Equa / Inequa / Alg expression

(Credit Past Paper quest 2003 – 2007)

KU	RE

(I) 10. (P1) A relationship between T and L is given by the formula, $T = \frac{k}{L^3}$ where k is a constant.

When L is doubled, what is the effect on T?

	2

(I) 11. (P1) (*a*) A cinema has 300 seats which are either standard or deluxe.

Let x be the number of standard seats and y be the number of deluxe seats.

Write down an algebraic expression to illustrate this information. **1**

(*b*) A standard seat costs £4 and a deluxe seat costs £6.

When all the seats are sold the ticket sales are £1380.

Write down an algebraic expression to illustrate this information. **2**

(*c*) How many standard seats and how many deluxe seats are in the cinema? **3**

Equa / Inequa / Alg expression

(Credit Past Paper quest 2003 – 2007)

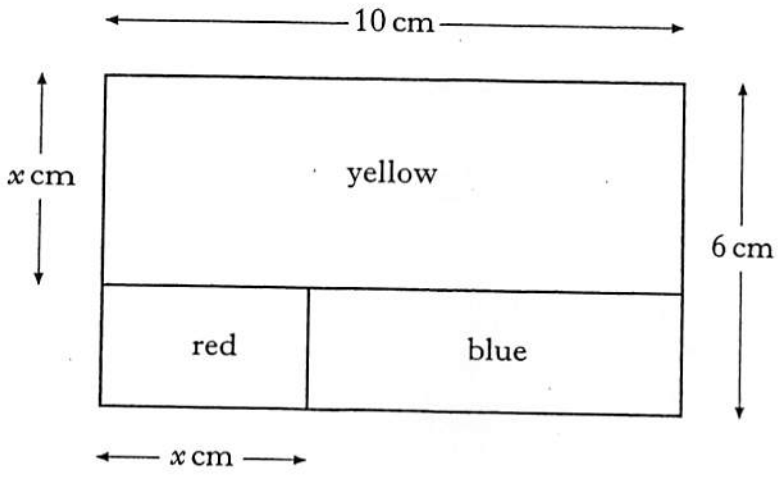
(G) **4.** Solve the inequality

$$\frac{x}{4} - \frac{1}{2} < 5.$$

KU 2

(H) (P2) **11.** (*a*) A decorator's logo is rectangular and measures 10 centimetres by 6 centimetres.

It consists of three rectangles: one red, one yellow and one blue.



The yellow rectangle measures 10 centimetres by x centimetres.

The width of the red rectangle is x centimetres.

Show that the area, A, of the blue rectangle is given by the expression

$$A = x^2 - 16x + 60.$$

(*b*) The area of the blue rectangle is equal to $\frac{1}{5}$ of the total area of the logo.

Calculate the value of x.

RE 2 4

Equa / Inequa / Alg expression

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(E) 9. Euan plays in a snooker tournament which consists of 20 games.

(P1)

He wins x games and loses y games.

(a) Write down an equation in x and y to illustrate this information. KU 1

(b) He is paid £5 for each game he wins and £2 for each game he loses.

He is paid a **total** of £79.

Write down another equation in x and y to illustrate this information. RE 2

(c) How many games did Euan **win**? 3

(F)

11. (a) (P1) One session at the Leisure Centre costs £3.

Write down an algebraic expression for the cost of x sessions. RE 1

(b) The Leisure Centre also offers a monthly card costing £20. The **first 6** sessions are then free, with each additional session costing £2.

(i) Find the **total** cost of a monthly card and 15 sessions. 1

(ii) Write down an algebraic expression for the **total** cost of a monthly card and x **sessions**, where x is greater than 6. 2

(c) Find the minimum number of sessions required for the monthly card to be the cheaper option.

Show all working. 3

KU	RE
	1
1	
	2
	3

Equa / Inequa / Alg expression

(Credit Past Paper quest 2003 – 2007)

(A) (P1) **6.** Solve the equation

$$\frac{2}{x}+1=6.$$

KU 3

9. (B)

(a) Emma puts £30 worth of petrol into the empty fuel tank of her car.

Petrol costs 75 pence per litre.
Her car uses 5 litres of petrol per hour, when she drives at a particular constant speed.

At this constant speed, how many litres of petrol will remain in the car after 3 hours?

(b) The next week, Emma puts £20 worth of petrol into the empty fuel tank of her car.

Petrol costs c pence per litre.
Her car uses k litres of petrol per hour, when she drives at another constant speed.

Find a formula for R, the amount of petrol remaining in the car after t hours.

KU	RE
2	
	3

(C) (P2) **4.** Solve the equation

$$x^2 + 2x = 9.$$

Give your answers **correct to 1 decimal place.**

KU 3

(D) (P1) **6.** Solve the equation

$$x-2(x+1)=8.$$

KU 3