BHUTAN COUNCIL FOR SCHOOL EXAMINATIONS AND ASSESSMENT

COMPETENCY BASED ASSESSMENT TEST

SUBJECT: MATHEMATICS **TOTAL MARKS: 100**

CLASS: VI **TIME: 2 Hrs 15 Mins**

Name: _____ **Roll No: _____**

School: _____ **Section: _____**

Dzongkhag/Thromdee: _____ **Gender: _____**

Points to Remember

1. *First write your **name, roll number, name of your school, section, Dzongkhag** in the space given above.*
2. *You must answer and write down **all answers** to each **question in the given space** of the **booklet** (**No separate answer sheet will be provided**).*
3. *Read the **questions** carefully.*
4. ***15 minutes** time is allocated for reading the questions.*
5. *In this **question paper**, you will find 15 multiple choice questions in **Section A** and 14 questions in **Section B** (numbered from 2 to 15). You must attempt **all** the questions.*
6. *You have **two hours** to finish the test. Make good use of the given time.*
7. *The mark for each question is given in the brackets.*
8. *Do **not talk** with your friends during the test.*

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	**2**	**3a**	**3b**	**4a**	**4 b**	**5a**	**5b**	**6a**	**6b**	**7a**	**7b**	**8a**	**8b**	**Total**	**Signature**
Marks	**5**	**3**	**2**	**2**	**3**	**3**	**2**	**3**	**2**	**3**	**2**	**3**	**2**	**35**	
Marks Scored															

Question	**9**	**10a**	**10b**	**11a**	**11b**	**12a**	**12b**	**13a**	**13b**	**14a**	**14b**	**15a**	**15b**	**Total**	**Signature**
Marks	**4**	**3**	**2**	**3**	**2**	**2**	**3**	**2**	**3**	**3**	**2**	**3**	**3**	**35**	
Marks Scored															

Section A

Answer ALL Questions

Direction: *Each question in this session is followed by **four** possible choices of answers. Choose the most correct answer and write it down in the **question booklet** itself. Each question carries 2 marks.*

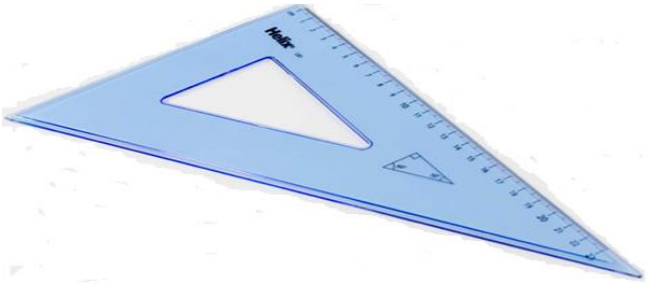
Question 1 **[15×2=30 Marks]**

i. When the numerator of a fraction is greater than the denominator, it is called

A proper fraction.
B mixed number.
C improper fraction.
D greater than one whole.

Answer ……

ii. The figure below is a geometrical instrument in the form of triangular shape.



Identify the type of triangle.

A an equilateral triangle
B an isosceles triangle
C a scalene triangle
D a right triangle

Answer……

iii. Karma wants to estimate $2865 \div 12$. Which method do you think is the best estimation?

A round up both values
B increase both values
C decrease both values
D increase one and decrease the other values

Answer ……..

iv. Pema works as a flower gardener and he wants to fence all the gardens.Which garden will have the longest fence?

I II III IV

A IV
B III
C II
D I

Answer ……

v. Sushma is a teacher earning an annual income of Nu 288,000. Her annual savings amount to Nu 36,000. The ratio of her **savings** to her **expenditure** is

A 1 : 8.
B 1 : 7.
C 1 : 6.
D 1 : 5.

Answer ……

vi. Ap Jamtsho is working as a village Tshokpa under Shongphu Gewog. His monthly salary is Nu 10,500. His annual income in the expanded form is

A 10 thousand + 5 hundred.
B 126 thousand + 5 hundred.
C 1 hundred thousand + 26 ten thousand + 6 thousand.
D 1 hundred thousand + 2 ten thousand + 6 one thousand.

Answer……

vii. **Four** friends did a temporary job of picking oranges during the last winter vacation. The table below shows oranges collected in one day.

Name	**Oranges collected (kg)**
Karma	20
Kinley	15
Wangmo	10
Sushma	15

Who collected the oranges with the probability of $\frac{1}{3}$?

A Wangmo
B Sushma
C Kinley
D Karma

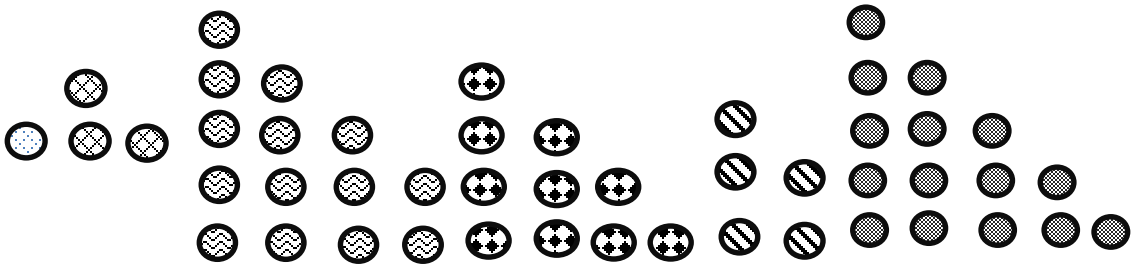
Answer……

viii. Out of 28 students in a class, 16 of them are men. What percent of the class are women?

A 12 %
B 42 %
C 43 %
D 57 %

Answer …….

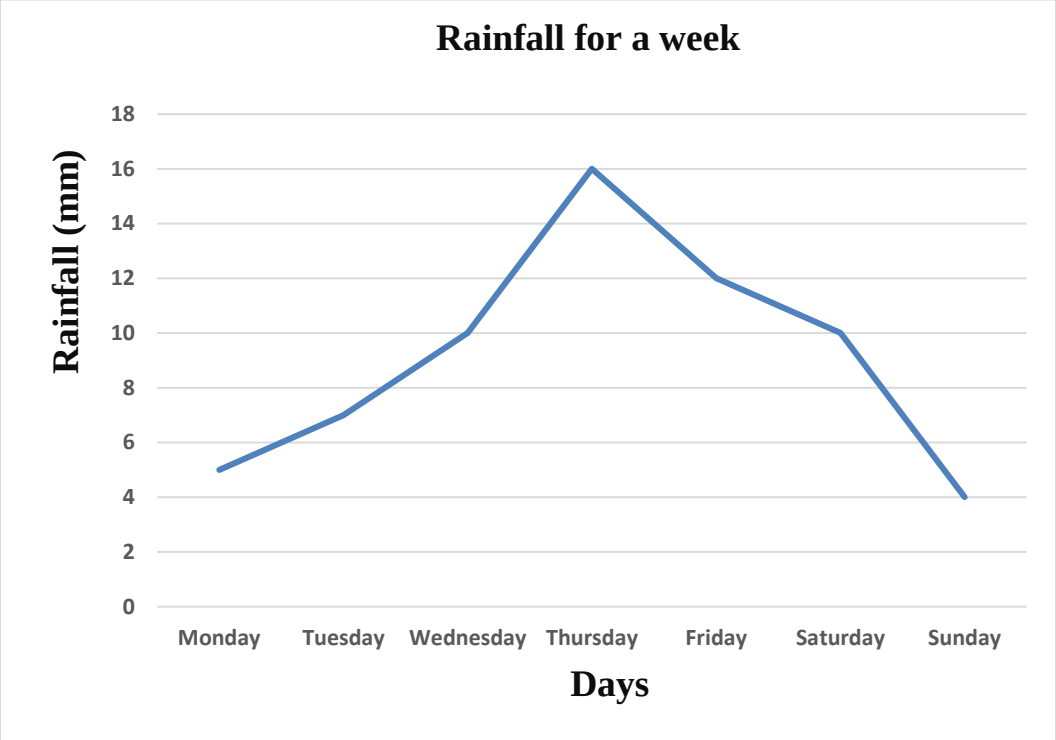
ix. Different flowers are planted in the figure shown below. A group of visitors visited the garden and concluded that the idea of **triangular** numbers are used in the design. What triangular numbers can you get from **least** to **greatest**?



	Numbers			
A	1	3	5	15
B	3	10	14	15
C	3	5	9	15
D	1	3	10	15

Answer ……

x. The graph below shows amount of rainfall (mm) in a week in Mongar during the month of June.



The average rainfall of a week to the nearest whole number is

A 8.0 mm.
B 9.0 mm.
C 12.6 mm.
D 16.0 mm.

Answer …….

xi. The table below shows amount of rice production of four different dzongkhags in the year 2016.

Dzongkhags	**Rice production**
Trashigang	35,000 kilogram
Samtse	2.4 tonne
Punakha	5.54 tonne
Paro	70,500,000 gram

Write down the dzongkhag in sequence with regard to rice production from **greatest** to **least**.

A Paro, Trashigang, Punakha , Samtse
B Paro, Punakha, Trashigang, Samtse
C Samtse, Punakha, Trashigang, Paro
D Punakha,Samtse, Trashigang, Paro

Answer…….

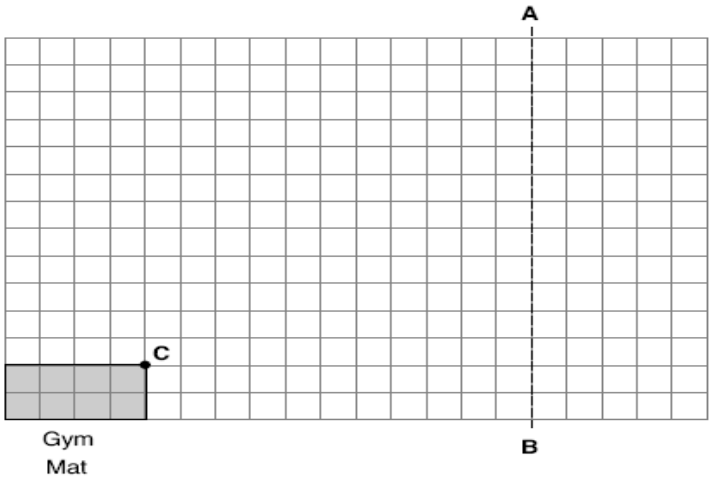
xii. Karma, Suraj, Zangpo and Mindu bought 3 pizzas of the same size. Karma ate $\frac{1}{3}$ of a pizza. Suraj, Zangpo and Mindu ate $\frac{1}{4}$ of a pizza each. How much pizza is left?

A $\frac{3}{4}$ of a pizza
B $1\frac{11}{12}$ of a pizza
C $\frac{7}{12}$ of a pizza
D about 2 pizza

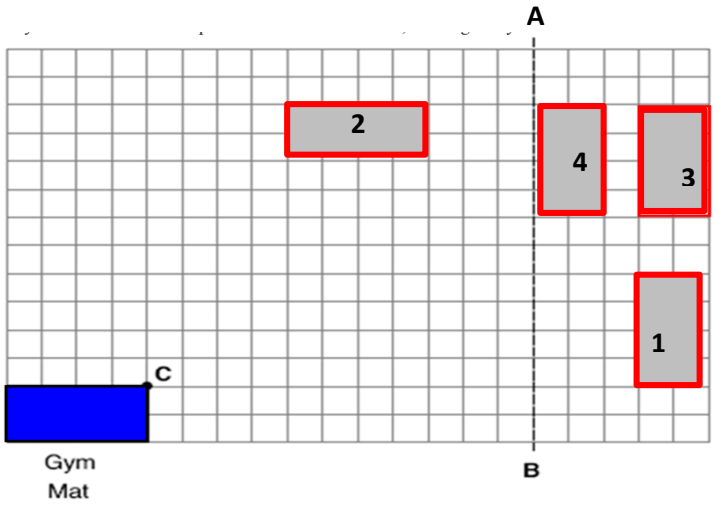
Answer …….

xiii. Dhendup wants to keep his body physically fit and strong. He joined in one of the gyms in Thimphu. He moves the gym mat using following **four transformations**;

- **Rotate** the gym mat 90 degree **cw** around the point **C**
- **Translate** the gym mat 8 units to right and 6 units up
- **Reflect** the gym mat over the line **AB**



Different new locations of a gym mat is shown by a number on a shape. Which number is the correct location of a new gym mat?



A 1
B 2
C 3
D 4

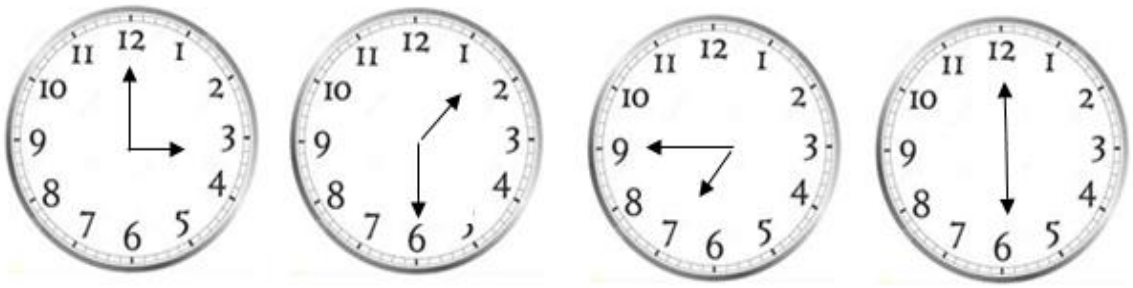
Answer.....

xiv. Ap Naka and Aum Dema are suffering from high blood pressure(BP). Doctor advised Ap Naka to walk 5.2km in 1 hour daily and Aum Dema to walk 4.8 km in 1 hour daily. If both of them kept walking at the same pace, how much further would Ap Naka walk than Aum Dema in 6.6 hours?

A 0.4 km
B 2.64 km
C 2.60 km
D 34.32 km

Answer……..

xv. Four wall clocks below shows different time.



Clock I Clock II Clock III Clock IV

In which of the following are the angles ordered by size, from **greatest** to **least**?

A	Clock IV	Clock II	Clock I	Clock III
B	Clock III	Clock II	Clock IV	Clock I
C	Clock I	Clock II	Clock III	Clock IV
D	Clock II	Clock IV	Clock I	Clock II

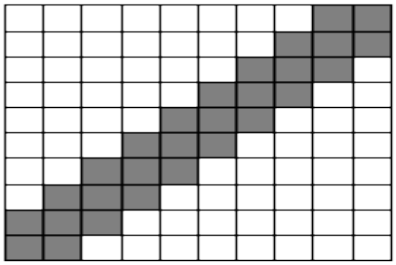
Answer……

Section B

(Answer ALL questions in this section and write it down in the question booklet itself)

Question 2 **[5]**

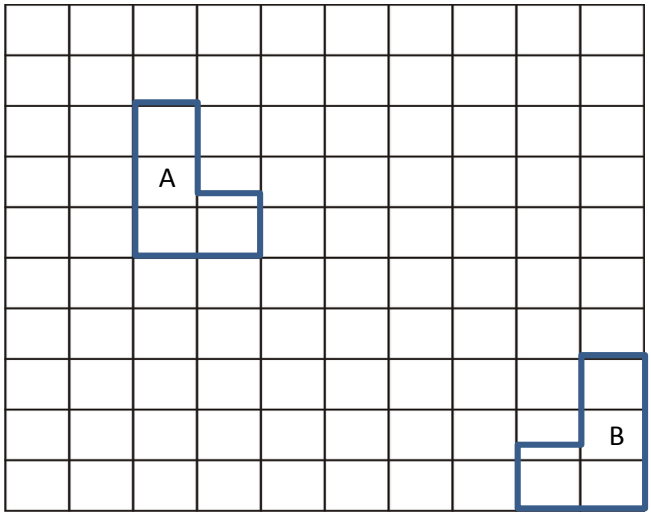
Match each item in **column A** against its correct item in **column B**. Rewrite the correct matching pairs in **Column C**.

Column A	Column B	Column C
i. Ratio of girls to boys is 15:20	a) 7:25	
ii. Cost of 4 apples is Nu 20. The ratio of cost to 9 apples is	b) 4:5	
iii. The ratio of beds planted with flowers to total beds is — beds planted with flowers — beds without flowers 	c) 3:4	
iv. Equivalent ratio of 80 %	d) 1:6	
v. 3 chocolate bars for Nu 18 what is the ratio of 1 chocolate bar to cost.	e) 5:1	
	f) 4:6	
	g) 6:1	

Question 3

a. Wangmo walks $\frac{7}{8}$ of a mile to her school. Choden walks $\frac{1}{2}$ of a mile to her school. How much further does Wangmo walk than Choden? **[3]**

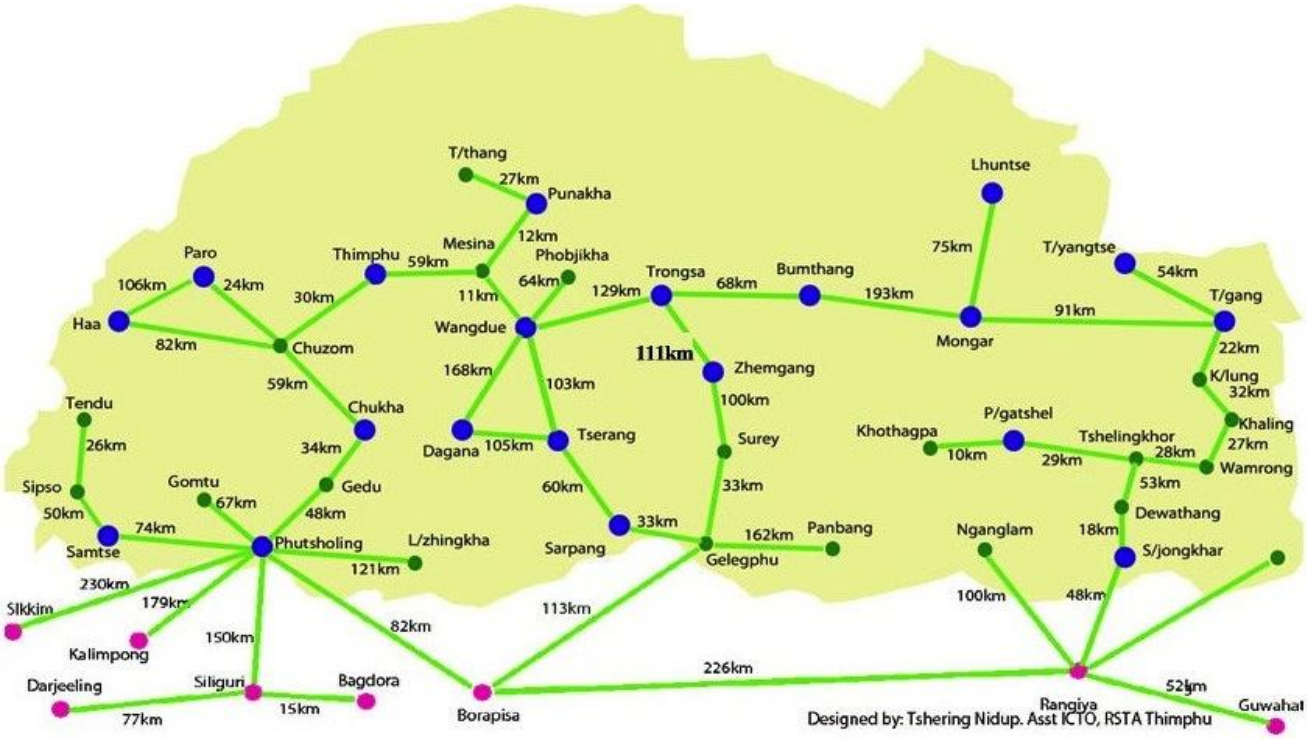
b. Sonam wants to transform the shape **A** to shape **B** as shown in the diagram below: **[2]**



Write down combining transformation to get the shape **B**.

Question 4

Look at the Road Safety and Transport Authority (RSTA) route map of Bhutan shown below for answering question **4 (a)**

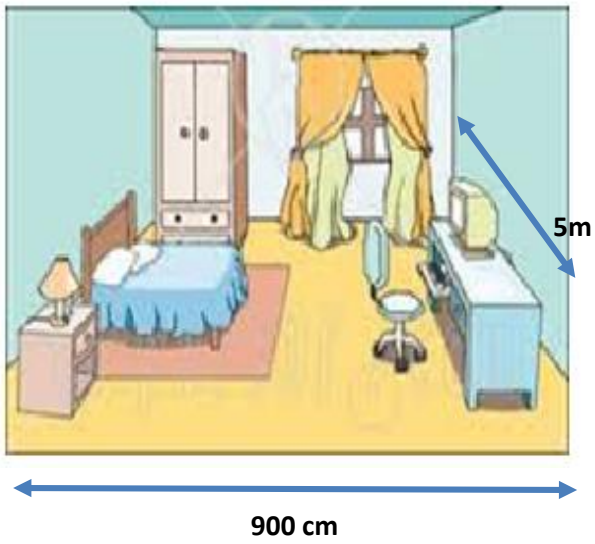


a. A bus driver drives at an average speed of 50.4 km in 2 hours. Calculate the time needed to travel from Thimphu to Punakha. Show your work. **[2]**

b. Figure below shows the dimensions of Tshering's and Karma's bedroom.

Tshering's bedroom

Karma's bedroom



Whose bedroom has larger area? Find out by how much more? Show you work. **[3]**

Question 5

a. A survey was taken on 30 classes at a school to find the total number of left-handed students in each class. The table below shows the results:

No. of left-handed students	0	1	2	3	4	5
Frequency (No. of classes)	1	2	5	12	8	2

A class was selected at random.

What is the probability that the class has at least 3 left-handed students? **[3]**

b. Samten is a Class VI student. He was asked to write a large whole number of 5 digits with the following conditions:

- ✓ The thousands digits is 3 times the tens digit.
- ✓ The hundreds digit is even.

i. What could be the number? **[1]**

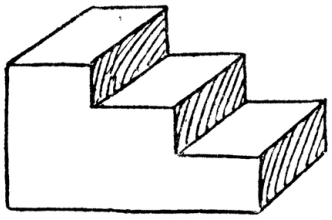
ii. Write the number in expanded form using words. **[1]**

Question 6

a. Four girls work in an apple orchard. On one of the day they picked up apples as shown in the table below. Who collected maximum apples? Show your work **[3]**

Dema	**Tshomo**	**Priya**	**Lhaki**
$\frac{2}{3}$ *full* 	$\frac{3}{6}$ *full* 	$\frac{7}{12}$ *full* 	$\frac{3}{4}$ *full* 

b. Look at the diagram of a stair case shown below. Think and draw **TWO** possible face views of a staircase**.** **[2]**



Front view

Question 7

a. The table below displays about the items and its rate in one of the cinema halls in America.

SL.NO	Item	Rate
1.	Movie Ticket 	$8.25
2.	Medium Popcorn 	$5.00
3.	Candy 	$4.00
4.	Medium Soda 	$4.75

If John wants to spent $66 fully, which of the above item can he purchase with no left over? Show your work. **[3]**

b. Thinley is reading a novel. His starting reading time and ending reading time is shown below. How many hours did he read? Write the ending time in 24 hours clock system. **[2]**

Starting reading time

Ending reading time

Question 8

a. Health officials recommends to drink 2 L of water daily to keep us healthy. The table below shows amount of water drank by Karma and Tshering.

Name	Water (L)	Days
Karma	18	11
Tshering	36	18

Sonam says Karma's drinking of water is better than Tshering's drinking. Do you agree with Sonam ? Justify. **[3]**

b. A truck of Damchen agency has an interior dimension of $150\ cm \times 50cm \times 30cm$. The dimension of each box is $20\ cm \times 15\ cm \times 10\ cm$.

How many number of boxes can be fitted in one truck? Show your work. **[2]**

Question 9

Use the *figure 1.1* below to complete **YES/ NO** questions.

The bar graph below shows about annual growth rate of the Gross Domestic Product (GDP) in Bhutan for different years.

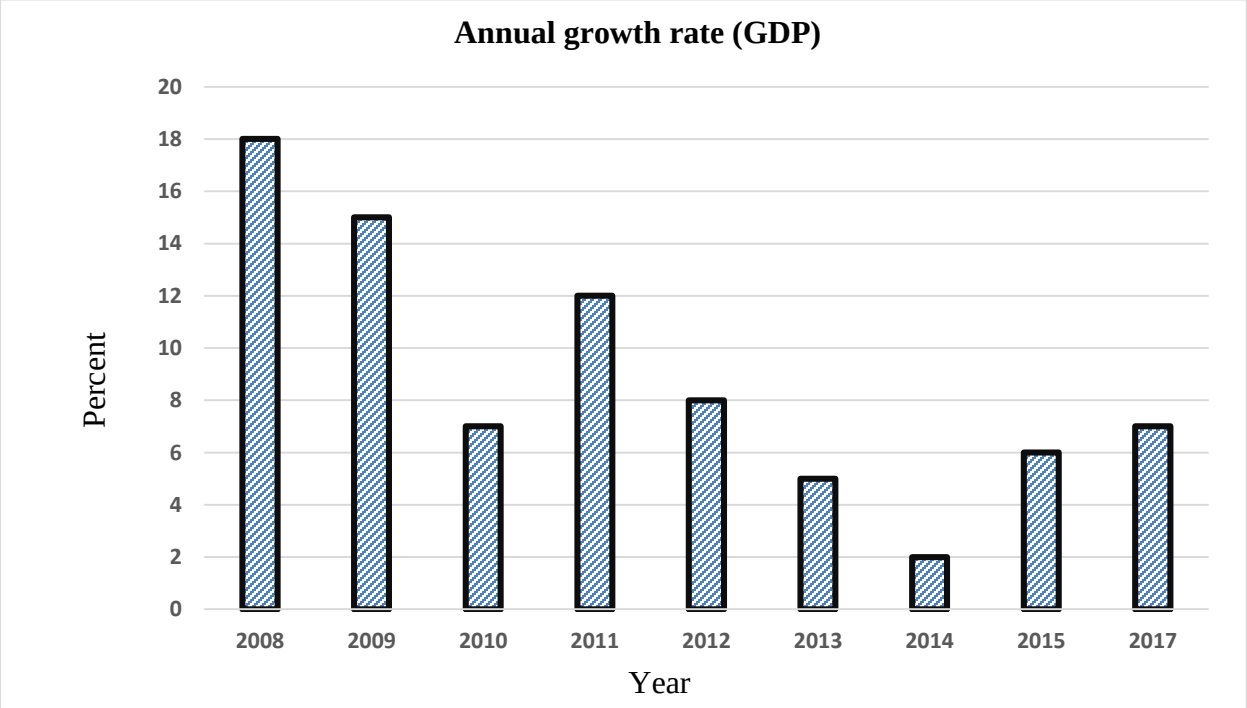


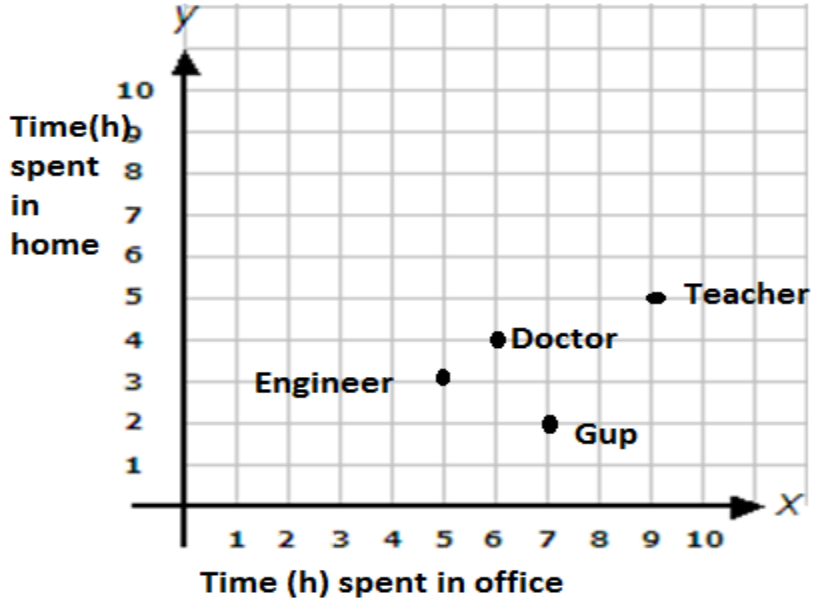
Figure 1.1

Use the figure 1.1 to decide whether each of the statements below is true or false. Circle "True" or "False" for each of the statements. **[4]**

SL.No	Statement	Remarks
i.	The GDP annual growth ratio of highest percent to lowest percent is 18 : 2.	True / False
ii.	The annual growth rate for 2013 in terms of lowest fraction is $\frac{5}{100}$.	True / False
iii.	In 2008, 2012 and 2017, the annual growth rate of GDP were three highest percent.	True / False
iv.	The GDP average ratio of two highest percent to two lowest percent is 16.5 : 3.5.	True / False

Question 10

The graph below shows the amount of time spent in the office and at home by different groups of people.



a. How much more time is spent by a teacher than Gup at home? How do you know? Show your work. **[3]**

b. The table below shows amount of sugar contain in three different fruits as per Bhutan Agriculture and Food Regulatory Authority.

Fruits	**Amount of sugar**
Pear	1.7 %
Apple	19 g
Mango	0.023 kg

Arrange the fruits in order from **least** to **greatest** as per the amount of sugar contained in the fruit. **[2]**

Question 11

a. Nima and Dawa are twins studying in Class V. They wish to share the bread equally on their birthdays. Show how they can to share the bread in **three** different ways. **[3]**

b. Chabilal is a class captain. He purchased some items as shown in the cash memo below. How much more amount did he pay for asian paint than brown cello tap in total? Show your work. **[2]**

CASH MEMO

Mobile : 17651188 77651189

PHURPA TSHERING

HARDWARE & ELECTRICAL SHOP

RANGJUNG, TRASHIGANG

No. 1002 Date 12/4/17

Name By Cash

Address

QNTY.	DESCRIPTION	RATE	AMOUNT Nu.	Ch.
1.5	Asian Paint	250	[redacted]	
2	Paint Brush	50		
2.5m	Table cloth	50		
7	Brown cello tap	35		

Question 12

a. Jigme wants to help his daughter to divide $72.9 \div 3.0$

He divided the problem as below

72 ⟶ 729 tenths

3.0 ⟶ 30 tenths

729 tenths $\div$ 30 tenths

24.3

Do you agree with his calculation? If not, identify the errors and solve it correctly. **[2]**

b. The table below shows number of students playing different games in one of the schools.

Games	**Number of students**
Football	35
Volley ball	25
Basket ball	20
Khuru	16
Archery	23
Table tennis	10
Chest	25
Badminton	20
Cricket	14
Doegor	20

Three students calculated **mean**, **median** and **mode** respectively.

- ✓ Dorji found the mean as $35+25+20+16+23+10+25+20+14+20=208$
- ✓ Tshomo found median as average of two middle data values

  $35, 25, 20, 16, 23, 10, 25, 20, 14, 20$

  $= 23+10$

  $= 33 \div 2 = 16.5$

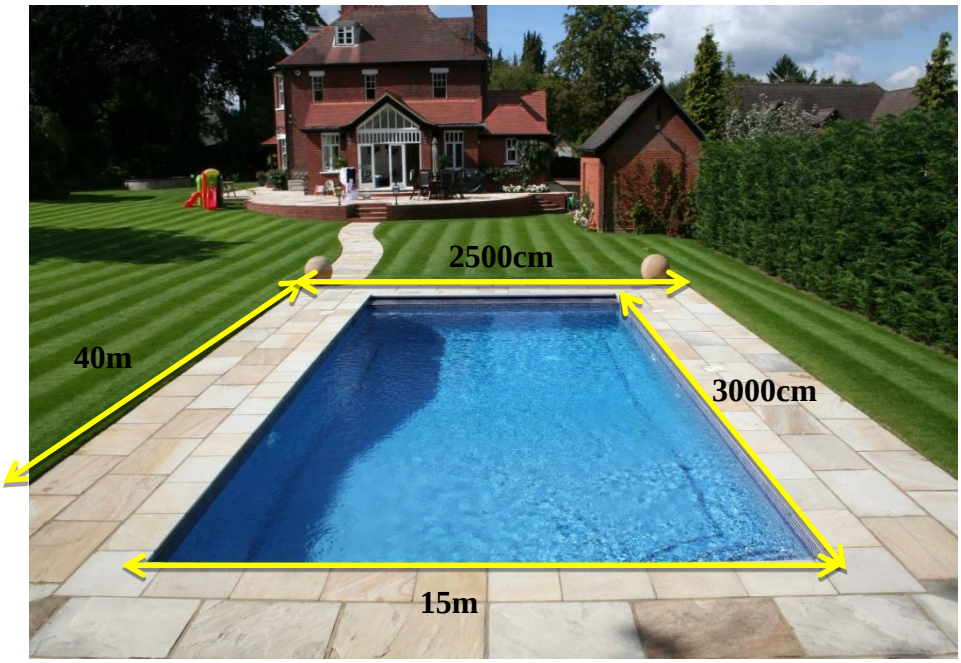
- ✓ Namgay found mode as 25 and 20

Do you agree with them? Support your answer with justification. **[3]**

Question 13

a. Wangdi's shop has 20 table tennis balls and 16 table tennis paddles. He wants to sell packages of balls and paddles bundled together. What is the greatest number of packages she can sell (with no leftover balls or paddles and one ball per paddle)? **[2]**

b. The white area around the swimming pool in the diagram below is called the deck or walkway.
Find the area of the deck around the swimming pool**.** **[3]**



Question 14

a. Study the graph given below carefully. Draw any suitable graph that can be used to represent data given below. What can you conclude from the graph? **[3]**

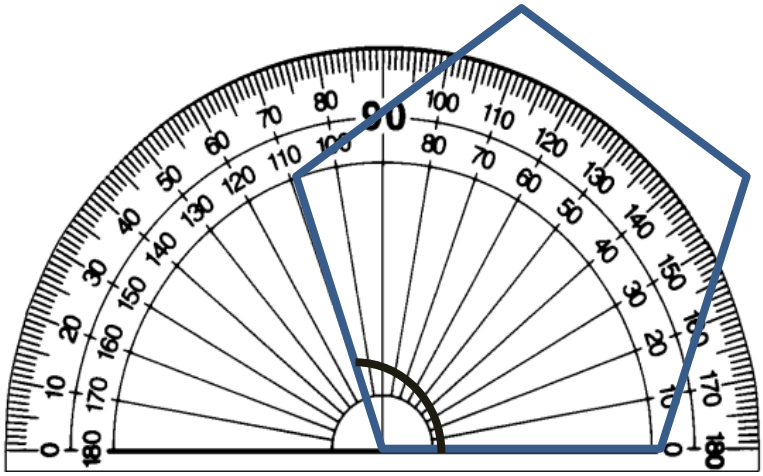
Student Heart Rates after doing 1 minute of jumping jacks	
Stem	Leaf
6	1
7	
8	4 6 8
9	2 9 9 9
10	
11	3 4
12	1 2 4 4 7 9
13	8
14	4 7 8
15	1

Key: 6 | 1 = 61

b. Three candidates were competing for a new job. One of them got **half** the vote. Another got **two fifths** of the vote. What **fraction** did the third candidate get? **[2]**

Question 15

a. A carpenter measured one of the angles of a door as 70 degree as shown below. Do you think he measured the angle correctly? Given a reason to support your answer**.** **[3]**



b. Zangmo said that a perpendicular bisector is an angle bisector and also a line segment bisector. Do you agree with her statement? Support your answer with good example. **[3]**

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