Maths Transition Workbook

GCSE to A-Level

Dear new Year 12 Maths student,

The activities in this booklet have been designed to help consolidate the work you have already done for GCSE and help prepare you for the work you will study for AS level mathematics.

You should see what is contained in this booklet as the minimum requirement for being able to cope with AS level Maths, and you should make sure you master all the topics in here.

All work must be completed and submitted to your Pure Maths teacher by week beginning **Monday 15th September 2025.**

You will not be retaught these GCSE topics in any Year 12 lesson and you will be tested on them at A Level

Your teacher will check that it has been done to a high standard and **every question** must be completed with full working shown.

In this booklet, there are a range of questions from key topics that you will have seen in GCSE and will be helpful for AS Level and A-Level.

Each topic has three sections:

- **Introduce** questions allow you to practice the key concepts.
- **Strengthen** questions build on your knowledge of the key concepts.
- **Deepen** questions will challenge your understanding.

Unless otherwise indicated, you may use a calculator.

Key facts and formulae:

The Quadratic formula:

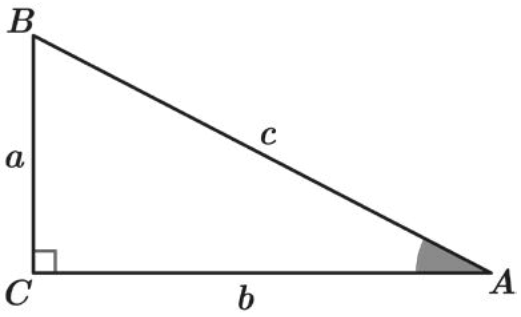
The solution of $ax^2 + bx + c = 0$

where $a \neq 0$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

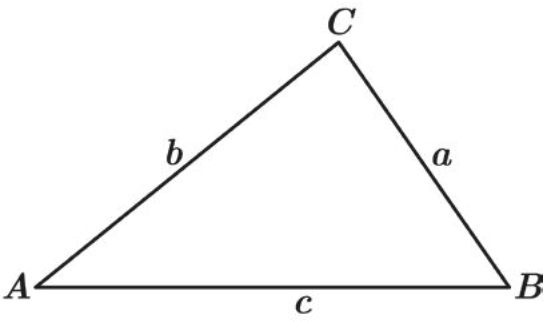
Trigonometry:

In any right-angled triangle ABC where a, b and c are the length of the sides and c is the hypotenuse:



$\sin A = \frac{a}{c}$ $\cos A = \frac{b}{c}$ $\tan A = \frac{a}{b}$

In any triangle ABC where a, b and c are the length of the sides:



sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

cosine rule: $a^2 = b^2 + c^2 - 2bc \cos A$

Q1 Expand and fully simplify $\sqrt{5}(\sqrt{5}+\sqrt{7})$

Answer: .....

Q2 Rationalise the denominator of $\frac{2\sqrt{5}}{\sqrt{6}}$

Give your answer in its simplest form.

Answer: .....

Q3 Expand and fully simplify $(6+\sqrt{5})(1+\sqrt{5})$

Answer: .....

Q4 Write $(5 + \sqrt{12})(11 + \sqrt{3})$ in the form $a + b\sqrt{3}$, where a and b are integers.

Answer: .....

Q5 Rationalise the denominator of $\frac{1 + \sqrt{2}}{\sqrt{2}}$

Give your answer as a fraction in its simplest form.

Answer: .....

Q1 Expand and fully simplify $(2\sqrt{6} - 5\sqrt{2})^2$

Answer: .....

Q2 Rationalise the denominator of $\frac{15 + \sqrt{3}}{10\sqrt{3}}$

Give your answer as a fraction in its simplest form.

Answer: .....

Q3 Rationalise the denominator of $\frac{2\sqrt{7}}{3+\sqrt{7}}$

Give your answer in its simplest form.

Answer: .....

Q4 Write $\sqrt{12}+\frac{33}{\sqrt{3}}$ in the form $r\sqrt{3}$, where r is an integer.

Answer: .....

Q1 Expand and fully simplify $(4 + \sqrt{7})^2 - (4 - \sqrt{7})^2$

Answer: .....

Q2 Work out the value of x in the equation below.

$x(\sqrt{11} - 2) = 21$

Give your answer in the form $a + b\sqrt{11}$, where a and b are integers.

Answer: .....

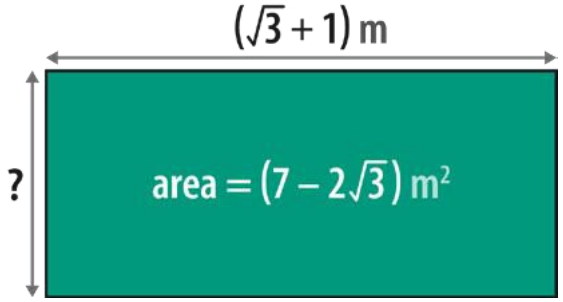
Q3 Given that h is a prime number, rationalise the denominator of $\frac{5h - \sqrt{h}}{\sqrt{h}}$

Give your answer in its simplest form.

Answer: .....

Q4 Calculate the unknown side length, in metres, of the rectangle below.

Give your answer in its simplest form, rationalising the denominator if necessary.



Answer: ..... m

Q1 Expand and fully simplify $(m + 9)(m + 2)$

Answer: .....

Q2 Expand and fully simplify $(2a + 3)(4a + 5)$

Answer: .....

Q3 Expand and fully simplify $(x - 3)(4x + 9)$

Answer: .....

Q4 Expand and fully simplify $(6n - 5)^2$

Answer: .....

Q1 Expand and fully simplify $2(4d + 5)(3d + 1)$

Answer: .....

Q2 Expand and fully simplify $(x + 1)(x^2 + 3x + 5)$

Answer: .....

Q3 Expand and fully simplify $(3n + 4)(5n + 2) + 5(n + 7)$

Answer: .....

Q4 Expand and fully simplify $(t - 2)(t + 5)(t - 4)$

Answer: .....

Q1 Expand and fully simplify $(2x + 5)(4x - 3)(5x - 4)$

Answer: .....

Q2 Work out the values of a, b and c in the identity below.

$(3x - 1)(x + 2)(ax + b) \equiv 15x^3 + 16x^2 - 25x + c$

Answer: $a =$ ..... $b =$ ..... $c =$ .....

Q3 Write the following expression in the form $\frac{1}{ax^b} + \frac{1}{cy^d}$ where a, b, c, and d are integers.

$$\left(\frac{1}{5x} + \frac{1}{4y}\right)\left(\frac{1}{25x^2} - \frac{1}{20xy} + \frac{1}{16y^2}\right)$$

Answer: .....

≡

Q4 Show that $(x^2 + 1)(y^2 + 4) \quad (xy - 2)^2 + (2x + y)^2$

Q1 Fully factorise $y^2 + 9y + 20$

Answer: .....

Q2 Fully factorise $x^2 - x - 20$

Answer: .....

Q3 Fully factorise $w^2 - 15w + 54$

Answer: .....

Q1 Fully factorise $x^2 - 16$

Answer: .....

Q2 Fully factorise $2r^2 + 15r + 7$

Answer: .....

Q3 Fully factorise $5x^2 + 22x + 8$

Answer: .....

Q1 Fully factorise $49h^2 - m^2$

Answer: .....

Q2 Fully factorise $7b - b^2 - 10$

Answer: .....

Q3 Fully factorise $4k^2 - 25n^2 - (2k - 5n)^2$

Answer: .....

Q1 Fully simplify the expression $4y^5 \times 3y^2$

Answer: .....

Q2 Simplify $(h^{-5})^3$

Give your answer without any negative indices.

Answer: .....

Q3 Write $\frac{2t^6u}{8t^3}$ as a fraction in its simplest form.

Answer: .....

Q4 Fully simplify $\left(\frac{t^3}{u^5}\right)^2$

Answer: .....

Q5 Write $\frac{33xy + 9x}{18x}$ as a fraction in its simplest form.

Answer: .....

Q6 Fully simplify $\frac{6a + 42}{a^2 + 11a + 28}$

Answer: .....

Q1 Write $\frac{(3a)^2}{54ak}$ as a fraction in its simplest form.

Answer: .....

Q2 Fully simplify $(64g^8h^4)^{\frac{1}{2}}$

Answer: .....

Q3 Fully simplify $\frac{x + 2}{2x^2 - 31x - 70}$

Answer: .....

Q1 Work out the values of a, b and c in the equality below.

$$\frac{2x^{20}y^4 \times 12x^4y^{26}}{(2xy^2)^3} = ax^by^c$$

Answer: $a =$ ..... $b =$ ..... $c =$ .....

Q2 Work out what expression should replace the ? in the equivalent fractions below.

$$\frac{?}{12r^4(t+6)} = \frac{2n}{3r}$$

Answer: ? = ...

Q3 $\frac{ax^2 + bx + c}{dx^2 - 25}$ simplifies to give $\frac{x - 4}{2x - 5}$

Work out the values of a, b, c and d in the original fraction.

Answer: $a =$ ..... $b =$ ..... $c =$ ..... $d =$ .....

Q1 Fully simplify $\frac{14a}{b} \times \frac{b}{2}$

Answer: .....

Q2 Fully simplify $\frac{6a}{v} \div \frac{2a}{5}$

Give your answer as a fraction.

Answer: .....

Q3 Fully simplify the expression below to give a single fraction.

$$\frac{n+2}{5} + \frac{6n}{7}$$

Answer: .....

Q1 Fully simplify $\frac{2}{5a + 4} \times \frac{45a + 36}{a}$

Give your answer as a fraction.

Answer: .....

Q2 Fully simplify $\frac{6x}{(5x - 7)(x + 1)} - \frac{1}{5x - 7}$

Give your answer fully factorised.

Answer: .....

Q3 Write the following as a single fraction in its simplest form:

$$\frac{2x^2 - 11x + 12}{x + 5} \div (4x^2 - 6x)$$

Give your answer fully factorised.

Answer: .....

Q4 Fully simplify $\frac{4ab^2}{k} \times \frac{3ak}{12k} \times \frac{7}{5ab}$

Give your answer as a fraction.

Answer: .....

Q1 Fully simplify $\frac{7}{36 - x^2} - \frac{3}{6 + x}$

Give your answer fully factorised.

Answer: .....

Q2 Write the following as a single fraction in its simplest form:

$$6 - (x + 4) \div \frac{x^2 + 11x + 28}{x - 7}$$

Give your answer fully factorised.

Answer: .....

Q1 Find the two solutions to the equation

$(x - 9)(x + 5) = 0$

Answer: .....

Q2 Solve this equation by factorising:

$y^2 + 3y - 10 = 0$

Answer: .....

Q3 Solve this equation by factorising:

$12 - 8w + w^2 = 0$

Answer: .....

Q4 Using the quadratic formula, solve

$4x^2 + 16x + 15 = 0$

Answer: .....

Q5 Solve this equation by factorising:

$2m^2 - 11m + 5 = 0$

Answer: .....

Q1 Using the quadratic formula, solve $y^2 - 6y + 7 = 0$

Give your answer in the form $a \pm \sqrt{b}$

Answer: .....

Q2 Solve the equation below using factorising.

$6y^2 - 11y - 10 = 0$

Answer: .....

Q3 Using the quadratic formula, solve $6x^2 - 35 = -11x$

Answer: .....

Q4 Solve $3r(3r - 4) = 2$

Give your answers to 2 d.p.

Answer: .....

Q1 Solve $x(x + 4) - 4(5x + 9) = 0$

Answer: .....

Q2 Jessica thinks of a positive number, n, which is less than 1
She adds this number to its reciprocal and gets 2.9

Work out the value of n.
Give your answer as a fraction in its simplest form.

Answer: .....

Q3 Solve $\frac{4}{y - 1} - \frac{5}{y + 2} = \frac{3}{y}$

Answer: .....

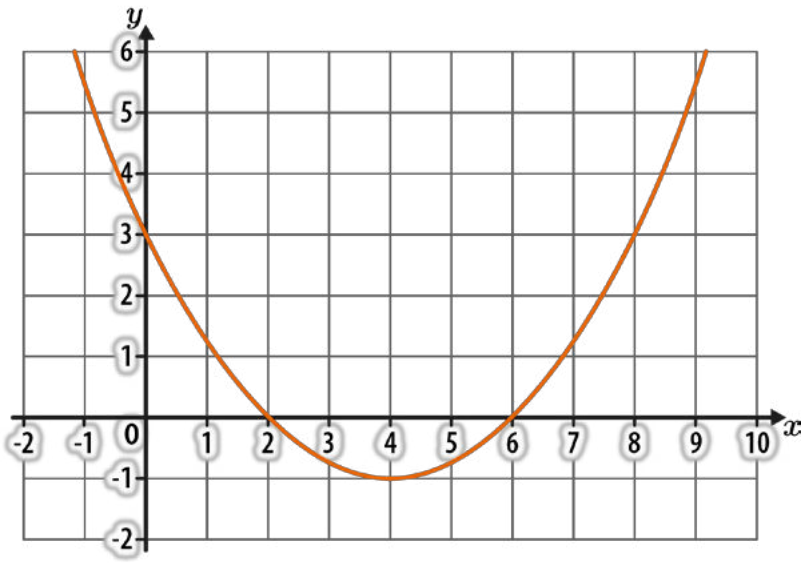
Q4 $x = \frac{-3 \pm \sqrt{29}}{2}$

There is only one equation of the form $x^2 + bx + c = 0$ that gives these values of x as solutions.

Work out the values of b and c.

Answer: $b =$ ..... $c =$ .....

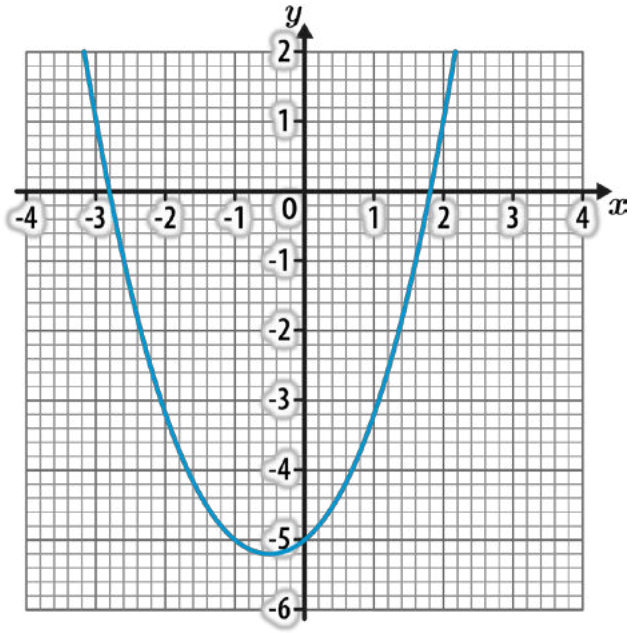
Q1 Write down the coordinates of the roots of the quadratic curve shown below.



Answer: (..... , ...) and (..... , ...)

Q2 Here is the graph of the function $y = x^2 + x - 5$

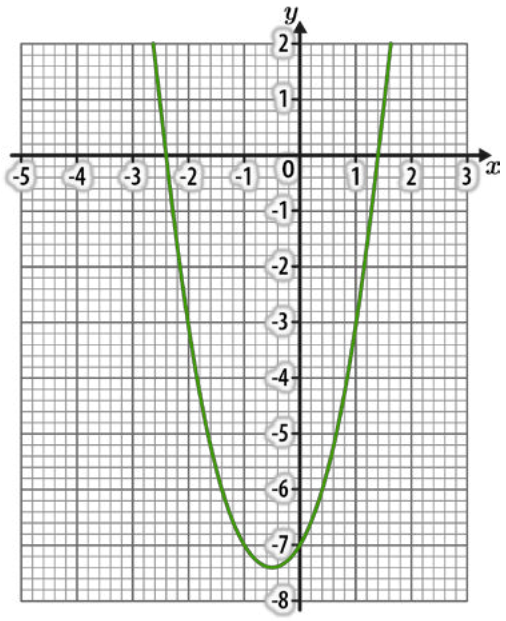
Estimate the solutions to $x^2 + x - 5 = 0$
Give your answers to 1 d.p.



Answer: .....

Q3 The diagram below shows the graph of the function $y = 2x^2 + 2x - 7$

Work out the solutions to $2x^2 + 2x - 7 = -3$



Answer: .....

Q4 a) Write $x^2 + 6x + 11$ in the form $(x + c)^2 + d$, where c and d are numbers.

Answer: a) .....

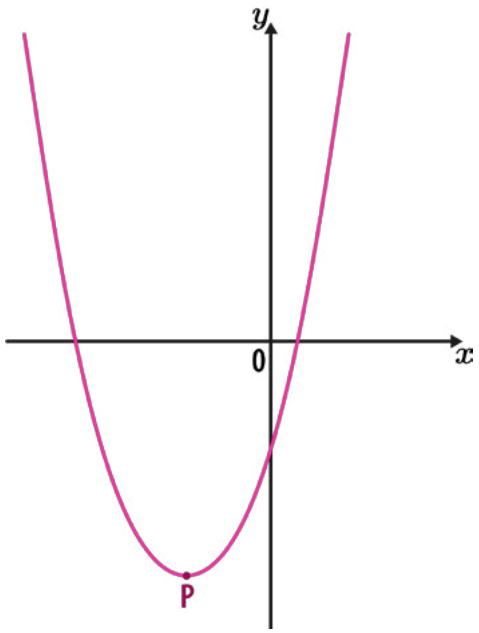
b) Hence, write down the coordinates of the turning point on the curve $y = x^2 + 6x + 11$

Answer: b) (..... , ...)

Q1 The diagram below shows a sketch of the curve $y = x^2 + 8x - 10$

P is the turning point of the curve.

Work out the coordinates of P.



Answer: (..... , ...)

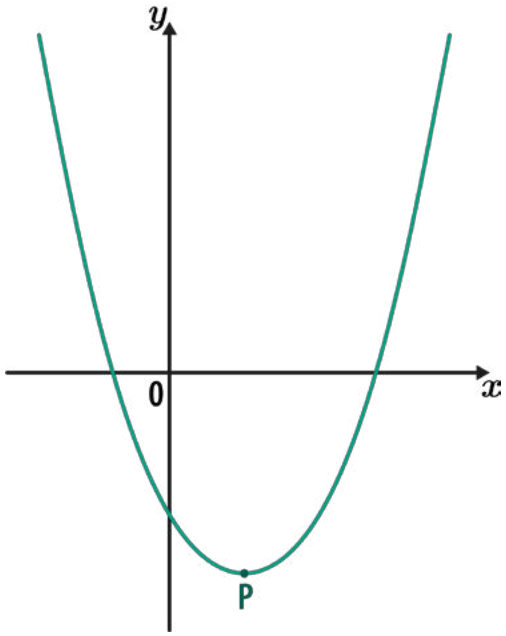
Q2 Work out the coordinates of the turning point of the curve $y = x^2 - 5x + 1$

Answer: (..... , ...)

Q3 The diagram below shows a sketch of the curve $y = 3x^2 - 6x - 10$

P is the turning point of the curve.

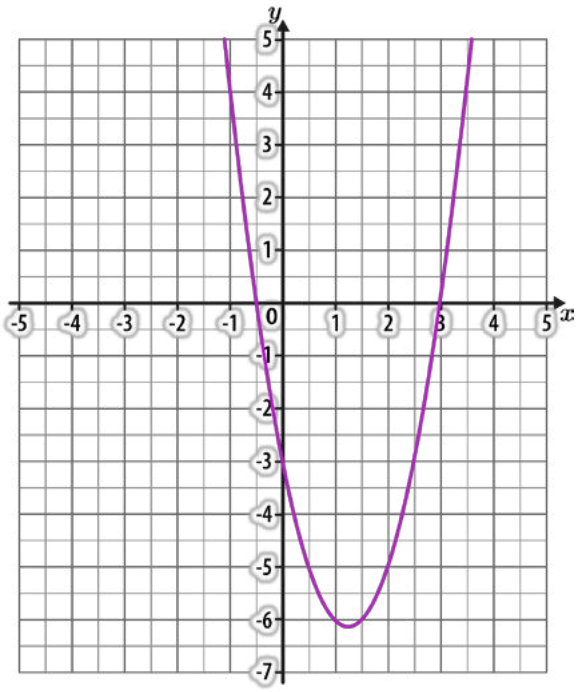
Work out the coordinates of P.



Answer: (..... , ...)

Q4 The diagram below shows the graph of $y = 2x^2 - 5x - 3$

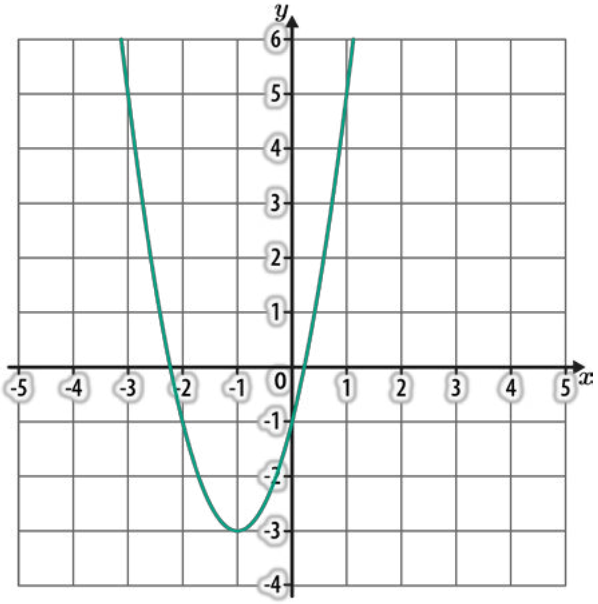
Use the diagram to estimate the solutions to $2x^2 - 5x - 3 = -2x + 2$
Give any decimal answers to 1 d.p.



Answer: .....

Q1 The diagram below shows the graph of $y = 2x^2 + 4x - 1$
The equation $2x^2 + 4x - 1 = k$ has solutions at $x = -3$ and $x = 1$

What is the value of k?



Answer: $k =$ .....

Q2 A curve has the equation $y = x^2 + ax + b$, where a and b are numbers.
The turning point of the curve is (5, 4)

Work out the values of a and b.

Answer: $a =$ ..... $b =$ .....

Q3 A curve has the equation $y = -x^2 + 16x - 65$

a) Work out the turning point of the curve.

Answer: a) (..... , ...)

b) By considering the position of the turning point and the shape of the curve, work out how many real roots $y = -x^2 + 16x - 65$ has.

Answer: b) .....

Q1 Solve the following simultaneous equations:

$6x + y = 22$

$2x + y = 10$

Answer: $x =$ ..... $y =$ .....

Q2 Solve the following simultaneous equations:

$7x - 4y = 20$

$2x + 4y = 16$

Answer: $x =$ ..... $y =$ .....

Q3 Solve the following simultaneous equations:

$15a - 4b = 25$

$5a + 2b = 25$

Answer: $a =$ ..... $b =$ .....

Q4 Solve the following simultaneous equations:

$2x + 3y = 8$

$3x + 4y = 11$

Answer: $x =$ ..... $y =$ .....

Q1 Solve the following simultaneous equations:

$7x + 5y = 8$

$3x - 2y = -9$

Answer: $x =$ ..... $y =$ .....

Q2 Solve the following simultaneous equations:

$6x + 7y = 5$

$9x + 13y = -10$

Answer: $x =$ ..... $y =$ .....

Q3 Solve the following simultaneous equations:

$7y + 2x = \frac{23}{2}$

$5y + 3x = 9$

Answer: $x =$ ..... $y =$ .....

Q4 Solve the following simultaneous equations:

$4.6t + 8.1u = 104$

$3.8t - 2.7u = -8$

Answer: $t =$ ..... $u =$ .....

Q1 Solve the following simultaneous equations:

$3x = 3 - 4y$

$12y + 11 = -5x$

Answer: $x =$ ..... $y =$ .....

Q2 Find the values of x, y and a by solving the following simultaneous equations:

$6x - 7y = -10$

$12x - 5y = 16$

$2x + ay = 10$

Answer: $x =$ ..... $y =$ ..... $a =$ .....

Q3 Solve the following simultaneous equations:

$$\frac{4}{7x - 4} = \frac{1}{6y}$$

$$\frac{5x}{3y + 2} = 4$$

Answer: $x =$ ..... $y =$ .....

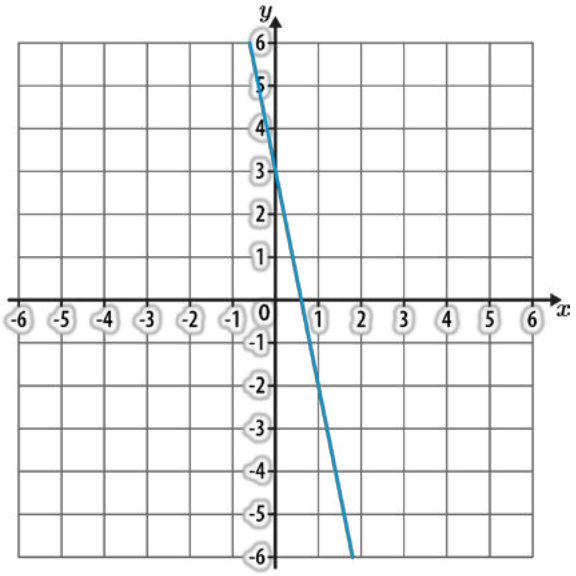
Q4 Solve the following simultaneous equations:

$$2^x = 4^{(7 - 2y)}$$

$$3^{(5x - 13y)} = 81$$

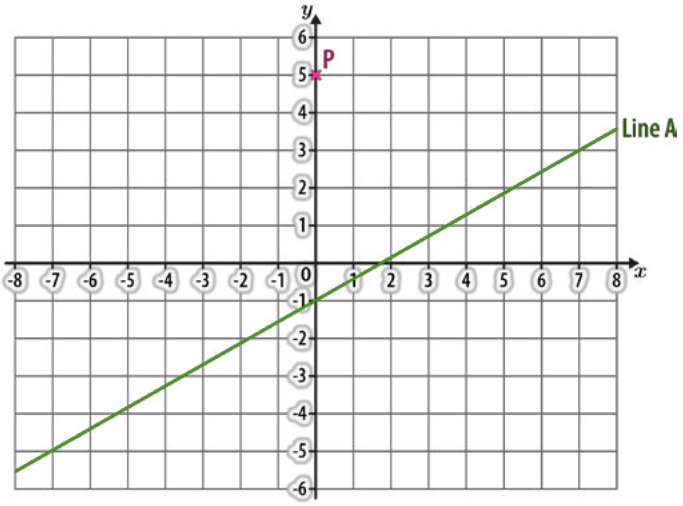
Answer: $x =$ ..... $y =$ .....

Q1 Work out the equation of the straight line shown below.



Answer: .....

Q2 Work out the equation of the straight line that is parallel to line A and passes through point P.



Answer: .....

Q3 Line A has the equation $2y - 10 = 16x$
Line B is perpendicular to Line A.

What is the gradient of Line B?

Answer: .....

Q4 A straight line has a gradient of 3 and passes through the point (2, 10)

Work out the equation of the line.

Answer: .....

Q5 Work out the equation of the straight line that passes through (2, 3) and (5, 18)

Answer: .....

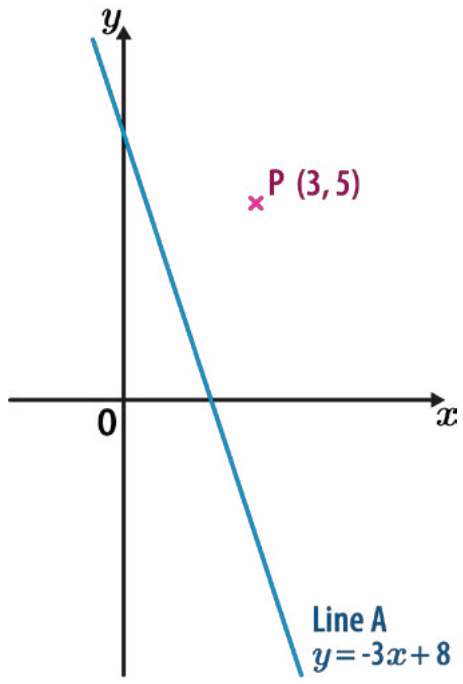
Q1 A straight line has a gradient of $-\frac{3}{4}$ and passes through the point (32, 12)

Work out the equation of the line.

Answer: .....

Q2 The diagram below shows point P and Line A.
Line B is **perpendicular** to line A and passes through point P.

What is the equation of line B?



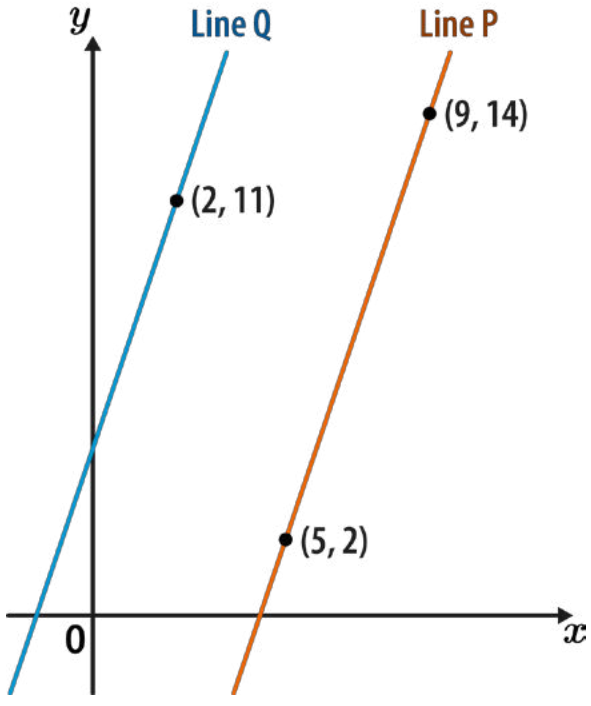
Answer: .....

Q3 Work out the equation of the straight line that passes through (1, -7) and (6, 8)

Answer: .....

Q4 The graph below shows line P and line Q.
Line Q is **parallel** to line P.

What is the equation of line Q?



Answer: .....

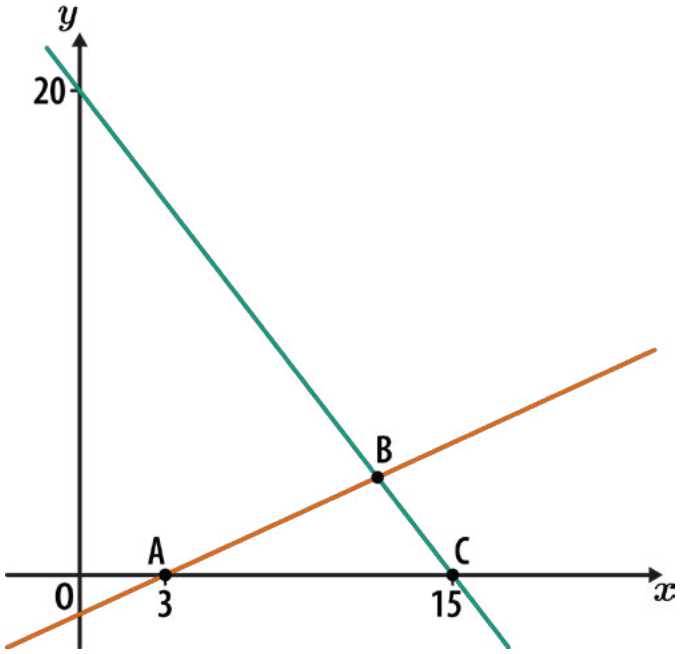
Q1 Write an expression, in terms of h, for the gradient of a line **perpendicular** to the line segment joining $(3h, 20)$ to $(6h, 8)$

Give your answer as a fully simplified fraction.

Answer: .....

Q2 The triangle ABC has an area of 24 square units.

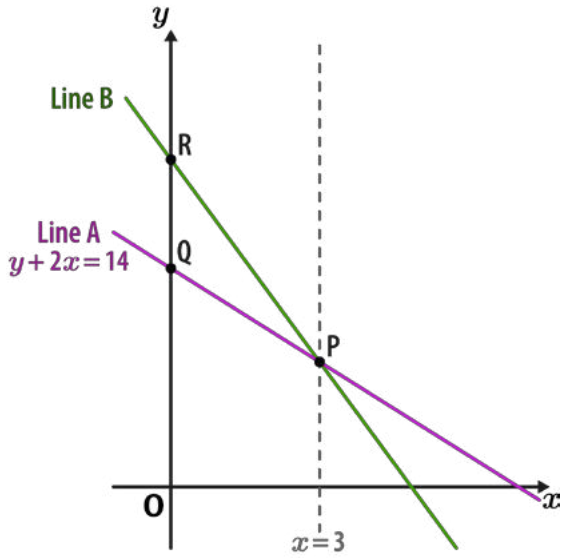
What are the coordinates of point B?



Answer: (..... , ...)

Q3 Line A has the equation $y + 2x = 14$
The gradient of line B is twice the gradient of line A.

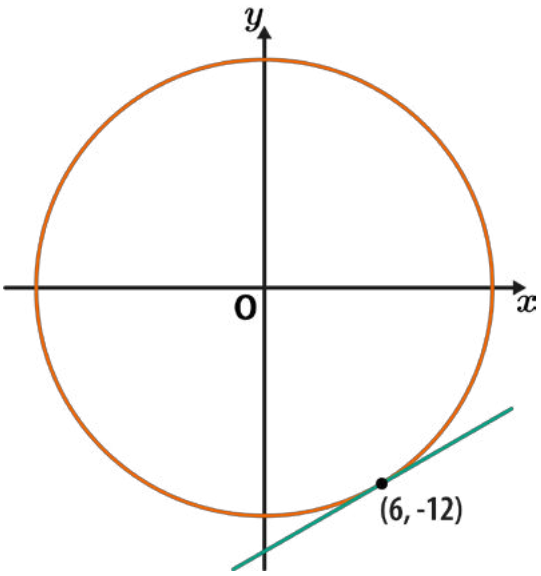
Work out the ratio of the length of OQ to the length of OR.
Give your answer in its simplest form.



Answer: .....

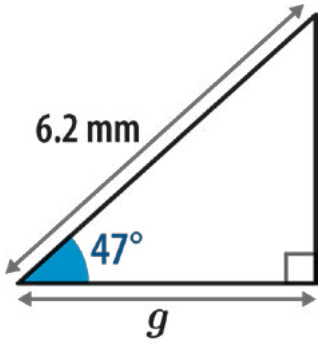
Q4 A circle, centre O, passes through the point (6, -12), as shown.

Work out the equation of the tangent to the circle at this point.
Give your answer in the form $y = mx + c$, where m and c are integers or fractions in their simplest form.



Answer: .....

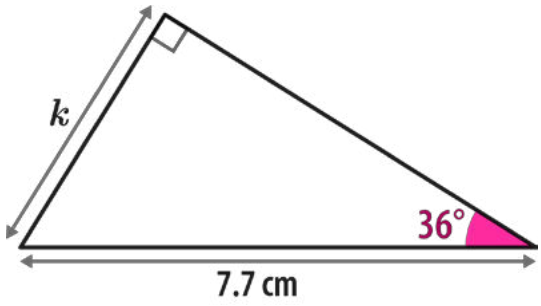
Q1 Work out the length g.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... mm

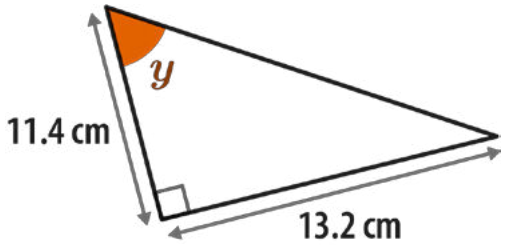
Q2 Work out the length k.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... cm

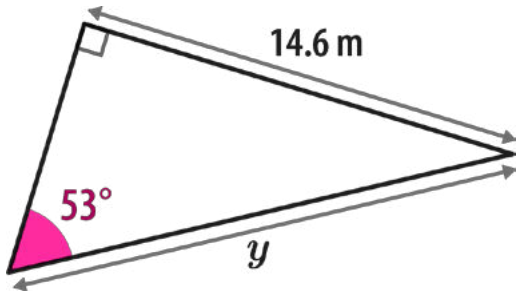
Q3 Calculate the size of angle y.
Give your answer to the nearest integer.



Not drawn accurately

Answer: ..... °

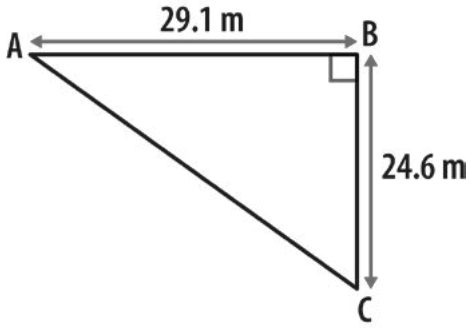
Q1 Calculate the length y.
Give your answer to 2 d.p.



Not drawn accurately

Answer: ..... m

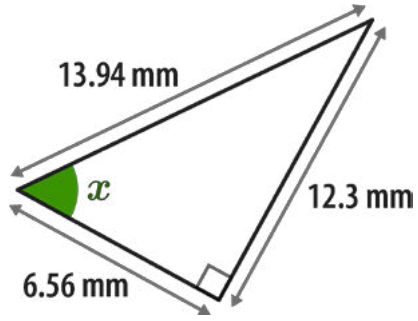
Q2 Calculate the size of angle BAC.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... °

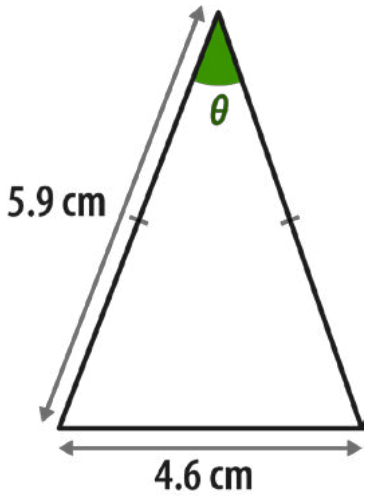
Q3 What is the size of angle x?
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... °

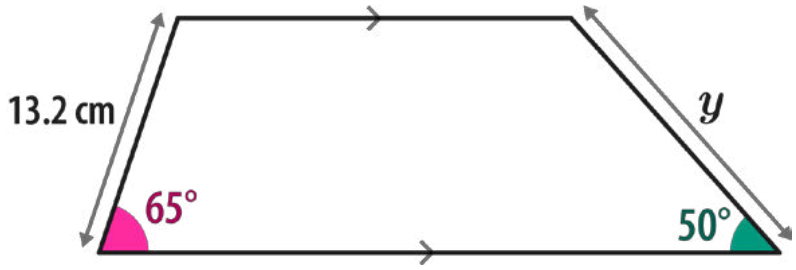
Q1 Calculate the size of angle θ.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... °

Q2 Work out the length y.
Give your answer to 2 d.p.

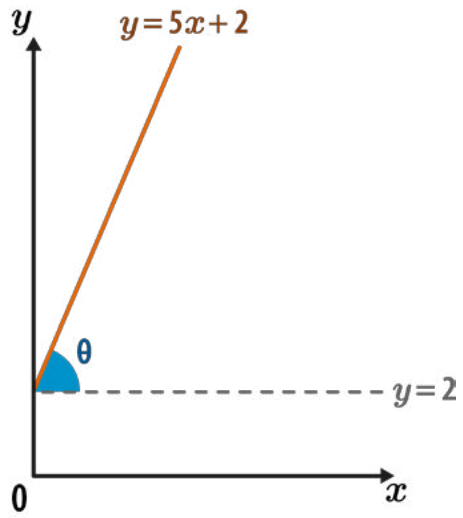


Not drawn accurately

Answer: ..... cm

Q3 The graph below shows the line with equation $y = 5x + 2$
The axes both have the same scale.

Calculate the size of angle θ.
Give your answer in degrees to the nearest integer.

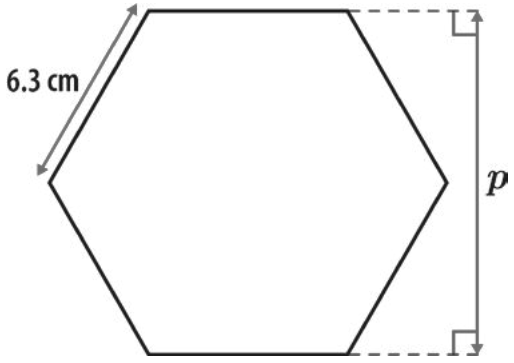


Not drawn accurately

Answer: ..... °

Q4 The shape below is a regular hexagon.

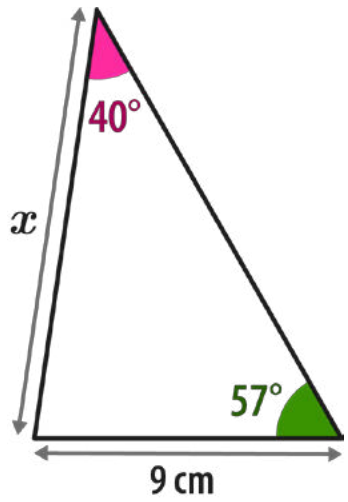
Use trigonometry to calculate the distance p.
Give your answer in centimetres to 2 d.p.



Not drawn accurately

Answer: ..... cm

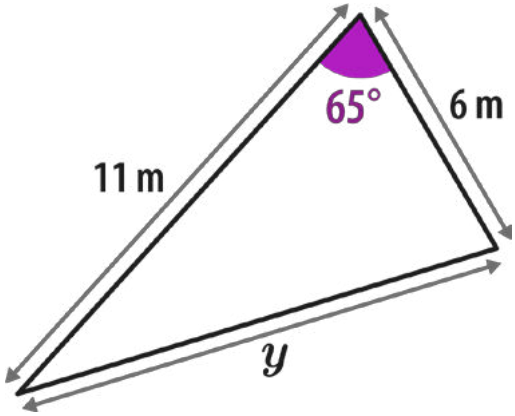
Q1 Using the sine rule, calculate the length x.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... cm

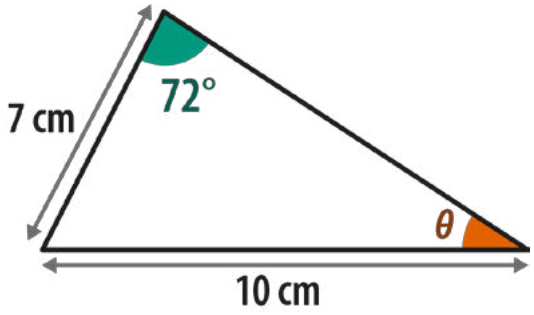
Q2 Using the cosine rule, work out the length y.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... m

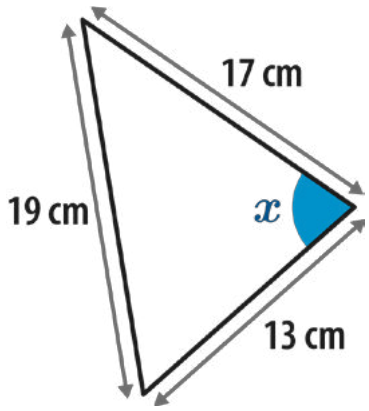
Q3 Use the sine rule to calculate angle θ.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... °

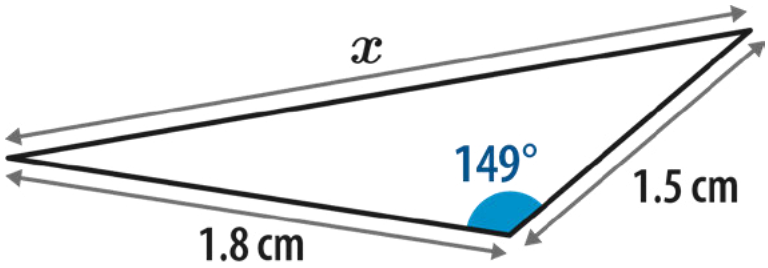
Q4 Use the cosine rule to calculate the size of angle x.
Give your answer to the nearest degree.



Not drawn accurately

Answer: ..... °

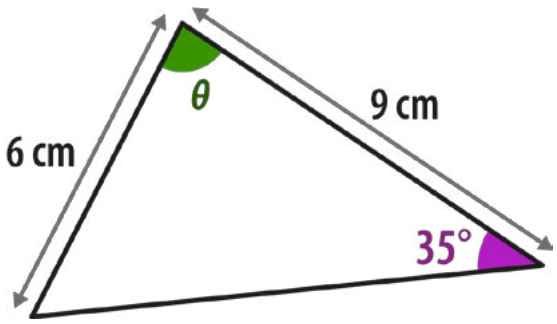
Q1 Work out length x.
Give your answer to 1 d.p.



Not drawn accurately

Answer: ..... cm

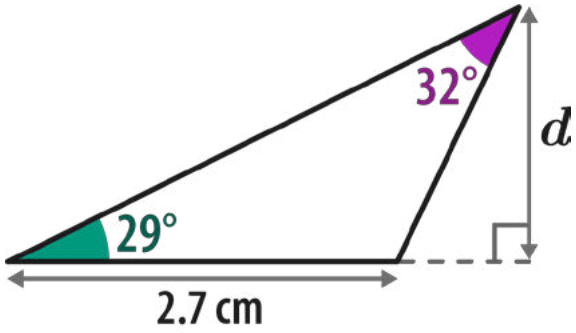
Q2 All the angles in the triangle below are acute.
Calculate the angle θ to 1 d.p.



Not drawn accurately

Answer: ..... °

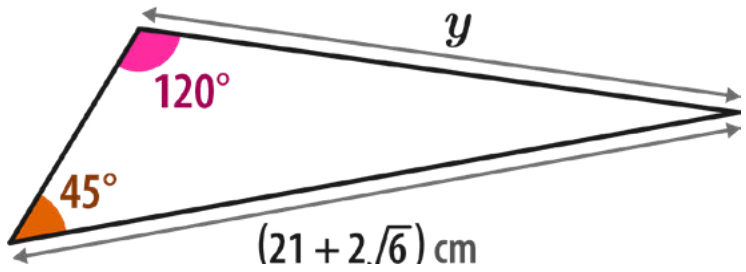
Q1 Calculate the length d.
Give your answer to 2 s.f.



Not drawn accurately

Answer: ..... cm

Q2 Work out the length y in the triangle below.
Give your answer in its simplest form, rationalising the denominator if necessary.

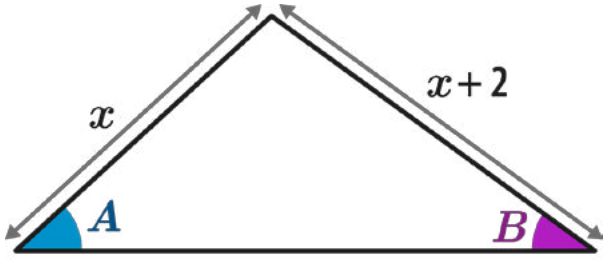


Not drawn accurately

Answer: ..... cm

Q3 Using the information below, work out the value of x.

$\sin A = \frac{4}{5}$ $\sin B = \frac{3}{4}$

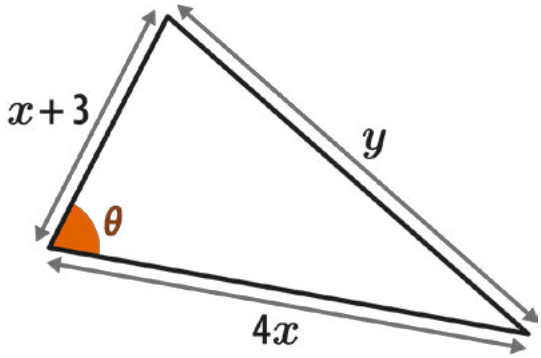


Not drawn accurately

Answer: .....

Q4 Given that $\cos\theta = \frac{1}{8}$ in the triangle below, show that $y^2 = ax^2 + bx + c$ where a, b and c are numbers.

What are the values of a, b and c?

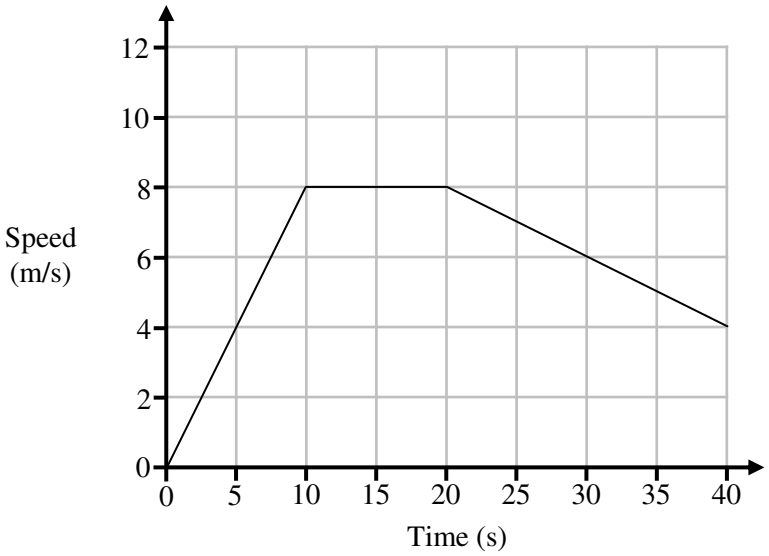


Not drawn accurately

Answer: $a =$ ..... $b =$ ..... $c =$ .....

Speed Time Graphs

1 Here is a speed-time graph for a 40 second journey.



(a) Work out the acceleration during the first 10 seconds.
State the units of your answer.

.....

(2)

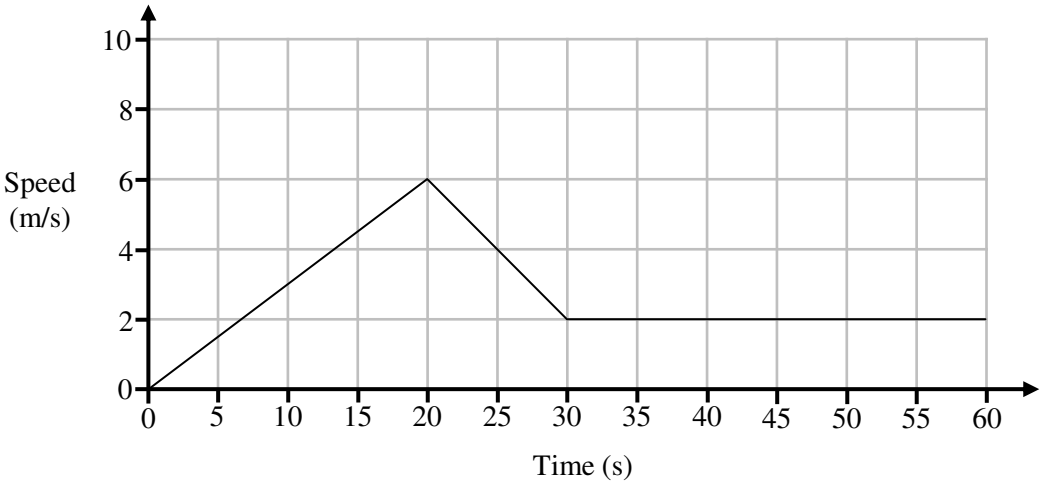
(b) Work out the total distance travelled.

..... m

(3)

(Total for Question 1 is 5 marks)

2 Here is a speed-time graph for a 1 minute journey.



(a) Write down the acceleration in the second half of the journey.

..... m/s^2

(1)

(b) Work out the acceleration during the first 20 seconds.

..... m/s^2

(1)

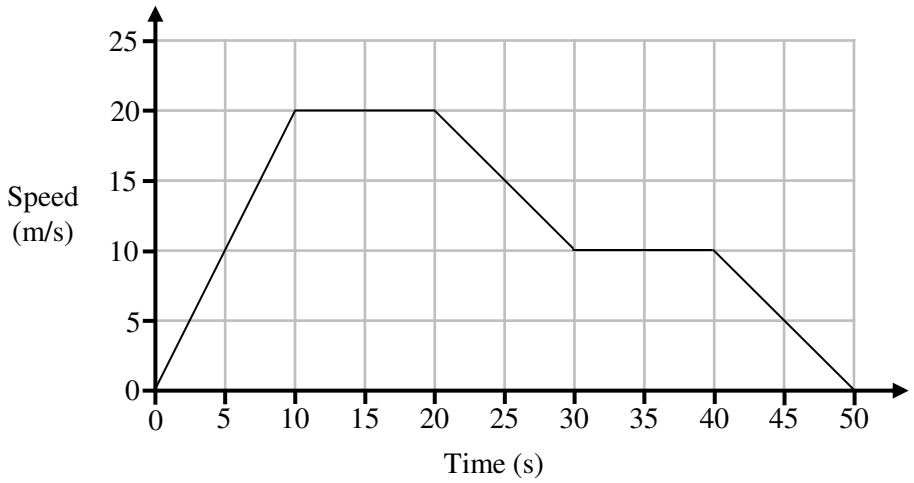
(c) Work out the total distance travelled.

..... m

(3)

(Total for Question 2 is 5 marks)

3 Here is a speed-time graph for a 50 second journey.



Negative	Zero	Positive
Decreasing		Increasing

Use words from the box above to complete each of the statements below.
You may use a word more than once.

Between 0 and 10 seconds the speed is ..... and .....

Between 0 and 10 seconds the acceleration is .....

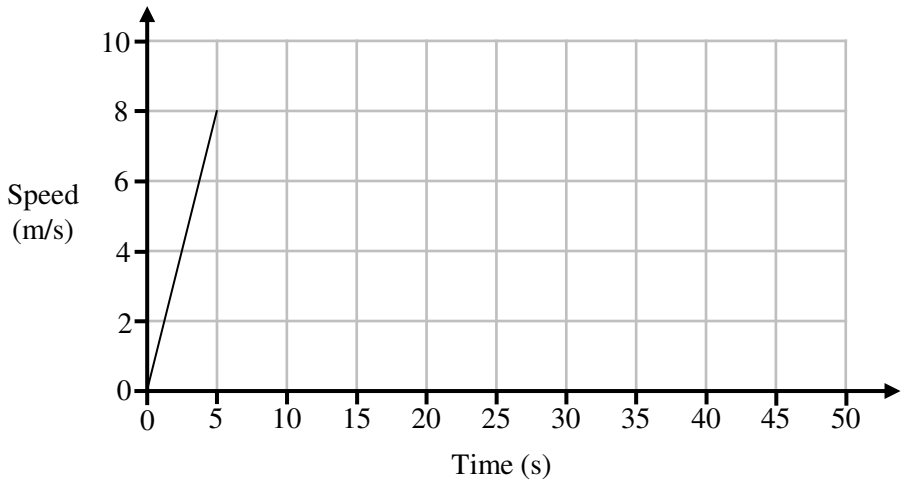
Between 10 and 20 seconds the acceleration is .....

Between 20 and 30 seconds the acceleration is .....

Between 20 and 30 seconds the speed is ..... and .....

(Total for Question 3 is 5 marks)

4 Here is part of a speed-time graph for an athlete in a 400 metre race.



(a) Work out the acceleration of the athlete in the first 5 seconds.

..... m/s^2

(1)

(b) After the first 5 seconds the athlete runs at a constant speed to the end of the race.

Work out the total time taken for the athlete to complete the 400 metre race.

..... seconds

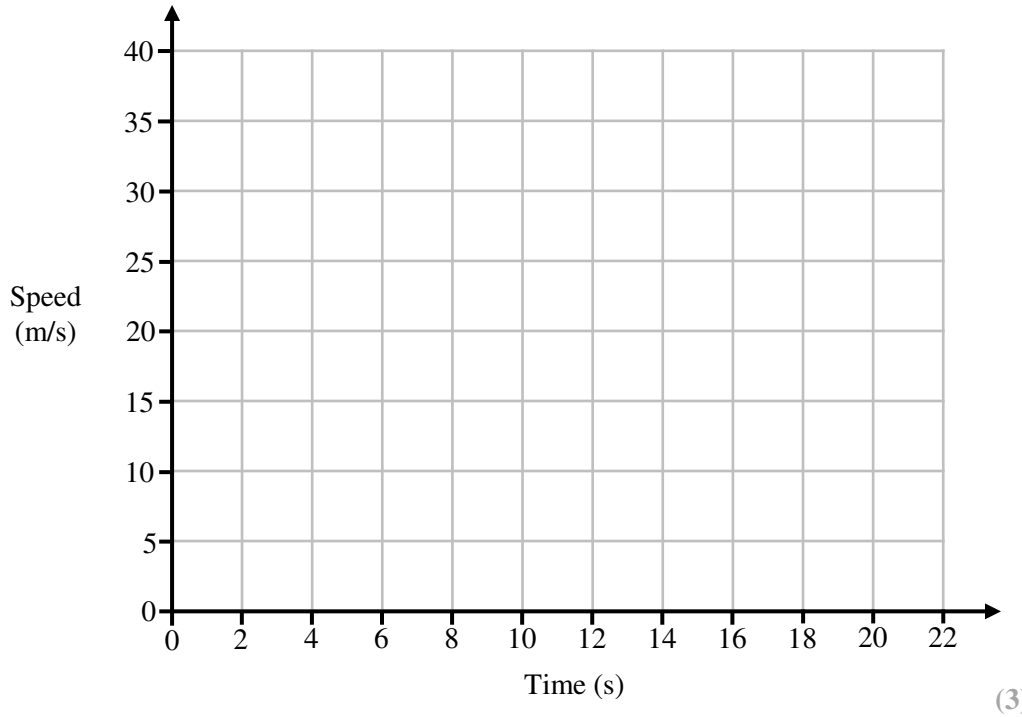
(3)

(Total for Question 4 is 4 marks)

5 A car accelerates from rest with a constant acceleration 5 m/s^2 for 6 seconds.

The car then travels at a constant speed for a further 8 seconds before decelerating at 7.5 m/s^2 until it comes to rest.

(a) Draw a speed-time graph for the car onto the grid below.



(3)

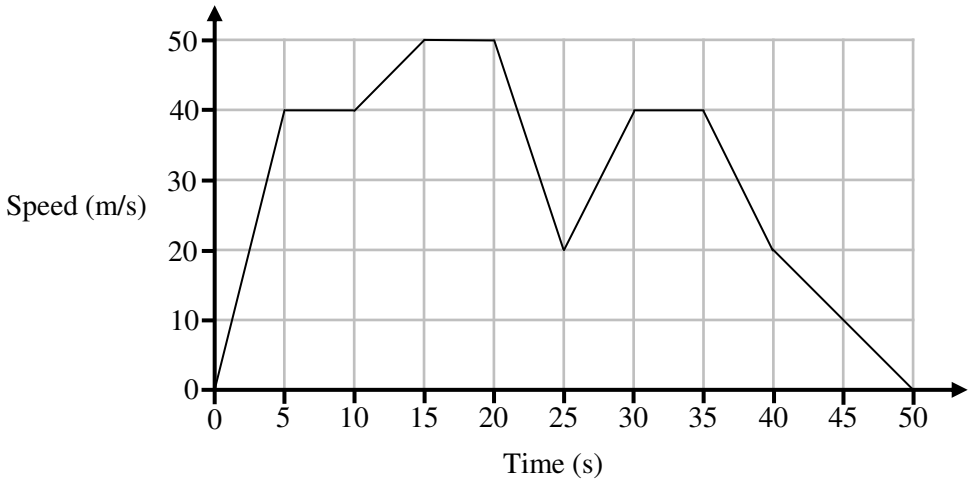
(b) Work out the total distance travelled by the car.

..... m

(2)

(Total for Question 5 is 5 marks)

6 Here is a speed-time graph for a 50 second journey.

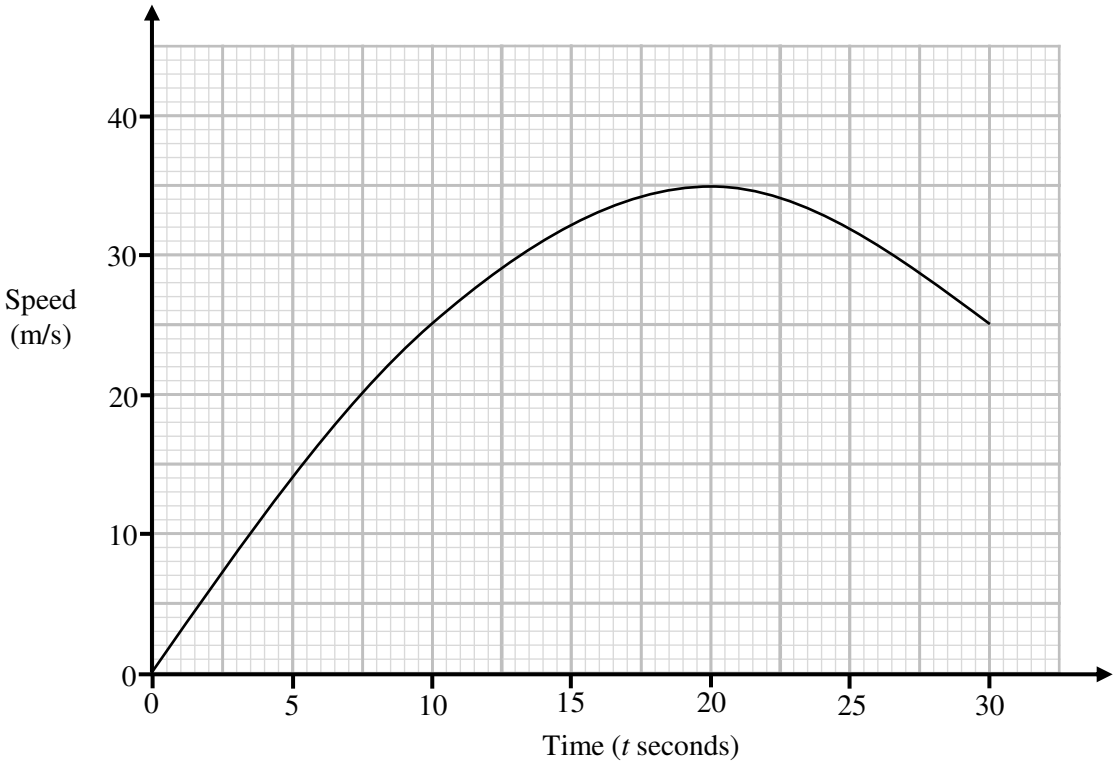


Tick the correct box for each statement below

	True	False
The acceleration is greatest between 15 and 20 seconds.	☐	☐
The acceleration between 15 and 20 seconds is the same as the acceleration between 30 and 35 seconds.	☐	☐
The acceleration between 25 and 30 seconds is the same as the acceleration between 35 and 40 seconds.	☐	☐
The distance travelled in the first 5 seconds is the same as the distance travelled in the last 10 seconds.	☐	☐

(Total for Question 6 is 4 marks)

7 Here is a speed-time graph for a 30 second journey.



(a) Work out an estimate for the acceleration when $t = 15$ seconds.

..... m/s^2

(2)

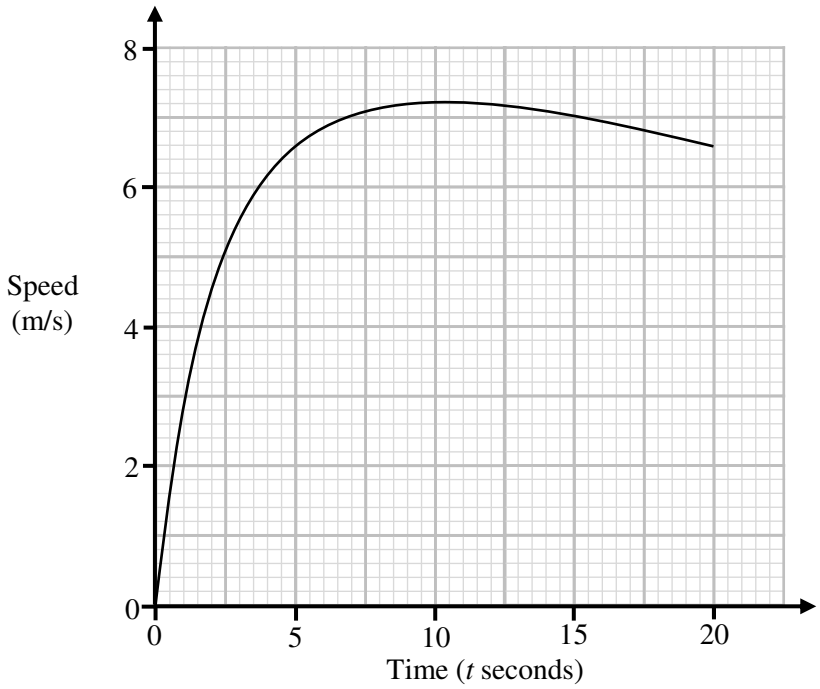
(b) Work out an estimate for the distance travelled in the first 20 seconds.
Use 4 strips of equal width.

..... m

(3)

(Total for Question 7 is 5 marks)

8 Here is a speed-time graph for an athlete during a race.



(a) The athlete finishes the race in 20 seconds.
Work out an estimate for the distance of the race.
Use 4 strips of equal width.

..... m

(4)

(b) Is your answer to part (a) and underestimate or an overestimate.
Give a reason for your answer.

.....

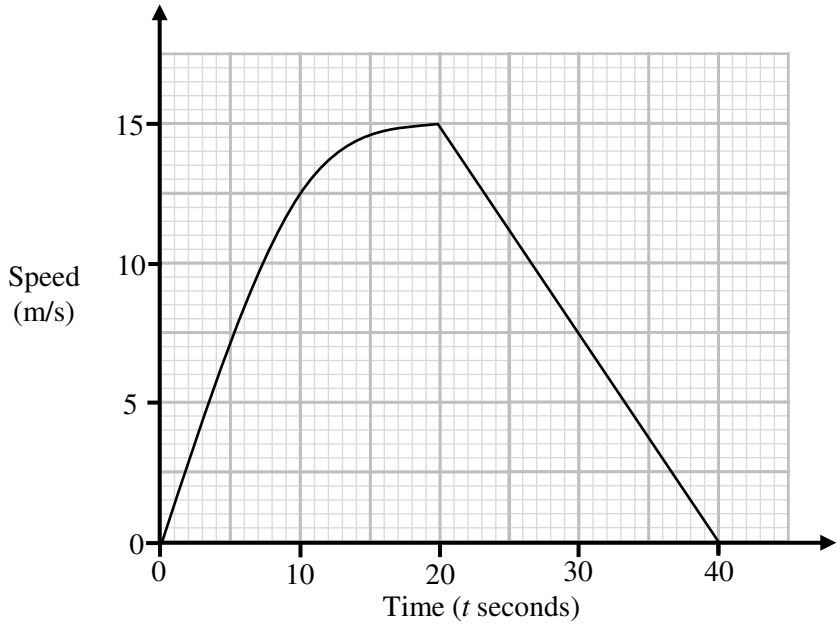
.....

.....

(1)

(Total for Question 8 is 5 marks)

9 Here is a speed-time graph for a 40 second journey.



(a) Show clearly that the distance travelled in the first half of the journey is greater than the distance travelled in the second half of the journey.

(2)

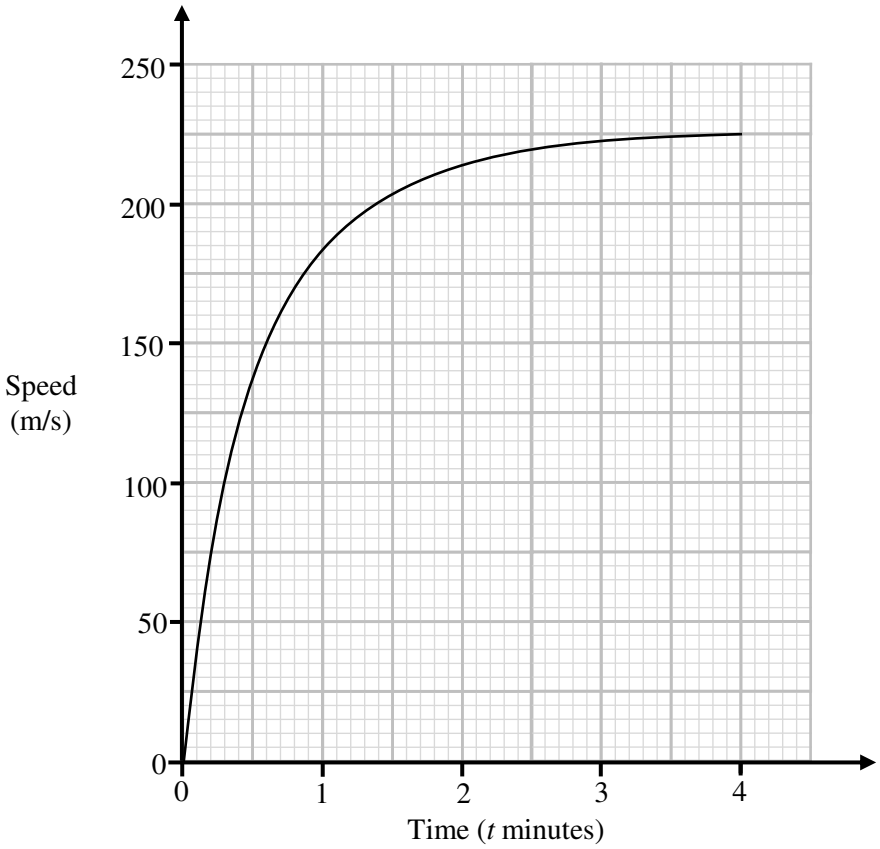
(b) Work out the average acceleration for the first half of the journey.

..... m/s^2

(2)

(Total for Question 9 is 4 marks)

10 Here is a speed-time graph for the first 4 minutes of an aeroplane's flight.



(a) Work out the average acceleration for the first 4 minutes.
Give your answer in **m/s²**

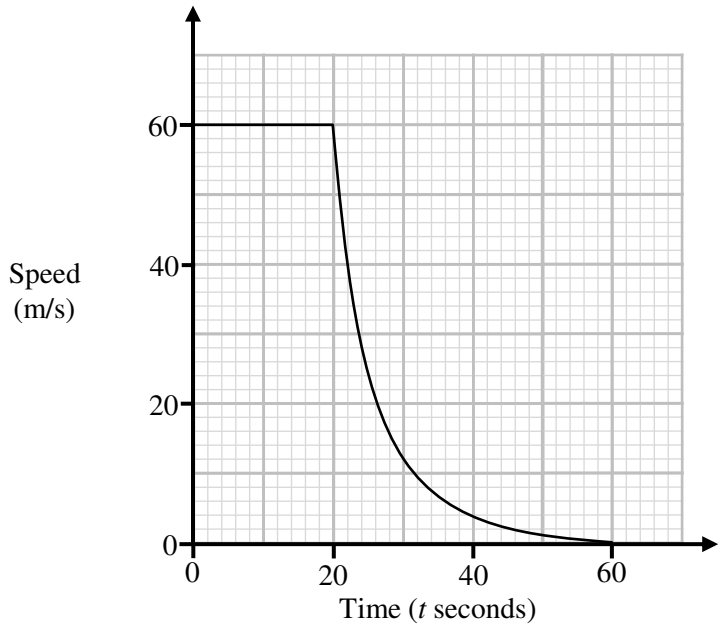
..... m/s²
(2)

(b) How many seconds into the flight was the acceleration of the aeroplane equal to the average acceleration for the first 4 minutes.

..... seconds
(2)

(Total for Question 10 is 4 marks)

11 Here is a speed-time graph for a train as it arrives to a station.



(a) Write down the acceleration of the train in the first 20 seconds.

..... m/s^2

(1)

(b) Work out an estimate for the distance the train travels between 0 and 60 seconds.

..... m

(3)

(c) Is your answer to part (b) and underestimate or an overestimate.
Give a reason for your answer.

.....

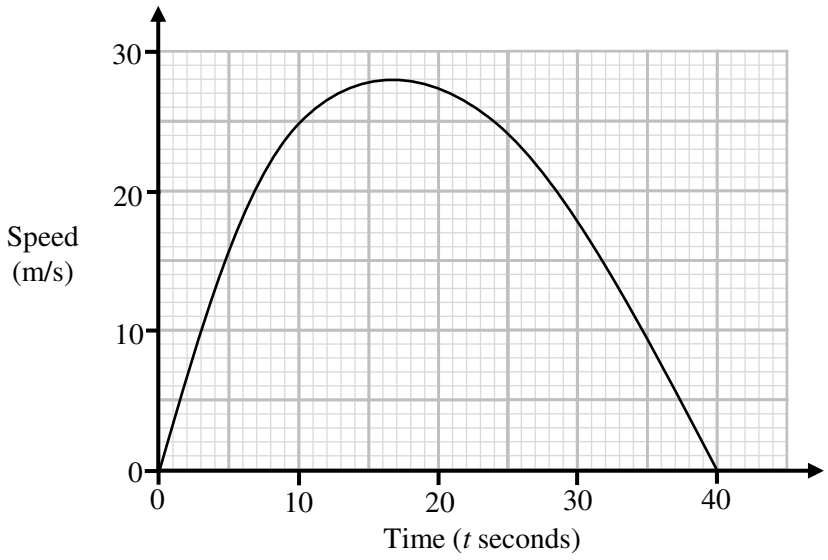
.....

.....

(1)

(Total for Question 11 is 5 marks)

12 Here is a speed-time graph for a 40 second car journey.



(a) After how many second was the acceleration zero?

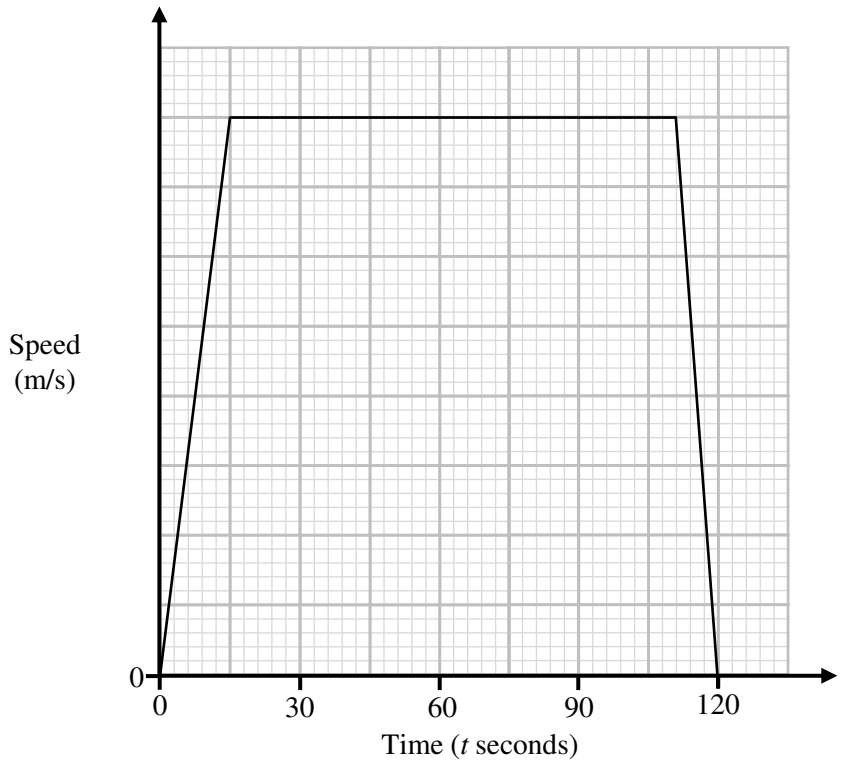
..... seconds
(1)

(b) The car is travelling on a road with a speed limit of 90 km/h
Work out percentage of the 40 second journey that the car was above the speed limit.

..... %
(4)

(Total for Question 12 is 5 marks)

13 Here is a speed-time graph for a super car during a 2 minute journey.



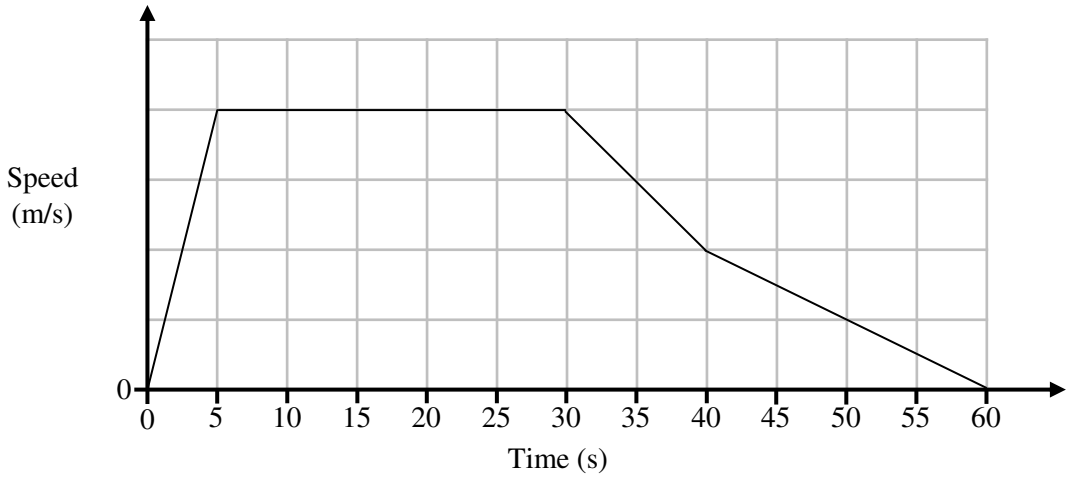
The total distance travelled by the super car is 8.64 km

Work out the acceleration of the super car in the first 15 seconds.

..... m/s^2

(Total for Question 13 is 4 marks)

14 Here is a speed-time graph for Tommy as he walks from his house to the docks.



(a) At what time is Tommy halfway between his house and the docks?

..... seconds

(4)

(b) The total distance between Tommy's house and the docks is 320 metres.
Work out the maximum speed that Tommy reaches on his way to the docks.

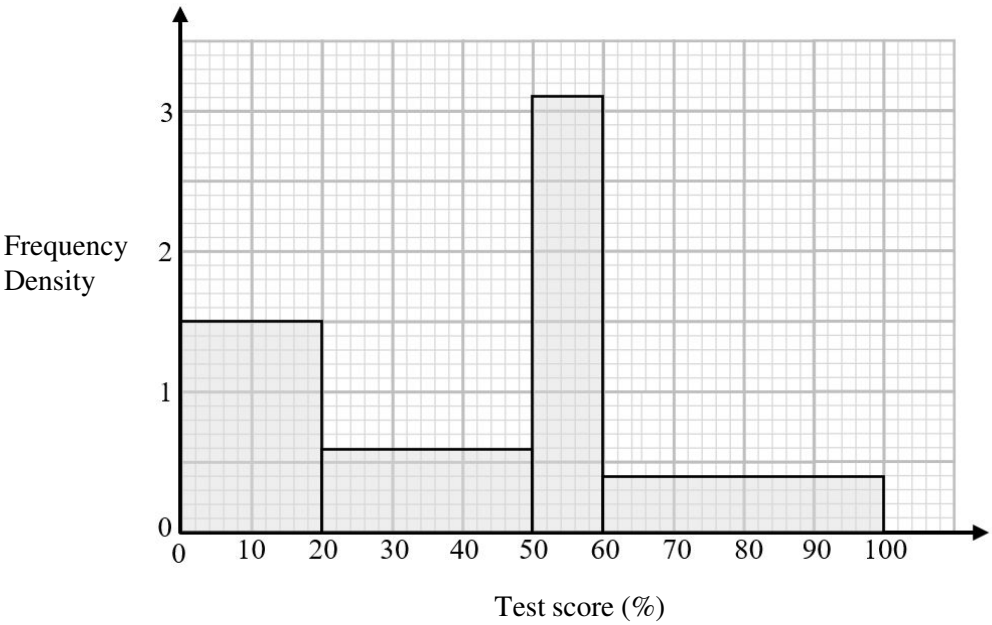
..... m/s

(3)

(Total for Question 14 is 7 marks)

Interpreting Histograms

1 The histogram shows information about the test scores S, as percentages, for some students.



(a) Complete the frequency table for this information.

Test Score, S (%)	Frequency
$0 \leq S \leq 20$	
$20 < S \leq 50$	
$50 < S \leq 60$	
$60 < S \leq 100$	

(2)

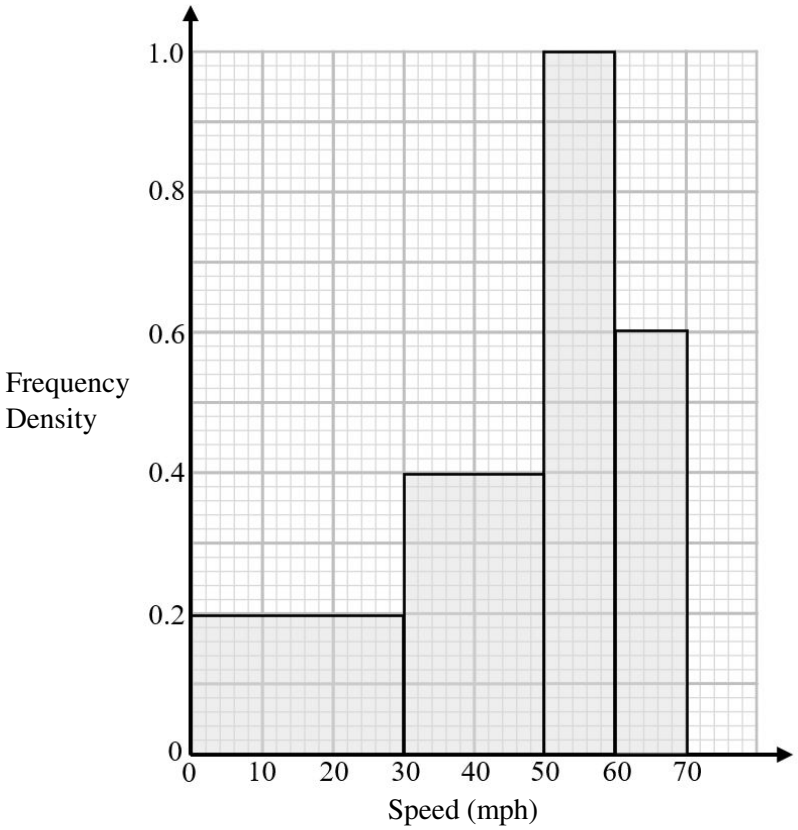
(b) Work out an estimate for the number of students who scored more than 70% in the test.

..... students

(2)

(Total for Question 1 is 4 marks)

2 The histogram shows information about the speed of 30 vehicles travelling on a road.



The speed limit on the road is 60 mph.

(a) Work out the percentage of the vehicles that were exceeding the speed limit.

..... %

(2)

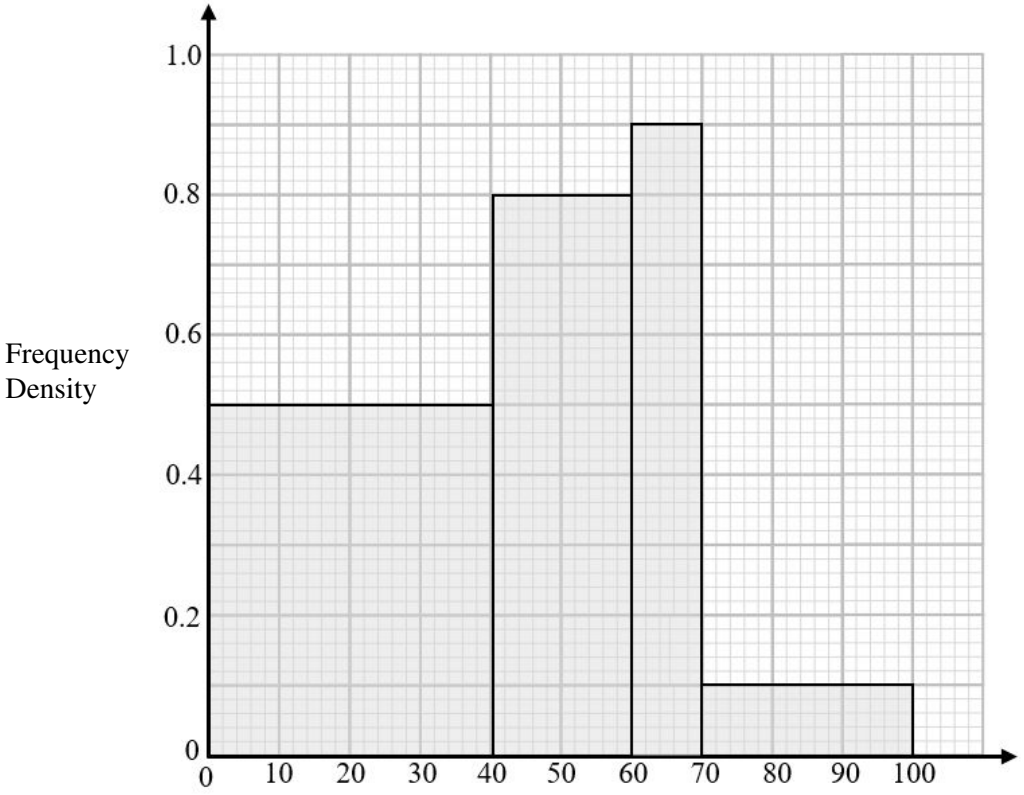
(b) Work out an estimate for the mean speed of the 30 vehicles.

..... mph

(4)

(Total for Question 2 is 7 marks)

3 The histogram shows information about the times spent waiting at an emergency department.



(a) Work out an estimate for the median time spent waiting.

..... minutes

(2)

(b) Work out an estimate for the interquartile range of the times spent waiting.

..... minutes

(3)

(Total for Question 3 is 5 marks)

Box Plots and Quartiles

1 The test scores of 19 students in a science class are shown below.

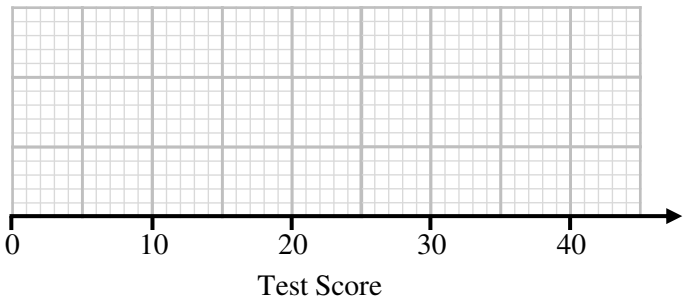
32	29	20	24	40	38	21	25	20	30
23	22	35	13	31	19	15	36	38	

(a) Complete the table.

Lowest Score	
Lower Quartile	
Median	
Upper Quartile	
Highest Score	

(2)

(b) Use your table to draw a box plot of the test scores of the 19 students.



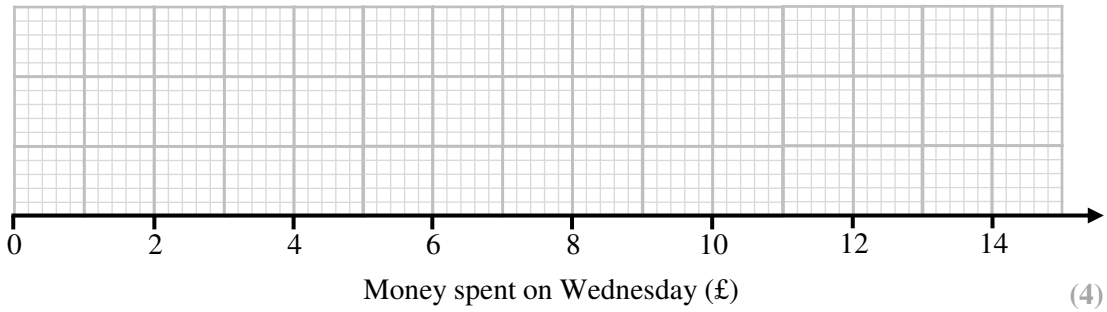
(2)

(Total for Question 1 is 4 marks)

2 A shopkeeper collected information on how much money (to the nearest pound) 23 customers spent in their shop on a Wednesday.

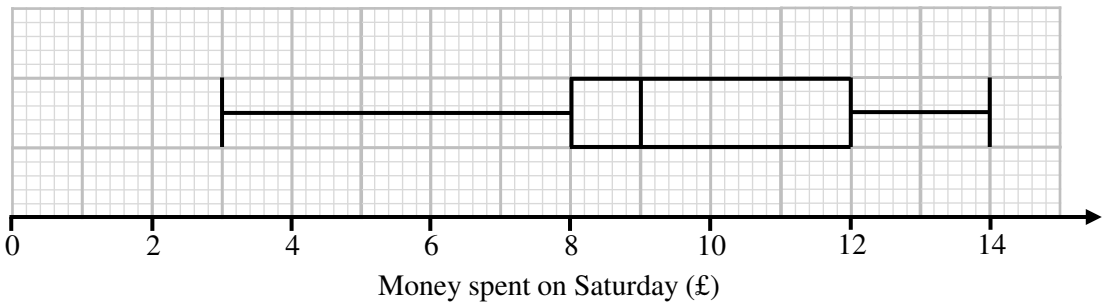
£6	£3	£4	£3	£2	£3	£4	£5	£6	£9	£12	£3
£10	£11	£3	£1	£3	£6	£2	£4	£5	£9	£3	

(a) Draw a box plot for the money spent by customers on Wednesday.



(4)

The box plot below shows information about how much customers spent in the same shop on a Saturday.



(b) Compare the distributions of money spent by customers on Wednesday and Saturday.

.....

.....

.....

.....

(2)

(Total for Question 2 is 6 marks)

Conditional Probability

1 There are 4 blue counters and 5 yellow counters in a bag.

Two counters are taken at random from the bag.

Work out the probability that both counters taken are the **same** colour.

.....

(Total for Question 1 is 4 marks)

2 Students who arrive late to school must enter through the late gate.

P(the **first student** to arrive late is in Year 11) = 0.4

For all students after the first student to arrive,

If the previous student was in Year 11, P(this student is in Year 11) = 0.75
If the previous student was not in Year 11, P(this student is in Year 11) = 0.1

(a) Work out the probability that the first student is in Year 11 and the second is not.

.....

(2)

(b) Work out the probability **exactly two** of the first three students are in Year 11.

.....

(4)

(Total for Question 2 is 6 marks)

End Of Booklet