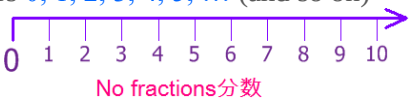
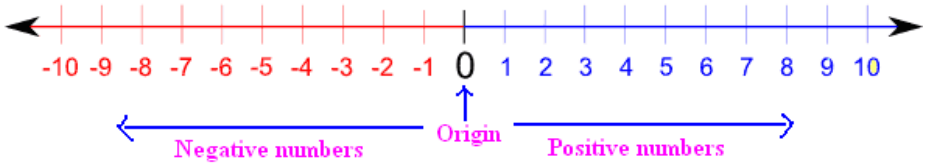
1.1 Integers 整数

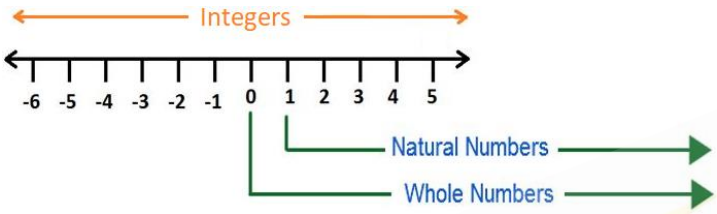
Whole numbers 整数 are simply the numbers 0, 1, 2, 3, 4, 5, … (and so on)



Natural numbers 自然数 are positive integers (whole numbers), 1, 2, 3, 4, 5, …

Integer is a number that is not a fraction, it includes positive and negative whole numbers as well as zero.



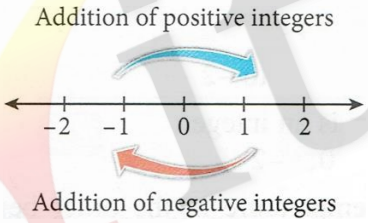


1.2 Basic Arithmetic 算术 Operations 运算 Involving Integers

(a) addition of

(i) positive integers is represented by moving towards the right

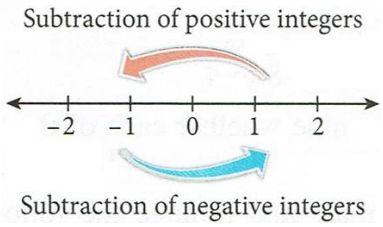
(ii) negative integers is represented by moving towards the left



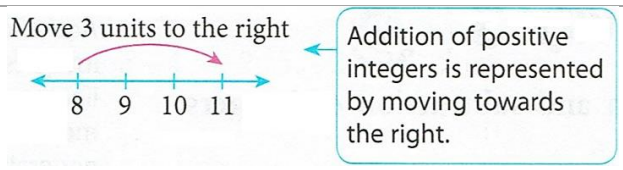
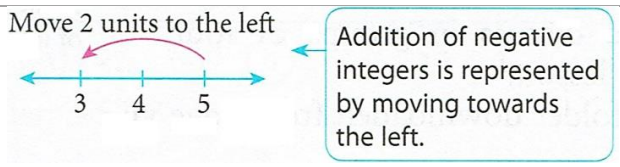
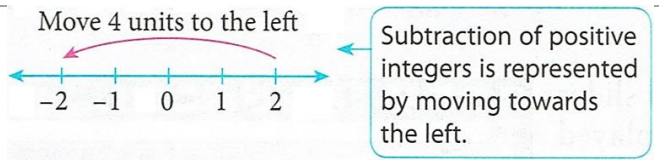
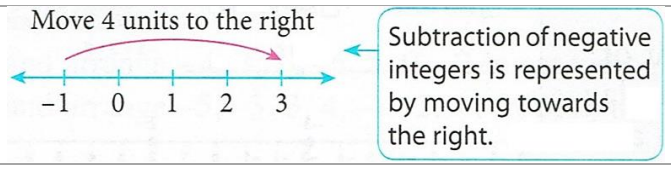
(b) subtraction of

(i) positive integers is represented by moving towards the left

(ii) negative integers is represented by moving towards the right

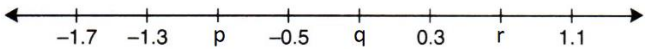


Example:

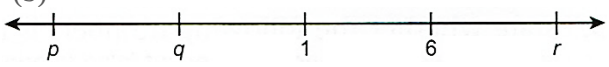
(a) 8 + (+3) = 8 + 3 = 11	
(b) 5 + (–2) = 5 – 2 = 3	
(c) 2 – (+4) = 2 – 4 = –2	
(d) –1 – (–4) = –1 + 4 = 3	

1. Determine the values of p, q and r.

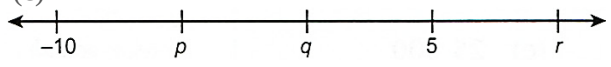
(a)



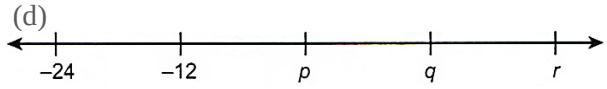
(b)



(c)

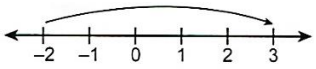


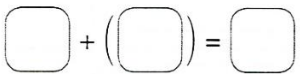
(d)



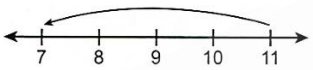
2. Fill in the blanks below based on the following diagram.

(a)



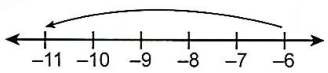


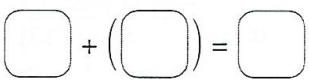
(b)



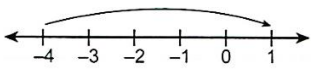
(c)

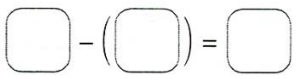
(d)



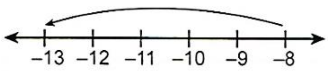


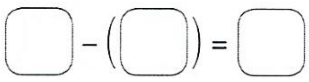
(e)





(f)





3. Solve

(a) $-2 + 8 - 4$

(b) $6 - 11 + 3$

(c) $-7 + 10 - 3$

(d) $-4 + (-5) + 7$

(e) $-13 - (-6) + 5$

(f) $12 - (6 - 11) + 5$

(g) $40 + (-21) - (-8)$

(h) $85 - (+5) - 10$

(i) $-35 - (+6 - 13) + 7$

2 Algebraic Expressions

Algebraic expressions with like terms can be simplified.

(a) $3x + x = 4x$
(b) $8k + 2k + 5k = 15k$
(c) $-4y + 6y = 2y$
(d) $-6m - 2m = -8m$

Algebraic expressions with unlike terms cannot be simplified.

(a) $5x + 2y = 5x + 2y$
(b) $-3p + 3q = -3p + 3q$

1. Simplify:

(a) $4m + 5h + 13 - 2h + 13m - 6$

(b) $5j + 7h + 8 + 8j - 2h + 5 =$

(c) $3k + 6m + 9 – 2m + 4k – 2 =$

(d) $–9m + 6n – 3m + 5 – 7n – 6 =$

(e) $3e – 8p + 9p – 8 + 5e – 5 =$

(f) $–3y – 5d + 4y + 8 + 6d =$

3 Ratios 比率, Rates 率 and Proportions 比重

(a) Mohsin has 600 pear trees and 720 apple trees on his farm. Write the ratio pear trees : apple trees in its simplest form

(b) Amol and Priya deliver 645 parcels in the ratio Amol : Priya = 11 : 4.
Calculate the number of parcels Amol delivers.

(c) Aasha, Biren and Cemal share $640 in the ratio 8 : 15 : 9.
(i) Show that Aasha receives $160.

(ii) Calculate the amount that Biren and Cemal receive.

(d) The Smith family paid $5635 for a holiday in India. The total cost was divided in the ratio travel : accommodation : entertainment = 10 : 17 : 8.
(i) Calculate the money spent on entertainment.

(ii) Show that the amount spent on accommodation was $2737.

(e) In a cycling club, the number of members are in the ratio males : females = 8 : 3.
The club has 342 females. Find the total number of members.

(f) Ali and Mo share a sum of money in the ratio Ali : Mo = 9 : 7. Ali receives $600 more than Mo.
Calculate how much each receives.

(g) The selling price of each photo is $6.
The selling price for each photo is made up of two parts, printing cost and profit.
For each photo, the ratio printing cost : profit = 5 : 3.
Calculate the profit she makes on each photo.