



S2

CfE Level 3

Working at Home Workbook

Algebra

Learning Intention. To be able to -
Solve simple equations
Solve more challenging equations
Solve equations with brackets
Solve equations with fractions
Solve inequalities

Solve simple equations

Question 1

Solve the following one step equations:

a) $a - 3 = 7$	b) $a - 2 = 2$	c) $a - 5 = 4$
d) $a + 4 = 9$	e) $a + 7 = 12$	f) $a + 1 = 9$
g) $3 + a = 9$	h) $9 + a = 11$	i) $10 + a = 10$
k) $6 = a - 1$	l) $8 = a + 6$	m) $12 = a + 3$
n) $a + 5 = 3$	o) $a + 2 = 1$	p) $a + 7 = 3$
q) $a - 5 = -7$	r) $a - 4 = -12$	s) $a - 2 = -2$
t) $a + 5 = -3$	u) $a + 3 = -8$	v) $a + 9 = -11$

Question 2

Solve the following one step equations:

a) $2a = 8$	b) $3a = 9$	c) $5a = 30$
d) $7a = 140$	e) $6a = 60$	f) $4a = 60$
g) $5a = 120$	h) $8a = 24$	i) $11a = 88$
k) $2a = 5$	l) $2a = 9$	m) $2a = 17$
n) $3a = 14$	o) $5a = 22$	p) $6a = 25$

Question 3

Solve the following two step equations:

a) $2a + 1 = 9$	b) $2a - 3 = 5$	c) $3a + 2 = 14$
d) $3a - 4 = 23$	e) $4a - 1 = 27$	f) $5a - 7 = 28$
g) $5a + 3 = 33$	h) $6a - 5 = 19$	i) $7a + 1 = 50$
k) $11 = 2a + 1$	l) $5 = 2a - 9$	m) $33 = 4a - 7$
n) $4 - a = 5$	o) $2 - a = 9$	p) $7 - a = 11$
q) $3 - 2a = 9$	r) $1 - 3a = 7$	s) $3 - 5a = 13$
t) $2a + 5 = 1$	u) $3a + 7 = 1$	v) $4a + 13 = 1$
w) $3a + 5 = -3$	x) $4a + 9 = -7$	y) $5a + 8 = -22$
A) $5a - 1 = 8$	B) $2a - 5 + 2$	C) $3a - 7 = 6$

Solve more challenging equations

a)	$2a + 3 = a + 8$	b)	$3a + 6 = 2a + 10$
c)	$5a - 7 = 3a + 5$	d)	$4a - 3 = 2a + 7$
e)	$7a + 1 = 2a + 6$	f)	$6a - 5 = 2a + 3$
g)	$8a + 5 = 5a + 2$	h)	$7a + 3 = 2a - 7$
i)	$2a + 3 = 6 - a$	j)	$4a + 1 = 9 - 2a$
k)	$8a + 3 = 12 - a$	l)	$3a - 7 = 2a - 13$
m)	$5a + 8 = 2a - 1$	n)	$4a - 9 = 5a + 1$
o)	$3a - 7 = 5a + 3$	p)	$a + 5 = 4a - 7$
q)	$5a = 7a + 8$	r)	$3a = 8a - 5$

Solve equations with brackets

Question 1

Expand brackets and solve the following:

a)	$2(a + 1) = 8$	b)	$3(a - 2) = 9$	c)	$5(a - 3) = 20$
d)	$7(2a - 1) = 14$	e)	$4(3a + 2) = 16$	f)	$3(4a - 3) = 21$
g)	$2(4a - 1) = 5$	h)	$3(2a - 7) = 7$	i)	$2(5a - 1) = 9$
k)	$2(5 - 2a) = 7$	l)	$4(7 - 3a) = 1$	m)	$5(9 - 2a) = 12$
n)	$3(2a + 1) = -9$	o)	$4(3a - 8) = -20$	p)	$6(7a + 2) = -42$

Question 2

Expand brackets, simplify and solve

a)	$3(a - 2) + 2a = 2$	b)	$2(3a - 1) - a = 3$
c)	$5(2a - 3) + 2a = 9$	d)	$3(2a - 1) - a = 9$
e)	$4(3a - 4) - 2a = 4$	f)	$2(a + 5) + 3 = 1$
g)	$3(a - 2) + 5 = 8$	h)	$4(a - 1) + 7 = -1$
i)	$4(2a + 1) - 3a + 5 = 19$	j)	$3(4a - 3) + 2a - 3 = 2$
k)	$2(3a + 5) - 2a + 5 = 31$	l)	$5(3 - 2a) + 13a - 4 = 20$
m)	$2(3a - 1) + 3(a + 2) = 22$	n)	$3(2a - 5) + 2(2a - 3) = -1$
o)	$5(2a - 1) + (3 - 4a) = 9$	p)	$2(4a + 3) + 3(2 - 3a) = 0$
q)	$4(3a - 1) + 2(1 - 4a) = 0$	r)	$5(2a - 3) - 3(1 - 2a) + 2 = 0$
s)	$2(3a + 1) + 4(a - 3) = 2a - 1$	t)	$5(2a + 3) + 3(2a - 8) = a + 6$

Solve equations with fractions

Solve the following equations with fractions:

a)	$\frac{1}{3}x = 5$	b)	$\frac{1}{4}x = 3$
c)	$\frac{x}{5} = 35$	d)	$\frac{1}{8}x - 16 = 0$
e)	$\frac{x}{3} - 18 = 0$	f)	$\frac{1}{2}x - 7 = 3$
g)	$\frac{1}{4}x + 1 = 3$	h)	$\frac{2}{3}x + 1 = 5$
i)	$\frac{3}{4}x - 2 = 1$	j)	$\frac{1}{2}x - \frac{1}{4} = 1$
k)	$\frac{2}{5}x - \frac{1}{2} = 1$	l)	$\frac{3}{4}x + \frac{5}{8} = 2$
m)	$\frac{4}{5}x + \frac{1}{2} = \frac{1}{2}x + 1$	n)	$\frac{3}{4}x + \frac{1}{2} = \frac{1}{3}x - 1$

Solve inequalities

Solve the inequalities

a)	$a + 2 > 3$	b)	$a - 8 < 5$	c)	$a + 3 \leq 10$
d)	$4a > 20$	e)	$7a < 35$	f)	$9a \geq 99$
g)	$2a - 3 \geq 5$	h)	$3a - 2 > 10$	i)	$5a - 7 < 3$
k)	$7a + 8 < 2a - 2$	l)	$8a + 1 \geq 2a + 13$	m)	$11a + 5 \leq 2a + 14$
n)	$6a - 7 > 2a + 1$	o)	$10a - 5 < 2a + 27$	p)	$2(3a + 5) > 8$
q)	$6(2a + 1) < 18$	r)	$5(2a - 1) > 2(2a - 3)$	s)	$3(4a + 1) \leq 2(a - 3)$
t)	$\frac{1}{2}(x + 2) \leq 3$	u)	$\frac{1}{3}(2x - 4) \geq 2$	v)	$\frac{2}{3}x - \frac{1}{2} > 3$