Year 11 EQUATIONS Name:

Solve

a) $2(5x-1)-4=10$

b) $\frac{4x}{5} - \frac{x-1}{3} = 1$

c) $x^2+5x-6=0$

d) $\frac{5}{2x+1} + \frac{4}{x} = 3$

e) $|7-x| = 3$

f) $|x+12| = |2x+6|$

g) $|2x+1| = 3-4x$

h) $6x-1 \geq 8$

i) $5 - \frac{x}{2} > 7$

j) $|x+2| \leq 4$
and graph on the no. line

k) $|2x-1| > 5$
and graph on the no. line

l) $5x+2y=9$ and
$4x-3y=-25$

m) $xy = 3$ and
$2x+3y=9$

2. Solve

$$\frac{x+2}{2x+1} \geq 1$$

3. Factorise fully:

a) $2x-6y-xy+3y^2$

b) a^2b-b^3

c) $\frac{27x^3}{64} - y^3$

d) $8y^2+2y-3$

e) $9x^2+9x-10$

4. Simplify

a) $\frac{x^2-16}{x^2+2x-8} \div \frac{x^2+4x}{2x^2-3x}$

b) $\frac{x}{pq} + \frac{q}{px}$

c) $\frac{x+2}{3x} - \frac{x-2}{4x}$

d) $\frac{m}{n^2-nm} + \frac{1}{n}$

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11MaX3

59½/65 good

1) a) $10x-2-4=10$

$10x-6=10$

$10x=16$

$x=13/5$ ✓

b) $\frac{4x}{5}-\frac{x-1}{3}=1$

$3(4x)-5(x+1)=15(1)$

$12x-5x+5=15$

$7x=10$

$x=10/7=1\ 3/7$ ✓

c) $(x+6)(x-1)=0$

$x=1,-6$ ✓

d) $5(x)+4(2x+1)=(x)(2x+1)(3)$

$5x+8x+4=6x^2+3x$

$13x+4=6x^2+3x$

$6x^2-10x-4=0$

$(6x+2)(6x-12)=0$

$(3x+1)(x-2)=0$

$x=-1/3, 2$ ✓

e) $7-x=3$ OR $7-x=-3$

$-x=-4$ $-x=-10$

$x=4$ ✓ $x=10$ ✓

f) $x+12=2x+6$ OR $x+12=-(2x$

$6=x$ $x+12=-2x-$

✓ $3x=-18$

$x=-6$

g) $2x+1=3-4x$ OR $-(2x+1)=3-4x$

$6x=2$ $-2x-1=3-4x$

$x=1/3$ ✓ $2x=4$ ✓

$x=2$

check solns

h) $6x-1\geq 8$

$6x\geq 9$

$x\geq 1\ 1/2$ ✓

i) $5-\frac{x}{2}>7$

$\frac{5(2)-x-7(2)}{2}>0$

$\frac{10-x-14}{2}>0$

$\frac{-4-x}{2}>0$

$(-4-x)(2)>0$

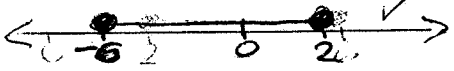
$x=-4$ X

j) $x+2\leq 4$ OR and $-(x+2)\geq 4$ $x+2\geq -4$

$x\leq 2$ $-x-2\geq 4$ $x\geq -6$

$-6\leq x\leq 2$ ✓ $-x\geq 6$

$x\leq -6$

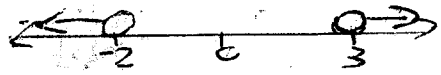


k) $2x-1>5$ OR $2x-1\leq -5$

$2x>6$ $2x\leq -4$

$x>3$ $x\leq -2$

$\therefore x>3$ or $x\leq -2$



✓

l) i) $5x+2y=9$

2) $4x-3y=-25$

1)×4 $= 20x+8y=36$

2)×5 $= 20x-15y=-125$

$23y=161$

$y=7$

1) $5x+2(7)=9$

$5x+14=9$

$5x=-5$

$\therefore x=-1, y=7$ ✓

i) $5-\frac{x}{2}>7$

$-\frac{x}{2}>2$

$-x>4$ $x<-4$

m) 1) $xy = 3$

2) $2x + 3y = 9$

1) $\rightarrow x = 3/y$

2) $2(3/y) + 3y = 9$

$6/y + 3y = 9$

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

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

$(3y - 6)(3y - 3) = 0$

$(y - 2)(y - 1) = 0$ ✓

$\therefore y = 2, 1$

1) $\rightarrow x(2) = 3$ OR $x(1) = 3$

$2x = 3$ $\quad x = 3$

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

$\therefore x = 1\frac{1}{2}, y = 2$ OR ✓

$x = 3, y = 1$ ✓

36/40

2) $\frac{x+2}{2x+1} \geq 1 \rightarrow x \neq -\frac{1}{2}$ ✓

$\frac{x+2}{2x+1} - 1 \geq 0$

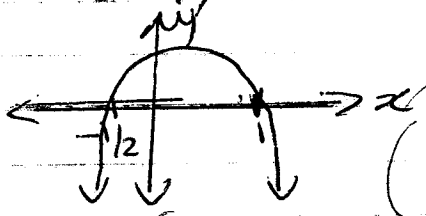
$\frac{x+2-1(2x+1)}{2x+1} \geq 0$

$\frac{x+2-2x-1}{2x+1} \geq 0$

$\frac{1-x}{2x+1} \geq 0$

$(1-x)(2x+1) \geq 0$

$\therefore x = 1, -1/2$ ✓



$\therefore -1/2 \leq x \leq 1$ ✓

4½/5

3) a) $2(x - 3y) - y(x - 3y)$

$= (2 - y)(x - 3y)$ ✓

b) $b(a^2 - b^2)$

$b(a - b)(a + b)$ ✓

c) $27x^3 - 64y^3$

$(3x - 4y)(9x^2 + 12xy + 16y^2)$ ✓

d) $(8y + 6)(8y - 4)$

$(4y + 3)(2y - 1)$ ✓

e) $(9x + 15)(9x - 6)$

$(3x + 5)(3x - 2)$ ✓

9/10

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

$\frac{1}{2}(1 + 4) = 1.5$

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

4) a) $\frac{(x-4)(x+4)}{(x-2)(x+4)} \times \frac{(2x+1)(x-2)}{(x+8)(x-4)}$ ✓

$= \frac{2x+1}{x+8}$ ✓

b) $\frac{x}{pq} + \frac{q}{px}$

$= \frac{x(x) + q(q)}{pqx}$

$= \frac{x^2 + p^2}{pqx}$ ✓

c) $\frac{4(x+2) - 3(x-2)}{(=)(4)(x)}$ ✓

$= \frac{4x + 8 - 3x + 6}{12x}$

$= \frac{x + 14}{12x}$

d) $\frac{m + 1(n-m)}{n(n-m)}$ ✓

$\frac{m + n - m}{n(n-m)}$

$= \frac{n}{n(n-m)}$

$= \frac{1}{n-m}$ ✓

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