Shatin Pui Ying College (2020-2021)

S1 Mathematics

Summer Vacation Assignment

Chapter 0: Basic Mathematics

Name: _____ ( ) Class: S.1_____

Instructions:

1) Read Chapter 0 of the textbook (Mathematics in Action 3rd Edition Book 1A) as instructed.
2) Put all your answers in the spaces provided.
3) All steps must be shown clearly in your calculations.
4) You will have **a test on Chapter 0 in the first cycle** of the school term. The exact date will be announced in early September.

Fundamental Arithmetic

📖 Read Page 0.2 – 0.5

I) Learning objectives:

- ✓ Learn the concepts of natural numbers, whole numbers, even numbers and odd numbers.
- ✓ Revise the four basic arithmetic operations and describe expressions involving these operations by words.
- ✓ Learn how to perform mixed operations with / without brackets.

II) You are going to learn…

A) Numbers

(i) _____ numbers (1, 2, 3, 4,…) are used for counting.

(ii) _____ numbers include 0 and all natural numbers.

(iii) _____ numbers are whole numbers that are ***NOT*** divisible by 2.

(iv) _____ numbers are whole numbers that are divisible by 2.

B) The four basic arithmetic operations

Symbol	Operation	Result
e.g. +	addition	sum
−		
×		
÷		

Descriptions of operations

Expression	Descriptions
$3+1$	(i) _____ (ii) _____
$6-2$	(i) _____ (ii) _____
4×5	(i) _____ (ii) _____
$10\div5$	(i) _____ (ii) _____

Exercise A

1. Write down the first six
   (a) natural numbers, (b) whole numbers,
   (c) odd numbers, (d) even numbers.

2. Find the result of each of the following.
   (a) Add 25 to 12. (b) Divide 54 by 9.
   (c) Multiply 12 by 4. (d) Subtract 8 from 34.

3. Find the result of each of the following.

(a) 22 minus 13.
(b) 27 times 2.
(c) 37 plus 15.
(d) 0 is divided by 13.

4. Find the result of each of the following.

(a) The sum of 3 and 14.
(b) The difference of subtracting 9 from 12.
(c) The quotient of dividing 45 by 5.
(d) The product of 13 and 5.
(e) Divide 45 by 5 and the quotient is added to 9.
(f) Multiply 4 by 6 and the product is subtracted from 48.

5. Find the value of each of the following expressions.

(a) $24+38-36$

(b) $64\div8\times2$

(c) $9+5\times8$

(d) $55-35\div5$

(e) $39-(23+8)$

(f) $(36+24)\div(36-24)$

(g) $9\times3-12\div4$

(h) $6+6\times6-6\div6$

6. (a) Write down the smallest and the largest odd numbers between 10 and 30.
   (b) Find the sum of the two numbers obtained in (a).

7. (a) Write down all the even numbers between 11 and 15.
   (b) Find the product of the numbers obtained in (a).

8. Use the symbols '+', '−', '×', '÷' or '( )' to complete the following expressions.

(a) 5 5 5 5 5 = 0

(b) 5 5 5 5 5 = 1

(c) 5 5 5 5 5 = 2

(d) 5 5 5 5 5 = 3

(e) 5 5 5 5 5 = 4

(f) 5 5 5 5 5 = 5

(g) 5 5 5 5 5 = 6

(h) 5 5 5 5 5 = 7

(i) 5 5 5 5 5 = 8

(j) 5 5 5 5 5 = 9

0.2 L.C.M. and H.C.F.

📖 Read Page 0.7 – 0.10

I) Learning objectives

- ✓ Revise the concepts of multiples and L.C.M.
- ✓ Revise the concepts of factors and H.C.F.

II) You are going to learn…

A) Multiples

What are multiples?

_____

_____

Write down the first four multiples of 8.

_____

B) L.C.M.

The full name of L.C.M. is L_____ C_____ M_____.

The L.C.M. of the given numbers can be found by listing out the multiples of the numbers.

e.g. Find the L.C.M. of 12 and 20.

Multiples of 12: _____

Multiples of 20: _____

∴ The L.C.M. of 12 and 20 is _____.

C) Factors

What is "a factor of a given number"?

_____

_____

List out all the factors of 18.

_____

D) H.C.F.

The full name of H.C.F. is H_____ C_____ F_____.

The H.C.F. of the given numbers can be found by listing out the factors of the numbers.

e.g. Find the H.C.F. of 48 and 72.

Factors of 48: _____

Factors of 72: _____

∴ The H.C.F. of 48 and 72 is _____.

Exercise B

1. Write down the first four multiples of
   (a) 6, (b) 8,
   (c) 12, (d) 21.

2. Write down all the factors of
   (a) 16, (b) 28,
   (c) 75, (d) 96.

3. Find the first three common multiples of 6 and 9.

4. Find all the common factors of 24 and 40.

5. (a) Find the sum of the 1st, 3rd, and 6th multiples of 13.
   (b) Find the difference between the 4th and 7th multiples of 22.

6. Find the H.C.F. of each of the following pairs of numbers.

(a) 18 and 22 (b) 57 and 63

7. Find the L.C.M. of each of the following pairs of numbers.

(a) 18 and 30 (b) 20 and 35

8. Find the H.C.F. and L.C.M. of 42 and 70.

9. Find the H.C.F. and L.C.M. of 8, 28 and 40.

10. Two light houses flash their lights every 20 seconds and 25 seconds respectively. Given that they flash light together at 7:00 p.m., when will they next flash together?

11. A rectangular card measuring 80 cm by 56 cm is cut into square cards of the same size so that the whole rectangular card is used up. Find
    (a) the greatest possible length of each side of the square cards,
    (b) the total number of pieces of square cards that can be obtained.

0.3 Fractions and Decimals

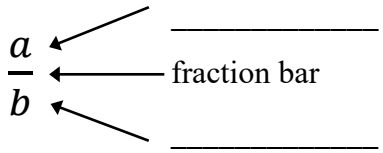
📖 Read Page 0.12 – 0.16

I) Learning objectives

- ✓ Revise different types of fractions.
- ✓ Revise how to expand or reduce fractions.
- ✓ Revise the conversion between decimals and fractions.

II) You are going to learn…

A) Types of fractions



Situation	Type of fraction
$a < b$	
$a \geq b$	

What is mixed fraction?

B) Expanding and Reducing a Fraction

To expand a fraction, we can _____

To reduce a fraction, we can _____

After expanding or reducing a fraction, the value of the fraction is _____.

C) <u>Conversion between fractions and decimals</u>

Convert 0.72 into a fraction.

Convert $2\frac{2}{5}$ into a decimal.

Exercise C

1. Convert the following mixed fractions into improper fractions.

(a) $3\frac{5}{6}$ (b) $10\frac{2}{13}$

2. Convert the following improper fractions into mixed fractions.

(a) $\frac{112}{9}$ (b) $\frac{105}{12}$

3. Convert the following decimals into fractions.

(a) 0.125 (b) 13.64

4. Convert the following fractions into decimals.

(a) $\frac{12}{25}$ (b) $2\frac{19}{20}$

5. Arrange the fractions $\frac{2}{3}$, $\frac{3}{5}$ and $\frac{7}{9}$ from the smallest to the largest.

6. Arrange the fractions $\frac{5}{3}$, $\frac{17}{10}$ and $\frac{42}{25}$ from the largest to the smallest.

0.4 Arithmetic Operations of Fractions and Decimals

📖 Read Page 0.19 – 0.24

I) Learning objectives

- ✓ Revise how to perform four basic operations of fractions and decimals.

Exercise D

1. Calculate

(a) $\frac{3}{7}+\frac{6}{7}$,

(b) $3\frac{2}{7}+\frac{4}{7}$.

2 Calculate

(a) $6-2\frac{5}{7}$,

(b) $4\frac{1}{7}-2\frac{6}{7}$.

3 Find the value of each of the following expressions.

(a) $\frac{1}{2}+\frac{3}{7}$

(b) $\frac{7}{12}-\frac{1}{3}$

(c) $1\frac{2}{3}+\frac{5}{12}$

(d) $1\frac{7}{10}-\frac{1}{5}$

4. Calculate

(a) $\frac{2}{15} \times \frac{3}{5}$

(b) $\frac{2}{7} \times 1\frac{3}{4}$

(c) $\frac{9}{24} \div \frac{7}{12}$

(d) $2\frac{7}{10} \div \frac{3}{5}$

5. Find the value of each of the following expressions.

(a) $14 \div \frac{21}{25} \times \frac{18}{35}$

(b) $\frac{8}{3} \div \frac{4}{9} \div \frac{12}{5}$

6. Find the value of each of the following expressions.

(a) $3\frac{1}{2}+4\frac{3}{5}-7\frac{3}{10}$

(b) $\frac{15}{32}\div 5\frac{5}{6}\times 2\frac{1}{3}$

(c) $4\frac{5}{18}-10\times\frac{5}{12}$

(d) $1\frac{7}{8}+\frac{3}{5}\div\frac{12}{35}$

7. Calculate

(a) $4\frac{1}{6}-\left(2\frac{2}{3}-1\frac{1}{12}\right)$

(b) $\left(\frac{1}{4}+\frac{2}{5}\right)\times 1\frac{9}{26}$

(c) $\left(\frac{2}{5}+\frac{7}{10}\right)\div\left(8-\frac{2}{3}\right)$

(d) $\left(6\frac{3}{5}-4\frac{1}{2}\right)\div\left(\frac{3}{5}\times 2\frac{2}{3}\right)$

8. Find the value of each of the following expressions.

(a) $3.9+2.6$ (b) $7.6-4.28$

(c) 4.5×1.2 (d) $12.96\div3.6$

9. Find the value of each of the following expressions.

(a) $14.2-2.1\times3.5$ (b) $(8.96+8.08)\div4.8$

10. A bottle contains $\frac{3}{4}$ L of milk. Bobby drinks $\frac{3}{5}$ of the milk. Find the volume of milk left in the bottle.

11. Mary has piece of green rope and a piece of brown rope. It is known that the green rope is $2\frac{4}{7}$ m long and that the brown rope is 0.4m shorter than the green rope. Find the total length of the two ropes.

12. Sunny wants to buy the following things from a supermarket:

Item	Price ($)
5 packs of potato chips	44.5
2 bottles of coke	25.6
1 box of candies	11.5

(a) Find the price of
   (i) one pack of potato chips,
   (ii) one bottle of coke.

(b) Sunny has $90. If he buys all those things listed in the table, how much is left?

Summary of Chapter 0

Try to construct a mind-map to summarize what you learn in Chapter 0.