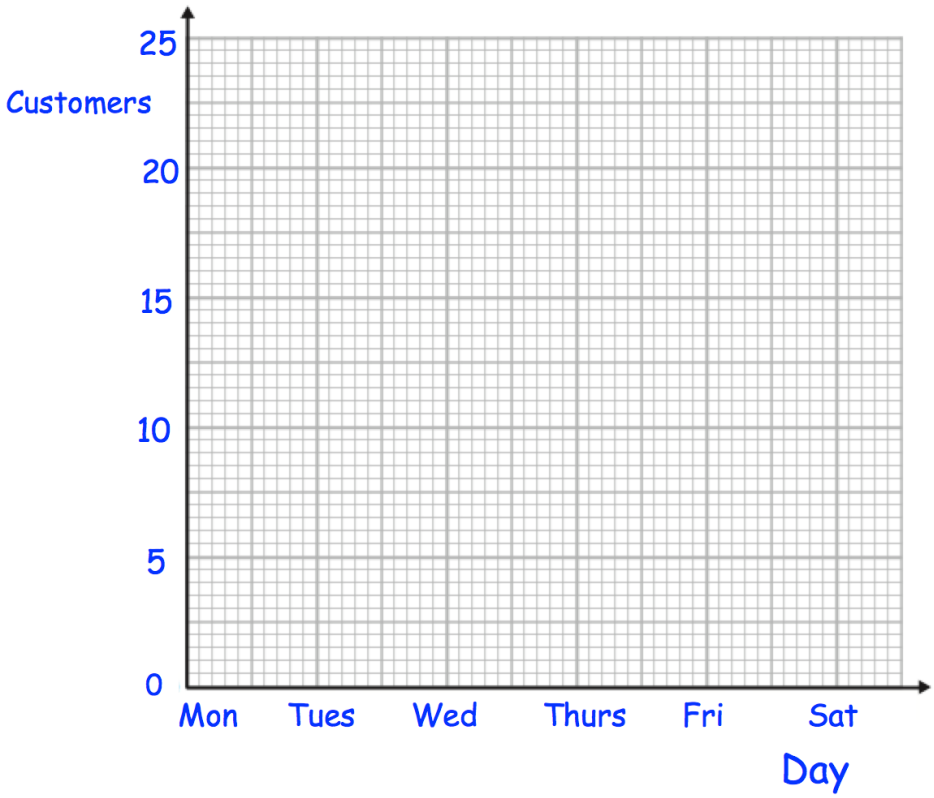
Question 1(a)



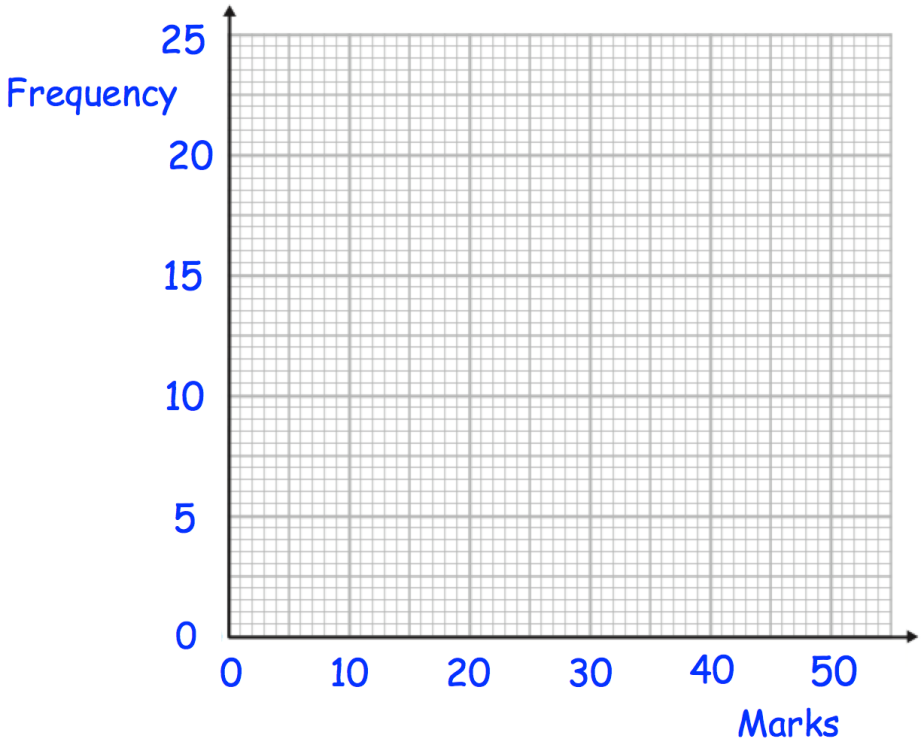
Question 1(b)



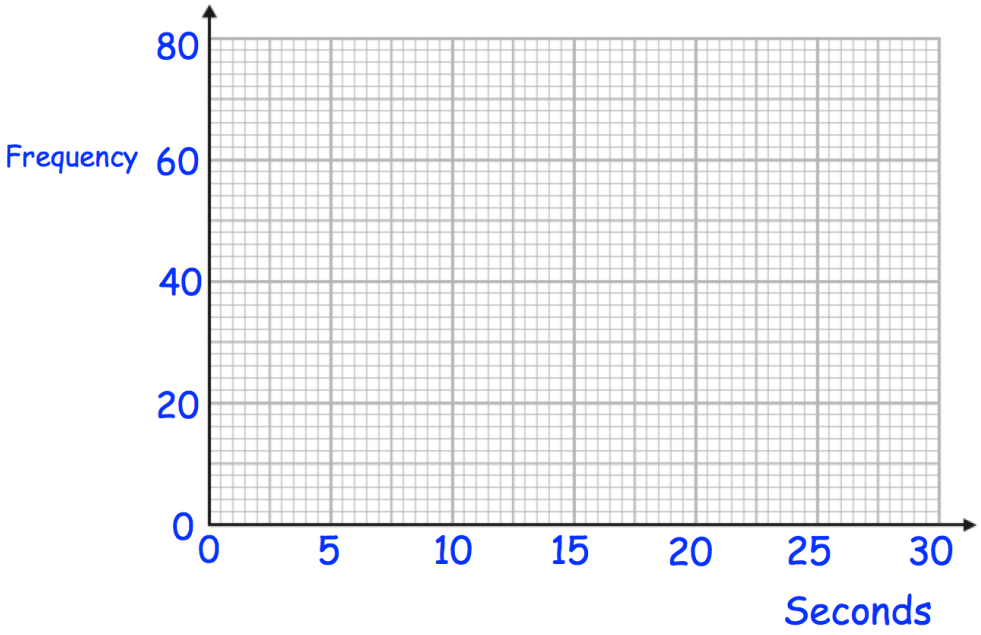
Question 1(c)



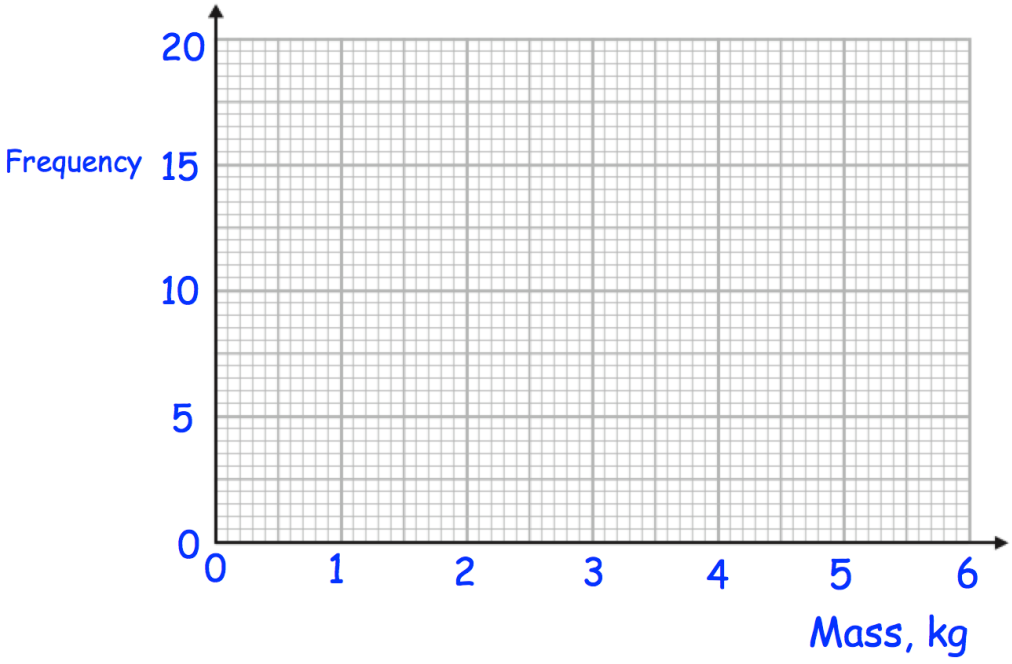
Question 2(a)



Question 2(b)



Question 2(c)

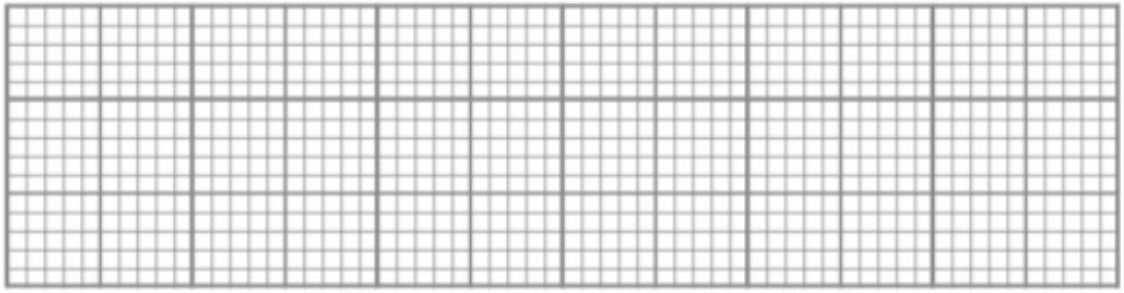


Box Plots

Worked Example

Draw a box plot to show this information:

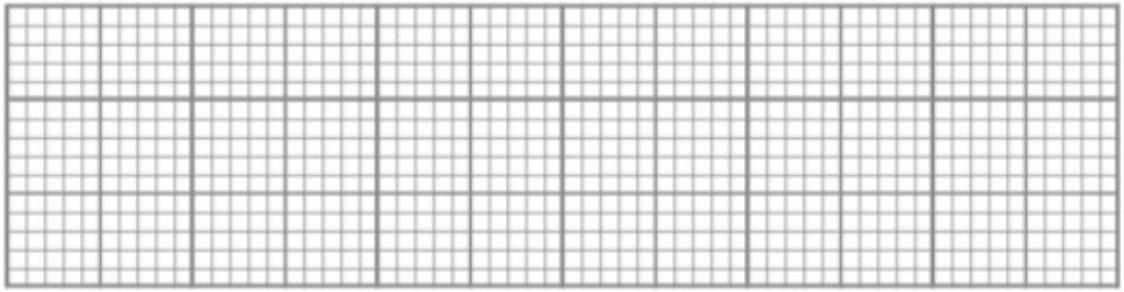
Lowest	51 kg
Lower Quartile	60 kg
Median	71 kg
Upper Quartile	74 kg
Highest	83 kg



Your Turn

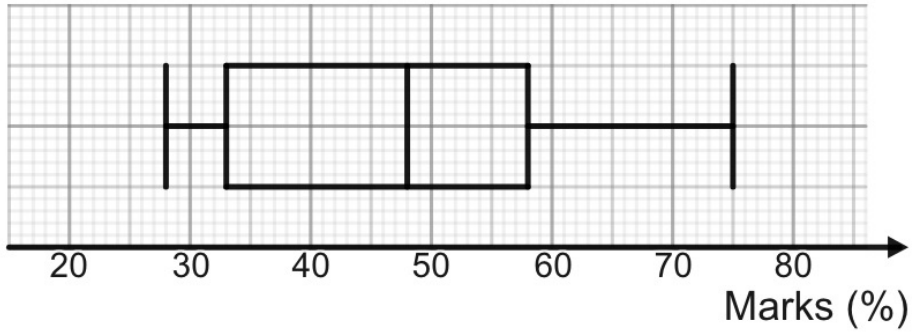
Draw a box plot to show this information:

Lowest	68kg
Lower Quartile	74kg
Median	82kg
Upper Quartile	88kg
Highest	100kg



Worked Example

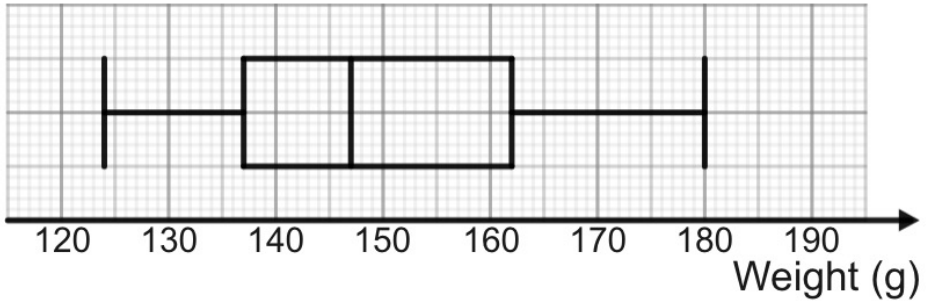
Selene recorded the marks some pupils achieved on a test and put this information on the box plot below.



Find the lower quartile of this data set.

Your Turn

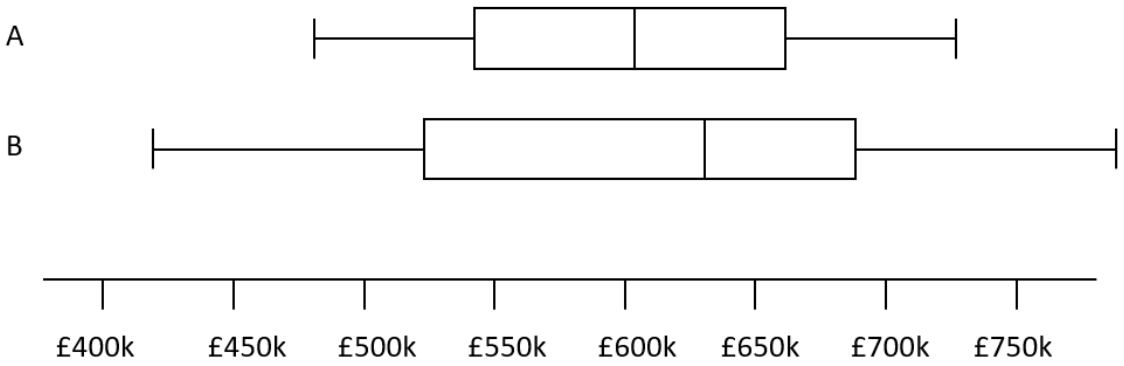
Kendra recorded the weights of some tomatoes.
The box plot below shows the distribution of the weights of the tomatoes.



Find the upper quartile of this data set.

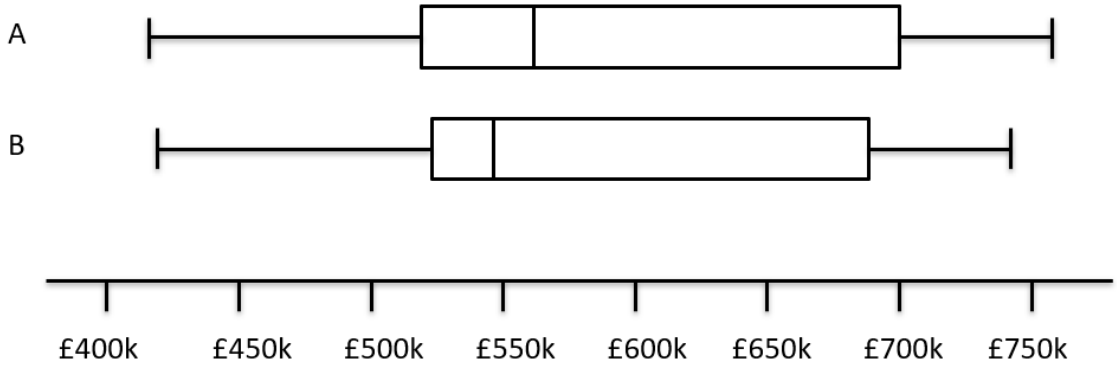
Worked Example

Compare the house prices of locations A and B.



Your Turn

Compare the house prices of locations A and B.



Question 1: Draw a box plot for each of the following.

(a)

Lowest Value	2
Lower Quartile	7
Median	9
Upper Quartile	10
Highest Value	13

(b)

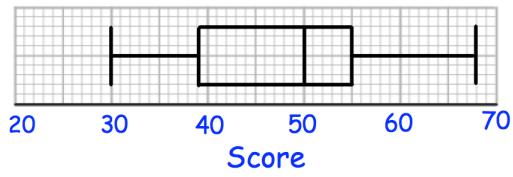
Lowest Value	23
Lower Quartile	30
Median	32
Upper Quartile	34
Highest Value	45

(c)

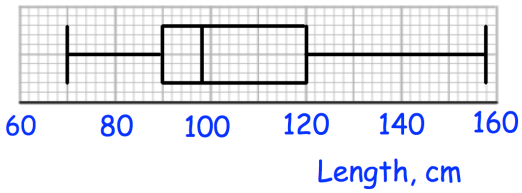
Lowest Value	60
Lower Quartile	85
Median	100
Upper Quartile	110
Highest Value	170

Question 2: For each box plot below, find the (i) median, (ii) interquartile range, (iii) range

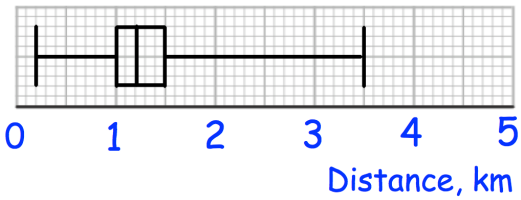
(a)



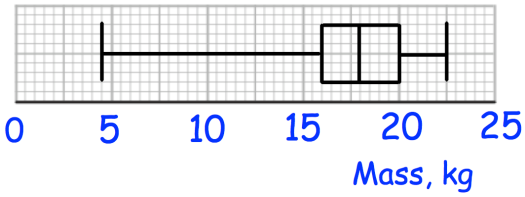
(b)



(c)



(d)



Question 3: Draw a box plot for each of the following.

(a)

Lower Quartile	3.4
Median	3.9
Upper Quartile	4.1
Highest Value	5.4
Range	3.7

(b)

Lowest Value	6
Median	14
Upper Quartile	16
Range	20
Interquartile Range	5

(c)

Lower Quartile	115
Median	135
Highest Value	160
Range	70
Interquartile Range	25

Question 4: Draw a box plot for each set of data

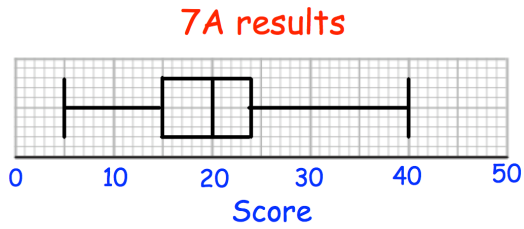
(a) 8, 10, 13, 14, 14, 15, 15, 16, 18, 19, 21, 22, 24, 29, 35

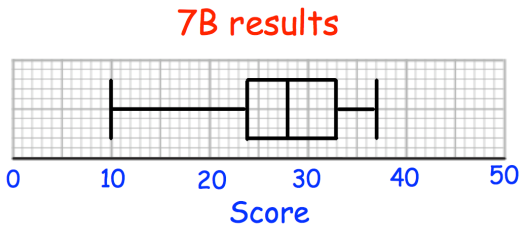
(b) 40, 80, 90, 90, 100, 120, 130

(c) 5.9, 7.3, 7.8, 8, 8.4, 8.7, 8.9, 8.9, 8.9, 9, 9, 9.1, 9.1, 9.3, 9.5, 9.6, 9.9, 10.5, 10.9

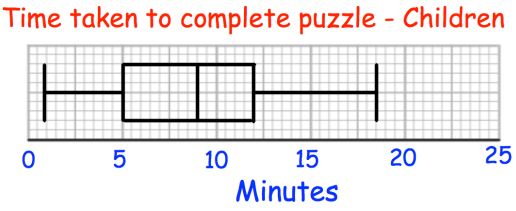
Question 5: Compare the distributions of each pair of box plots below.

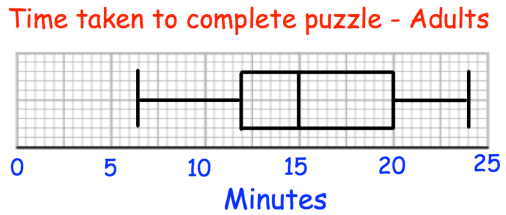
(a)



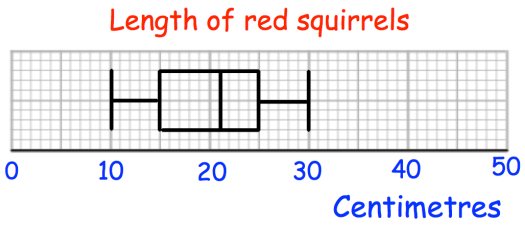


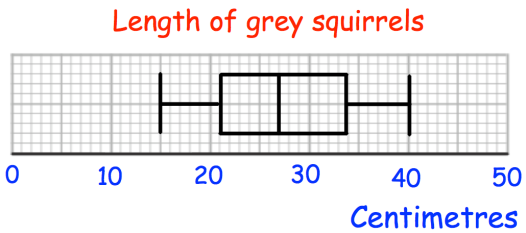
(b)



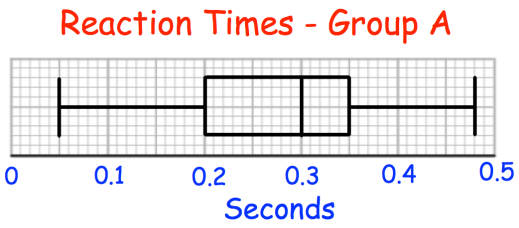


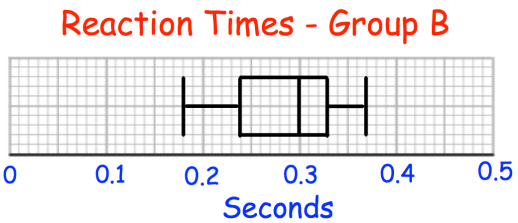
(c)





(d)





Apply

Question 1: Gareth and Wayne are two footballers.
The table shows information about the number of passes they make in each game over a season.

(a) Find the missing values from the table

(b) Using the same scale, draw box plots to represent the data.

(c) Compare and contrast the two box plots

	Gareth	Wayne
Lowest Value	5	2
Lower Quartile	12	11
Median	16	19
Upper Quartile	24	
Highest Value		57
Interquartile Range		25
Range	38	

Question 2: Rosie is going on holiday to an island.
The box plots below show information about the daily average rainfall in May and June on the island.

(a) What was the median rainfall in May?

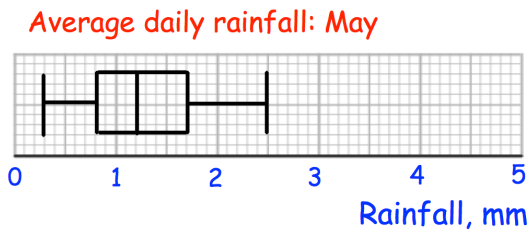
(b) What was the highest rainfall in June?

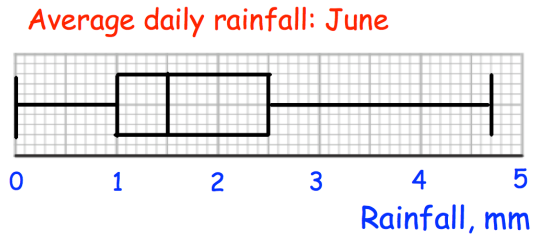
(c) What percentage of days in June had over 2.5mm of rain?

(d) What percentage of days in May had over 2.5mm of rain?

(e) What percentage of days in May had under 1.2mm of rain?

(f) When would you recommend Rosie visits the island?
Explain your answer.



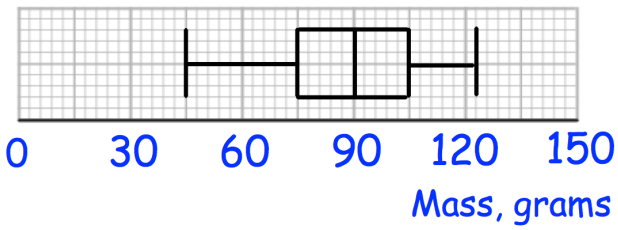


Question 3: Mr Jones is an estate agent on the Isle of Man.
He has created this table to show information about the prices of houses he has sold.

Explain how you know he has made a mistake.

Median	£375,000
Range	£235,000
Interquartile Range	£590,000

Question 4: The box plot show information about the masses of apples in a crate.



Jack is going to select apples at random from the crate.
After selecting each apple, he records its mass and returns it to the crate before picking another.
Work out the probability that:

(a) Jack picks two apples, both under 75g

(b) Jack picks two apples, both over 90g

(c) Jack picks two apples, both over 105g

(d) Jack picks two apples, one under 90g and one over 105g

(e) Jack picks three apples, all over 105g

(f) Jack picks three apples, two over 105g and one under 75g.

Cumulative Frequency Graphs

Worked Example

Ethan collects the lengths of 100 animals and records the data in the table below.

Length (y cm)	Frequency
$40 < y \leq 45$	7
$45 < y \leq 50$	10
$50 < y \leq 55$	63
$55 < y \leq 60$	11
$60 < y \leq 65$	9

Complete the cumulative frequency table.

Length (y cm)	Cumulative Frequency
$40 < y \leq 45$	
$40 < y \leq 50$	
$40 < y \leq 55$	
$40 < y \leq 60$	
$40 < y \leq 65$	

Your Turn

Meriem collects the running times of 80 athletes and records the data in the table below.

Time (y seconds)	Frequency
$30 < y \leq 40$	7
$40 < y \leq 50$	8
$50 < y \leq 60$	26
$60 < y \leq 70$	13
$70 < y \leq 80$	9
$80 < y \leq 90$	17

Complete the cumulative frequency table.

Time (y seconds)	Cumulative Frequency
$30 < y \leq 40$	
$30 < y \leq 50$	
$30 < y \leq 60$	
$30 < y \leq 70$	
$30 < y \leq 80$	
$30 < y \leq 90$	

Worked Example

Kaitlyn collects the running times of 50 athletes and records the data in the table below.

Time (t seconds)	Cumulative Frequency
$20 < t \leq 25$	3
$25 < t \leq 30$	10
$30 < t \leq 35$	26
$35 < t \leq 40$	34
$40 < t \leq 45$	41
$45 < t \leq 50$	50

Find the number of athletes whose times were between 25 and 40 seconds.

Your Turn

Kai collects the lengths of 100 animals and records the data in the table below.

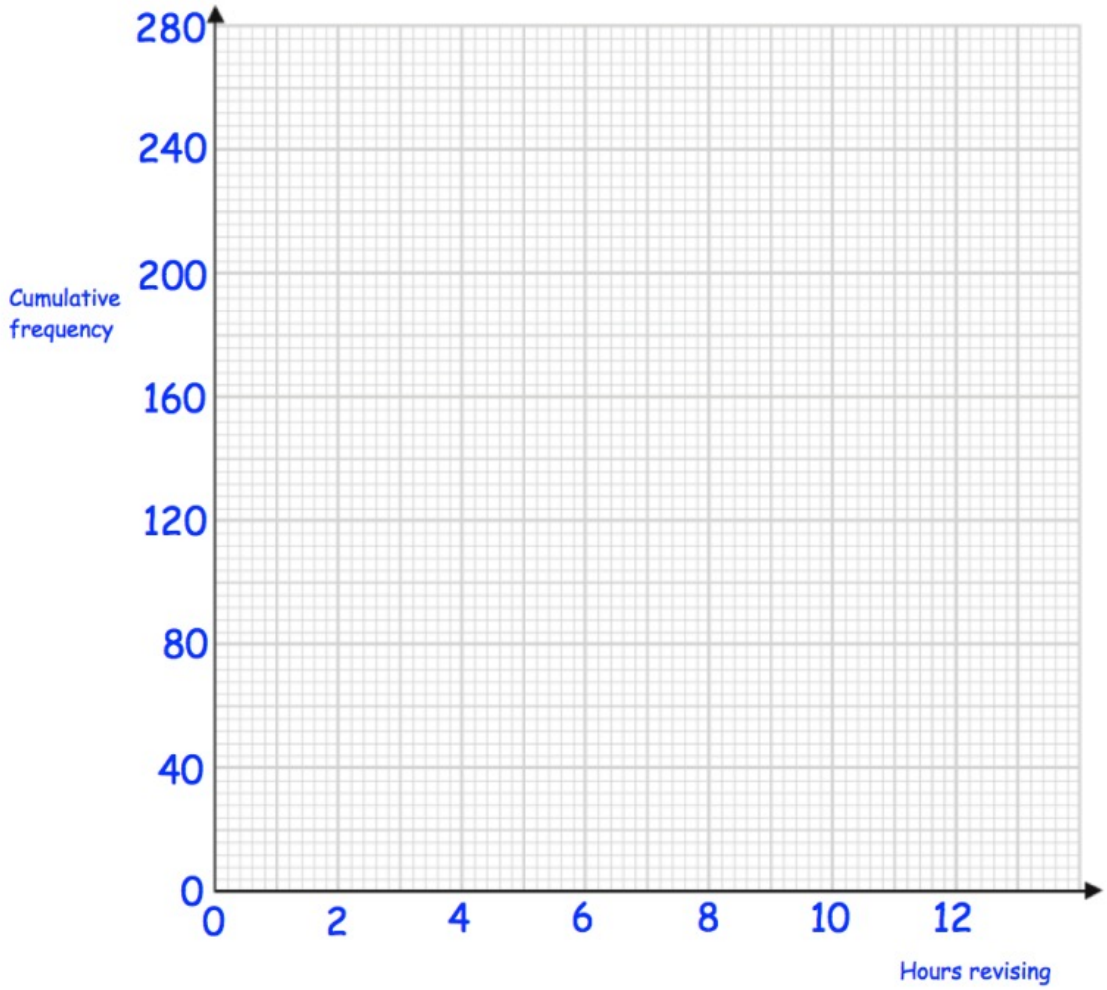
Length (x cm)	Cumulative Frequency
$20 < x \leq 30$	6
$30 < x \leq 40$	17
$40 < x \leq 50$	80
$50 < x \leq 60$	93
$60 < x \leq 70$	100

Determine how many animals were between 40 and 60 cm long.

Worked Example

Plot a cumulative frequency graph:

Number of hours (h)	Frequency
$0<h\leq2$	20
$2<h\leq4$	32
$4<h\leq6$	48
$6<h\leq8$	120
$8<h\leq10$	24
$10<h\leq12$	16

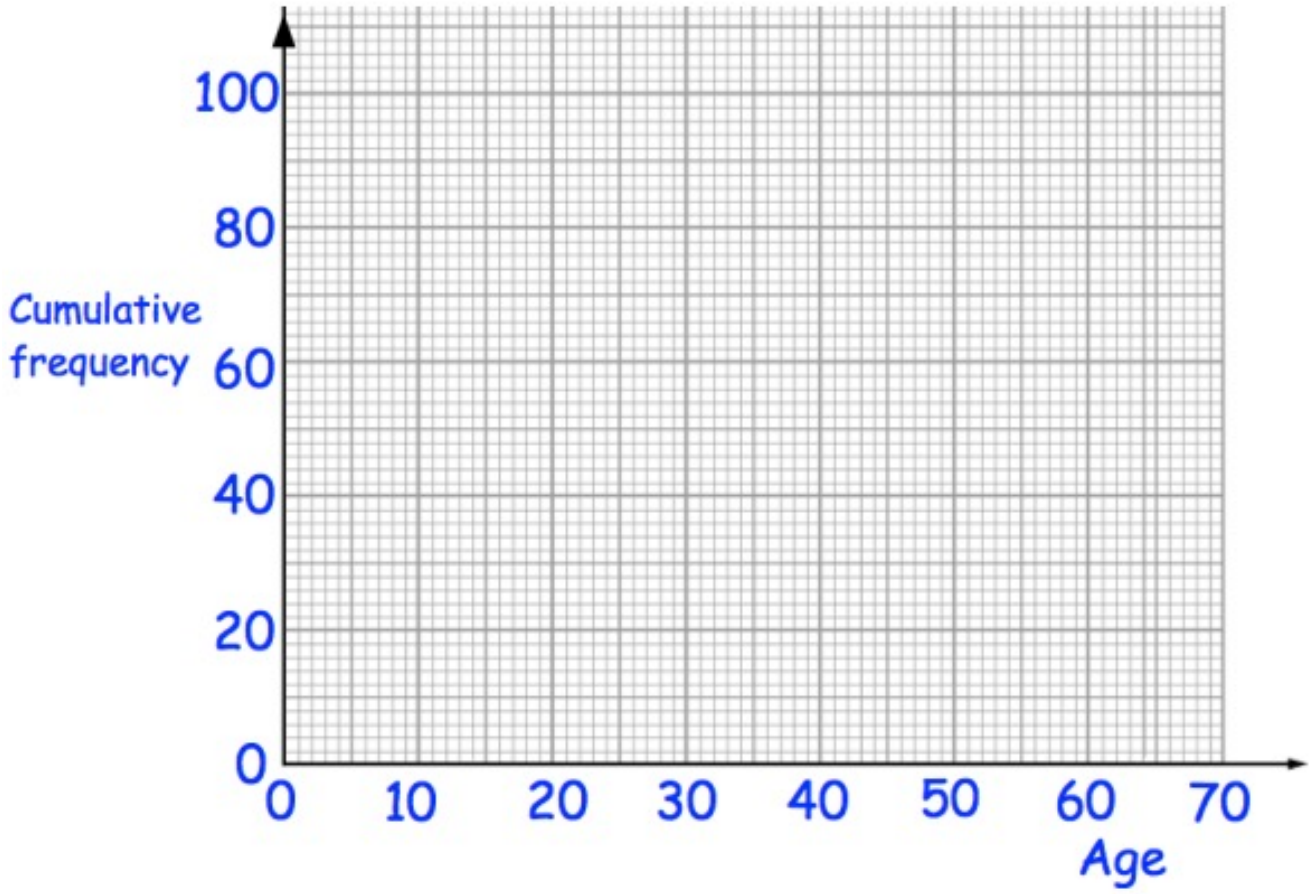


Dr Frost 398d and 398c

Your Turn

Plot a cumulative frequency graph:

Age, x years	Frequency
$20 < x \leq 30$	12
$30 < x \leq 40$	30
$40 < x \leq 50$	28
$50 < x \leq 60$	22
$60 < x \leq 70$	8

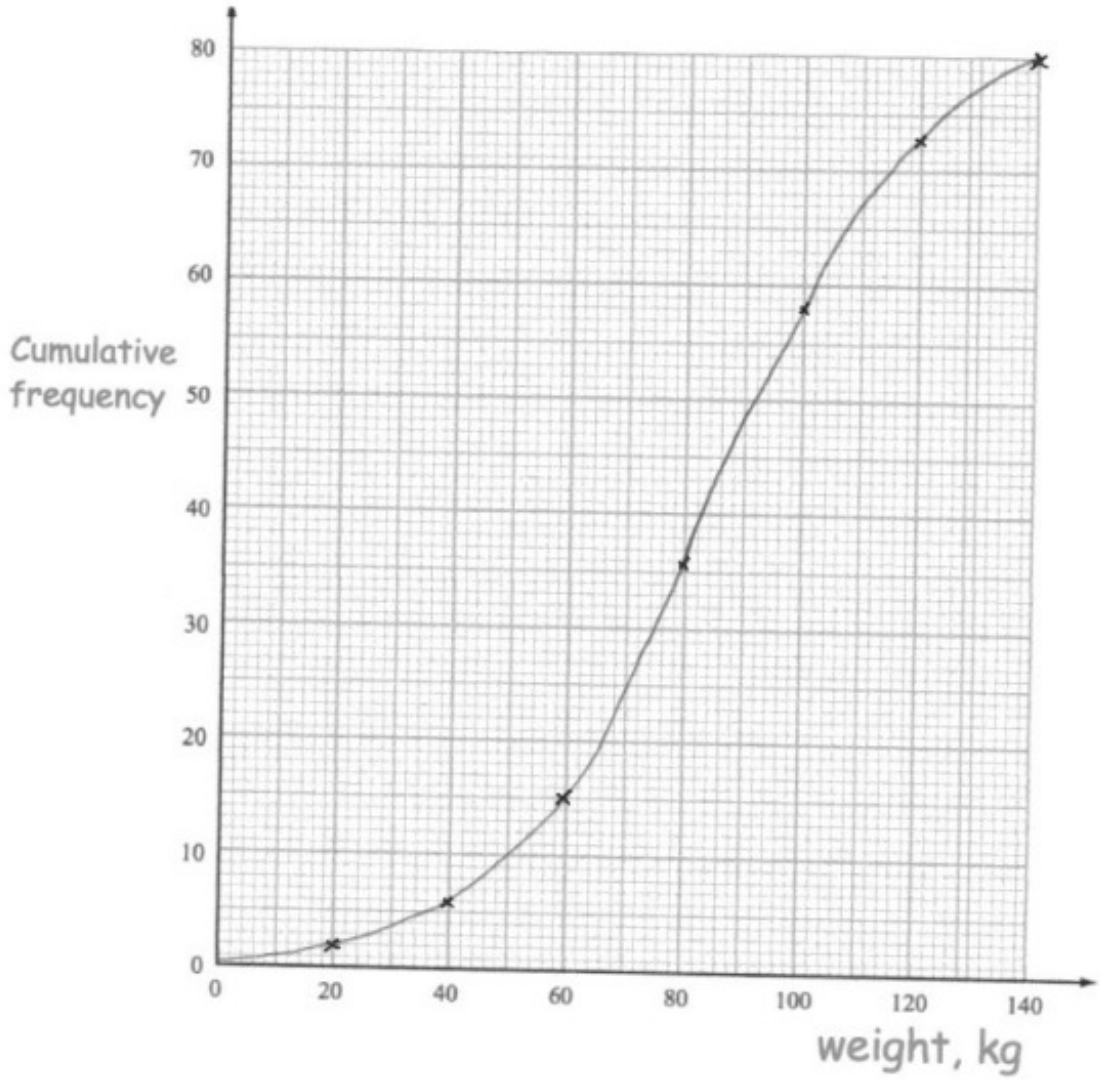


Worked Example

Using the cumulative frequency graph, estimate the:

a) Number of people who weight less than 40 kg

b) Number of people who weigh more than 100 kg



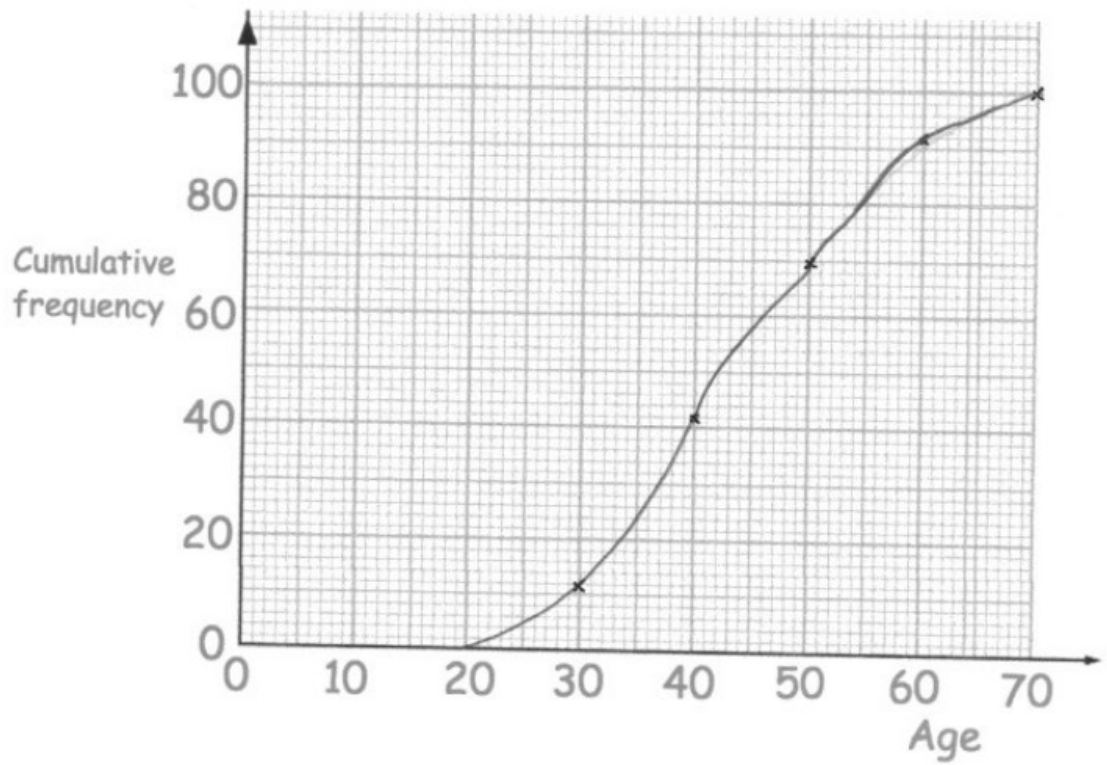
Dr Frost 398g

Your Turn

Using the cumulative frequency graph, estimate the:

a) Number of people younger than 35

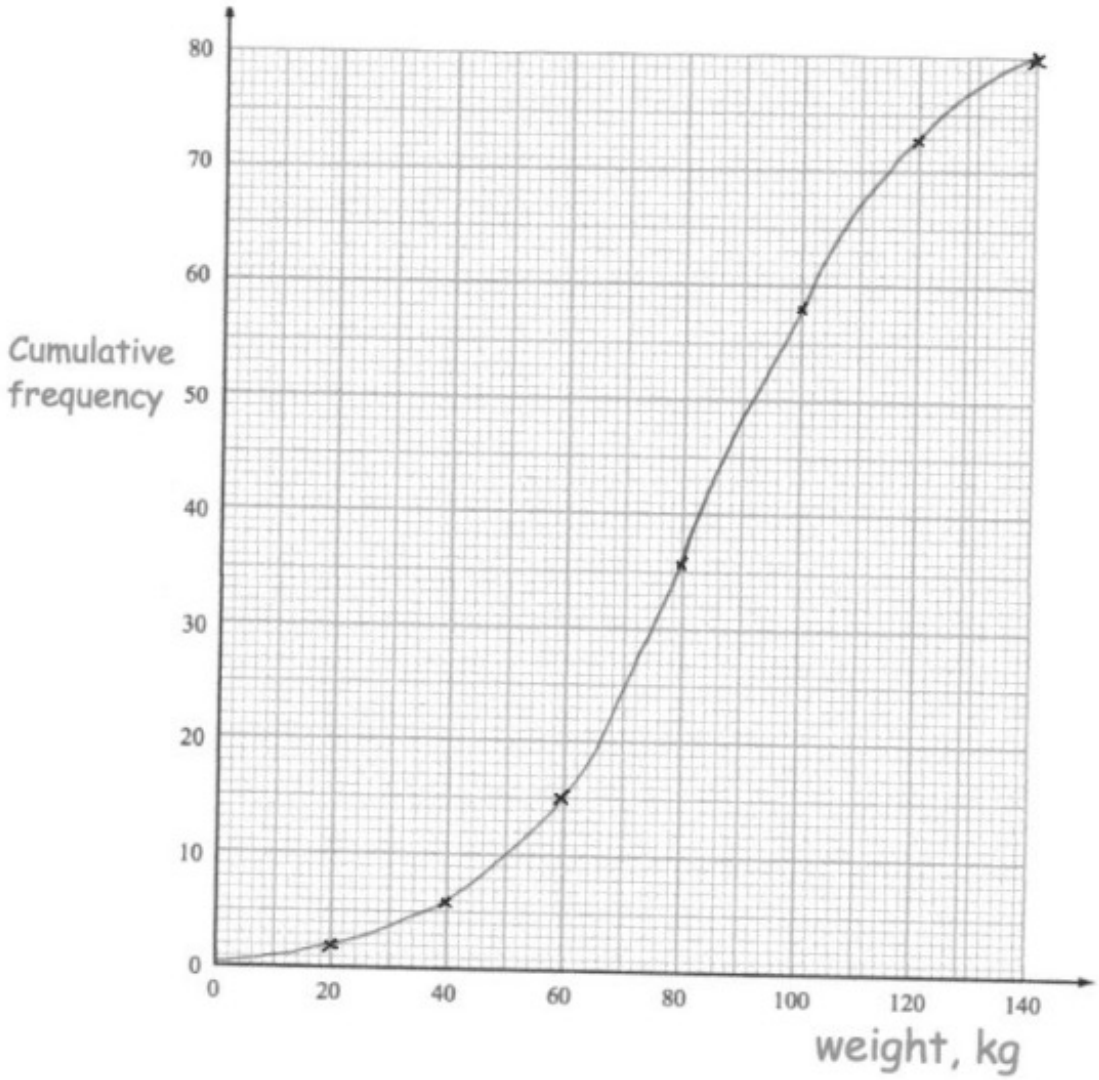
b) Number of people older than 62



Worked Example

Using the cumulative frequency graph, estimate the:

a) Median weight
b) Lower quartile weight
c) Upper quartile weight
d) Interquartile range of the weights

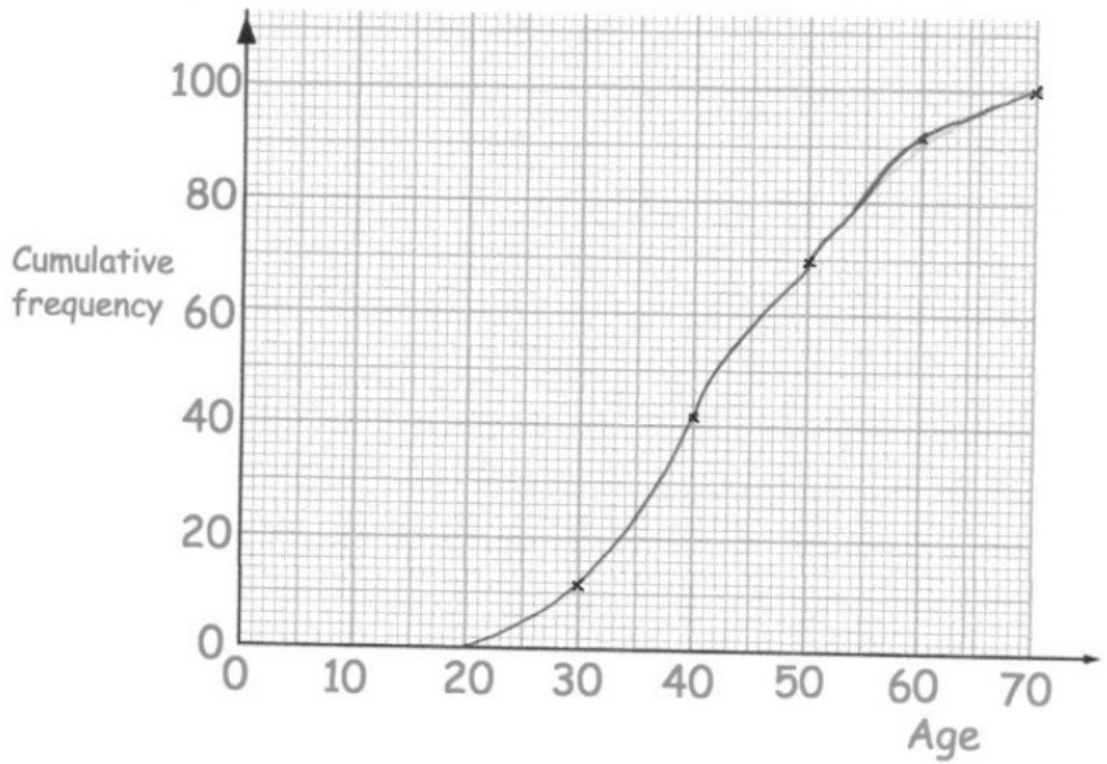


Dr Frost 398e and 398f

Your Turn

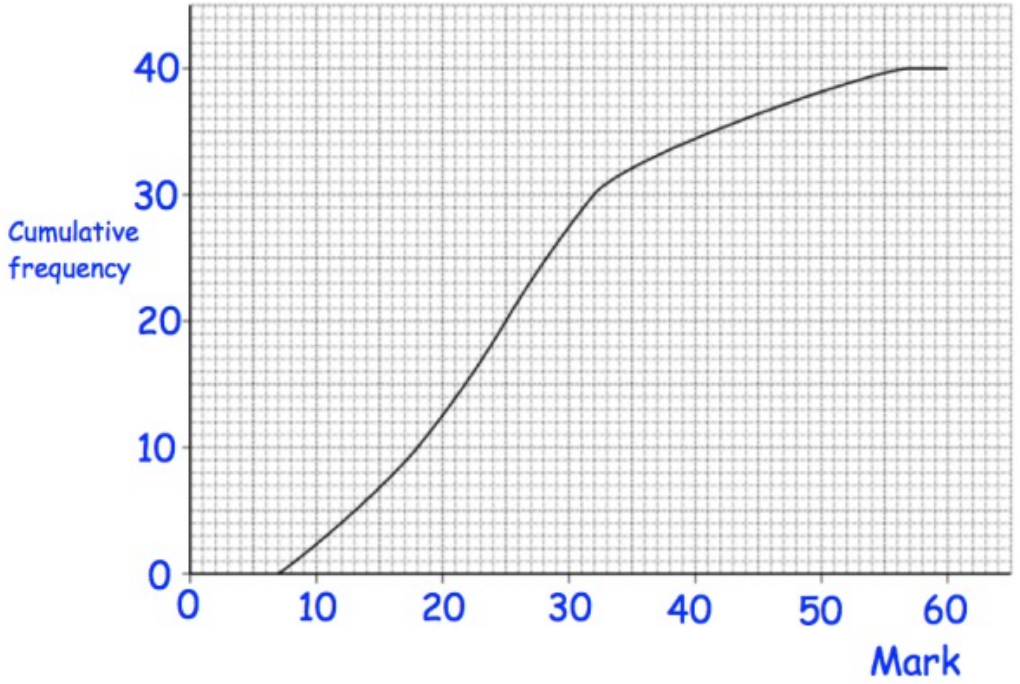
Using the cumulative frequency graph, estimate the:

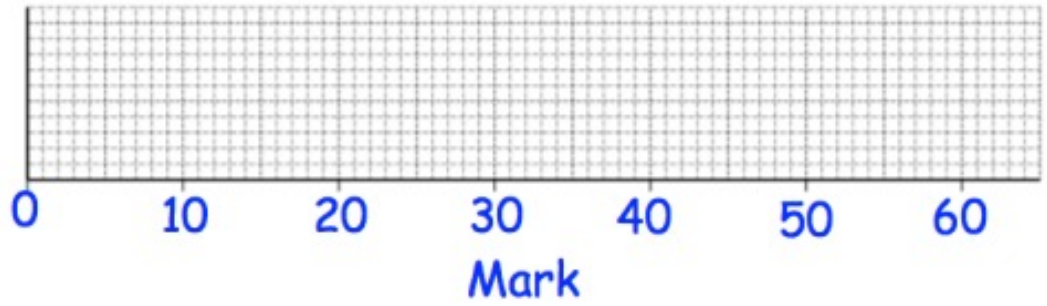
a) Median age
b) Lower quartile age
c) Upper quartile age
d) Interquartile range of the ages



Worked Example

Using the cumulative frequency graph, draw a box plot:

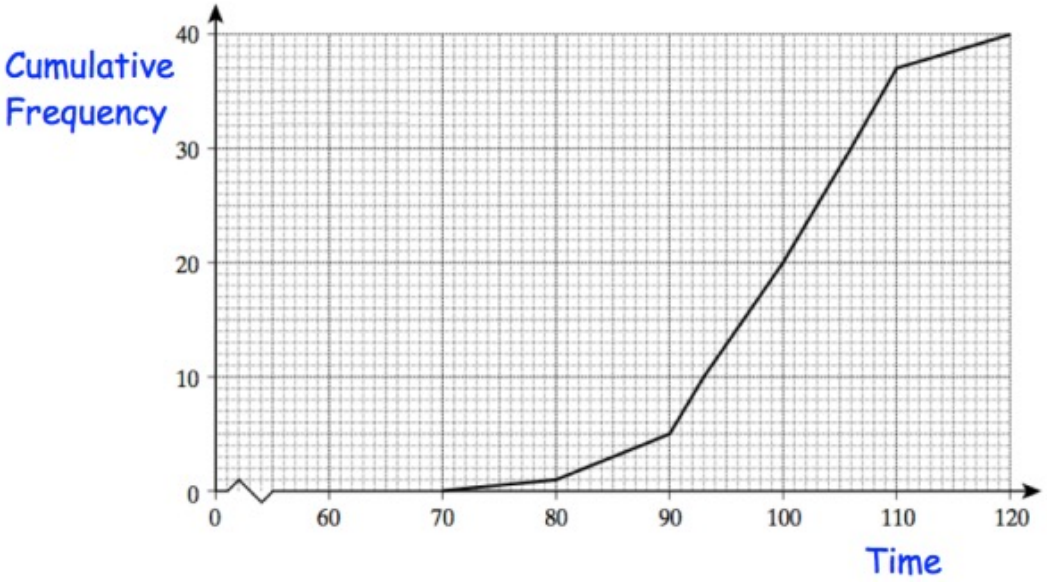


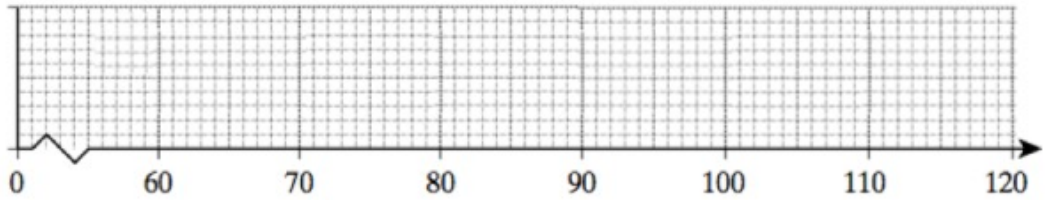


Dr Frost 399d

Your Turn

Using the cumulative frequency graph, draw a box plot:



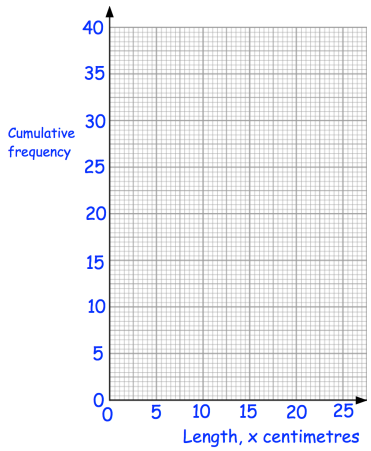


Question 1: The table shows information about the lengths of a type of fish caught in a lake

(a) Complete the cumulative frequency table
(b) Draw a cumulative frequency graph for your table.

Length, x cm	Frequency
$0 < c \leq 5$	3
$5 < c \leq 10$	10
$10 < c \leq 15$	21
$15 < c \leq 20$	4
$20 < c \leq 25$	1

Length, x cm	Cumulative Frequency
$0 < c \leq 5$	
$0 < c \leq 10$	
$0 < c \leq 15$	
$0 < c \leq 20$	
$0 < c \leq 25$	

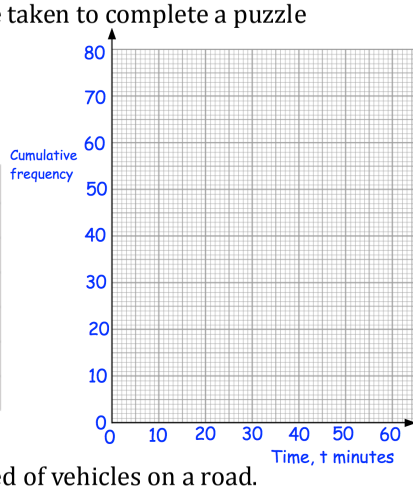


Question 2: The table shows information about the time taken to complete a puzzle

(a) Complete the cumulative frequency table
(b) Draw a cumulative frequency graph for your table.

Time, t minutes	Frequency
$0 < t \leq 10$	3
$10 < t \leq 20$	11
$20 < t \leq 30$	15
$30 < t \leq 40$	27
$40 < t \leq 50$	16
$50 < t \leq 60$	8

Time, t minutes	Cumulative Frequency
$0 < t \leq 10$	
$0 < t \leq 20$	
$0 < t \leq 30$	
$0 < t \leq 40$	
$0 < t \leq 50$	
$0 < t \leq 60$	

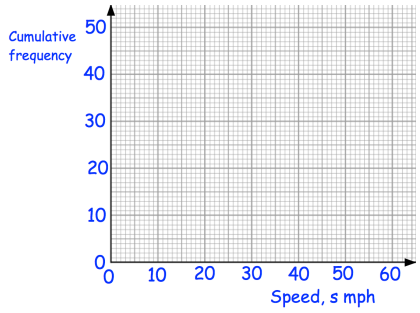


Question 3: The table shows information about the speed of vehicles on a road.

(a) Complete the cumulative frequency table
(b) Draw a cumulative frequency graph for your table.

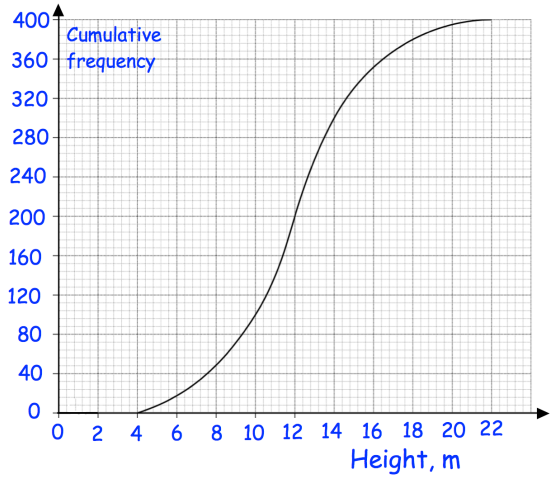
Speed, s mph	Frequency
$0 < s \leq 10$	2
$10 < s \leq 20$	4
$20 < s \leq 30$	14
$30 < s \leq 40$	21
$40 < s \leq 50$	9

Speed, s mph	Cumulative Frequency
$0 < s \leq 10$	
$0 < s \leq 20$	
$0 < s \leq 30$	
$0 < s \leq 40$	
$0 < s \leq 50$	

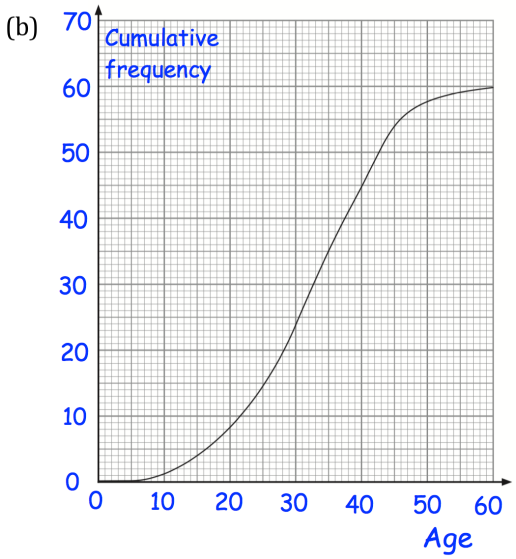


Question 4: Use each cumulative frequency graph to find an estimate for the median.

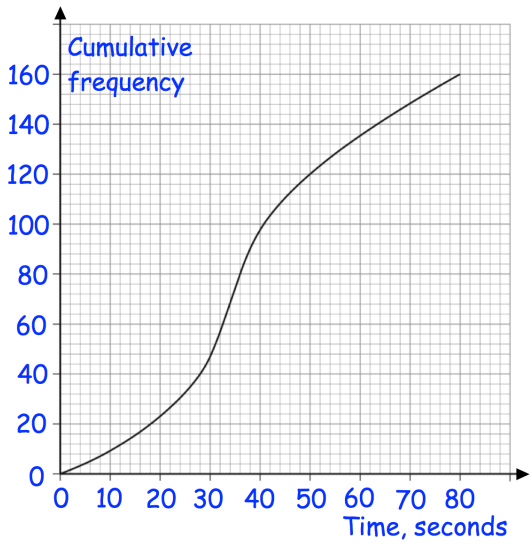
(a)



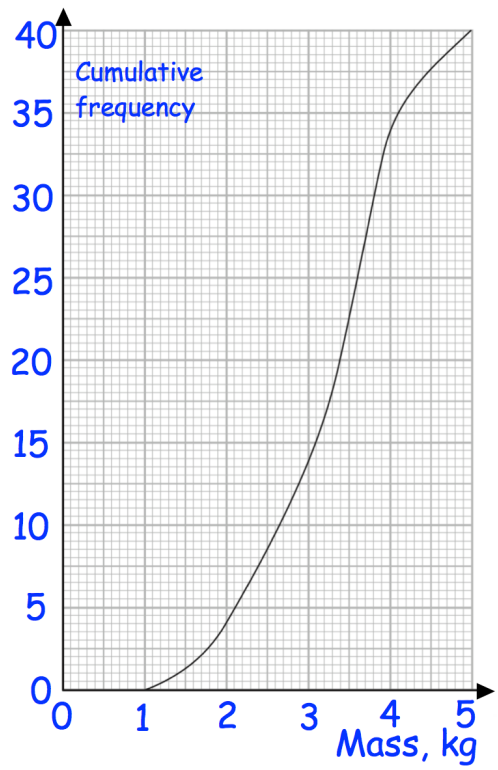
(b)



(c)



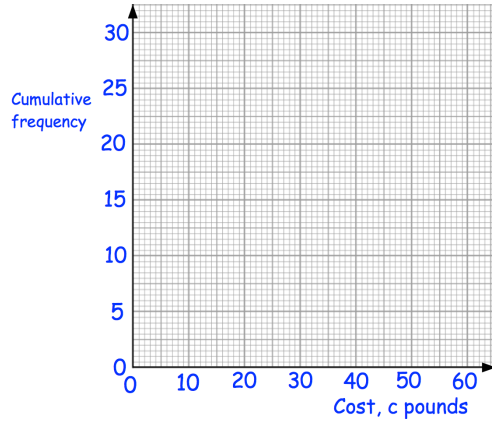
(d)



Question 5: For each table below (i) draw a cumulative frequency graph and
(ii) use your graph to find an estimate of the median

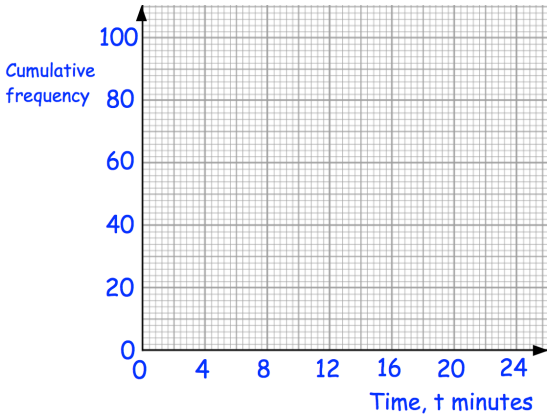
(a)

Cost, c pounds	Frequency
$0 < c \leq 10$	2
$10 < c \leq 20$	7
$20 < c \leq 30$	12
$30 < c \leq 40$	6
$40 < c \leq 50$	2
$50 < c \leq 60$	1



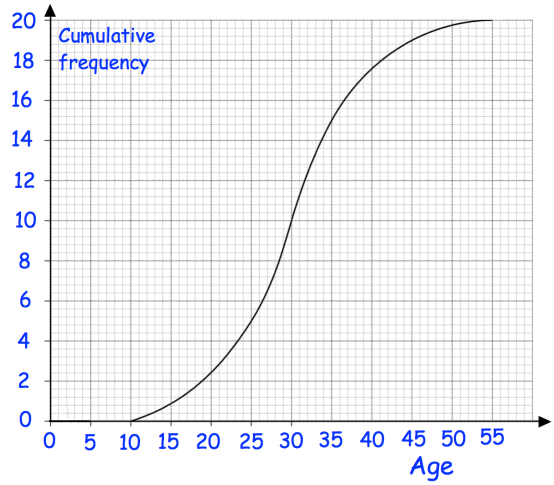
(b)

Time, t minutes	Frequency
$0 < t \leq 4$	5
$4 < t \leq 8$	11
$8 < t \leq 12$	19
$12 < t \leq 16$	25
$16 < t \leq 20$	31
$20 < t \leq 24$	9

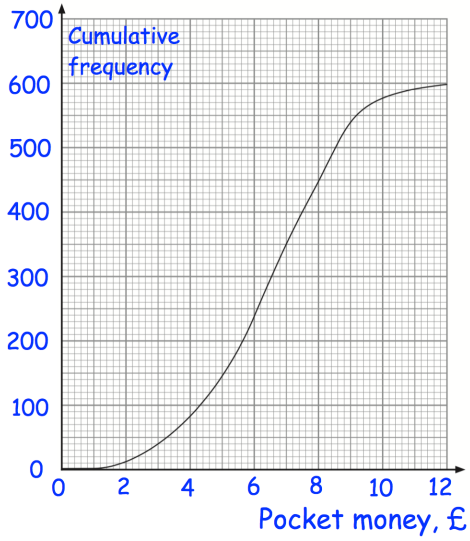


Question 6: Use each cumulative frequency graph to find the (i) lower quartile
(ii) upper quartile
(iii) interquartile range

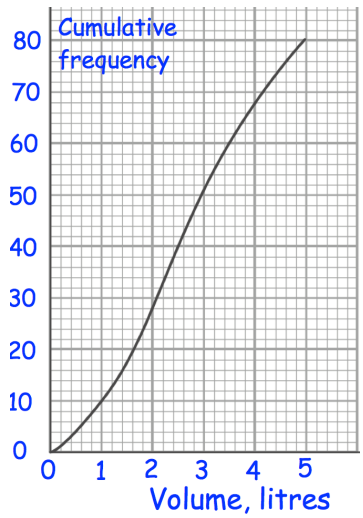
(a)



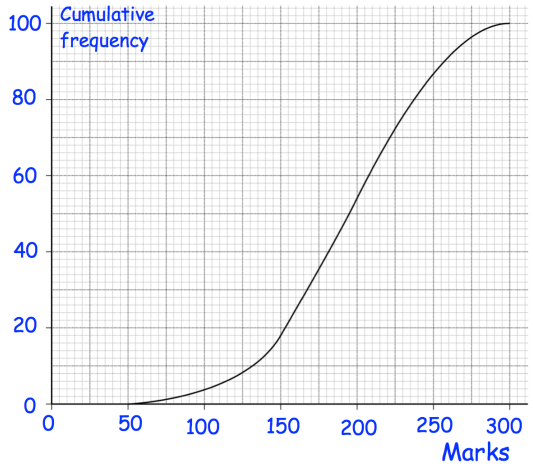
(b)



(c)



(d)



Question 7: The graph shows information about the time taken to solve a puzzle.

(a) How many people took less than 30 seconds?

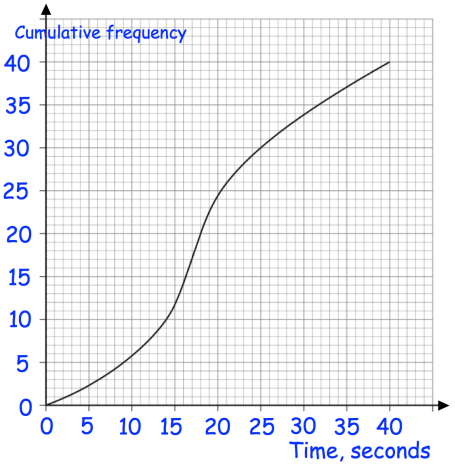
(b) How many people took less than 10 seconds?

(c) How many people took longer than 25 seconds?

(d) How many people took longer than 35 seconds?

(e) The fastest 10 people completed the puzzle in under how many seconds?

(f) The slowest 2 people completed the puzzle in longer than how many seconds?



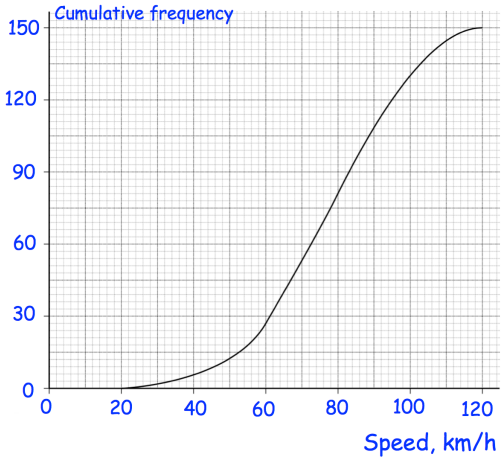
Question 8: The graph shows information about the speed of cars on a road.

(a) How many cars travelled under 50km/h?

(b) How many cars travelled over 110km/h?

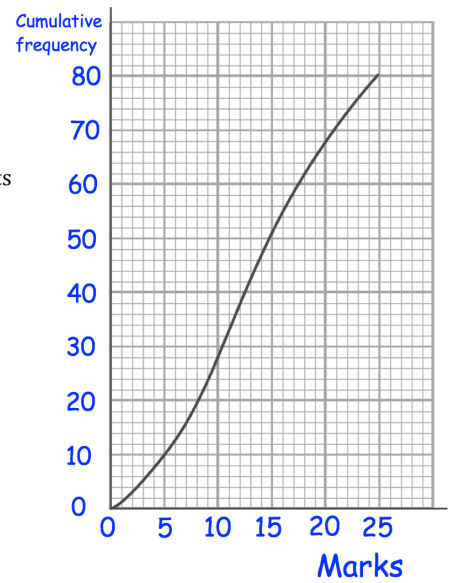
(c) 42 cars were exceeding the speed limit. What is the speed limit?

(d) Mr Rodgers says 18% of the cars were travelling too slowly on this road. Below what speed does he feel is too slow?



Apply

Question 1: Some students complete a quiz.
The cumulative frequency graph shows their results



(a) How many students completed the quiz?

(b) Complete the frequency table below.

(c) What percentage of the students scored above 20 marks?

Marks	Frequency
$0 < m \leq 5$	
$5 < m \leq 10$	
$10 < m \leq 15$	
$15 < m \leq 20$	
$20 < m \leq 25$	

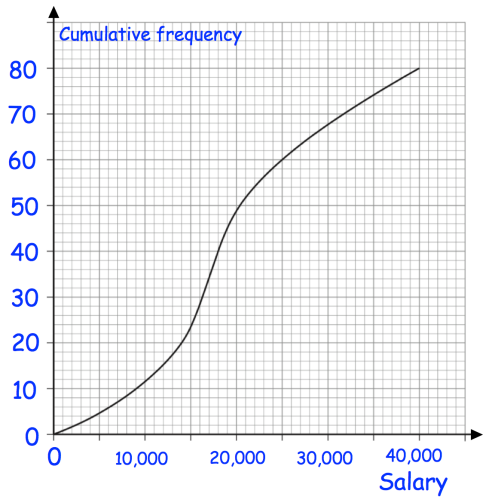
Question 2: The cumulative frequency graph below shows the salaries of 80 teachers.
The lowest salary is £4,000 and the highest salary is £39,000.

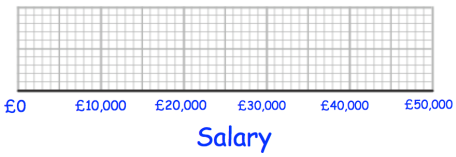
A teacher is picked at random to answer a survey.

(a) Find the probability that the teacher selected is paid less that £15,000.

(b) Find the probability that the teacher selected is paid over £25,000.

(c) Draw a box plot to represent the salaries.



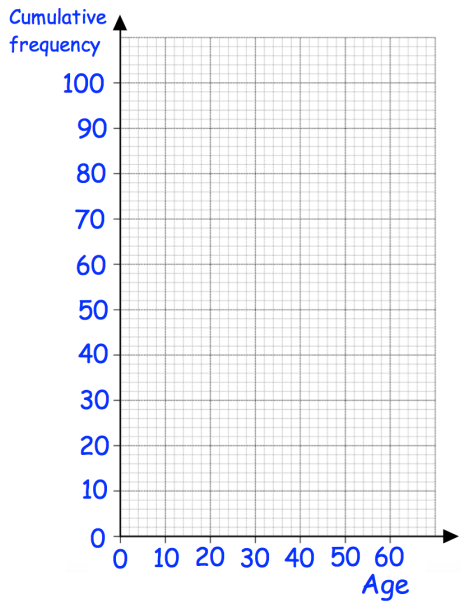


Question 3: The table shows information about the members of Abbeyville Cricket Club

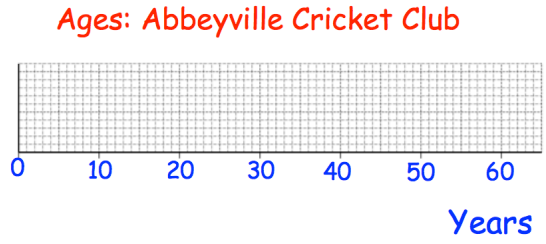
Age	Frequency
$0 < A \leq 10$	2
$10 < A \leq 20$	5
$20 < A \leq 30$	19
$30 < A \leq 40$	38
$40 < A \leq 50$	25
$50 < A \leq 60$	11

The youngest member is 9 and the oldest member is 58.

(a) Draw a cumulative frequency graph to represent this information.



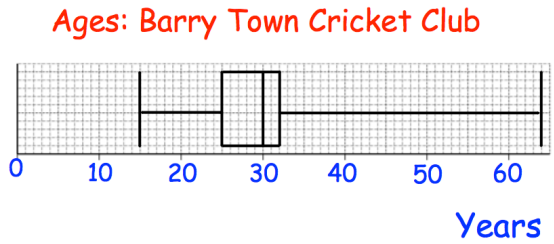
(b) Draw a box plot to represent this information



(c) Work out the interquartile of the ages of the members of Abbeyville Cricket Club.

The box plot below shows information about Barry Town Cricket Club

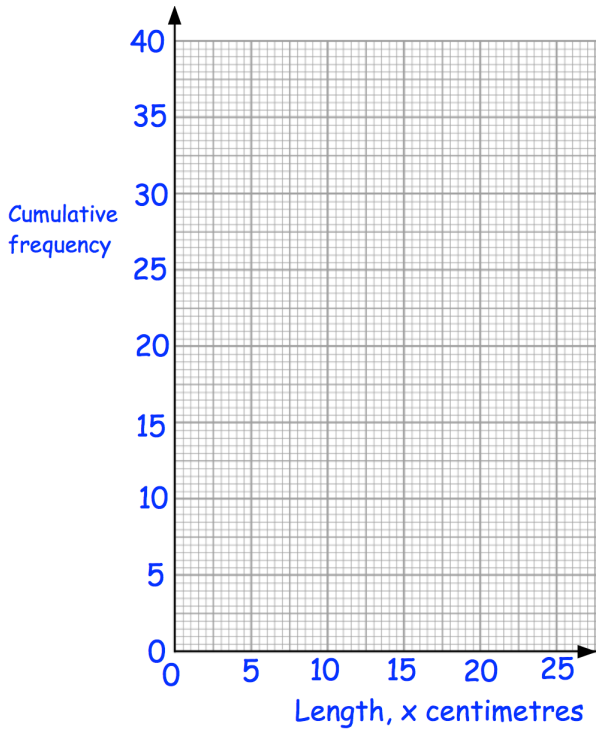
(d) Write down the median age of the members of Barry Town Cricket Club



(e) Compare the distributions of the ages of the members of Abbeyville Cricket Club to the ages of the members of Barry Town Cricket Club.

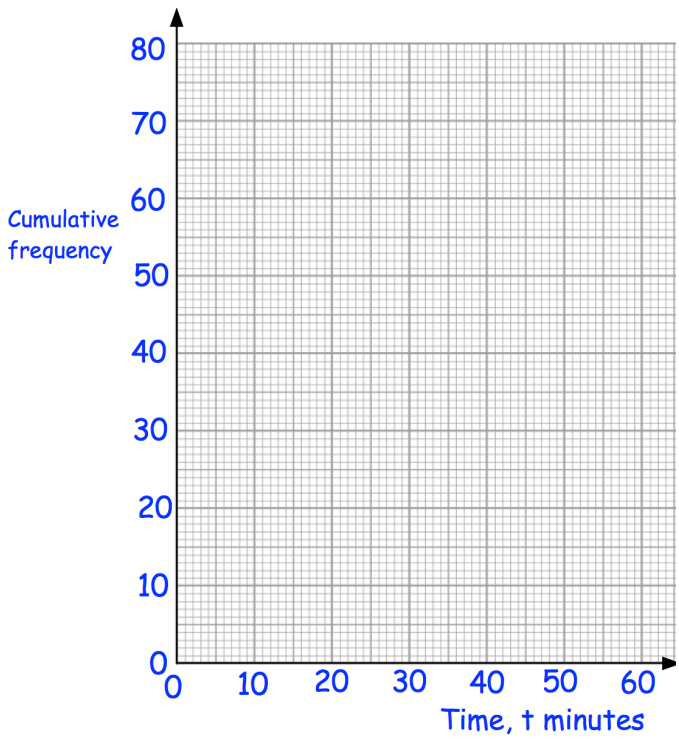
Workout Question 1

Length, x cm	Cumulative Frequency
0 < c ≤ 5	
0 < c ≤ 10	
0 < c ≤ 15	
0 < c ≤ 20	
0 < c ≤ 25	



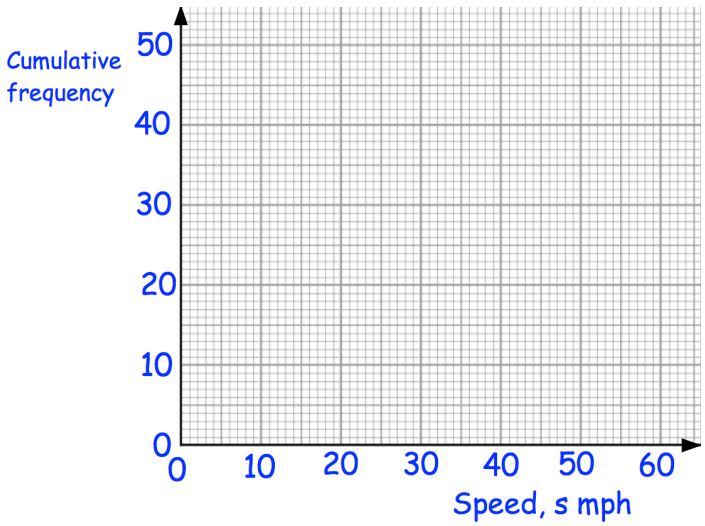
Workout Question 2

Time, t minutes	Cumulative Frequency
0 < t ≤ 10	
0 < t ≤ 20	
0 < t ≤ 30	
0 < t ≤ 40	
0 < t ≤ 50	
0 < t ≤ 60	

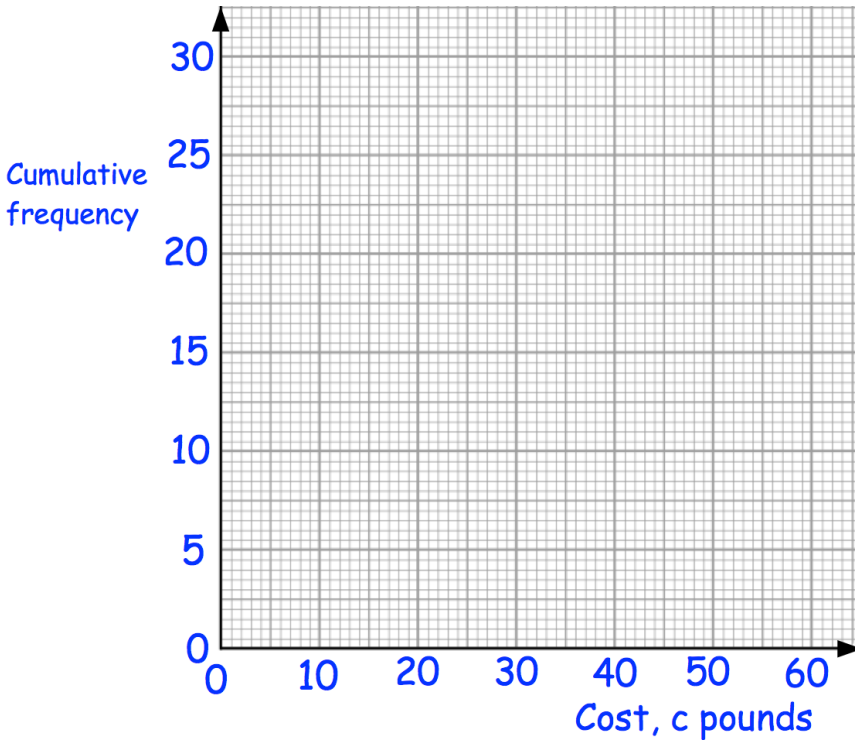


Workout Question 3:

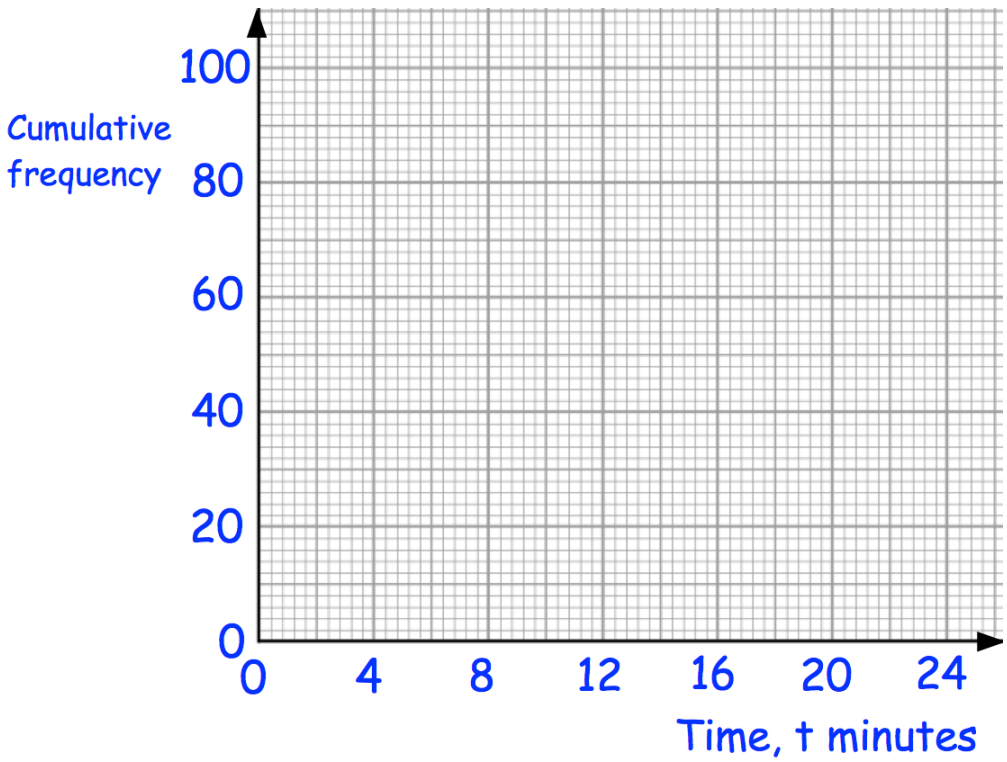
Speed, s mph	Cumulative Frequency
$0 < s \leq 10$	
$0 < s \leq 20$	
$0 < s \leq 30$	
$0 < s \leq 40$	
$0 < s \leq 50$	



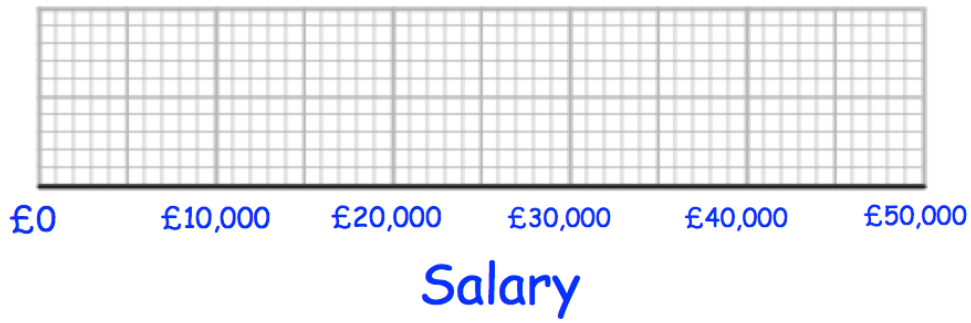
Workout Question 5
(a)



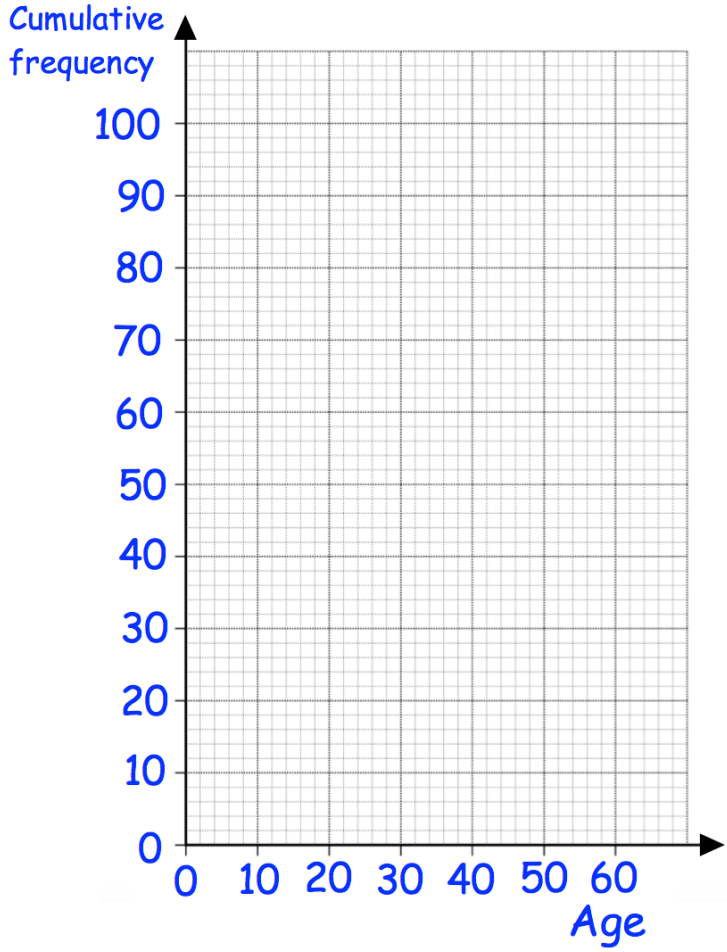
Workout
Question 5(b)



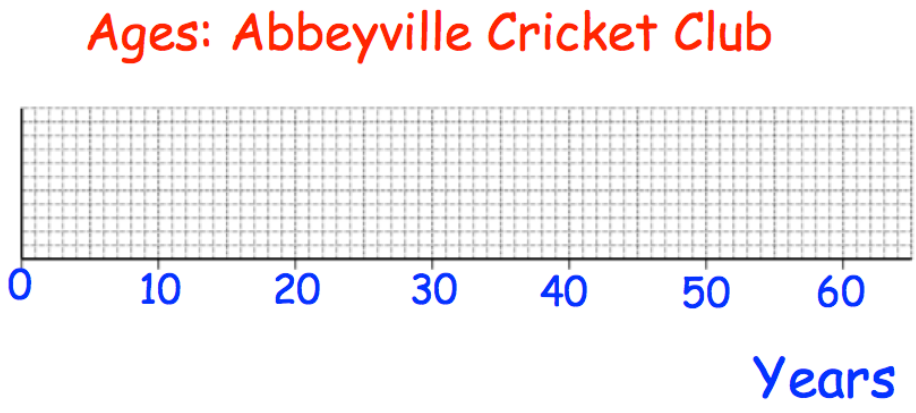
Apply Question 2(c)



Apply Question 3(a)



Apply Question 3(b)



Extra Notes