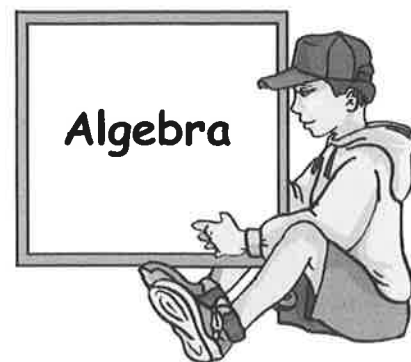


# CHAPTER 5

## Review 4

## Algebra & Integers



1. Find :-

- |   |                        |   |                           |   |                    |   |              |
|---|------------------------|---|---------------------------|---|--------------------|---|--------------|
| a | $3 - 8$                | b | $-6 + 4$                  | c | $11 + (-13)$       | d | $6 - (-6)$   |
| e | $-5 - (-1)$            | f | $-74 - (-65)$             | g | $-5 + (-6) - (-7)$ | h | $-9 - (-10)$ |
| i | $-1 + 2 - (-3) + (-4)$ | j | $30 - (-14) + (-12) - 15$ |   |                    |   |              |

2. Find :-

- |   |                          |   |                                |   |                               |   |                            |
|---|--------------------------|---|--------------------------------|---|-------------------------------|---|----------------------------|
| a | $4 \times (-6)$          | b | $(-3) \times (-4)$             | c | $36 \div (-4)$                | d | $(-24) \div (-3)$          |
| e | $5 \times (-2) \times 3$ | f | $(-5) \times (-1) \times (-1)$ | g | $(-11) \times (-10) \times 0$ | h | $(-48) \div (-4) \times 3$ |

3. a My bank balance reads  $-\pounds 120$ . What does this mean ?  
 b The temperature yesterday was  $5^{\circ}\text{C}$ . Today it is  $-3^{\circ}\text{C}$ .  
 By how many degrees has the temperature dropped ?



4. Simplify the following expressions :-

- |   |                 |   |                  |   |                 |   |                        |
|---|-----------------|---|------------------|---|-----------------|---|------------------------|
| a | $t + t + t$     | b | $g \times g$     | c | $3d \times 2d$  | d | $4f + 6g - f - 7g$     |
| e | $k^2 \times 3k$ | f | $6w \times 4w^2$ | g | $25x^2 \div 5x$ | h | $2s \times 6s \div 3s$ |

5. Work out the value of these expressions when  $a = 4$ ,  $b = 5$  and  $c = -2$  :-

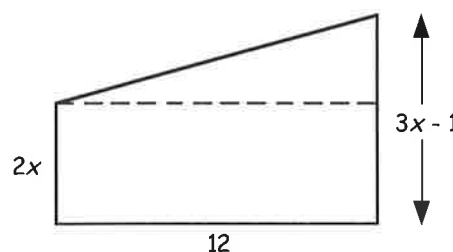
- |   |          |   |             |   |             |   |        |
|---|----------|---|-------------|---|-------------|---|--------|
| a | $2a + b$ | b | $a^2 - b^2$ | c | $(b - c)^2$ | d | $2b^2$ |
|---|----------|---|-------------|---|-------------|---|--------|

6. Multiply out the brackets and simplify fully where necessary :-

- |   |                       |   |              |                        |              |   |                |
|---|-----------------------|---|--------------|------------------------|--------------|---|----------------|
| a | $3(2x + 1)$           | b | $5(4a - 3b)$ | c                      | $g(g + 8)$   | d | $-2y(3y - 5z)$ |
| e | $-8(d - 9)$           | f | $-a(a - 3b)$ | g                      | $-7w(1 - w)$ | h | $-q^2(q - r)$  |
| i | $5(g - 3) + 4(g + 2)$ |   | j            | $7(4b - 2) - 3(b - 5)$ |              |   |                |

7. This shape is made up of a rectangle with a right angled triangle on top, (a trapezium).

Write down an expression for the total area of the shape, in terms of  $x$ .



## Exercise 1

### Solving Equations



1. Copy each equation and solve to find the value of  $x$  :-

a  $x + 6 = 11$

b  $x + 1 = 23$

c  $x + 7 = 6$

d  $x + 14 = 14$

e  $x - 7 = 8$

f  $x - 3 = 2$

g  $13 + x = 17$

h  $9 + x = 7$

i  $17 - x = -17$ .

2. Copy each equation and solve to find the value of the letter :-

a  $4x = 12$

b  $5p = 35$

c  $6k = 24$

d  $3h = 33$

e  $4g = 56$

f  $7n = 0$

g  $4m = 144$

h  $6c = 9$

i  $8d = 1$ .

3. Find the value of  $x$  in the following equations (*Set down ALL your working*).

a  $2x + 6 = 14$

b  $5x + 4 = 29$

c  $4x + 7 = 39$

d  $3x + 1 = 31$

e  $4x - 8 = 16$

f  $7x - 11 = 3$

g  $10x - 9 = 41$

h  $3x - 6 = 0$

i  $11x - 7 = 37$

j  $6x - 3 = 12$

k  $8x + 12 = 15$

l  $9x + 1 = 43$ .

## Exercise 2

### Harder Equations



1. Copy and complete :-

\*(You may have been shown  
a different method)

a

$$8x + 1 = 6x + 17$$

$$\Rightarrow 2x + 1 = \dots$$

$$\Rightarrow 2x = \dots$$

$$\Rightarrow x = \dots$$

b

$$7x - 3 = x + 15$$

$$\Rightarrow 7x - \dots = \dots$$

$$\Rightarrow 7x = \dots$$

$$\Rightarrow x = \dots$$

2. Solve these equations :-

a  $5x + 4 = 2x + 19$

b  $3x + 7 = x + 11$

c  $8x + 6 = 7x + 22$

d  $4x - 5 = x + 16$

e  $11x - 1 = 2x + 17$

f  $6x - 4 = 4x + 23$ .

3. These equations are a little "different". Solve :-

a  $5x = 4x + 3$

b  $3x = x + 44$

c  $7x = 4x + 42$

d  $12x = 8x + 1$

e  $15x = 3x + 18$

f  $6x - 2 = 8x$ .

4. Joe bought 5 bags of marbles. Harry bought 3 bags, but he already had 20 loose marbles. They then had exactly the same number of marbles.

a Make up an equation to show this information.

b Solve the equation to determine how many marbles there are in a bag.



**Exercise 3****Solving Equations with Brackets**

1. Solve these equations by multiplying out the brackets first :-

a  $3(x + 4) = 21$

b  $5(x + 2) = 80$

c  $4(x - 3) = 28$

d  $9(x + 2) = 63$

e  $8(x + 7) = 72$

f  $3(x + 3) = 0$ .

2. Solve these equations :-

a  $2(4x + 2) = 20$

b  $3(2x - 1) = 21$

c  $4(4x - 5) = 28$

d  $6(2x - 1) = 10x$

e  $10(3x - 3) = 11x + 8$

f  $7(x + 9) = 6x$ .

3. Solve :-

a  $2(x + 4) - x - 6 = 7$

b  $3(x + 1) + 3x - 8 = 13$

c  $4(x + 2) - 3x = 14$

d  $8(x - 2) + 2x + 6 = 10$

e  $3(3x + 2) + 4(x - 1) = 6x + 9$

f  $2(5x - 4) + 6(x + 1) = 3x + 24$

g  $3(x + 7) - 4(x + 3) = 10$

h  $2(x - 3) - 3(x - 4) = 7$

i  $3(3x + 1) - 2(x - 5) = x + 37$

j  $13(x + 3) - 2(3x + 11) = 2x + 7$ .

**Exercise 4****Solving Equations with Fractions**

1. Copy and complete the following equation :-

$$\frac{1}{2}x + 4 = 11$$

$$2 \times \frac{1}{2}x + 2 \times 4 = 2 \times 11$$

$$\Rightarrow x + \dots = \dots$$

$$\Rightarrow x = \dots$$

2. Solve each of these equations, by first of all multiplying every term by the l.c.m. of all the fractional denominators. This should eliminate all the fractions.

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

b  $\frac{1}{3}x + 1 = 11$

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

d  $\frac{3}{4}x - 12 = 0$

e  $2 + \frac{1}{3}x = 13$

f  $\frac{3}{8}x + 8 = 14$

g  $\frac{2}{3}x + 5 = 15$

h  $\frac{5}{6}x - 8 = 12$

i  $\frac{3}{5}x + \frac{1}{5} = \frac{4}{5}$

j  $\frac{2}{3}x + \frac{1}{2} = 2\frac{1}{2}$

k  $\frac{1}{2}x + \frac{1}{3} = \frac{2}{3}$

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

m  $\frac{1}{2}x - 4 = \frac{3}{4}$

n  $\frac{2}{3}x - 10 = \frac{1}{3}$

o  $\frac{1}{2}x + \frac{2}{3} = \frac{3}{4}$ .

**Exercise 5****Solving Inequalities**

1. Solve these inequalities, leaving your answers in the form  $x > 2$ , etc. :-

a  $x + 3 > 7$

b  $x + 5 < 14$

c  $x - 7 \leq 3$

d  $3x \geq 27$

e  $7x \leq 35$

f  $420 < 20x$ .

2. Solving the following inequalities :-

a  $2x + 1 < 21$

b  $3x + 4 > 13$

c  $5x - 1 < 24$

d  $6x + 5 \geq 35$

e  $9x - 11 \leq 43$

f  $9x - 7 > 74$

g  $\frac{1}{2}x - 2 < 1$

h  $\frac{1}{4}x + 5 \geq 12$

i  $\frac{1}{5}x - 1 > 1$

j  $3(2x - 5) \leq 6$

k  $\frac{1}{2}(4x - 20) > 0$

l  $\frac{1}{4}(x - 11) < 1$

m  $4(4x + 4) < 4x + 4$

n  $7(3x + 1) > 16x + 22$

o  $6x + 3 \leq 3(3x - 4)$ .

**Revisit - Review - Revise 5**

1. Find the value of  $x$  in these equations :-

a  $x + 7 = 11$

b  $7 - x = -2$

c  $2x = 13$

d  $2x + 18 = 0$

e  $6x - 2 = 52$

f  $3x + 10 = 20$

g  $5x - 2 = 4x + 5$

h  $10x + 7 = 8x + 11$

i  $5x - 2 = x + 18$

j  $11x + 1 = 9x + 11$

k  $12x = 3x - 45$

l  $11x - 55 = x$

m  $4(x + 3) = 24$

n  $7(3x - 1) = 14$

o  $3(2 + 5x) = 6$

p  $3(x - 4) - x = -8$

q  $4(x + 1) - 2(x + 3) = 6$

r  $5(2x - 3) = 9x + 8$ .

2. Solve each **inequality**, leaving your answer in the form  $x < 3$ ,  $x \geq 5$  etc.

a  $x - 5 > 13$

b  $4x \geq 56$

c  $3x - 7 < 35$

d  $4(x + 3) \leq 32$

e  $11(2x - 3) < 55$

f  $3x - 5 \geq x + 17$

g  $\frac{1}{2}x \geq 11$

h  $\frac{1}{5}x + 1 \leq 3$

i  $\frac{2}{3}x - 11 > 13$

j  $\frac{1}{2}(2x + 4) \leq 11$

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

l  $\frac{3}{4}(2x - 6) < x$ .

3. I'm thinking of a number ( $x$ ). I multiply it by 3, then add on 12 to it. I then half this and take away 11. I end up with an answer of 10.

a Construct an equation to show this information.

b Solve the equation to determine the number I was thinking of to begin with.

