



National 5 Mathematics

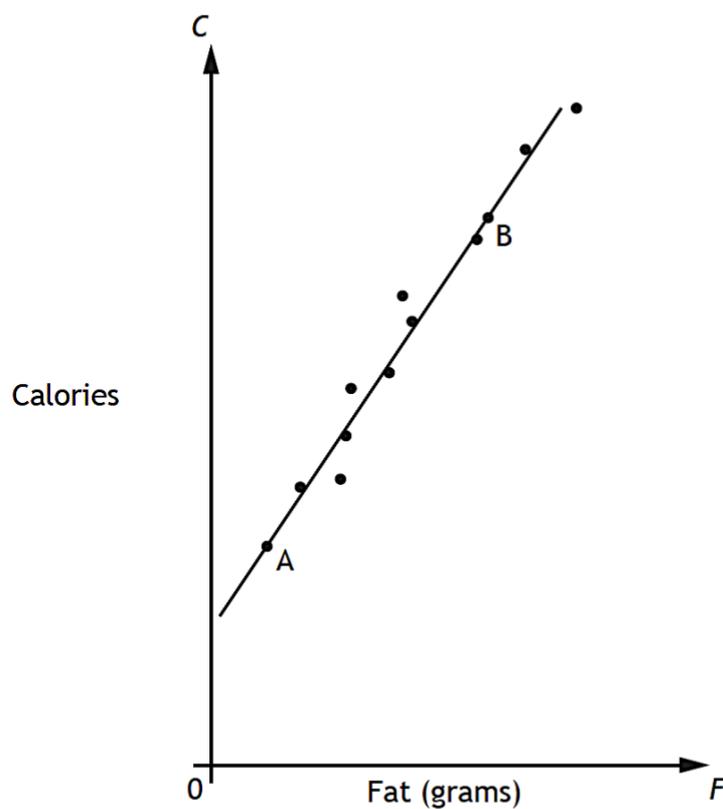
Straight Lines - Questions

Marks are indicated in brackets after each question number

2014 Paper 1 Question 6, (3) (1)

McGregor's Burgers sells fast food.

The graph shows the relationship between the amount of fat, F grams, and the number of calories, C , in some of their sandwiches.



A line of best fit has been drawn.

Point A represents a sandwich which has 5 grams of fat and 200 calories.

Point B represents a sandwich which has 25 grams of fat and 500 calories.

- (a) Find the equation of the line of best fit in terms of F and C .



(b) A Super Deluxe sandwich contains 40 grams of fat.

Use your answer to part (a) to estimate the number of calories this sandwich contains.

Show your working.

2014 Paper 1 Question 11, (2) (2)

(a) A straight line has equation $4x + 3y = 12$.

Find the gradient of this line.

(b) Find the coordinates of the point where this line crosses the x -axis.

2015 Paper 1 Question 8, (3)

Find the equation of the line joining the points $(-2, 5)$ and $(3, 15)$.

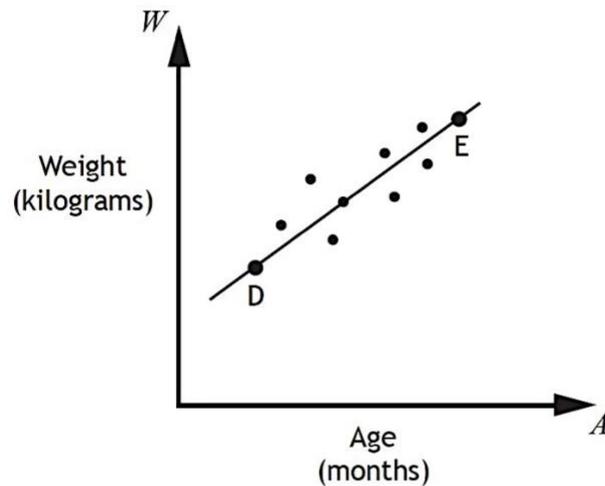
Give the equation in its simplest form.



2016 Paper 1 Question 5, (3) (1)

A cattle farmer records the weight of some of his calves.

The scattergraph shows the relationship between the age, A months, and the weight, W kilograms, of the calves.



A line of best fit is drawn.

Point D represents a 3 month old calf which weighs 100 kilograms.

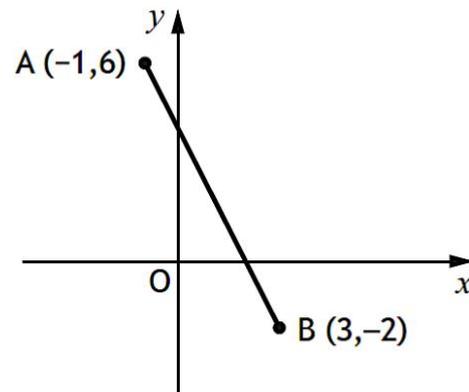
Point E represents a 15 month old calf which weighs 340 kilograms.

- (a) Find the equation of the line of best fit in terms of A and W .
Give the equation in its simplest form.
- (b) Use your equation from part (a) to estimate the weight of a one year old calf.
Show your working.



2017 Paper 1 Question 6, (3)

The diagram below shows the straight line joining points A and B.



Find the equation of the line AB.

Give the equation in its simplest form.

2017 Paper 2 Question 11, (2)

A straight line has equation $3x - 5y - 10 = 0$.

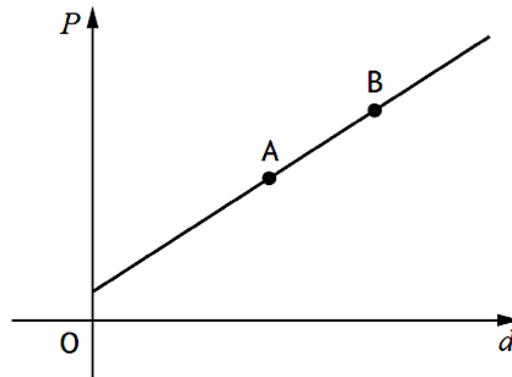
Find the gradient of this line.



2018 Paper 1 Question 7, (3) (1)

The cost of a journey with Tom's Taxis depends on the distance travelled.

The graph below shows the cost, P pounds, of a journey with Tom's Taxis against the distance travelled, d miles.



Point A represents a journey of 8 miles which costs £14.

Point B represents a journey of 12 miles which costs £20.

(a) Find the equation of the line in terms of P and d .

Give the equation in its simplest form.

(b) Calculate the cost of a journey of 5 miles.

2018 Paper 2 Question 14, (2)

A straight line has equation $2x - 5y = 20$.

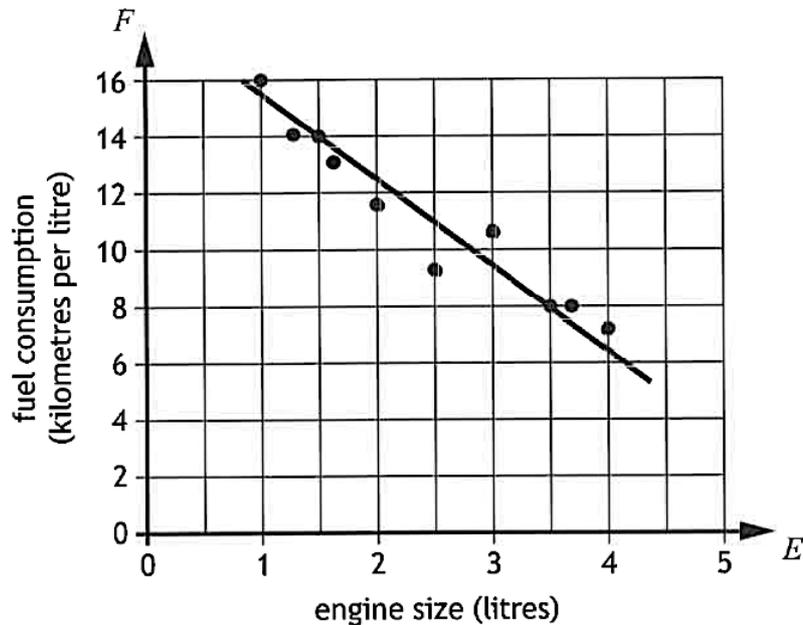
Find the coordinates of the point where this line crosses the y -axis.



2019 Paper 1 Question 6, (3) (1)

The fuel consumption of a group of cars is recorded.

The scattergraph shows the relationship between the fuel consumption, F kilometres per litre, and the engine size, E litres, of the cars.



A line of best fit has been drawn.

- (a) Find the equation of the line of best fit in terms of F and E .
Give the equation in its simplest form.

Amaar's car has an engine size of 1.1 litres.

- (b) Use your equation from part (a) to estimate how many kilometres per litre he should expect to get.

2019 Paper 2 Question 13, (3)

Find an expression for the gradient of the line joining point $A(6,9)$ to point $B(4p,4p^2)$.

Give your answer in its simplest form.



2022 Paper 1 Question 6, (3)

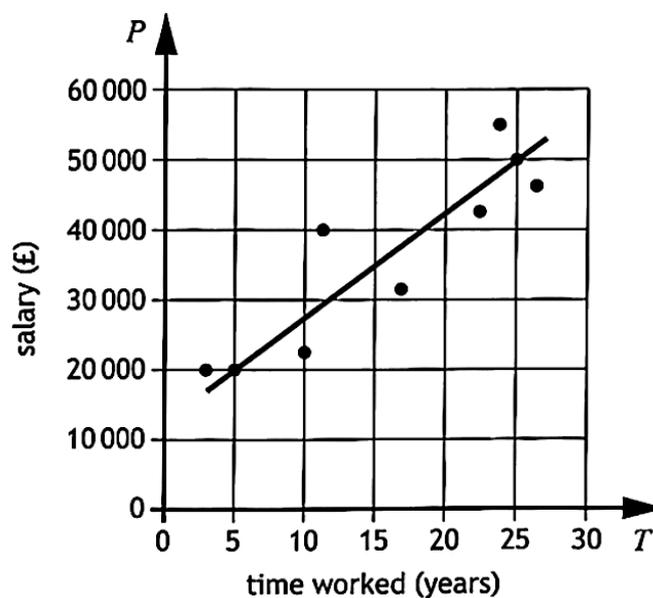
Find the equation of the line passing through the points $(-3,-1)$ and $(-5,7)$.

Give the equation in its simplest form.

2023 Paper 1 Question 7, (3) (1)

A business recorded the salaries of a sample of its employees and the length of time they have worked for the business.

The scattergraph shows the relationship between their salary, P pounds, and the length of time, T years, they have worked.



A line of the best fit has been drawn.

(a) Find the equation of the line of best fit in terms of P and T .

Give the equation in its simplest form.

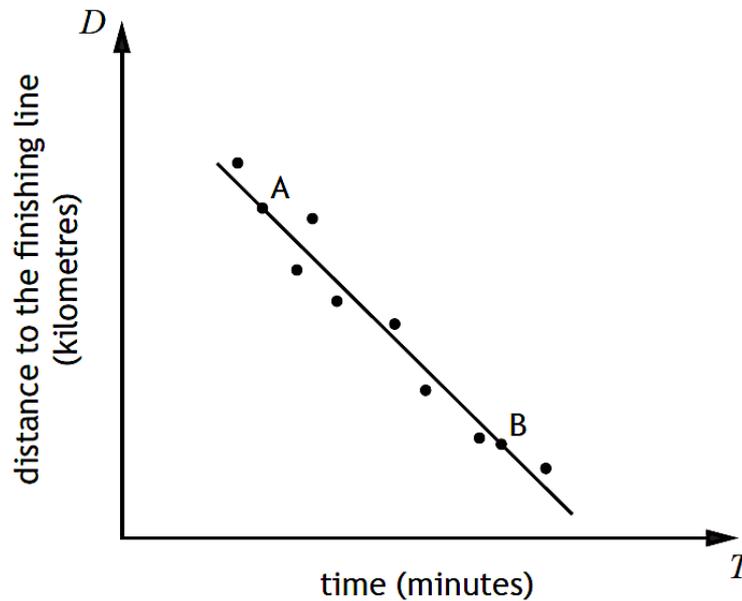
(b) Use your equation from part (a) to estimate the salary of an employee who has worked for the business for 8 years.



2024 Paper 1 Question 9, (3) (1)

In a car rally, competitors start at different times.

The scattergraph shows the relationship between the length of time they have been driving, T minutes, and the distance to the finishing line, D kilometres.



A line of best fit has been drawn.

Point A represents a competitor who has been driving for 3 minutes and is 26 kilometres from the finishing line.

Point B represents a competitor who has been driving for 10 minutes and is 12 kilometres from the finishing line.

- (a) Find the equation of the line of best fit in terms of D and T .
Give the equation in its simplest form.

Another competitor has been driving for 7 minutes.

- (b) Use your equation from part (a) to estimate the distance the competitor is from the finishing line.



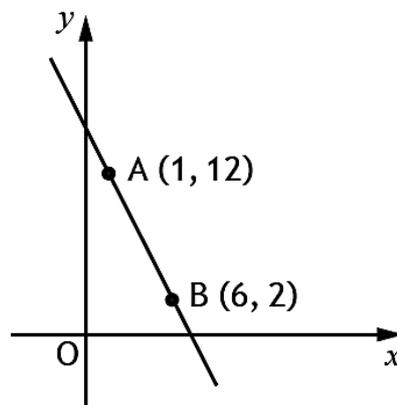
2024 Paper 1 Question 11, (2)

A straight line has equation $x + 4y - 24 = 0$.

Find the gradient of this line.

2025 Paper 1 Question 6, (3)

The diagram shows the straight line passing through points A and B.



Find the equation of the line AB.

Give the equation in its simplest form.