

Nat 5 NonCalculator Past Paper Questions

(Including Percentages, Volume, Straight line, Surds, Scientific Notation, Brackets, Equations, Factorising, Simultaneous Equations)

1. Multiply out the brackets and collect like terms

$$(x - 4)(x^2 + x - 2)$$

(3 marks)

2. Solve algebraically the inequality

$$11 - 2(1 + 3x) < 39$$

(3 marks)

3. a) Factorise the expression $9x^2 - y^2$

1 KU

4. Factorise $3x^2 - 13x - 10$

2 KU

5. Solve the system of equations

$$\begin{aligned} 5a + 3b &= 9 \\ 7a - 2b &= 25 \end{aligned}$$

3 KU

6. Express $\sqrt{50}$ as a surd in its simplest form.

1 KU

7. Express $\sqrt{32} + \sqrt{8}$ as a surd in its simplest form.

3 KU

8. $f(x) = 3\sqrt{x}$

Find the exact value of $f(12)$, giving your answer as a **surd, in its simplest form.**

2 KU

9. $f(x) = \frac{3}{\sqrt{x}}$ Find the **exact** value of $f(2)$

Give your answer **as a fraction** with a rational denominator.

1.0 480,000 tickets were sold for a tennis tournament last year.

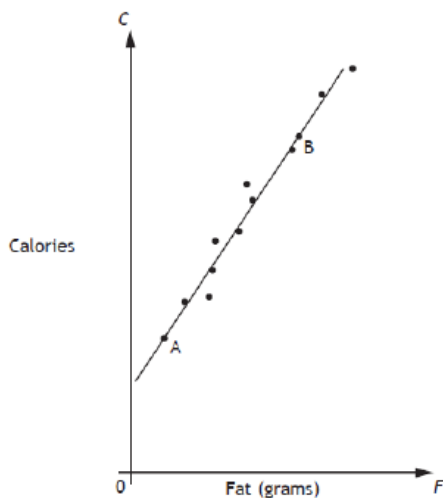
This represented 80% of all the available tickets.

Calculate the total number of tickets that were available for this tournament.

(3 marks)

11. 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 marks)

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

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

Show your working.

(1 mark)

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

Find the gradient of this straight line.

(2 marks)

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

(2 marks)