SOLUTIONS FOR S.4 MATH WORKSHEET THREE

1. Simplify the following expressions

1. Simplify the following expressions	
(a) $\frac{m+1}{m+1} + \frac{m-3}{m-1}$	(b) $\frac{2w+1}{2} - \frac{6w-2}{4}$
$=\frac{m+1+m-3}{3}$	1 1 4
$=\frac{1}{2}$	$=\frac{2(2w+1)-1(6w-2)}{4}$
m + m + 1 - 3	$= \frac{4w + 2 - 6w + 2}{4}$
=	=4
$=\frac{2m-2}{2m-2}$	$-\frac{4w-6w+2+2}{}$
$\begin{bmatrix} 2 \\ 2 \\ \end{bmatrix}$	34
$=\frac{2(m-1)}{2}$	$= \frac{4w - 6w + 2 + 2}{4}$ $= \frac{-2w + 4}{4}$
$= \frac{m + m + 1 - 3}{2}$ $= \frac{2m - 2}{2}$ $= \frac{2(m - 1)}{2}$ $= m - 1$	$\frac{4}{2}(-w+2)$
- m 1 ·	$=\frac{2(W+2)}{4}$
	-w+2 $2-w$
	$= \frac{\frac{2(-w+2)}{4}}{\frac{4}{2}}$ $= \frac{-w+2}{2} \text{ or } \frac{2-w}{2}$ $(d) \frac{5-2n}{4} + \frac{3p-1}{2}$
(c) $\frac{y+6}{5} + \frac{2y-5}{15}$	(d) $\frac{5-2n}{4} + \frac{3p-1}{2}$
3(y+6) + 1(2y-5)	5-2n+2(3p-1)
$=\frac{\sqrt{5}}{15}$	= 4
$= \frac{3(y+6)+1(2y-5)}{15}$ $= \frac{3y+18+2y-5}{15}$	-5-2n+6p-2
= 15	- 4
$=\frac{3y+2y+18-5}{15}$	$= \frac{5 - 2n + 2(3p - 1)}{4}$ $= \frac{5 - 2n + 6p - 2}{4}$ $= \frac{6p - 2n + 5 - 2}{4}$
15	6n-2n+3
$=\frac{3y+13}{15}$	$=\frac{3p-2n+3}{4}$
$= \frac{5y + 13}{15}$ $(e) \frac{3x+4}{11} + \frac{2x}{33}$	$= \frac{6p - 2n + 3}{4}$ $(f) \frac{v}{2} - \frac{v+1}{4}$
$(e) \frac{1}{11} + \frac{1}{33}$	$(1)\frac{1}{2}-\frac{1}{4}$
$=\frac{3(3x+4)+1\times 2x}{3(3x+4)+1\times 2x}$	$=\frac{2\times v-1(v+1)}{v-1}$
$= \frac{3(3x+4)+1\times 2x}{33}$ $= \frac{9x+12+2x}{33}$	$= \frac{2 \times v - 1(v + 1)}{4}$ $= \frac{2v - v - 1}{4}$ $= \frac{v - 1}{4}$
$=\frac{3x+12+2x}{22}$	$=\frac{2\nu}{4}$
9x + 2x + 12	v-1
=	= -4
44 . 40 /	
$=\frac{11x+12}{33}$, 1 1 n
$(g) x + 2a - \frac{3x}{1} - \frac{2a}{5}$	(h) $\frac{x-1}{2} - \frac{1}{3} + \frac{x}{3}$
x $2a$ $3x-1$ $2a$	$= \frac{3(x-1)^{3} - 3 \times 1 + 2 \times x}{2}$
$= \frac{x}{1} + \frac{2a}{1} - \frac{3x - 1}{4} - \frac{2a}{5}$	6
$= \frac{1}{20 \times x + 20 \times 2a - 5(3x - 1) - 4 \times 2a}$	$=\frac{3x-3-2+2x}{}$
20	$\begin{vmatrix} 6 \\ 2x + 2x & 2 \end{vmatrix}$
$=\frac{20x+40a-15x+5-8a}{30}$	$=\frac{3x+2x-3-2}{-6}$
$=\frac{40a - 8a + 20x - 15x}{20}$	$\begin{vmatrix} 5x - 5 \end{vmatrix}$
$=\frac{1000 \text{ GeV} + 2000 \text{ TSM}}{20}$	$=\frac{5x-5}{6}$
32a + 5x + 5	5 (x-1) 5
=	$= \frac{5(x-1)}{6} \text{ or } \frac{5}{6}(x-1)$ $(j) \frac{3p}{12} - \left(\frac{p}{2} - \frac{p}{4} + \frac{5p}{6}\right)$
$(i) \frac{4a}{7} + \frac{3a+5}{2} - \frac{3(a+2)}{3}$	$(j)\frac{3p}{4p}-\left(\frac{p}{p}-\frac{p}{p}+\frac{5p}{p}\right)$
$\begin{vmatrix} 1 & 7 & 2 & 3 \\ 4a & 3a + 5 & (a + 2) & 3 \end{vmatrix}$	$\begin{vmatrix} 7 & 12 & 12 & 4 & 6 \\ 3p & (6 \times p - 3 \times p + 2 \times 5p) \end{vmatrix}$
$= \frac{4a}{7} + \frac{3a+5}{2} - \frac{(a+2)}{1}$	$=\frac{3p}{12}-\left(\frac{6\times p-3\times p+2\times 5p}{12}\right)$
$2 \times 4a + 7(3a + 5) - 14(a + 2)$	$\begin{bmatrix} 3\overline{p} & (6p-3p+10p) \end{bmatrix}$
=	$= \frac{3p}{12} - \left(\frac{6p - 3p + 10p}{12}\right)$
8a + 21a + 35 - 14a - 28	$=\frac{3\overline{p}}{12}-\left(\frac{3p+10\overline{p}}{12}\right)$
14 20g 14g 25 29	$\begin{vmatrix} 12 & 12 & 12 \\ 2m & 12m \end{vmatrix}$
29a - 14a + 35 - 28	$=\frac{3p}{12}-\left(\frac{13p}{12}\right)$
14	1 12 \ 12 <i>I</i>

$=\frac{15a+7}{14}$

$$= \frac{3p - 13p}{12}$$

$$= \frac{-10p}{12}$$

$$= -\frac{5p}{6}$$

2. Solve the following equations

(a)
$$\frac{5x+2}{3} - \frac{7x+2}{5} = 2$$

 $15 \times \frac{5x+2}{3} - \frac{7x+2}{5} \times 15 = 2 \times 15$
 $5(5x+2) - 3(7x+2) = 30$
 $25x+10-21x-6=30$
 $25x-21x+10-6=30$
 $4x+4=30$
 $4x=30-4$
 $4x=26$
 $\frac{4x}{4} = \frac{26}{4}$
 $x = \frac{13}{2}$
 $x = 6\frac{1}{2}$

(b)
$$\frac{3}{4}(2a+1) = \frac{5}{6}(a+5)$$

 $12 \times \frac{3}{4}(2a+1) = \frac{5}{6}(a+5) \times 12$
 $3 \times 3(2a+1) = 2 \times 5(a+5)$
 $9(2a+1) = 10(a+5)$
 $18a+9=10a+50$
 $18a-10=50-9$
 $8a=50-9$
 $8a=41$
 $\frac{8a}{8}=\frac{41}{8}$
 $a=5\frac{1}{8}$

$$(c) \frac{n-1}{2} - \frac{n-3}{4} = \frac{1}{2}$$

$$4 \times \frac{n-1}{2} - \frac{n-3}{4} \times 4 = \frac{1}{2} \times 4$$

$$2(n-1) - 1(n-3) = 1 \times 2$$

$$2n-2-n+3=2$$

$$2n-n-2+3=2$$

$$n+1=2$$

$$n=2-1$$

$$n=1$$

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

$$12 \times \frac{2}{2} - \frac{x+1}{4} \times 12 = \frac{x}{3} \times 12 + 2 \times 12$$

$$6 \times 2 - 3(x+1) = x \times 4 + 24$$

$$12 - 3x - 3 = 4x + 24$$

$$12 - 3 - 3x = 4x + 24$$

$$9 - 3x = 4x + 24$$

$$9 - 3x = 4x + 24$$

$$-3x - 4x = 24 - 9$$

$$-7x = 15$$

$$\frac{-7x}{-7} = \frac{15}{-7}$$

$$x = -\frac{15}{7}$$

$$x = -2\frac{1}{7}$$

$$(e) \frac{n+1}{2} - \frac{n-3}{4} = \frac{n+2}{3}$$

$$12 \times \frac{n+1}{2} - \frac{n-3}{4} \times 12 = \frac{n+2}{3} \times 12$$

$$6(n+1) - 3(n-3) = 4(n+2)$$

$$6n+6-3n+9 = 4n+8$$

$$6n-3n+6+9 = 4n+8$$

$$3n+15 = 4n+8$$

$$3n-4n = 8-15$$

$$-n = -7$$

$$\frac{-n}{-1} = \frac{-7}{-1}$$

$$n = 7$$

$$x = -2\frac{1}{7}$$

$$(f) \frac{4p-1}{3} - \frac{3p-1}{2} = \frac{5-2p}{4}$$

$$12 \times \frac{4p-1}{3} - \frac{3p-1}{2} \times 12 = \frac{5-2p}{4} \times 12$$

$$4(4p-1) - 6(3p-1) = 3(5-2p)$$

$$16p-4-18p+6=15-6p$$

$$16p-18p-4+6=15-6p$$

$$-2p+2=15-6p$$

$$-2p+6p=15-2$$

$$4p=13$$

$$\frac{4p}{4} = \frac{13}{4}$$

$$p = \frac{13}{4}$$

$$p = 3\frac{1}{4}$$

(g) $\frac{1}{5}(w+6) - \frac{1}{15}(2w-5) = \frac{1}{3}(1-w)$	$(h)\frac{1}{2} - \frac{x}{6} = -\frac{5}{2}$
$15 \times \frac{1}{5}(w+6) - \frac{1}{15}(2w-5) \times 15 = \frac{1}{3}(1-w) \times 15$	$(h)\frac{1}{2} - \frac{x}{6} = -\frac{5}{2}$ $6 \times \frac{1}{2} - \frac{x}{6} \times 6 = -\frac{5}{2} \times 6$
3(w+6) - (2w-5) = 5(1-w)	$\begin{vmatrix} 2 & 6 & 2 \\ 3 \times 1 - x \times 1 = -5 \times 3 \end{vmatrix}$
3w + 18 - 2w + 5 = 5 - 5w	$3 \times 1 - x \times 1 = -3 \times 3$ 3 - x = -15
3w - 2w + 18 + 5 = 5 - 5w	$\begin{vmatrix} 3 - x15 \\ -x = -15 - 3 \end{vmatrix}$
w + 23 = 5 = 5w	10
w + 5w = 5 - 23	-x = -18 $-x = -18$ $-1 = -1$ $x = 18$
6w = -18	$\frac{-x}{-} = \frac{-18}{-}$
6w = -18 6w = -18	-1 -1
$\frac{\partial W}{\partial t} = \frac{10}{t}$	x = 18
$\frac{\overline{6}}{6} = \frac{\overline{6}}{6}$ $w = -3$	
$W = -3 \checkmark$ $4n-1 3n-1$	r+1 r-4
$(i)\frac{4p-1}{3} - \frac{3p-1}{2} = 1$	$(j)\frac{x+1}{3} + \frac{x-4}{2} = 5$
4p-1 $3p-1$	x+1 $x-4$
$6 \times \frac{4p-1}{3} - \frac{3p-1}{2} \times 6 = 1 \times 6$	$6 \times \frac{x+1}{3} + \frac{x-4}{2} \times 6 = 5 \times 6$
2(4p-1) - 3(3p-1) = 6	2(x+1) + 3(x-4) = 30
8p - 2 - 9p + 3 = 6	2x + 2 + 3x - 12 = 30
8p - 9p - 2 + 3 = 6	2x + 3x + 2 - 12 = 30
-p+1=6	5x - 10 = 30
-p=6-1	5x = 30 + 10
-p=5	5x = 40
	5x 40
$\left \frac{-p}{-1} = \frac{5}{-1} \right $	$\frac{1}{5} = \frac{1}{5}$
p = -5	x = 8
	, 0

END.