

**NOTES AND ACTIVITIES**

*Note: Please read through the explanations/notes first before attempting the activities since you are working on your own then you will understand it easily.*

**I. RATIO**

When we compare quantities that are in the same unit, we need to use ratio. A ratio represents proportion and is written as two or more quantities with a colon separating them. Because the quantities are of the same kind, there are no units of measurement in a ratio.

Consider a box with 18 pieces of clothing. There are 6 pairs of socks, 3 pairs of pants and 9 shirts. The ratio of socks to pants to shirts can be written as follows:

Pairs of socks : Pairs of pants : Shirts = 6 : 3 : 9

This ratio can be simplified further by dividing all numbers by HCF, the HCF is 3 so the simplified ratio = 2:1:3

**ACTIVITY 1**

1. Write down the ratio described in each situation in its simplest form.
  - a. The farmer needs 84 bales of hay and 68 kg of grain to feed his animals this month.
  - b. At the local kite flying contest there were 132 girls and 242 boys.
  - c. In the parking lot there were 168 sedans, 42 SUVs and 12 taxis.
  
2. Use ratios to solve the following problems.
  - a. The ratio of bees to grasshoppers in a garden is 3 : 4. If there are 144 grasshoppers, how many bees are there?
  - b. A keyboard has white and black keys in a ratio of 7 : 5. How many black keys are there if the keyboard has 56 white keys?
  - c. A molecule contains carbon, hydrogen and oxygen atoms in the ratio of 1 : 3 : 2. If there are 8 oxygen atoms, how many carbon and hydrogen atoms will there be?
  - d. A biscuit recipe uses flour, sugar and butter in a ratio of 9 : 7 : 2 grams. If I have 252g of sugar, how much flour and butter do I need?

**II. SHARING**

We have seen how ratios can be used to present the proportion of one quantity when compared to another. Ratios can also be used to divide a quantity into a set proportion.

**ACTIVITY 2**

A girl has 24 sweets and wants to share them between herself and friends A and B. She decides to share the sweets in the ratio 2 : 3 : 1. How many sweets does each person receive?

**III. ACTIVITY 3**

1. A boy has a bag of 42 oranges to share among himself and four friends. If the boy keeps twice as many oranges as he gives to each friend.
  - a. How many oranges does the boy keep for himself?
  - b. How many oranges does each friend receive?
  
2. Calculate
  - a. Increase 125 in the ratio 6 : 5.
  - b. Decrease 96 in the ratio 3 : 8.

**INTEGERS (REVISION)****Properties of integers**

So far we have been working only with positive whole numbers (including zero). Remember that whole numbers are counting numbers. If we include all the negative numbers, then we are working with integers. Integers are all the positive and negative numbers, including zero, that are not fractions or decimals.

Integers can be represented by the symbol  $Z$ . We can describe integers by using set notation as  $Z = \{-3; -2; -1; 0; 1; 2; 3; \dots\}$ .

The properties that apply to working with whole numbers also apply to working with integers.

Commutative	Changing the order of the numbers in addition or multiplication expressions will not change the answer
-------------	--

property	
Associative property	How the numbers are grouped together in addition or multiplication expressions will not change the answer
Distributive property	Multiplying a number by the total of the numbers in the brackets is the same as multiplying by the individual numbers in the brackets.
Inverse operations	Addition and subtraction are inverse operations. Multiplication and division are inverse operations.

**Counting in integers**

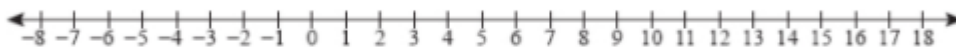
Let's revise how to count with integers, or in other words, increasing or decreasing repeatedly by the same amount. We count forwards by adding the same integer each time and backwards by subtracting the same integer each time.

A number line has regular intervals marked along its length, each number is written below a marking. Numbers increase to the right and decrease to the left when you move along the number line.

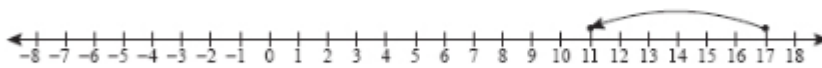
Counting in integers will help you with multiplication and division.

### Examples

Count from 17 to  $-7$  in intervals of 6. How much did you subtract from 17 to get to  $-7$ ? Start by drawing a number line that covers more than the full range you have to count:



Draw a dot above the starting number 17. We are decreasing in intervals of 6, so draw an arc from 17 to 11.



Continue decreasing (moving to the left) in intervals of 6. Stop when you reach the final number  $-7$ .



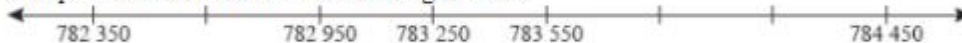
Count backwards in sixes to see how much you had to subtract to get from 17 to  $-7$ . Your answer is 24.

## IV. ACTIVITY 4

- Complete this number line for counting in 50s. How much did you have to add to  $-150$  to get to 200?



- Complete this number line for counting in 300s.



- Draw a number line with 16 markings for counting from  $-98\ 000$  to  $283\ 525$  in  $25\ 435$ s.
- Fill in the missing numbers in each sequence.

- $5\ 364$ ; \_\_\_;  $5\ 382$ ; \_\_\_; \_\_\_;  $5\ 409$ ;  $5\ 418$ ; \_\_\_; \_\_\_
- \_\_\_;  $2\ 318$ ;  $2\ 313$ ; \_\_\_; \_\_\_; \_\_\_; \_\_\_;  $2\ 283$
- $-69$ ; \_\_\_; \_\_\_; \_\_\_;  $-177$ ; \_\_\_; \_\_\_; \_\_\_;  $-285$
- \_\_\_; \_\_\_;  $4\ 155$ ; \_\_\_; \_\_\_; \_\_\_;  $4\ 443$ ;  $4\ 515$ ; \_\_\_
- \_\_\_; \_\_\_;  $-254$ ;  $-155$ ; \_\_\_; \_\_\_; \_\_\_; \_\_\_;  $340$

### Comparing integers

When we compare numbers we are considering the relationship between them. The following three possible relationships and their symbols are shown below.

Symbol	Relationship
<	less than
=	equal to
>	greater than

We write two numbers with the relationship symbol between them. For example:

$2 < 5$  Two is less than five.

$8 = 4 + 4$  Eight is equal to four plus four.

$7 > -3$  Seven is greater than negative three.

Here is a handy way to remember the greater than and less than symbols. If you pretend that the symbol is a greedy mouth, it will always be open towards the larger number!

### Exercise 1.21

State whether the following pairs of numbers are less than, equal to or greater than. Use the symbols <, > and =.

1.  $465 \square 574$
2.  $686 \square 668$
3.  $7 \square -1$
4.  $243 \square 2403$
5.  $94 \square -100$

6.  $-644 \square -884$

### Ordering integers

When we order integers the numbers either increase or decrease from start to finish. Numbers can be arranged in ascending or descending order. Numbers are put into order according to place value.

Consider this set of numbers: 3; -7; -26; 21; 17

Ascending order goes from small to large: -26; -7; 3; 17; 21

Descending order goes from large to small: 21; 17; 3; -7; -26

### Exercise 1.22

1. Copy the numbers and rewrite them in ascending order.
  - a) 92; 395; 56; 161; 506
  - b) -150; 0; -105; -871; -510
  - c) 12; -116; -48; 29; -2
  - d) -9; -100; 0; 9; -10; 15
2. Copy the numbers and rewrite them in descending order.
  - a) 740; -301; -800; 276; -427
  - b) 162; -63; 244; 101; -102
  - c) -102; 4; -68; -3; -17
  - d) -13; 31; 14; -7; -28

We will continue with integers in the next worksheet that will be uploaded, please revise and master everything from integers so that you do not encounter challenges as we continue.

**THANK YOU ENJOY.....**