

(1) Solve the following equations simultaneously:

(a) $\frac{2x+5}{3} = 3$ and $\frac{x+y}{3} = \frac{y}{2}$

$$\frac{3}{1} \times \frac{(2x+5)}{3} = \frac{3}{1} \times \frac{3}{1}$$

$$2x+5=9$$

$$2x=9-5$$

$$2x=4$$

$$x=\frac{4}{2}$$

$$x=2$$

$$\frac{(x+y)}{3} = \frac{y}{2}$$

$$\text{LCD} = 6$$

$$\frac{6^2}{1} \times \frac{(x+y)}{3} = \frac{6^3}{1} \times \frac{y}{2}$$

$$2 \times (x+y) = 3 \times y$$

$$2x+2y=3y$$

$$2(2)+2y=3y$$

$$4+2y=3y$$

$$4=3y-2y$$

$$4=y$$

$$(2, 4)$$

(b) $5a = 10 = a - 3b + 2$

$$\frac{5a}{5} = \frac{10}{5}$$

and

$$10 = a - 3b + 2$$

$$10 = 2 - 3b + 2$$

$$a=2$$

$$3b = 2+2-10$$

$$\frac{3b}{3} = \frac{-6}{3}$$

$$b = -2$$

$$(2, -2)$$

(2) Solve the following equations:

$$(a) \quad 2(m-2)^2 + (3+m)2 - (m-1)(m+2) - m^2 = 0$$

$$2(m-2)(m-2) + 2(3+m) - (m^2+2m-m-2) - m^2 = 0$$

$$2(m^2-2m-2m+4) + 6+2m - m^2-2m+m+2 - m^2 = 0$$

$$2m^2-4m-4m+8 + 8+m-2m^2 = 0$$

$$-7m+16=0$$

$$-7m = -16$$

$$m = -\frac{-16}{-7} = 2\frac{2}{7}$$

$$(b) \quad \frac{(2y-3)}{2} + \frac{(y+1)}{3} - \frac{(3y-1)}{2} = 0$$

$$LCD = 6$$

$$\frac{6^3}{1} \times \frac{(2y-3)}{2} + \frac{6^2}{1} \times \frac{(y+1)}{3} - \frac{6^3}{1} \times \frac{(3y-1)}{2} = \frac{6}{1} \times \frac{0}{1}$$

$$3 \times (2y-3) + 2 \times (y+1) - 3 \times (3y-1) = 0$$

$$6y-9 + 2y+2 - 9y+3 = 0$$

$$-1y-4=0$$

$$-1y = 4$$

$$\frac{-1y}{-1} = \frac{4}{-1}$$

$$y = -4$$

$$(c) \quad x(2x+1)(x^2-100)\left(x+\frac{1}{4}\right) = 0$$

$$x=0 \quad \text{or} \quad 2x+1=0 \quad \text{or} \quad x^2-100=0 \quad \text{or} \quad x+\frac{1}{4}=0$$

$$2x = -1$$

$$x^2 = 100$$

$$x = -\frac{1}{4}$$

$$x = -\frac{1}{2}$$

$$\sqrt{x^2} = \pm\sqrt{100}$$

$$x = \pm 10$$

(d) $2p^2 + 16p = -32$

$$2p^2 + 16p + 32 = 0$$

$$\frac{2p^2}{2} + \frac{16p}{2} + \frac{32}{2} = \frac{0}{2}$$

$$p^2 + 8p + 16 = 0$$

$$(p + 4)(p + 4) = 0$$

$$p + 4 = 0 \quad \text{or} \quad p + 4 = 0$$

$$\therefore p = -4$$

(3) Determine the possible value(s) of x and y if:

$$(2x - 4)(3y + 9) = 0$$

$$2x - 4 = 0$$

or

$$3y + 9 = 0$$

$$2x = 4$$

$$3y = -9$$

$$x = \frac{4}{2}$$

$$y = \frac{-9}{3}$$

$$x = 2$$

$$y = -3$$

(4) Make K the subject if $I = \frac{Krt}{100}$

$$I = \frac{Krt}{100}$$

$$\frac{100}{1} \times \frac{I}{1} = \frac{Krt}{100} \times \frac{100}{1}$$

$$\frac{100 I}{rt} = \frac{K \cancel{rt}}{\cancel{rt}}$$

$$K = \frac{100 I}{rt}$$

- (5) Sameul is four years older than Jack. In six years' time, the sum of their ages will be 34.
How old is Jack now?

Let Jack be x years old now

$\therefore$ Sameul is now $(x+4)$ years old.

In 6 years time: Jack $\rightarrow x+6$

Sameul $\rightarrow (x+4)+6$

$$\therefore \text{Jack} + \text{Sameul} = 34$$

$$\therefore x+6 + (x+4)+6 = 34$$

$$x+6 + x+4+6 = 34$$

$$2x = 34 - 16$$

$$2x = 18$$

$$\therefore x = 9$$

$\therefore$ Jack is now 9 years old.

- (6) A certain number doubled then increased by 7 is equal to five times the same number decreased by 2. Find the number.

Let the number be x .

$$\therefore 2x + 7 = 5x - 2$$

$$2x + 7 = 5x - 2$$

$$2x - 5x = -2 - 7$$

$$-3x = -9$$

$$x = \frac{-9}{-3}$$

$$x = 3$$

$\therefore$ The number is 3.

Graad 9 – INHOUD

		Eng	<u>Totaal</u>
2	(A) Reële getalle		
4	(B) Eksponente		
4	(C) Getalpatrone		
2	D. Algebraïese uitdrukkings		2 ✓
14	(E) Faktorisering	✓	28 ✓
	F. Vergelykings		
	G. Algebraïese breuke		
	H. Funksies / Grafieke		
	I. Verhouding, koers en eweredigheid		
	J. Finansiële wiskunde		
	K. Statistiek		
	L. Waarskynlikheid		
	M. Konstruksie en meting		
	N. Graad 8 Meetkunde Hersiening		
	O. Kongruensie		
	P. Gelykvormigheid		
	Q. Buite-oppervlakte en volume		
	R. Transformasies		
18			
	X Toetse		
	Y Eksamenvraestelle		