

Name: _____

GCSE Unit 19 Practice Assessment

Date: _____

Time: 50 minutes

Total marks available: 43

Total marks achieved: _____

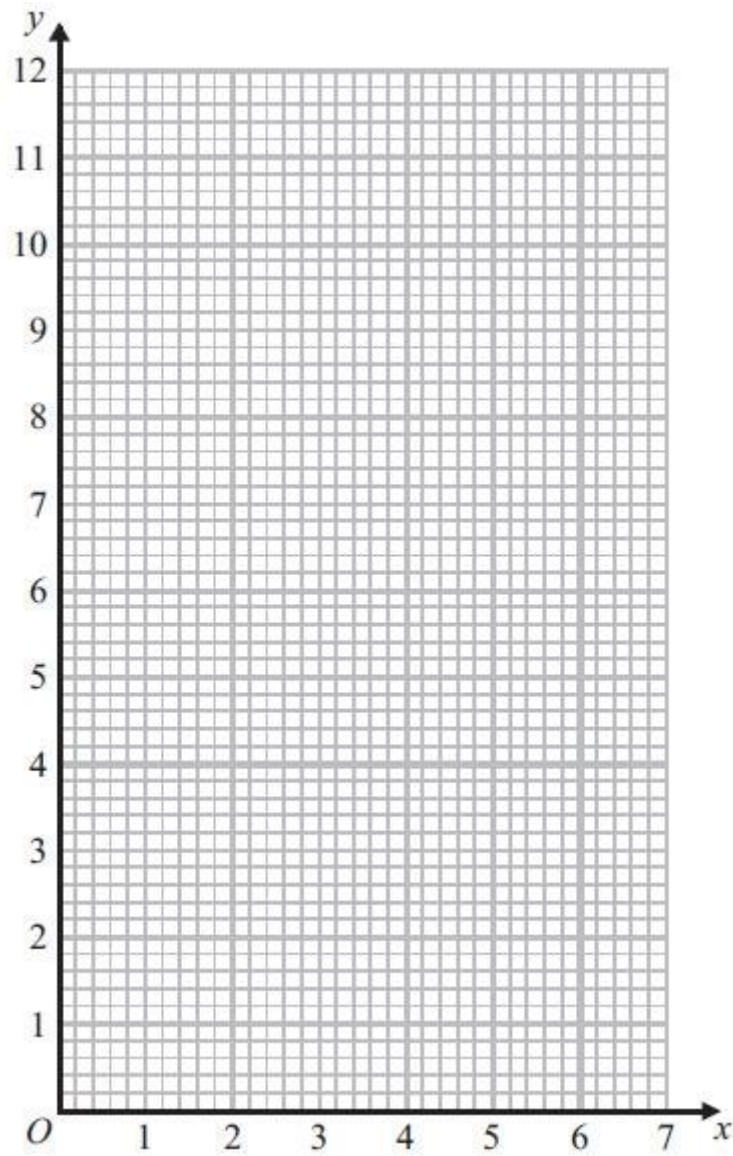
Questions

Q1.

(a) Complete the table of values for $y = \frac{6}{x}$

x	0.5	1	2	3	4	5	6
y		6	3		1.5		1

(2)



(b) On the grid, draw the graph of $y = \frac{6}{x}$ for $0.5 \leq x \leq 6$

(2)

(Total for Question is 4 marks)

Q2.

The graph of $y = f(x)$ is transformed to give the graph of $y = -f(x + 3)$

The point A on the graph of $y = f(x)$ is mapped to the point P on the graph of $y = -f(x + 3)$

The coordinates of point A are $(9, 1)$

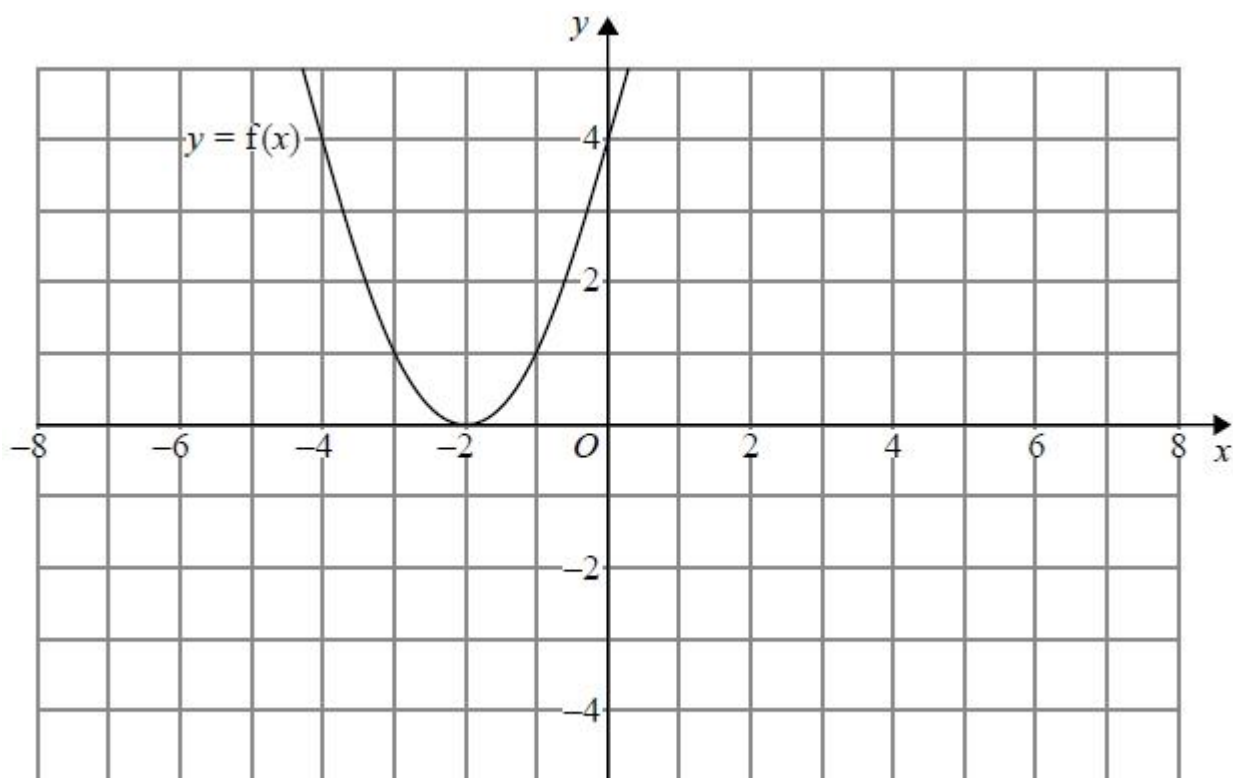
Find the coordinates of point P .

(.....,)

(Total for question is 2 marks)

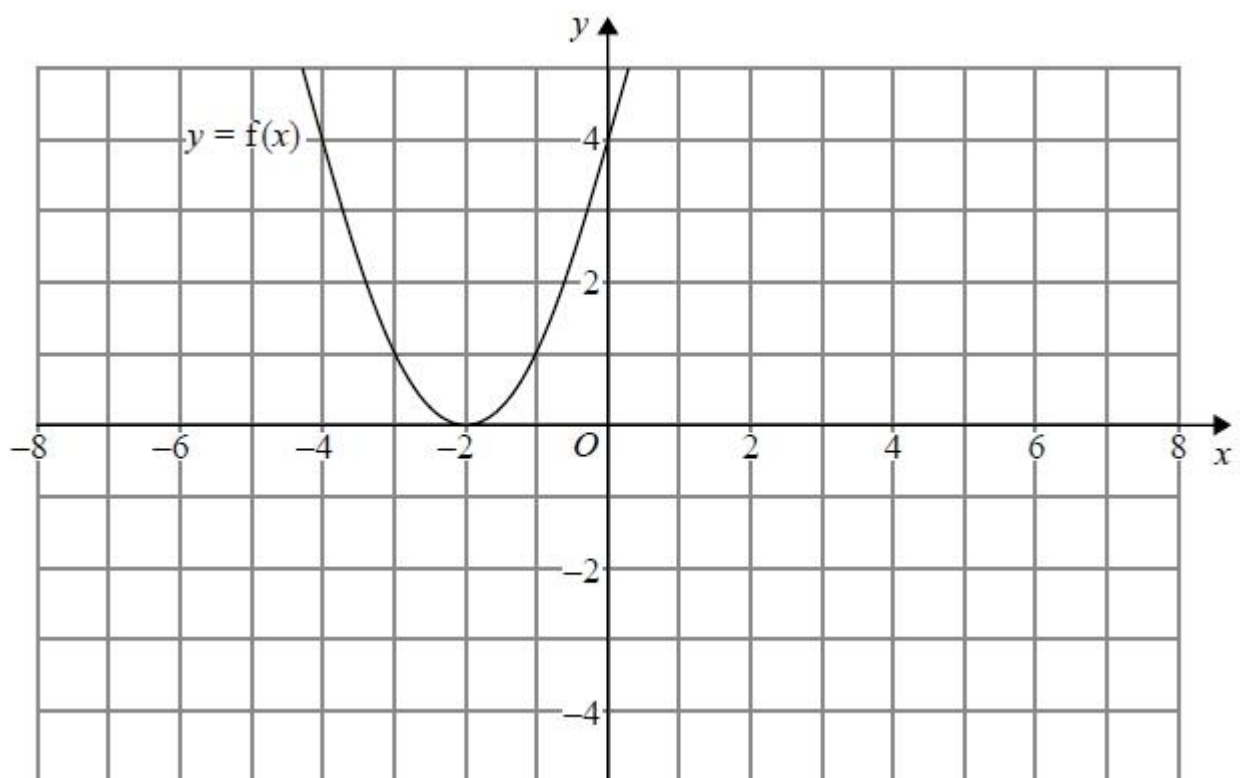
Q3.

The graph of $y = f(x)$ is shown on both grids below.



(a) On the grid above, sketch the graph of $y = f(-x)$

(1)



(b) On this grid, sketch the graph of $y = -f(x) + 3$

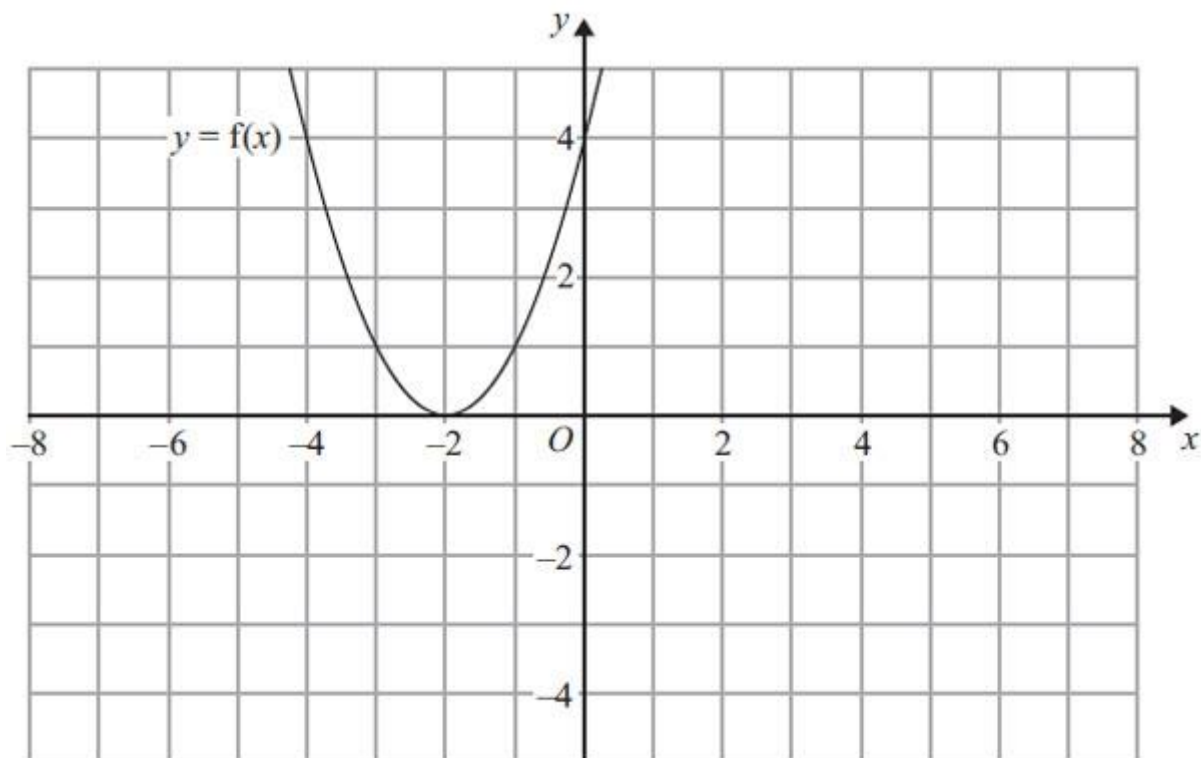
(1)

(Total for question = 2 marks)

Q4.

$$y = f(x)$$

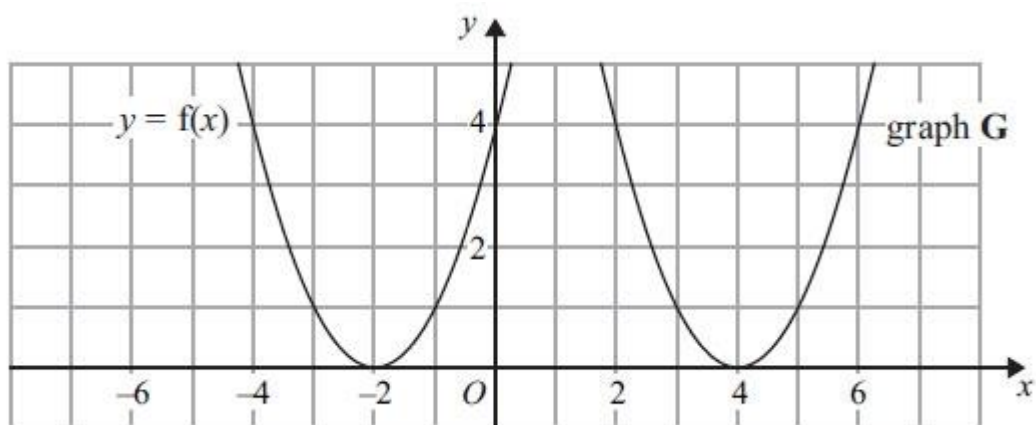
The graph of $y = f(x)$ is shown on the grid.



(a) On the grid above, sketch the graph of $y = -f(x)$.

(2)

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



The graph **G** is a translation of the graph of $y = f(x)$.

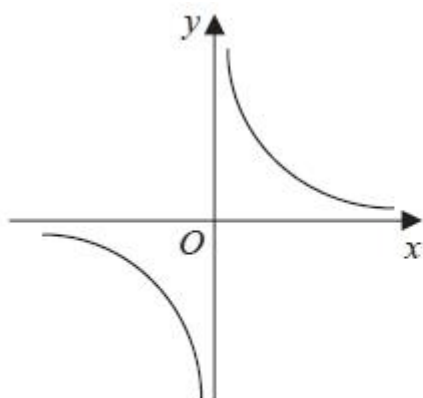
(b) Write down the equation of graph **G**.

(2)

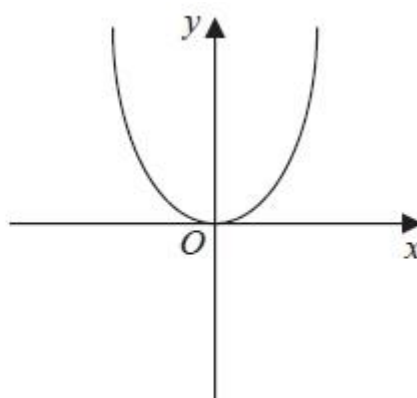
(Total for Question is 3 marks)

Q5.

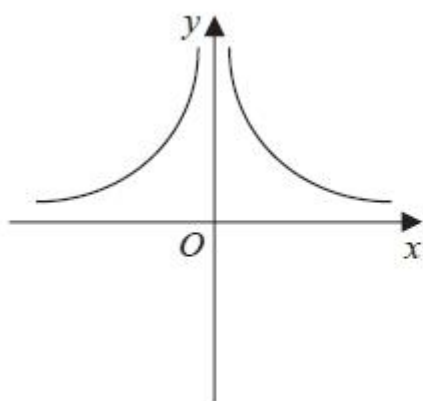
These graphs show four different proportionality relationships between y and x .



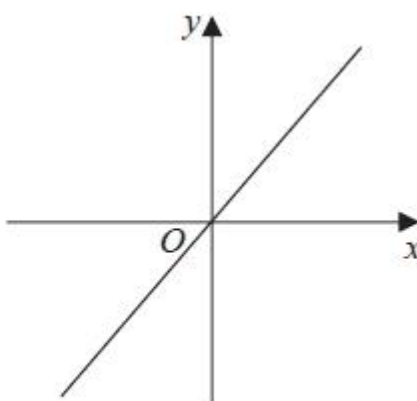
Graph A



Graph B



Graph C



Graph D

Match each graph with a statement in the table below.

Proportionality relationship	Graph letter
y is directly proportional to x	
y is inversely proportional to x	
y is proportional to the square of x	
y is inversely proportional to the square of x	

(Total for question is 2 marks)

Q6.

d is inversely proportional to c

When $c = 280$, $d = 25$

Find the value of d when $c = 350$

$d = \dots\dots\dots$

(Total for question = 3 marks)

Q7.

T is inversely proportional to d^2

$T = 160$ when $d = 8$

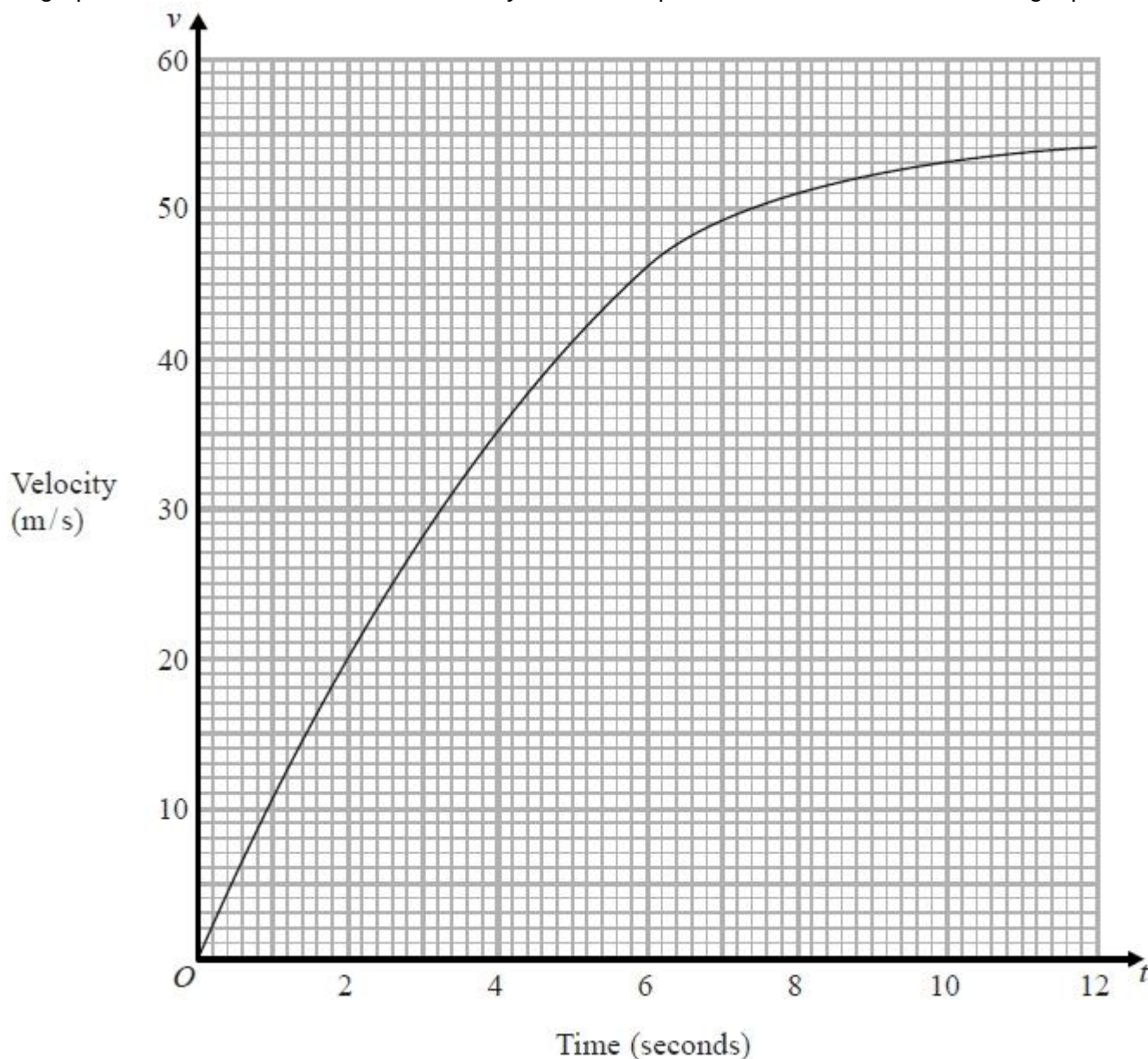
Find the value of T when $d = 0.5$

.....

(Total for Question is 3 marks)

Q8.

The graph shows information about the velocity, v m/s, of a parachutist t seconds after leaving a plane.



(a) Work out an estimate for the acceleration of the parachutist at $t = 6$

..... m/s²
(2)

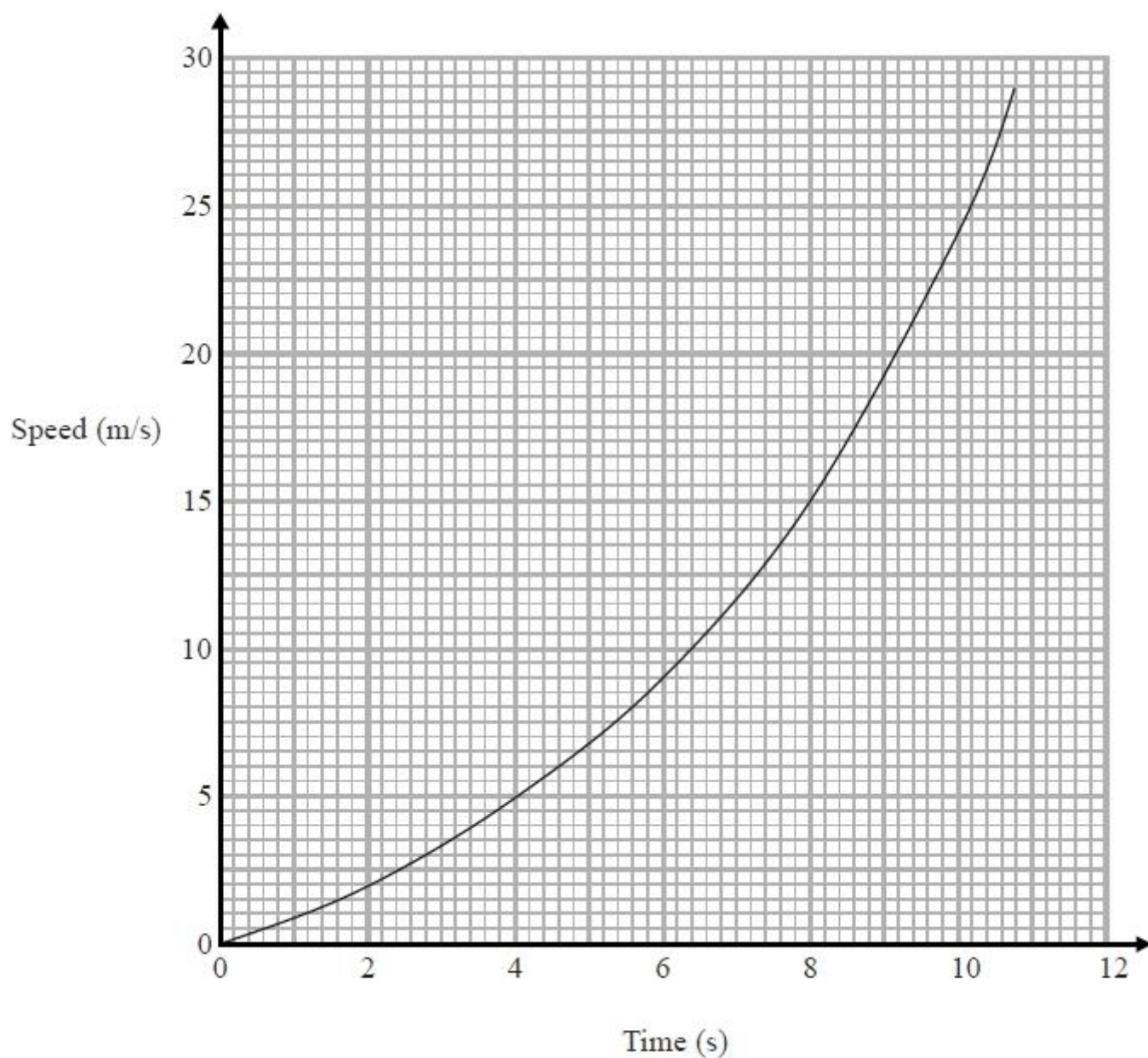
(b) Work out an estimate for the distance fallen by the parachutist in the first 12 seconds after leaving the plane.
Use 3 strips of equal width.

..... m
(3)

(Total for question is 5 marks)

Q9.

Here is a speed-time graph for a car.



- (a) Work out an estimate for the distance the car travelled in the first 10 seconds.
Use 5 strips of equal width.

..... m
(3)

- (b) Is your answer to (a) an underestimate or an overestimate of the actual distance?
Give a reason for your answer.

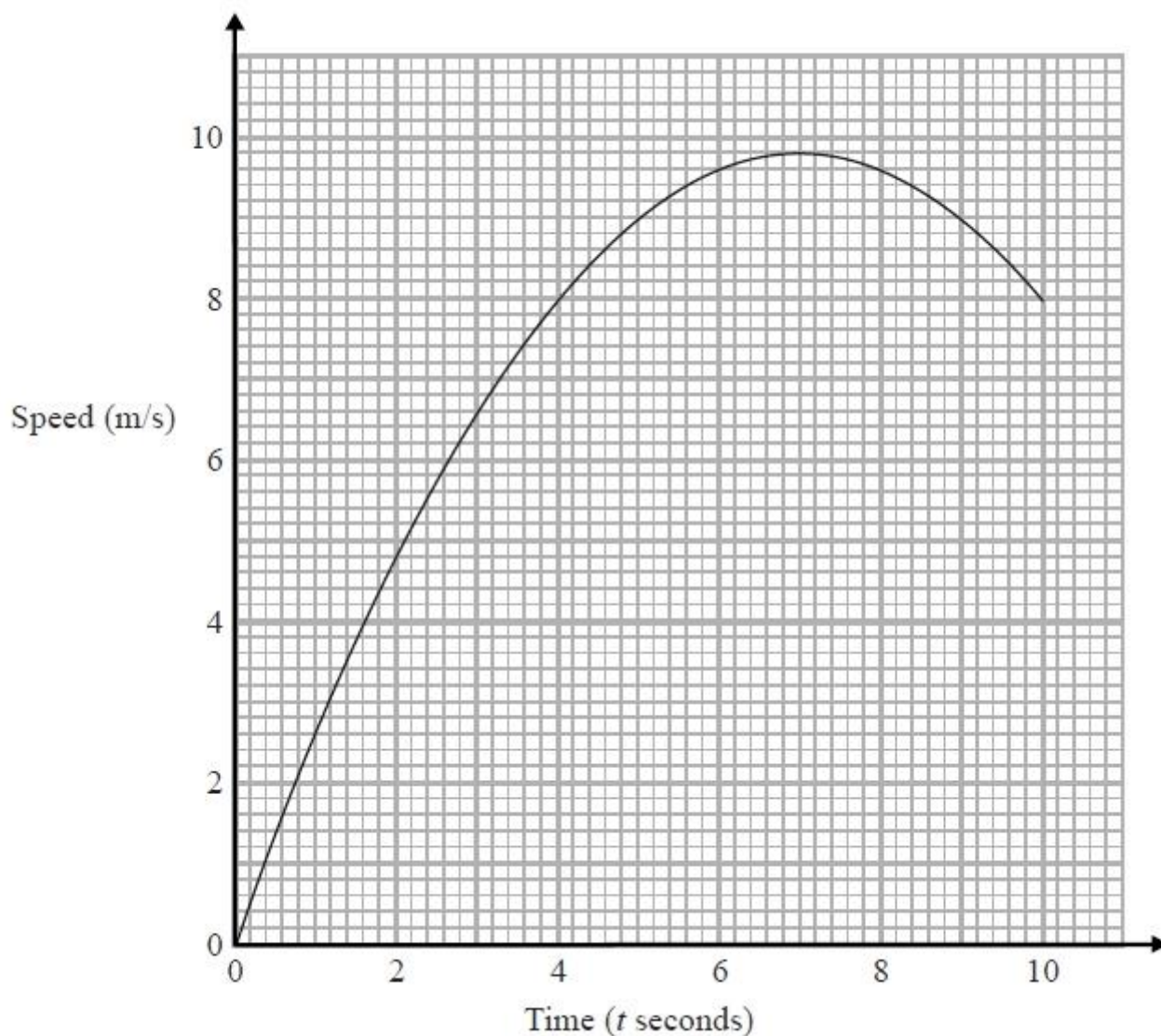
.....
.....

(1)
(Total for question = 4 marks)

Q10.

Karol runs in a race.

The graph shows her speed, in metres per second, t seconds after the start of the race.



- (a) Calculate an estimate for the gradient of the graph when $t = 4$
You must show how you get your answer.

.....
(3)

- (b) Describe fully what your answer to part (a) represents.

.....
.....
(2)

(c) Explain why your answer to part (a) is only an estimate.

.....

.....

(1)

(Total for question = 6 marks)

Q11.

D is directly proportional to the cube of n .

Mary says that when n is doubled, the value of D is multiplied by 6

Mary is wrong.
Explain why.

.....

.....

.....

(1)

(Total for question = 1 mark)

Q12.

Louis and Robert are investigating the growth in the population of a type of bacteria. They have two flasks A and B.

At the start of day 1, there are 1000 bacteria in flask A.

The population of bacteria grows exponentially at the rate of 50% per day.

(a) Show that the population of bacteria in flask A at the start of each day forms a geometric progression.

(2)

The population of bacteria in flask A at the start of the 10th day is k times the population of bacteria in flask A at the start of the 6th day.

(b) Find the value of k .

.....
(2)

At the start of day 1 there are 1000 bacteria in flask B.

The population of bacteria in flask B grows exponentially at the rate of 30% per day.

(c) Sketch a graph to compare the size of the population of bacteria in flask A and in flask B.

(1)

(Total for question = 5 marks)

Q13.

A pendulum of length L cm has time period T seconds.
 T is directly proportional to the square root of L .

The length of the pendulum is increased by 40%.

Work out the percentage increase in the time period.

..... %

(Total for question is 3 marks)