2025-2026
SECTION: A/55

MARKING GUIDE FOR S1 EXAMS OF MATHS

(1)

(1) a) True /1
b) True /1
c) True /1
d) False /1

(2) a) False /1
b) False /1
c) True /1
d) True /1
e) False /1

(3) a) $0.35 = 0.35 \text{ of } 100\% = 24\%$ /1
b) $\frac{2}{11} = \frac{2}{11} \text{ of } 100\% = \frac{2}{11} \times 100$
$= 18.18\%$ /1

(4) a) Neither /1
b) Equivalent /1
c) Equal /1

(5) a) Disjoint sets /1
b) Null set /1
c) Symmetric difference /1
d) Universal set /1
e) papygram /1

(6) $A = \{2, 4, 6, 8\}$; $B = \{1, 2, 4\}$
$C = \{6, 8, 10\}$
i) False /1
ii) True /1
iii) False /1
iv) False /1

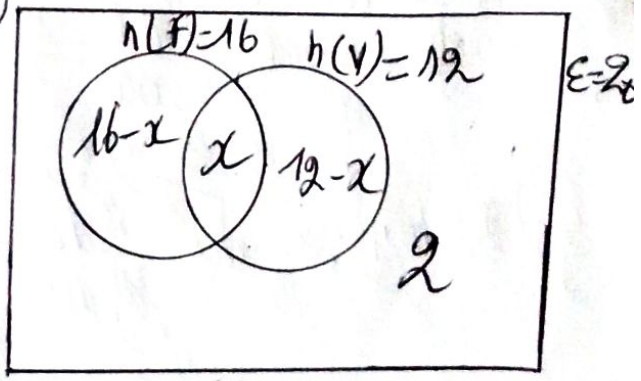
(7) A) (iii) 64 /2
$n = 6$
$NS = 2^n = 2^6 = 64$ /1
/1

B) $NS = 128$
$NS = 2^n$
$2^7 = 2^n$ /1
$n = 7$ /1 (i)

C) $\xi = \{a, b, c, d, e\}$ and
$A = \{a, b, e\}$
(i) $A' = \{c, d\}$ /3 marks

D) (ii) $NS = 2^n$ /1

(8)



$16 - x + x + 12 - x + 2 = 20$
$28 + 2 - x = 20$
$30 - x = 20$
$30 - 20 = x$
$10 = x$
$x = 10$

i) 10 Girls play both games
ii) The Girls whose play only one game $= 16 - 10 + 12 - 10$
$= 8$ Girls

(9) a) $5+(4+x)=8$

$5+4+x=8$

$9+x=8$

$x=8-9$

$x=-1$

$S=\{-1\}$

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

$6x+3-5x+10=6-4x$

$6x-5x+4x=6-3-10$ /1

$5x=-7$

$x=-\frac{7}{5}$ or /1

$x=-1\frac{2}{5}$ /1

$S=\{-1\frac{2}{5}\}$

(10) a) $28:42=\frac{28^{4}}{42_{6}}=\frac{4}{6}=\frac{2}{3}$ /1

$=2:3$

b) $1\ell : 250cl$

$1\ell = 100cl$

$100cl : 250cl = \frac{100cl}{250cl} = \frac{2}{5}$

$\frac{5}{}$ $2:5$ /1

c) $28\,days : 2\,weeks = \frac{28\,days}{14\,days}$

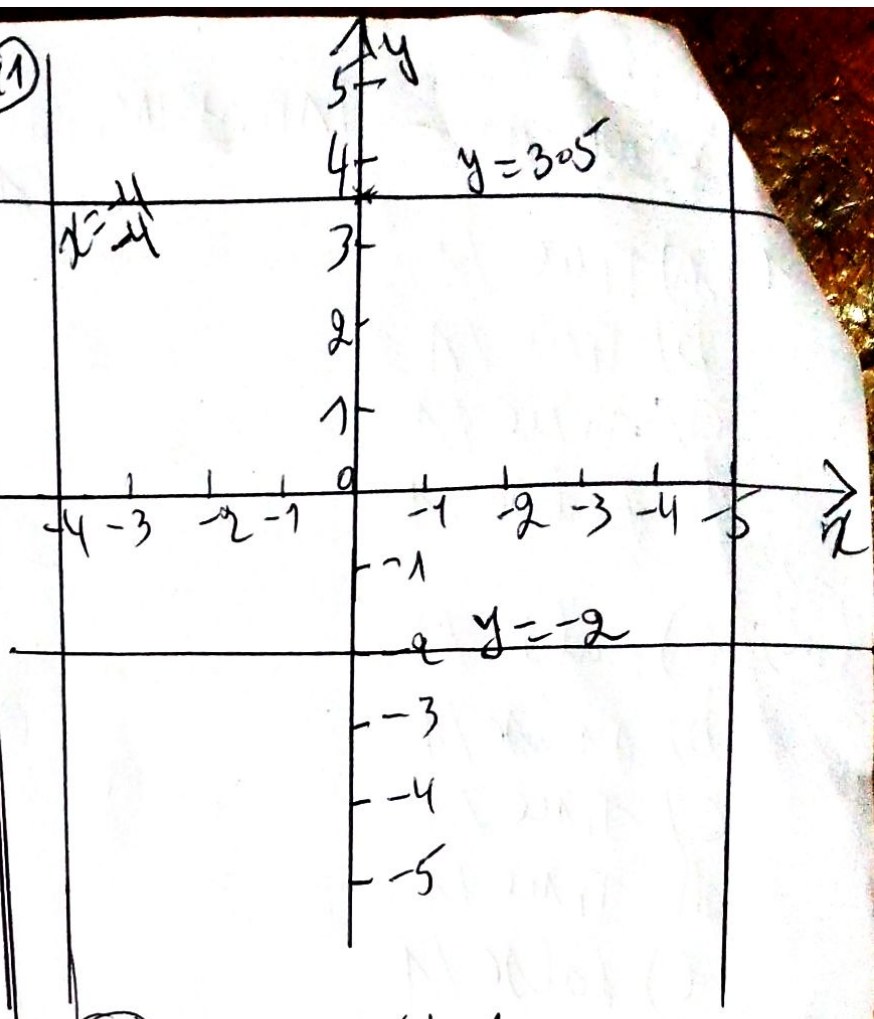
$= \frac{2}{2} = \frac{2}{1} = 2:1$ /1

d) $45\,km/h : 1\frac{1}{2}\,hours = \frac{45\,km/h}{90\,km/h}$

$1\frac{1}{2}\,hours = 90\,km/h$

$= \frac{1}{2} = 1:2$ /1

(11)



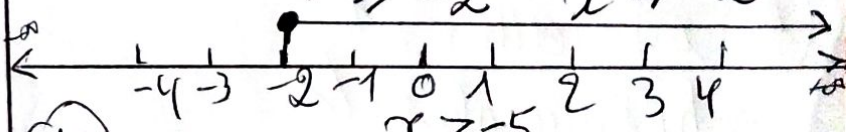
(12) $3-7x \leq 2x+1$

$-7x-2x \leq 1-3$

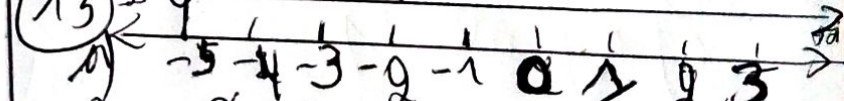
$-9x \leq -2$

$x \geq \frac{-2}{-9}$

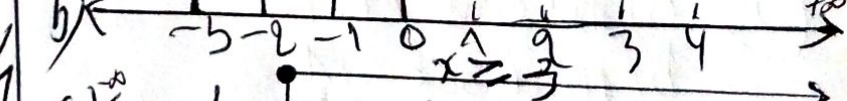
$x \geqslant -2$ $x \geqslant -2$



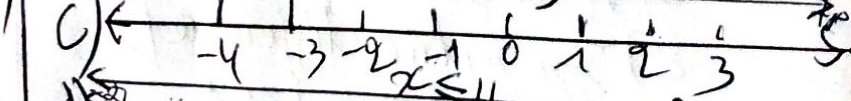
(13) a) $x > -5$



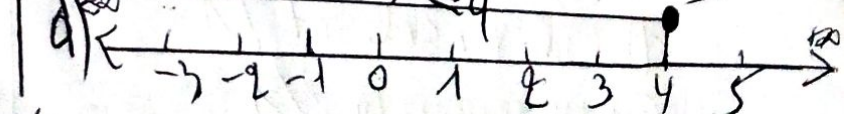
b) $x \leq 0$



c) $x \geqslant -3$



d) $x \leq 4$



SECTION B /45

14) $f(x) = 3x^2 + 2$

a) $f(2) = 3 \times 2^2 + 2$ /1
$= 3 \times 4 + 2$
$= 12 + 2$
$= 14$ /1

b) $f(x) = 3x^2 + 2$
Let $x = y$ and $f(y) = x$ /1
$f(y) = 3y^2 + 2$
$3y^2 + 2 = x$ /1
$3y^2 = x - 2$
$y^2 = \frac{x-2}{3}$
$y = \sqrt{\frac{x-2}{3}}$
$f^{-1}(x) = \sqrt{\frac{x-2}{3}}$ /1

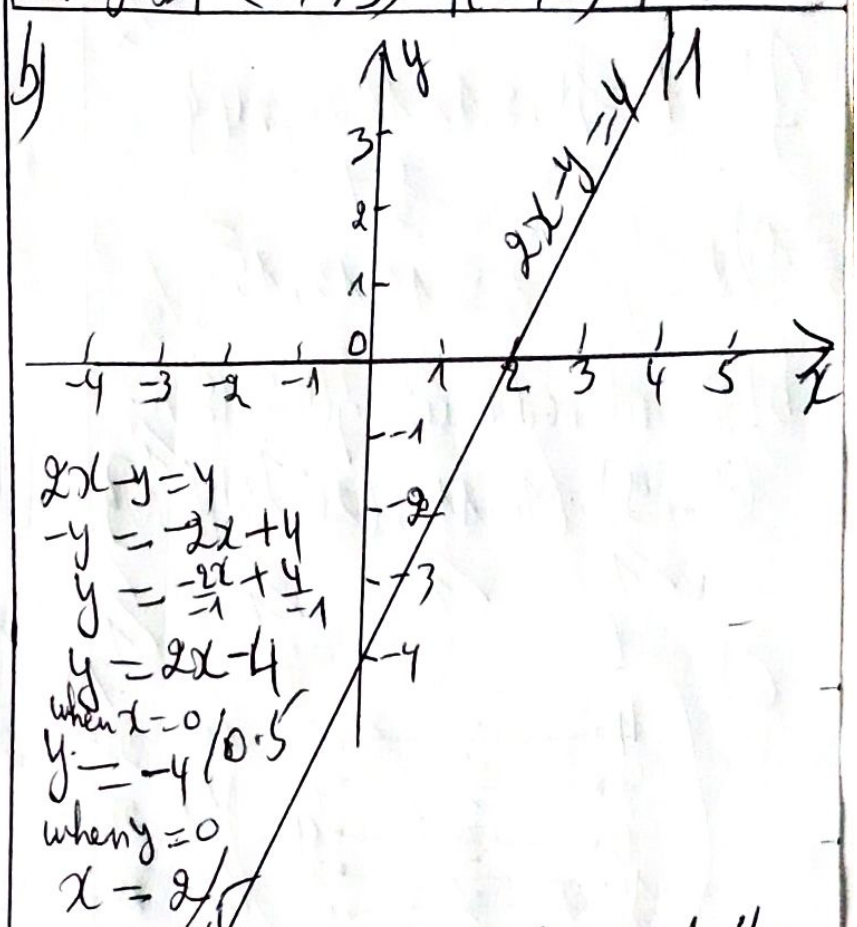
c) $f(x) = 5x$ and
$g(x) = 2x - 2$
i) $fg(x) = 5(2x-2)$ /2
$= 10x - 10$ /1
ii) $gf(x) = 2(5x) - 2$ /2
$= 10x - 2$ /1

d) $10x - 2 = 10x - 10$

15) a)

Function	y-intercept	x-intercept	Gradient
$2y + 3x = 2$	$(0, 1)$	$(\frac{2}{3}, 0)$	$-\frac{3}{2}$
$3x + 4y = 8$	$(0, 2)$	$(\frac{8}{3}, 0)$	$-\frac{3}{4}$
$-15 + 9y = 3x$	$(0, \frac{5}{3})$	$(-5, 0)$	$\frac{1}{3}$

b)



$2x - y = 4$
$-y = -2x + 4$
$y = \frac{-2x}{-1} + \frac{4}{-1}$
$y = 2x - 4$
when $x = 0$
$y = -4$ /0.5
when $y = 0$
$x = 2$ /0.5

c) i) The coordinate of the points the line meets the x-axis is $(2, 0)$ /2
ii) The coordinate of the points the line meets the y-axis is $(0, -4)$ /2

16) a) $x + x + 5 + 20 = 55$ /1
$2x + 25 = 55$
$2x = 55 - 25$
$2x = 30$ /1
$x = \frac{30}{2}$
$x = 15$ /1

b) 15 students like the three subjects /2
The total number students of Senior one ~~class~~ is: $10 + 20 + 60 + 15 + 15$

= 125 students /3

c) 0 student like physics and Kinyarwanda only /2

d) student like at least two subject are = 7 + 5 = 15 + 5 = 20 students /3

e) Students like only one subject are: 10 + 60 + 20 = 90 students /2

(17) $A = \{4, 8, 12, 16, 20, 24\}$

$\frac{1}{2} + 3$

a) $B = \{5, 7, 9, 11, 13, 15\}$ /2

b) The ordered pairs $= \{(4,5), (8,7), (12,9), (16,11), (20,13), (24,15)\}$

/1 /1 /1 /1

c)

/1 /1 /1 /1

d)