ASBAT EDUCATIONAL CONSULT

MATHEMATICS
LESSON NOTES TERM 1 2024
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P.6

PRIMARY SIX MATHEMATICS LESSON NOTES FOR TERM I 2024

SET CONCEPTS

REVIEW OF THE P.5 WORK

- **Meaning of a set and an element of a set.**
- **Naming sets.**
- **Symbols used in sets.**
- **Types of sets.**
- **Intersection, union and difference of sets and universal sets.**
- **Complement of sets and shading regions of complement.**
- **Finding number of subsets and proper subsets.**
- **Simple application of sets.**

Week Two lesson 1 and 2

APPLICATION OF SUBSETS

Finding the number of elements when given the number of subsets or proper subsets

Examples

1. Given that set A has 16 subsets. How many members has set A?

$2^n =$ N$^{o.}$ of subsets

$2^n = 16$

$2^n = 2^4$

$N = 4$

2	16
2	8
2	4
2	2
	1

Set A has 4 elements $16 = 2^4$

2. Given that set Z has 63 proper subsets. Find the number of elements in set Z.

$2^n - 1 =$ N$^{o.}$ of subsets

$2^n - 1 = 63$

$2^n - 1 + 1 = 63 + 1$

$2^n = 64$

$2^n = 2^6$

$N = 6$

2	64
2	32
2	16
2	8
2	4
2	2
	1

Set Z has 6 elements $64 = 2^6$

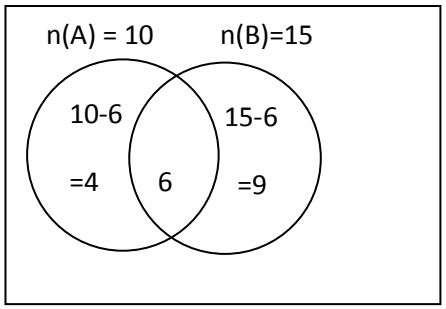
MK mtcs bk 7 page 2 – 4, MK mtcs bk 6 page 16, Fountain Primary mtcs bk 6 page 13 – 14.

Week Two lesson 3 and 4

Drawing and representing information on a Venn diagram

1. Given that n (A) = 10, n (B) =15 and n (AnB) = 6.

   Represent the above information on a Venn diagram.



a) Find

i) n(A – B)
= 10 – 6
= 4

b) Find;

i) n(B-A)

= 15 – 6

= 9

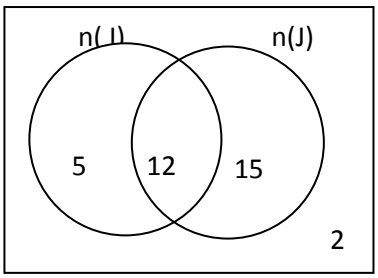
c) Find $n(AnB)^1$

= 4 + 9

= 13

Mk Primary Mathematics Bk 6 page 23.

2. Study the Venn diagram below and use it to answer the questions that follow.



Find

a) n(I)

= 12 + 5

= 17

b) n(J)

= 12 + 15

= 27

c) $n(InJ)^1$

= 5 + 15

= 20

MK mtcs Bk 6 page 25.

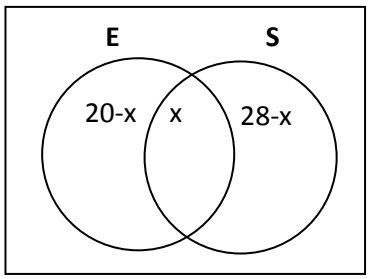
Week Two lesson 5 and 6

Application of sets

1. In a class of 50 pupils, 20 like English (E), 28 like Science (S), x like both subjects while 7 do not like any of the two subjects.

a) Represent the above information on the Venn diagram below.

$n(\varepsilon)=50$



b) How many pupils like both subjects?

$7 + 20 - x + x + 28 - x = 50$

$27 + 28 - x = 50$

$55 = x = 50$

$55 - 55 - x = 50 - 55$

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

$X = 5$

c) Find the number of pupils who like only one subject.

$= (20 - x) + (28 - x)$

$= (20 - 5) + (28 - 5)$

$15 + 23$

38 pupils

MK mtcs Bk 6 page 29, Understanding mtcs Bk 6 page 14, Fountain Primary mtcs Bk 6 page 16.

Week three lesson 1 and 2

Probability

This is how likely something is to happen. It's the chance of an event or something happening.

Examples

1. Given that uncle Tom will visit us next week. What is the probability that he will visit on a day starting with letter "T"?
   Sample space = {Monday, Tue, Wed, Thur, Fri, Sat, Sun}
   Expected outcomes = {Tue, Thur}
   Probability (T) = $\frac{n(possibleoutcome)}{n(samplespace)}$
   Or $\frac{n(Desiredchance)}{Totalchance}$
   Probability = $\frac{2}{7}$

2. If a coin is tossed at once. What is the probability of a Head showing up?

   Probability (H) = $\frac{\text{n (Desired outcome)}}{\text{Total outcome}}$
   $= \frac{1}{2}$

3. If a die is tossed once, what is the probability that a number greater than 2 will show up?
   Sample space = {1, 2, 3, 4, 5, 6}
   Numbers greater than 2 = {3, 4, 5, 6}
   Probability (H) = $\frac{\text{n (Desired outcome)}}{\text{Total outcome}}$
   $= \frac{4}{6}$

Mk Bk 6 page 30, MK Bk 7 page 191, fountain Primary mtcs Bk 6 page 20.

Week Three lesson 3

Application of probability

Examples

1. The probability of picking a red pen out of a bag is $\frac{3}{5}$. What is the probability of picking a blue pen from the same bag?
   Probability =1 - $\frac{3}{5}$

$$= \frac{5}{5} - \frac{3}{5}$$

$$= \frac{5-3}{5}$$

Probability (Blue pen) = $\frac{2}{5}$

2. In a bag there are 3 red cards, 4 green cards and 5 Blue cards. What is the probability of picking a blue card from the bag?

$$\text{Probability} = \frac{n(Desiredchance)}{Totalchance}$$

$$= \frac{5}{(3+4+5)}$$

Probability (Blue) = $\frac{5}{12}$

Week Three lesson 4

WHOLE NUMBERS

REVIEW OF P.5 WORK

- Place values and values of whole numbers up to millions.
- Writing figures in words up to millions and vice versa.
- Rounding off whole numbers.
- Rounding off decimals.
- Roman numerals up to 2000.

Week Three lesson 5, 6 and week Four1and 2

Expanding numbers using powers or exponents.

Examples.

1. Expand 345692 using powers of base ten

$$(3x10^{5)} + (4x10^{4)} + (5x10^{3)} + (6x10^{2)} + (9x10^{1)} + (2x10^{0})$$

2. Using powers of base ten expand 475.

$$(4x10^{2}) + (7x10^{1}) + (5x10^{0})$$

3. Find the expanded number when given $(9x10^{4}) + (1x10^{3}) + (7x10^{2}) + (3x10^{1}) + (5x10^{0})$

(9x10x10x10x10) + (1x10x10x10) + (7x10x10) + (3x10) + (5x1)

90000 + 1000 + 700 + 30 + 5

91735

Week Four lesson 3 and 4

OPERATION ON WHOLE NUMBERS
REVIEW OF P5 WORK

- **Review on addition, subtraction, multiplication and division of whole numbers.**

Week four Lesson 5,6 and Week Five lesson 1.

BASES
Addition and subtraction of Bases

1. Add

232_{four}

$+\ 123_{four}$

2. Add

563_{eight}

$+\ 347_{eight}$

3. Subtract

212_{three}

-121_{three}

4. Subtract

333_{five}

$-\ 244_{five}$

Week Five lesson 2

Changing from one base to another
Examples

1. Change 112_{three} to decimal base or base ten.

$1^{2}\quad 1^{1}\quad 2^{0}{}_{three}$

$(1x3^{2}) + (1x3^{1}) + (2x3^{0})$

$1x3x3 + 1x3 + 2x1$

$9 + 3 + 2$

14_{ten}

OR 112_{three}

- Ones
- Threes
- Three threes

$(1x3x3) + (1x3) + (2x1)$

$9 + 3 + 2$

14_{ten}

2. Convert 212_{four}

From base four ⟶ Base ten ⟶ Base five

212_{four}

- Ones
- Fours
- Four fours

$(2x4x4) + (1x4) + (2x1)$

$32 \quad + \quad 4 \quad + \quad 2$

$= 38_{ten}$

Base	N	Rem
5	38	3
5	7	2
5	1	1
	0	

123_{five}

Week Five lesson 3 and 4

Finding the unknown base

1. Find the value of b

$21_x \quad = \quad 13_{ten}$

$21_x \quad = \quad 13_{ten}$

Ones

b

$(2xb) + (1x1) = 13$

$2b \quad + \quad 1 \quad = 13$

$2b + 1 - 1 \quad = 13 - 1$

$\frac{2b}{2} = \frac{12}{2}$

$b = 6$

$\therefore$ b is base six

2. Calculate the value of y in $32_y = 43_{five}$

32_y (Ones, y) $\quad 43_{five}$ (ones, fives)

$(3xy) + (2x1) \quad = \quad (4x5) + (3x1)$

$3y \quad + 2 \quad = \quad 20 \quad + 3$

$3y \quad + 2 \quad = \quad 23$

$3y + 2 - 2 \quad = 23 - 2$

$\frac{3y}{3} \quad = \quad \frac{21}{3}$

$y = 7$

$\therefore$ y is base seven

Mk mtcs Bk 7 page 37.

Fountain primary maths Book 6 page 231

Week Five lesson 5 and 6

Finite system.

Application of finite system.

Standard or Scientific notation

- The standard form leaves only one digit to the side of the whole numbers.
- That one digit must be a counting number.
- The new decimal fraction should be multiplied by the power of 10.
- When the standard form is worked out, it should give the original number.

Examples

1. Express 1489 in standard or scientific notation.

   $1\ 4\ 8\ 9 = 1.489 \times 10^3$

2. Express 43006 in scientific notation.

   $4\ 3\ 0\ 0\ 6 = 4.3006 \times 10^3$

3. Write 0. 0 0 4 5 3 in standard form.

   $0.00453 = 4.53 \times 10^{-3}$

4. What is 0.8945 in scientific notation?

   $0.8945 = 8.945 \times 10^{-1}$

MK mtc Bk 7 page 50.

Week six lesson1

INDICES

Laws of indices

Given a^b a is the base

b is the power / index / exponent

NB 1: The first law of Indices

The first Law of indices states that when multiplying powers of the same base, keep the base constant and add the powers.

Examples

1. Simplify $4^2 \times 4^5$

   $= 4^2 \times 4^5$

   $= 4^{(2+5)}$

   $= 4^7$

2. Simplify $P^3 \times P^6$

   $= P^3 \times P^6$

   $= P^{(3+6)}$

   $= P^9$

NB 2: The second law of Indices.

The second Law of indices states that when dividing powers of the same base, keep the base constant and subtract the powers.

1. Simplify $6^7 \div 6^3$

$= 6^{7-3}$

$= 6^4$

2. Simplify $12^9 \div 12^7$

$= 12^{9-7}$

$= 12^2$

Week Six lesson 2 and 3

NB 3: The law of Indices.

The third Law of indices states that when equating power of the same base, we ignore the base and equate the powers.

Examples

1. Solve for x in

$2^x = 2^5$

$\therefore x = 5$

2. Solve for y in $3^y = 27$

$3^y = 3^3$

$y = 3$

3	27
3	9
3	3
	1

$27 = 3^3$

3. Solve $2^x \times 3^3 = 108$

$2^x \times 3 \times 3 \times 3 = 108$

$2^x \times \frac{27}{27} = \frac{108}{27}$

$2^x = 4$

$2^x = 2^2$

$x = 2$

MK mtcs Bk 6 page 7, 53 - 54

MK mtcs Bk 6 page 95

Week Six lesson 4 and 5

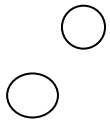
NUMBER PATTERNS AND SEQUENCES

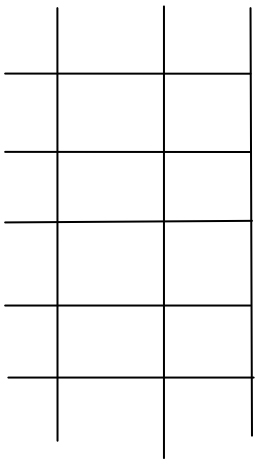
REVIEW OF P.5

- **Types of numbers.**
- **Squares and square roots of numbers.**
- **L.C.M and G.C.F of numbers.**
- **Representing prime factors on the Venn diagram**
- **Finding the unknown values on the Venn diagram**

Week Six lessons 6 and Week Seven lesson1 and 2

$\frac{6xLCM}{6}$ $\frac{60}{6}$





$\frac{1}{60}$

$\frac{120}{60}$

$$\frac{3a}{3} \quad \frac{90}{3}$$

$$\frac{4y}{4} \quad \frac{160}{4}$$

$$\frac{3x}{3} \quad \frac{63}{3}$$

$$\frac{3y}{3} \quad \frac{60}{3}$$

$$\frac{3n}{3} \quad \frac{24}{3}$$
