ADVANCED ALGEBRA.
Clear working needed

1. Solve the following.
(a) $7(x+2)-4(x-2)=x+5$

More Advanced.
2. Solve
(a) $\frac{12}{x+3}=\frac{8}{x-2}$
(b) $6-\frac{2(x+3)}{5}=\frac{3(x-4)}{2}$
(c) Rearrange $\frac{b}{a+x}=w$ to make $x$ the subject.
(c) $\frac{x}{4}+\frac{7}{12}=\frac{x}{3}+\frac{5}{6}$

Advanced Algebra (2).
Solve these equations:

1. $6(x-3)-2(x-4)=5(x+2)$
2.(a) $\frac{3 x}{4}>-12$
(b) $\frac{-4}{5} x>-20$
2. $6(x-4)<-4(2-x)$
3. $\frac{5 x}{6}+\frac{3}{4}=\frac{x}{3}+2$
4. $\frac{9}{x+7}=\frac{6}{x-4}$

More Advanced (2).
6. $4-\frac{3(x+2)}{2}=\frac{2(x-5)}{3}$
7. Rearrange the equations to make $x$ the subject of each.
(a) $a x-b y=w$
(b) $\frac{x}{p}+c=b-k$
(c) $\frac{c}{x}=p+g$
(d) $\frac{y}{x-v}=b$

## MODEL SOLUTIONS

Clear working needed

1. Solve the following.
(a) $7(x+2)-4(x-2)=x+5$

$$
\begin{aligned}
7 x+14-4 x+8 & =x+5 \\
3 x+22 & =x+5 \\
2 x+22 & =5 \\
2 x & =-17 \\
x & =\frac{-17}{2}
\end{aligned}
$$

(b) $2(x-3)=-5(6-x)$

$$
\begin{aligned}
2 x-6 & =-30+5 x \\
-6 & =30+3 x
\end{aligned}
$$

$$
-36=3 x
$$

$$
-12=x
$$

(c)

$$
\begin{aligned}
\frac{x}{4}+\frac{7}{12} & =\frac{x}{3}+\frac{5}{6} \\
12\left(\frac{x}{4}+\frac{7}{12}\right) & =12\left(\frac{x}{3}+\frac{5}{6}\right) \\
3 x+7 & =4 x+10 \\
7 & =x+10 \\
-3 & =x
\end{aligned}
$$

## More Advanced.

2. Solve
(a)

$$
\begin{aligned}
& \frac{12}{x+3}=\frac{8}{x-2} \\
& \frac{12}{x+3}=\frac{8}{x-2}
\end{aligned}
$$

$$
12(x-2)=8(x+3)
$$

$$
12 x-24=8 x+24
$$

$$
\begin{aligned}
4 x-24 & =24 \\
4 x & =48 \\
x & =12
\end{aligned}
$$

(b) $\quad 6-\frac{2(x+3)}{5}=\frac{3(x-4)}{2}$
$10\left(6-\frac{2(x+3)}{5}\right)=10\left(\frac{3(x-4)}{2}\right)$

$$
60-4(x+3)=15(x-4)
$$

$$
60-4 x-12=15 x-60
$$

$$
48=19 x-60
$$

$$
108=19 x
$$

$$
\frac{108}{19}=x
$$

(c) Rearrange $\frac{b}{a+x}=w$ to make $x$ the subject.

$$
\begin{aligned}
b & =w a+w x \\
b-w a & =w x \\
\frac{b-w a}{w} & =x
\end{aligned}
$$

Advanced Algebra(2).
Solve these equations:

$$
\text { 1. } \begin{aligned}
6(x-3)-2(x-4) & =5(x+2) \\
6 x-18-2 x+8 & =5 x+10 \\
4 x-10 & =5 x+10 \\
-10 & =x+10 \\
-20 & =x
\end{aligned}
$$

2.(a) $\frac{3 x}{4}>-12$

$$
3 x>48
$$

$$
x>16
$$

(b) $\frac{-4 x}{5}>-20$
$-4 x>-100$

$$
x<25
$$

3. $6(x-4)<-4(2-x)$

$$
6 x-24<-8+4 x
$$

$$
2 x-24<-8
$$

$$
2 x<16
$$

$$
x<8
$$

4. $\frac{5 x}{6}+\frac{3}{4}=\frac{x}{3}+2$

$$
\begin{aligned}
12\left(\frac{5 x}{6}+\frac{3}{4}\right) & =12\left(\frac{x}{3}+2\right) \\
10 x+9 & =4 x+24 \\
6 x & =15 \\
x & =\frac{15}{6}=\frac{5}{2}
\end{aligned}
$$

5. $\frac{9}{x+7}=\frac{6}{x-4}$

$$
\begin{array}{rlr}
9(x-4) & =6(x+7) \\
9 x-36 & =6 x+42 \\
3 x-36 & = & 42 \\
3 x & =78 \\
x & =26
\end{array}
$$

More Advanced(2).
6. $4-\frac{3(x+2)}{2}=\frac{2(x-5)}{3}$
$6\left(4-\frac{3(x+2)}{2}\right)=6\left(\frac{2(x-5)}{3}\right)$

$$
\begin{aligned}
24-9(x+2) & =4(x-5) \\
24-9 x-18 & =4 x-20 \\
6 & =5 x-20 \\
26 & =5 x \\
\frac{26}{5} & =x
\end{aligned}
$$

7. Rearrange the equations to make $x$ the subject of each.
(a) $a x-b y=w$

$$
a x \quad=w+b y
$$

$$
x=\frac{w+b y}{a}
$$

(b) $\frac{x}{p}+c=b-k$

$$
\begin{array}{ll}
\frac{x}{p} & =b-k-c \\
x & =p(b-k-c)
\end{array}
$$

(c) $\frac{c}{x}=p+g$

$$
\frac{c}{(p+g)}=x
$$

(d) $\frac{y}{x-v}=b$

$$
\frac{y}{b} \quad=x-v
$$

$$
\frac{y}{b}+v=x
$$

