



National 5 Maths Straight Line

SQA past paper and specimen paper
questions and answers by topic

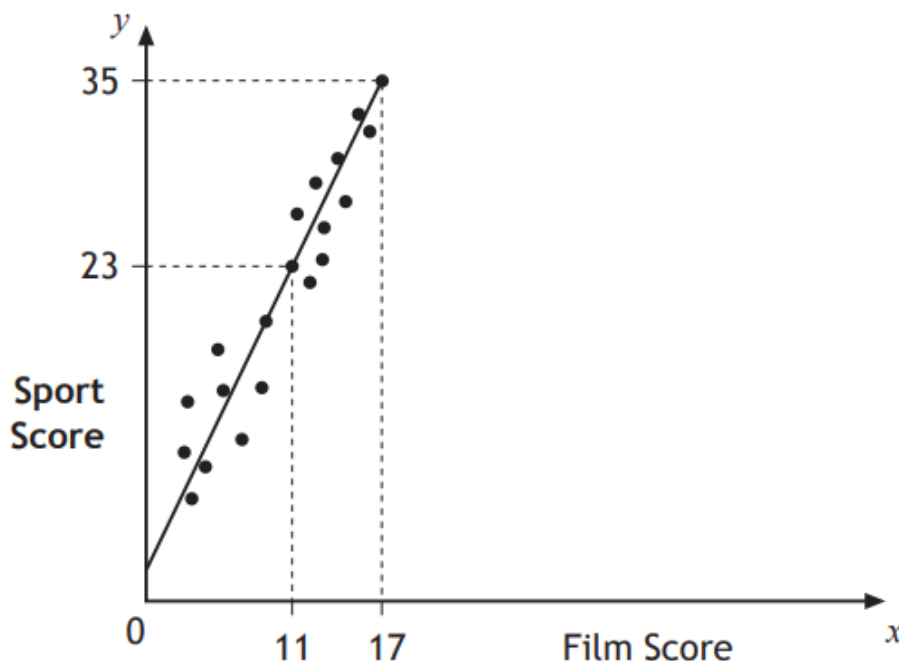
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Teams in a quiz answer questions on film and sport.
This scattergraph shows the scores of some of the teams.



A line of best fit is drawn as shown.

- (a) Find the equation of this straight line. 3
- (b) Use this equation to estimate the sports score for a team with a film score of 8. 1

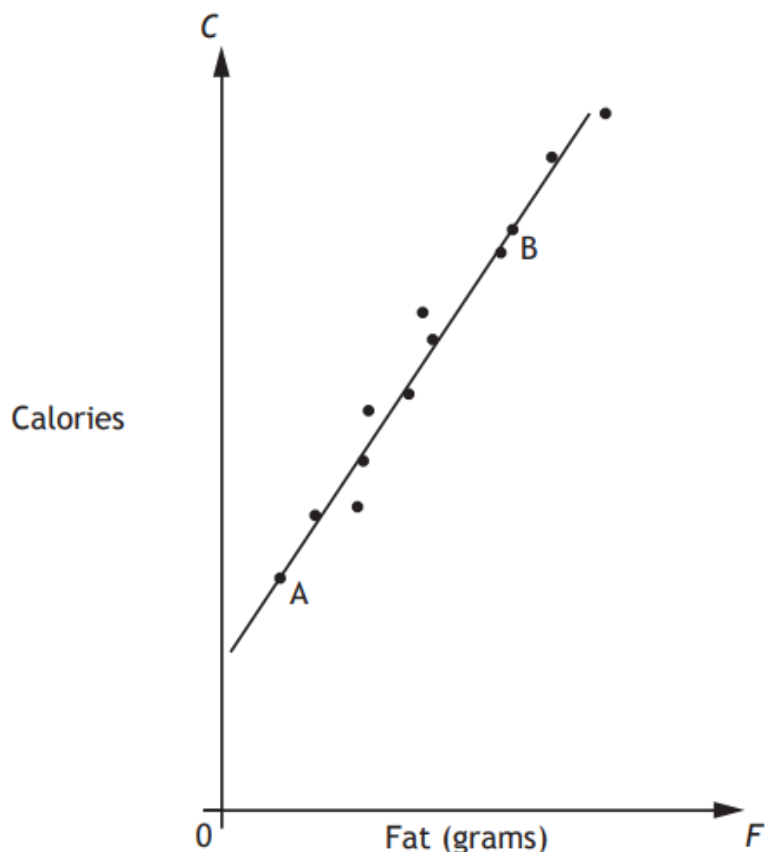
Answers:

- (a) $y = 2x + 1$ or equivalent
- (b) 17

National 5 Maths
SQA 2014 Paper 1
Question 6

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 . 3

(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. 1

Answers: (a) $C = 15F + 125$ (b) 725 calories

National 5 Maths
SQA 2014 Paper 1
Question 11

-
- (a) A straight line has equation $4x + 3y = 12$.
Find the gradient of this line. 2
- (b) Find the coordinates of the point where this line crosses the x -axis. 2
-

Answers:

- (a) $-\frac{4}{3}$
- (b) $(3, 0)$

National 5 Maths
SQA 2015 Paper 1
Question 8

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

Give the equation in its simplest form.

3

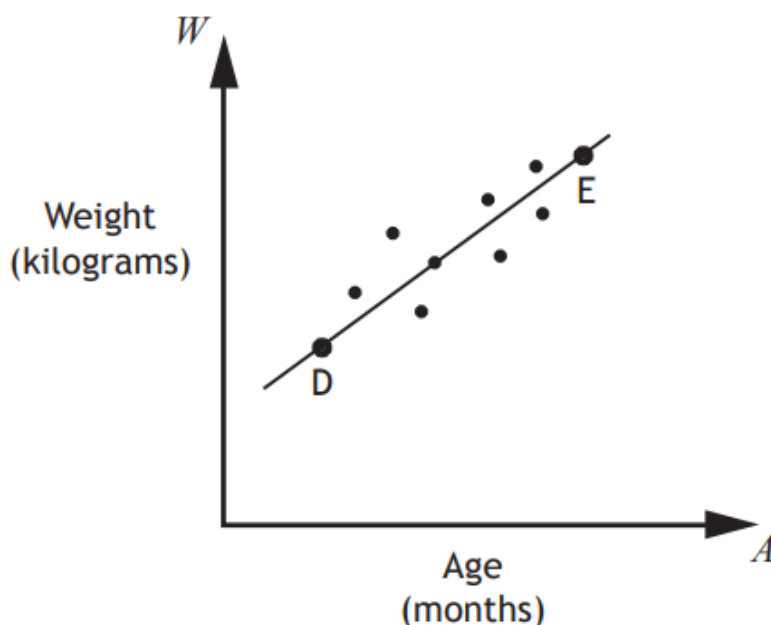
Answer:

$$y = 2x + 9$$



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.

3

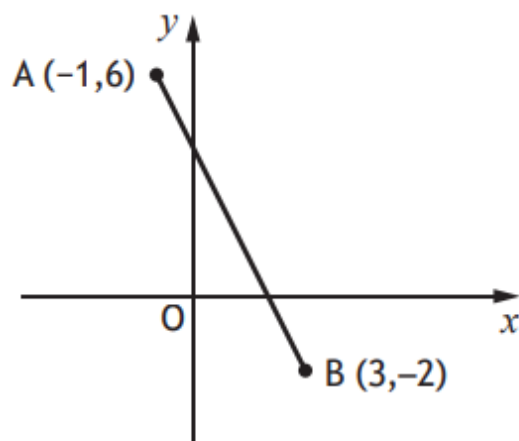
(b) Use your equation from part (a) to estimate the weight of a one year old calf.

Show your working.

1

Answers: (a) $W = 20A + 40$ or equivalent (b) 280 kg

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.

3

Answer:

$$y = -2x + 4 \text{ or equivalent}$$

National 5 Maths
SQA 2017 Paper 2
Question 11

A straight line has equation $3x - 5y - 10 = 0$.
Find the gradient of this line.

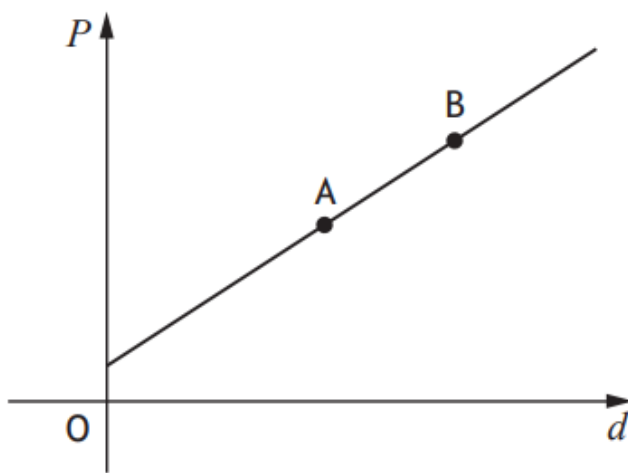
2

Answer:

$\frac{3}{5}$ or 0.6

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.

3

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

1

Answers:

(a) $P = \frac{3}{2}d + 2$ or $2P = 3d + 4$ or equivalent

(b) £9.50

National 5 Maths
SQA 2018 Paper 2
Question 14

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

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

2

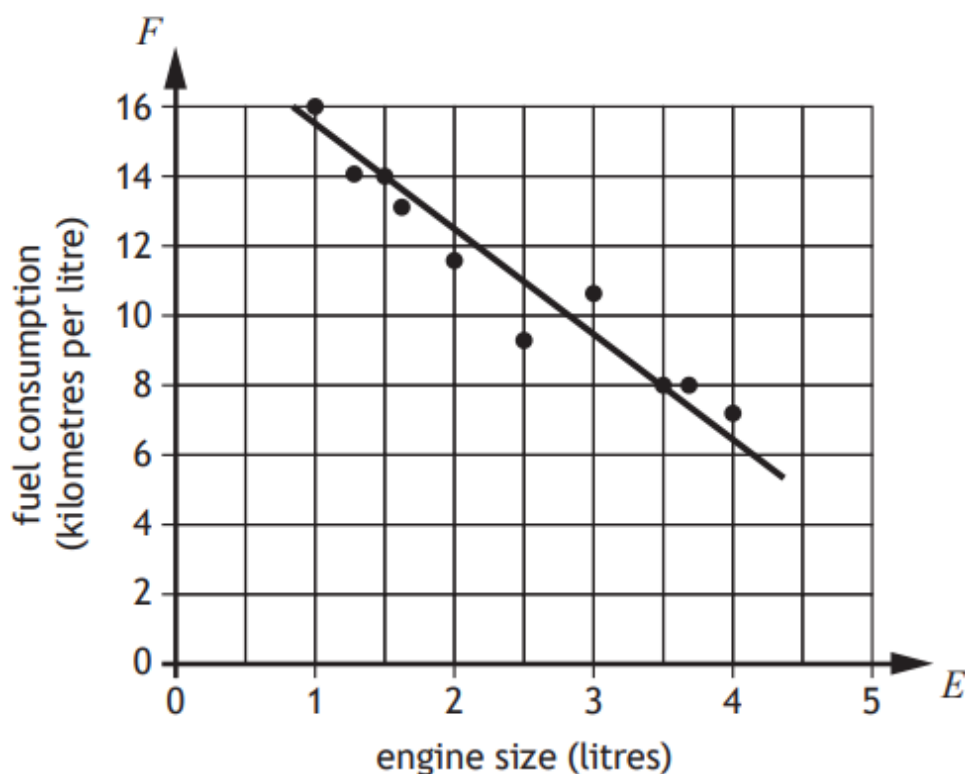
Answer:

$(0, -4)$



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.

3

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.

1

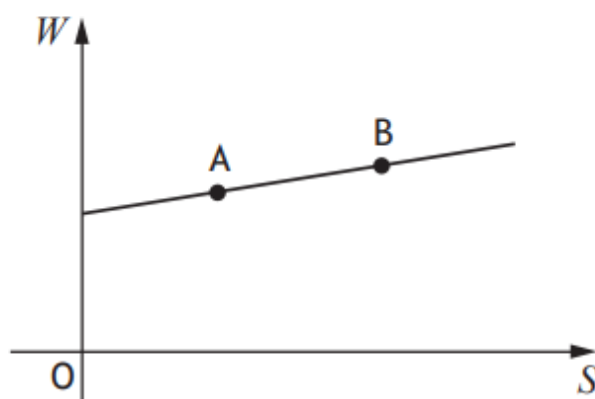
Answers: (a) $F = -3E + 18.5$ or equivalent (b) 15.2 km/litre



David works in a shop, and is paid weekly.

His wage is made up of a basic wage plus commission on his sales.

The graph shows his wage, W pounds, against his sales, S pounds.



Point A represents sales of £6000 and a wage of £450.

Point B represents sales of £7200 and a wage of £510.

(a) Find the equation of the line in terms of W and S .

Give the equation in its simplest form.

3

(b) Calculate David's wage in a week when his sales are £1000.

1

Answers:

(a) $W = \frac{1}{20}S + 150$ or equivalent

(b) £200

National 5 Maths
SQA 2021 Paper 2
Question 9

A straight line has equation $3x + 4y - 8 = 0$.

- (a) Find the gradient of the line. 2
- (b) State the coordinates of the point where the line crosses the y -axis. 1
-

Answers:

- (a) $-\frac{3}{4}$ or -0.75
- (b) $(0, 2)$

National 5 Maths
SQA 2022 Paper 1
Question 6

Find the equation of the line passing through the points $(-3,-1)$ and $(-5,7)$.
Give the equation in its simplest form.

3

Answer:

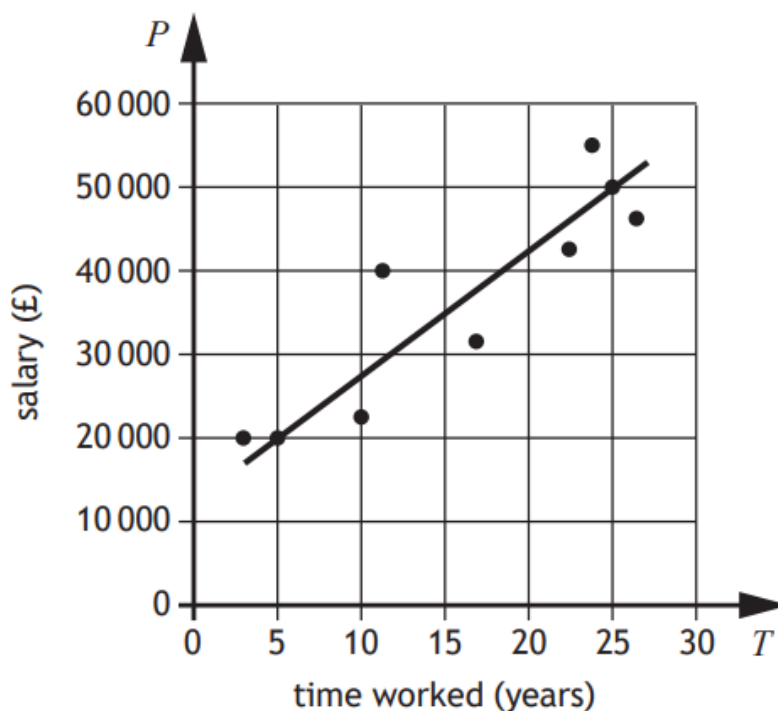
$$y = -4x - 13 \text{ or equivalent}$$

National 5 Maths
SQA 2023 Paper 1
Question 7



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.

3

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

1

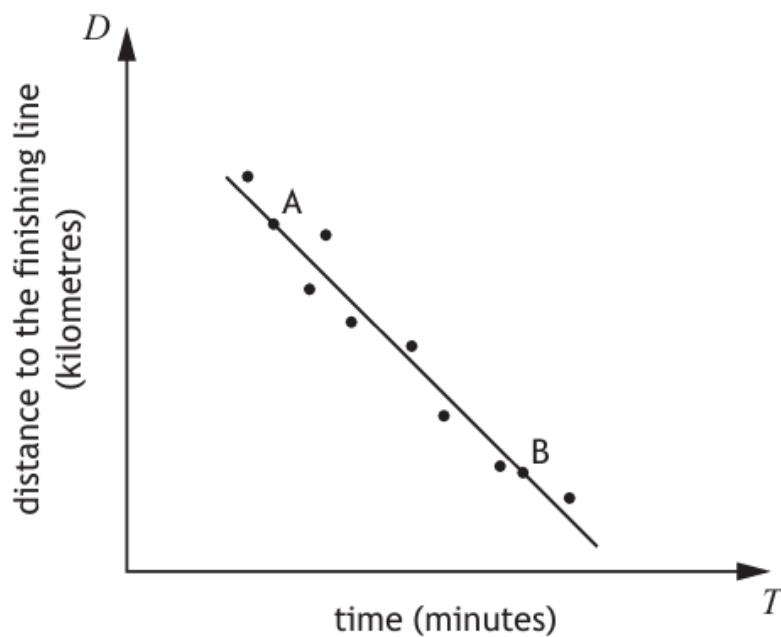
Answers:

(a) $P = 1500T + 12500$

(b) £24 500

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.

3

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.

1

Answers: (a) $D = -2T + 32$ or equivalent (b) 18 km

National 5 Maths
SQA 2024 Paper 1
Question 11

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

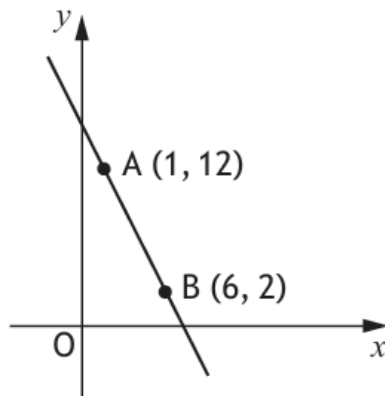
Find the gradient of this line.

2

Answer:

$-\frac{1}{4}$ or -0.25

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.

3

Answer:

$$y = -2x + 14 \text{ or equivalent}$$