BHUTAN COUNCIL FOR SCHOOL EXAMINATIONS AND ASSESSMENT

COMPETENCY BASED ASSESSMENT TEST

SUBJECT: MATHEMATICS **TOTAL MARKS: 100**

CLASS: VI **TIME: 2 HRS 15 MIN**

Name: …….. **Roll No**:…….

School: …… **Section**: ……

Dzongkhag / Thromde:…….. **Gender**: ……..

Points to Remember

1. *First write your **name, roll number, section, gender, name** of your school and **Dzongkhag** in the space given above.*
2. *Read the questions carefully. You must answer all questions.*
3. *Do not write in the **first 15 minutes**. This time is to be spent in reading the questions*
4. *Write your answers to each question in the given space. The mark for each question is given in the brackets.*
5. *You have **TWO** hours to finish the test. Make good use of the given time.*

For teacher's use only

MCQ	i	ii	iii	iv	v	vi	vii	viii	ix	x	xi	xii	xiii	xiv	xv	Total	Signature
Options																30	
Marks Scored																	

Question	2a	2b	3	4	5a	5b	6a	6b	7a	7b	8a	8b	9a	9b	Total	Signature
Marks	3	2	5	5	3	2	3	2	3	2	3	2	3	2	40	
Marks Scored																

Question	10a	10b	11a	11b	12a	12b	13a	13b	14a	14b	15a	15b	Total	Signature
Marks	2	2	3	2	2	3	2	3	2	3	4	2	30	
Marks Scored														

SECTION A

Answer ALL Questions.

Direction: *Each question in this session is followed by **FOUR** alternatives: **A, B, C, D**. Choose the correct alternative and **circle** it. Do not circle more than **ONE** alternative. If there are more than one choice circled, **NO** score will be awarded.*

Question 1 **[15×2=30 Marks]**

i. Find the correct diagram for $\frac{25}{8}$.

A

B

C

D

ii. The difference between $\frac{2}{5}$ - $\frac{1}{4}$ is

A $\frac{3}{9}$.

B $\frac{13}{20}$.

C $\frac{3}{20}$.

D $\frac{20}{3}$.

iii. The correct statement for a pair of fractions below is

A $\frac{5}{6} > \frac{3}{7}$.

B $\frac{2}{4} < \frac{5}{10}$.

C $\frac{3}{5} < \frac{1}{3}$.

D $\frac{3}{4} = \frac{3}{6}$.

iv. Describe the rotational symmetry of regular hexagon.

A 6
B 7
C 8
D 9

v. A perpendicular bisector bisects a straight line forming an angle of

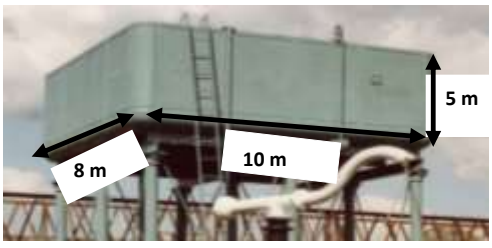
A 90º.
B 60º.
C 45º.
D 30º.

vi. Sonam Wangmo has Nu 250.50 in her bank account. Her sister has twice as much money in the bank. How much money does her sister have?

A Nu 500
B Nu 501
C Nu 510
D Nu 600

vii. How much kilo liters of water can the tank given below hold? *[If 1 m^3=1kL]*

A 200 kL
B 300 kL
C 400 kL
D 500 kL



viii. Tashi completes the distance of 180 km from Thimphu to Phuntsholing in 6 hours while traveling by car. He takes a break for an hour in Chukha. How much distance will be covered if he travels for 8 hours non-stop?

A 1440 km
B 1080 km
C 288 km
D 240 km

ix. The Penden Cement Plant in Samtse Dzongkhag produces about 150 tonnes of cement per day. If the cement is packed into 50 kg bags, how many bags would that be?

A 3 bags
B 30 bags
C 300 bags
D 3000 bags

x. Paint is made using different proportions of **Green** and **White**. Which paint is the darkest?

	Green part	White part
A	3	2
B	3	4
C	2	4
D	6	9

xi. A student eats one complete apple. What percent would you use to describe this statement?

A 25%
B 50%
C 70%
D 100%

xii. The population of Bhutan at present is about 750,000. It is expected to increase by 100,000 after every 10 years. What will be the estimated population in the year 2037?

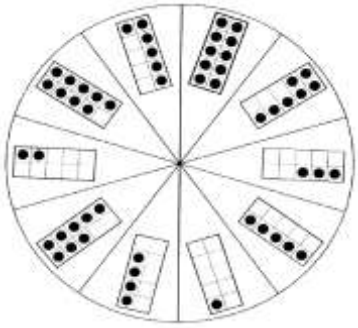
A nine hundred and fifty thousand
B eight hundred and fifty thousand
C six hundred and fifty thousand
D one million and fifty thousand

xiii. The next number after one million is

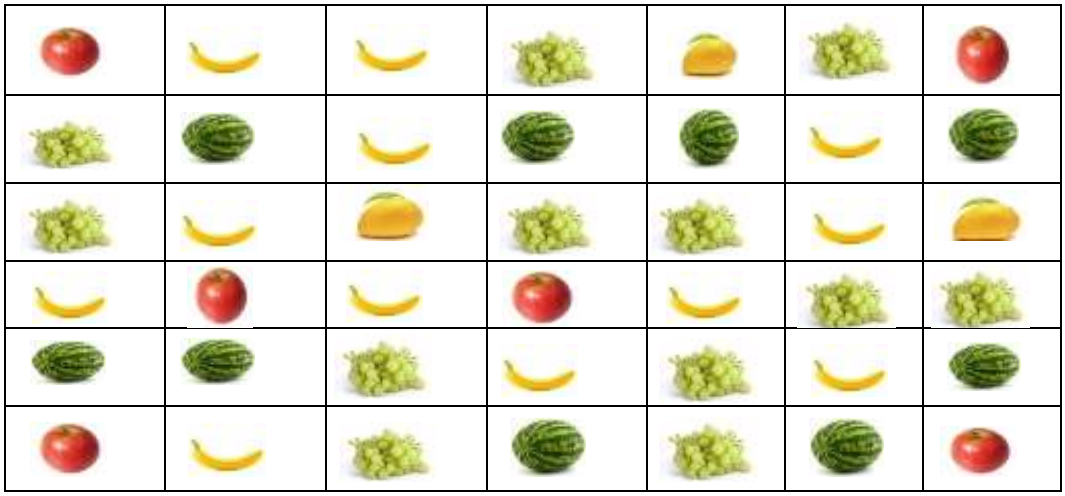
A 2,000,000.
B 1,000,001.
C 10,000,001.
D 100,000,001.

xiv. What is the theoretical probability of spinning the prime number from the spinner given below?

A $\frac{5}{10}$
B $\frac{4}{10}$
C $\frac{3}{10}$
D $\frac{2}{10}$



xv. The choices of favourite fruits of 42 students in a class are given below:



Which of the **two fruits** are **equally liked** by the students?

A	banana	apple
B	water melon	orange
C	grapes	mango
D	grapes	banana

SECTION B

(Answer ALL questions in this section and write it down in the space provided)

Question 2 **[5]**

a. The table given below shows the record of marks obtained by Pema in a weekly test conducted for three different subjects. Complete the missing values. **[$\frac{1}{2}$ ×6 = 3]**

Subjects	Ratio	Percent	Fraction
Math	25 : 50	……..	……..
English	……..	45%	…….
Dzongkha	……	…….	$\frac{3}{4}$

b. Based on the above observation which subject is Pema good at? How do you know? **[2]**

Question 3 **[5]**

Based on the knowledge of 2-D transformation, circle **YES** or **NO** against each statement in the given table.

Sl. No	Statement	
i.	A $\frac{1}{4}$ turn in **CW** around the turn centre creates 270˚.	YES / NO
ii	The image and original shapes are congruent in rotation.	YES / NO
iii	A $\frac{1}{2}$ turn makes 180˚ at the turn centre.	YES / NO
iv	A tessellation is when we cover a surface with a pattern of flat shapes so that there are overlaps.	YES / NO
v	In reflection, the image and original shapes face each other.	YES / NO

Question 4 **[5]**

The following are the marks obtained by Class VI student in Mathematics out of 100.

Math Marks	**20, 40, 25, 30, 12, 41, 20, 18, 56, 70, 64, 80, 90, 43, 37**

Match each item in **Column A** against its correct item in **Column B** based on the above data. Rewrite the correct pairs in **Column C**. **[5]**

Column A	**Column B**	**Column C**
i. The mean mark	a. increase	i…….
ii. What will happen to the mean, if a number less than mean is removed?	b. 20	ii……..
iii. The median mark	c. decrease	iii…….
iv. What will happen to the median if the largest and the smallest number from the data is removed?	d. 40	iv…….
v. The mode mark	e. 43	v……
	f. 645	
	g. remain same	

Question 5 **[5]**

a. Nima has written 340,047,006 in expanded form as given below. **[3]**

340,047,006 = 300,000,000 + 4,000, 000 + 40,000 + 7,000 + 6

Has she written it correctly? Give a reason to support your answer.

b. Describe **two** different situations where (**- 4**) is used in day to day life? **[2]**

Question 6 **[5]**

a. Pema is a diabetic patient. On the advice of a doctor, she carries out different types of exercises as given in the table below. **[3]**

Day	Types of Exercise	Time (h)
Monday	swimming	$\frac{2}{5}$
	walking	$\frac{1}{3}$
Tuesday	jogging	$\frac{1}{4}$
	cycling	$\frac{2}{3}$

i) How much time does Pema spend exercising each day? Show your work. **[2]**

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ii) On which day does she exercise more? How do you know? **[1]**

b. Calculate $4.8 - 2.4 \times 2 + 9.1 \div 1.3$ **[2]**

Question 7 **[5]**

a. The mass and the price of 4 different chips are given in the table below. **[3]**

Types of Chips	Price in (Nu)	Mass (kg)
 Potato chips	15	0. 25 kg
 Banana chips	20	0.38 kg
 Maize chips	10	0.19 kg
 Happy chips	35	0.26g

i) Which 2 chips will add up to 0.64 kg? **[1]**

ii) If you have Nu 25, which two chips can you buy? How do you know? **[2]**

b. Complete the statement with operation signs and brackets. **[2]**

10 ☐ 2 x 1.2 ☐ 9 = 5.4

Question 8 **[5]**

a. Kinley claims that when we **double** the dimensions of a cube, the volume **increases** by 8 times, whereas Maya claims that the volume gets **doubled.** Who do you think is correct? Explain using diagrams. **[3]**

b. The different times given in the table below shows Thimphu city bus that departs from Olakha every day. Arrange them from the earliest to the latest. **[2]**

16:32	9:30 a.m.	15:23	07:30	5:20 p.m.

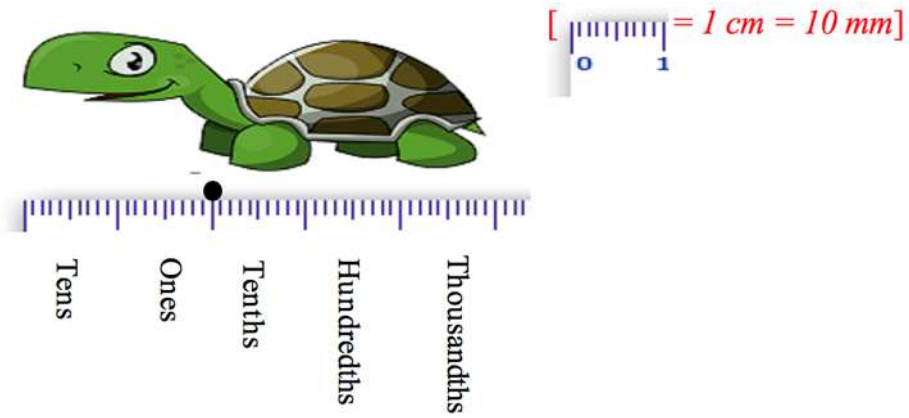
Question 9 **[5]**

a. 5 swimmers entered into a competition. 4 of them had their turns. Their timings were 9.8 min, 9.75 min, 9.79 min and 9.81 min. What timing must the 5^{th} swimmer get to win the competition? **[3]**

b. Write a word problem that could be solved by using 5 x ☐ = 2.5 and solve it. **[2]**

Question 10 **[4]**

a. Turtle is one of the slowest reptiles. Use the figure below to answer the questions. **[2]**



i) On which place on the scale does the end of the tail fall? **[1]**

ii) How much distance will be covered when the tail of the turtle reaches the tip of the nose? **[1]**

b. The length of a football ground is 110 m and the length of a volleyball court is 20 m. About how many times is the football ground longer than the volleyball court? **[2]**

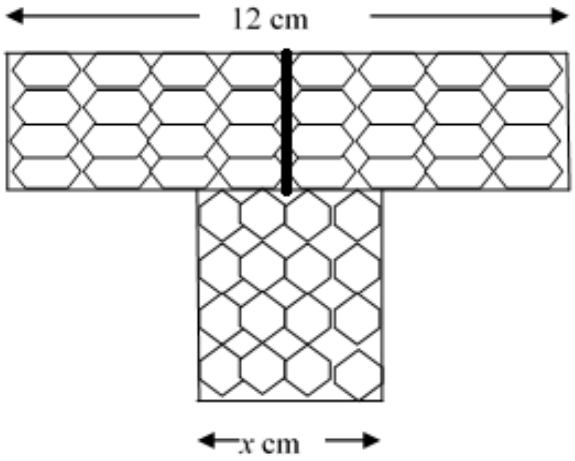
Question 11 **[5]**

a. Draw any **two polygons** with the same **perimeter** but different **area**. Show your work using diagrams. **[3]**

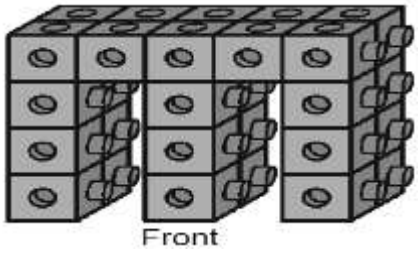
b. A rectangular prism container holds about 1320 mL of water. Its length, width and height are consecutive whole numbers. One of its dimensions is 11 cm. What are the dimensions of the prism? **[2]**

Question 12 **[5]**

a. Here is a T-shape foot path made from 3 identical rectangles. The area of the shape is 90 cm^2. What is the value of x? **[2]**



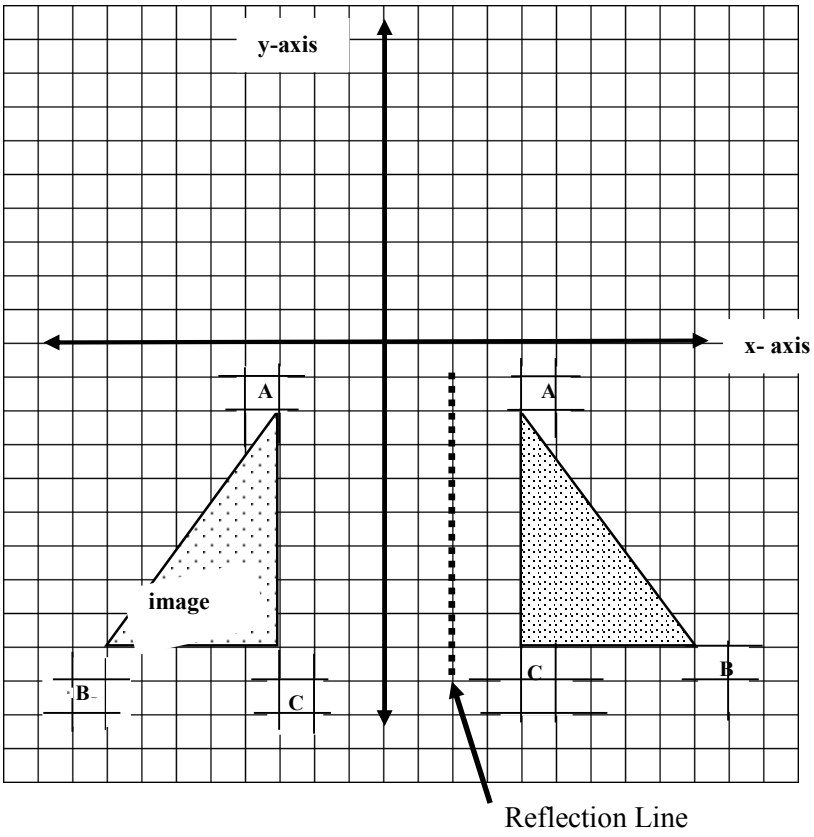
b. Draw the **front**, **top** and **back** face view of this cube structure **[3]**



Question 13 **[5]**

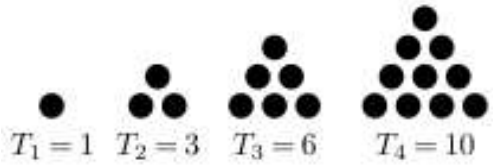
a. There are slips of paper in a bag. Some slips have letters on them and some have numbers. The probability of drawing a slip with a letter is $\frac{5}{9}$. How many slips could there be in the bag? What is the probability of drawing slips with numbers? **[2]**

b. In Mathematics remedial class, a teacher asked the students to reflect white shape across the reflection line and write the ordered pairs of the image. Phub Dorji drew the shape with the ordered pairs A **(-3, -2**), B **(-8, -9**) and C **(-3, -9**) as shown below.
Do you agree with his drawing? Explain. **[3]**



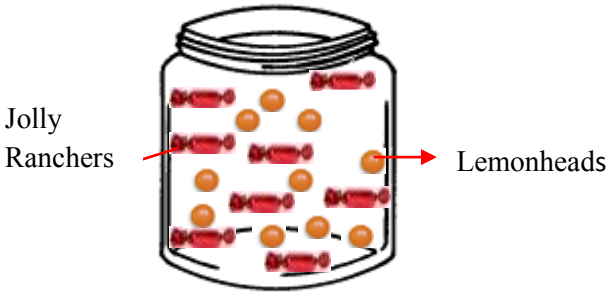
Question 14 **[5]**

a. Given below shows the first **four** triangular numbers.



Find the 5th and 6th triangular numbers (T_5 and T_6). **[2]**

b. A candy jar below contains Jolly Ranchers (cylindrical) and Lemonheads (the circle) sweets. What is the ratio of Jolly Ranchers to Lemonheads? **[3]**



Question 15 **[6]**

a. A lady principal is comparing her students' performance on an English test with their performance on a Dzongkha test.
The table given below shows the **number of students** who got marks in each **range** for the two subjects.

Marks range	30s	40s	50s	60s	70s	80s
English	5	8	5	14	6	2
Dzongkha	7	6	8	9	6	4

i. Draw a labelled double bar graph based on the above data. **[3]**

ii. What does the graph show on the students' performance in the two tests? **[1]**

b. Which of the experiment below creates the **probability of each outcome always the same**. Justify your thinking. **[2]**

Experiment 1: A spinner has 4 equal sectors coloured yellow, blue, green and red. The probability of landing on each colour after spinning it.

OR

Experiment 2: A glass jar contains 6 red, 5 green, 8 blue and 3 yellow marbles. The probability of choosing a red or a green or a blue or a yellow marble if a single marble is chosen at random from the jar.

**********ROUGH WORK**********