

Mathematics (National 5) USAP 2(b) Homework – Ink Exercise

1. Solve these equations

(a) $2x - 12 = -3$ (b) $5z + 9 = 4$ (c) $6y - 9 = 2y + 5$ (6)

2. Solve these equations by first multiplying out the brackets

(a) $3(2x - 4) = 6$ (b) $6(a - 1) = 4(a + 2)$ (5)

3. Solve these inequalities

(a) $7x > 42$ (b) $3x - 2 > -11$ (3)

4. Solve these inequalities

(a) $9x + 2 \leq 6x + 11$ (b) $5(y - 2) > 2(y + 4)$ (5)

5. Two lines have equations $2x + 3y = 12$ and $x + y = 5$.

By drawing graphs of the two lines, find the point of intersection of the 2 lines. (3)

6. Solve, by substitution, the equations

$$3a + 1.2b = 14.4$$

$$a = 0.5b + 3$$

(4)

7. Solve, by elimination, the equations

$$3p - 2q = 4$$

$$p - 3q = 13$$

(3)

8. Mr. Martini is ordering tea and coffee for his cafe. He spends exactly £108 on these each month.

In March he orders 4kg of tea and 6kg of coffee. In April he changes his order to 8kg of tea and 3 kg of coffee.

How much do the tea and coffee cost each per kilogram?

(6)

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9. The formula for changing from °C to °F is $C = \frac{5}{9}F - 32$

Change the subject of the formula to F . (3)

10. $H = w + \frac{50}{m^2}$ Change the subject of the formula to m .

(4)

11. Change the subject of the formula to x : $A = 5 + 4\sqrt{x}$

(3)

Factorise each expression in the following:

12. (a) $y^2 + 5y$ (b) $4x^2 - 49$ (c) $5s^2 - 20$

(5)

13. (a) $x^2 + 10x + 25$ (b) $x^2 - 10x - 24$ (c) $k^2 + 5k - 6$

(6)

14. (a) $12a^2 + 7a - 12$ (b) $7w^2 - 2w - 9$ (c) $4x^2 - 11x + 6$

(6)

15. Write each of the following quadratic expressions in the form $a(x+b)^2 + c$:

(a) $x^2 + 6x - 3$ (b) $x^2 - 5x + 1$ (4)

16. Show that the function $f(x) = x^2 - 16x + 7$ can be written in the form $f(x) = (x + p)^2 + q$ and write down the values of p and q .

Hence state the minimum value of the function and the corresponding value of x . (4)

Total – 70 marks