SECTION A (30 MARKS)

Full mark

ANSWER **ALL** QUESTIONS

Question 1. For each question, there are four alternatives A, B, C and D. Choose the correct alternative and circle it. Do not circle more than ONE alternative. If there are more than one circled, NO score will be awarded. **[30]**

Criteria	Marks
Circles the correct option	**2**
Circles more than ONE alternative	**0**
Circles none of the alternatives	**0**

i. What fraction is represented by the picture given below?

A $\frac{5}{4}$

B $\frac{6}{5}$

C $\frac{11}{12}$

D $\frac{11}{4}$

Solution:

There are 2 whole and $\frac{3}{4}$ pizza which can be represented as $2\frac{3}{4}$. Converting it to improper will give $\frac{11}{4}$

Therefore, answer is option

D $\frac{11}{4}$

ii. The area of the two different rectangles is 12 cm^2 and 18 cm^2. What could be the common side length of the two rectangles?

A **2 cm and 3 cm**

B 3 cm and 4 cm

C 4 cm and 6 cm

D 6 cm and 9 cm

Solution:

F12 = 1, 2, 3, 4, 6, 12

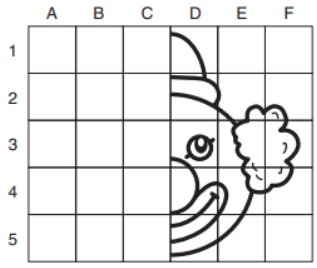
F18 = 1, 2, 3, 6, 9, 18

CF of 12 and18 are 1, 2, 3 and 6

Therefore, answer is option

A **2 cm and 3 cm**

iii. The picture given below is incomplete. In which square should you draw the eye so that the picture is symmetrical?



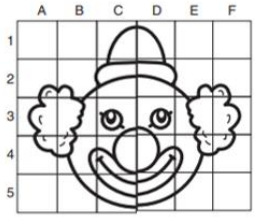
A D 3

B **C 3**

C B 3

D A 3

Solution:



Therefore, answer is option

B **C 3**

iv. How many dots will be there in figure 5?

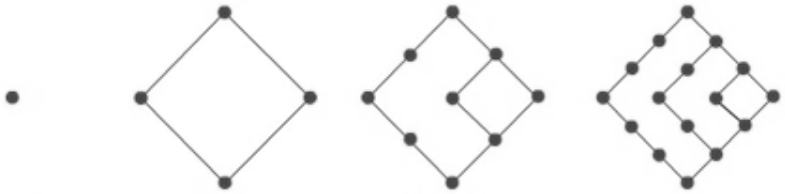


Figure 1 Figure 2 Figure 3 Figure 4

A **25 dots**

B 30 dots

C 36 dots

D 49 dots

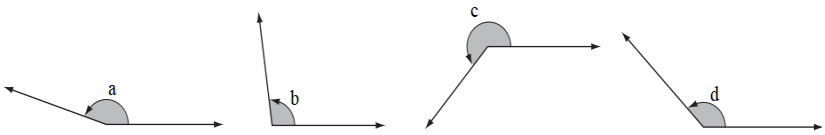
Solution:

Figure 5

Therefore, answer is option

A **25 dots**

v. Estimate the angles given below:



Which of the following angles are arranged in ascending order?

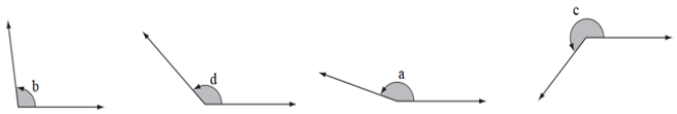
A angle a; angle b; angle c; angle d

B angle b; angle d; angle c; angle a

C angle d; angle c; angle b; angle a

D **angle b; angle d; angle a; angle c**

Solution:



Therefore, answer is option

D **angle b; angle d; angle a; angle c**

vi. Study the image carefully and answer the question that follows.

What percent of the battery is used?

A 60%

B **40%**

C 10%

D 2%

Solution:

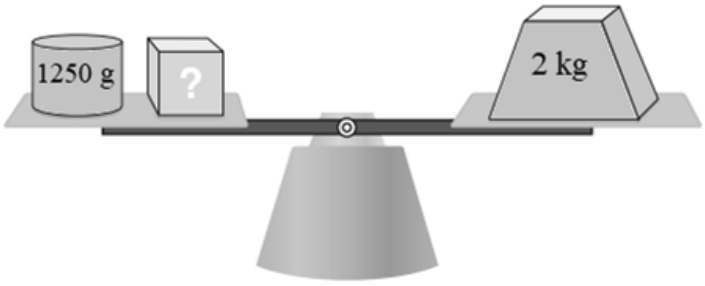
2 out of 5 bars in total is used.

$\frac{2}{5}$ of 100 % is 40%

Therefore, answer is option

B **40%**

vii. The scale given below is balanced.



What is the mass of the cube?

A 18,750 g

B 3,250 g

C 1,250 g

D **750 g**

Solution:

In-order to find the missing mass, subtraction should be done.

2 kg = 2000 g

2000 – 1250

= 750

Therefore, answer is option

D **750 g**

viii. A shopkeeper charges Nu 5 for every 4 chocolates. How much do you need to pay for 20 such chocolates?

A Nu 16

B Nu 20

C **Nu 25**

D Nu 30

Solution:

20 chocolates can be grouped into 5 with 4 chocolates in each.

Nu 5 for 4 chocolates (1 group)

For 5 groups, 5 × Nu 5 = Nu 25

Therefore, answer is option

C **Nu 25**

ix. Geeta tries to draw a triangle using the following dimensions.

I. 3 cm; 4 cm; 5 cm

II. 2 cm; 4 cm; 6 cm

III. 4 cm; 6 cm; 8 cm

Which sets of the dimension can form a triangle?

A I and II

B **I and III**

C II and III

D I, II, and III

Solution:

Sum of the any two sides must be longer than the third one.

I. 3 cm; 4 cm; 5 cm

3 + 4 = 7, 7 cm is greater than 5 cm;

3 + 5 = 8, 8 cm is greater than 7 cm

4 + 5 = 9, 9 cm is greater than 3 cm

This set can form triangle.

II. 2 cm; 4 cm; 6 cm

2 + 4 = 6, 6 cm is equal to the third length.

This set can't form triangle.

III. 4 cm; 6 cm; 8 cm

4 + 6 = 10, 10 cm is greater than 8 cm

4 + 8 = 12, 12 cm is greater than 6 cm

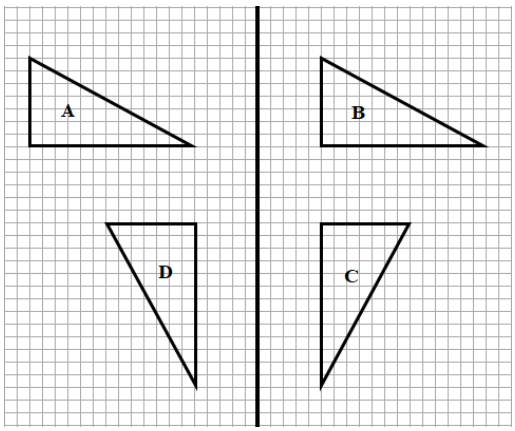
6 + 8 = 14, 14 cm is greater than 4 cm

This set can form triangle.

Therefore, answer is option

B **I and III**

x. Which transformations are used to move Shape **A** to Shape **B**, Shape **B** to Shape **C** and Shape **C** to Shape **D**?



A **translate, rotate and reflect**

B rotate, reflect and translate

C translate, reflect and rotate

D reflect, rotate and reflect

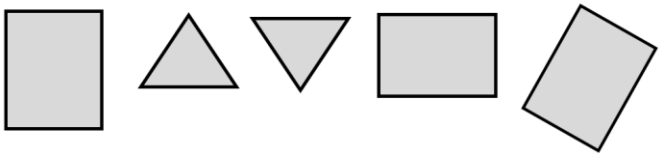
Solution:

Translate shape A to B, Rotate shape B to C and Reflect Shape C to D.

Therefore, answer is option

A **Translate, rotate, and reflect.**

xi. The shapes given below are the five faces of a 3-D object.



What is the name of the object?

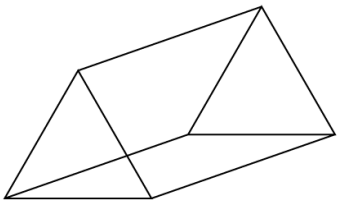
A Rectangular pyramid

B Triangular pyramid

C Rectangular prism

D **Triangular prism**

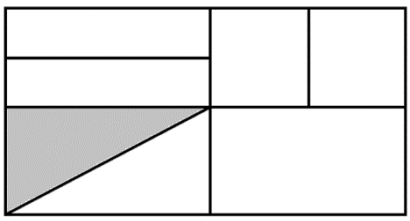
Solution:



Therefore, answer is option

D **Triangular prism**

xii. What part of a whole is shaded?



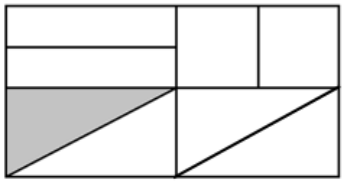
A $\frac{1}{7}$

B $\mathbf{\frac{1}{8}}$

C $\frac{6}{7}$

D $\frac{6}{8}$

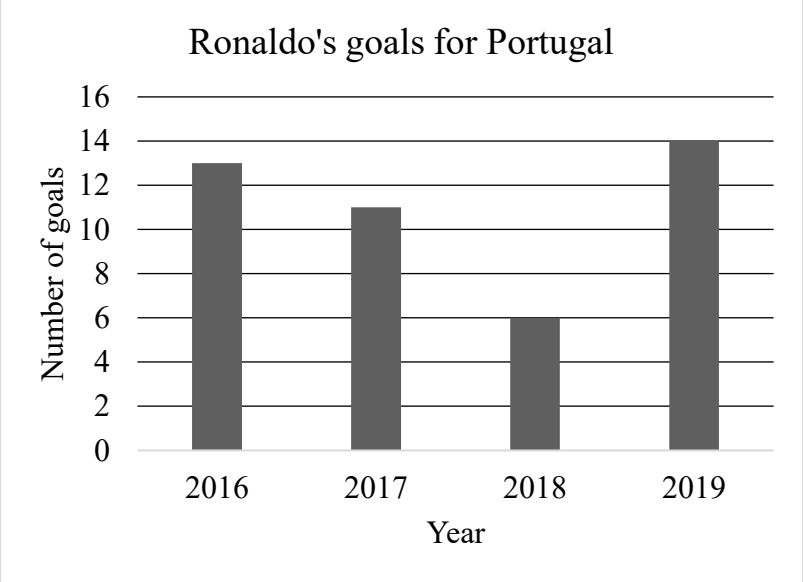
Solution



Therefore, answer is option

B $\mathbf{\frac{1}{8}}$

xiii. Study the graph and answer the question that follows.



What is his mean score?

A **11 goals**

B 12 goals

C 14 goals

D 44 goals

Solution:

Year	Goal scored
2016	13

2017	11
2018	6
2019	14
Total	44

$mean = \frac{44}{4} = 11$

Therefore, answer is option

A **11 goals.**

xiv. Kelly spent Nu 10 every day. If she still has Nu 20 after 7 days, how much ngultrum did she have in the beginning?

Which of the following equation represent the above situation?

A $10x + 7 = 20$

B $7x + 10 = 20$

C $\boldsymbol{x - 70 = 20}$

D $70 - x = 20$

Solution:

Let the amount be x

Money spent = Nu 10 every day for 7 days

$= 7 \times 10 = 70$

Money balance = Nu 20

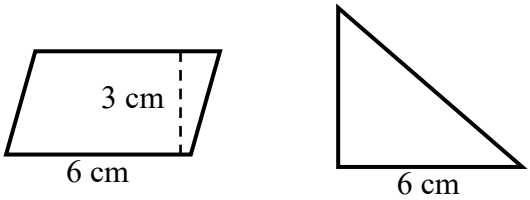
Equation

Total amount – money spent = money balance

Therefore, answer is option

C $\boldsymbol{x - 70 = 20}$

xv. The shapes given below covers equal area.



What is the height of a triangle?

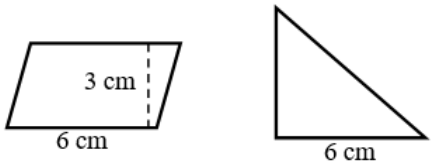
A 3 cm

B **6 cm**

C 9 cm

D 18 cm

Solution:



Area of parallelogram $= b \times h$

$$= 6\ cm \times 3\ cm = 18\ cm^2$$

Since the area of two shapes are equal, the area of a triangle will be $18\ cm^2$.

Height of a triangle $= \frac{2 \times Area}{base}$

$$= \frac{2 \times 18\ cm^2}{6\ cm} = 6\ cm$$

Therefore, answer is option

B **6 cm**

SECTION B (30 MARKS) ANSWER ALL **SIX** QUESTIONS	
Question 2 a) Bhutan exported commodities worth Nu 4.65 billion in April 2023 to Bangladesh. i. Write the figures in ngultrum in standard form. ***Sample Response:***	**[2]**

Billions	Millions			Thousands			Ones		
O	H	T	O	H	T	O	H	T	O
4	6	5	0	0	0	0	0	0	0

[Drawing and using place value chart correctly 0.5 + 0.5 mark]
Nu 4,650,000,000 ------ **1 mark**

Or

Nu 4.65 × 1,000,000,000 ------ **1 mark**
= Nu 4,650,000,000 ------ **1 mark**

ii. What is in the place value of 3 in 1,250,300,000? **[1]**

Sample Response:

Hundred Thousands ------ **1 mark**

a) Which animal is the fastest in the table given below? **[2]**

Wild animal	**Average speed**
Reindeer	40 km/30 min
Tiger	65 km/h
Kangaroo	210 km/3 h
Ostrich	180 km/ 2 h

Sample Response:

Reindeer; 40 km/30 minutes = 80 km/60 min or **80 km/h**

Tiger; **65 km/h**

Kangaroo; 210 km/3 hours = **70 km/h**

Ostrich; 180 km/ 2 hours = **90 km/h**

[Provide 0.5 mark each for converting it into unit rate]

Ostrich is the fastest ------ **0.5 mark**

Question 3 **[2]**

a) The following data represent the shoe sizes sold by the shopkeeper.

Shoe Sizes
6, 10, 7, 6, 9, 8, 6, 5, 5, 6, 7, 10, 6, 8, 6, 8, 5, 6

i. If you were a shopkeeper, which shoe size will you bring the maximum for sale? Why?

Sample Response:

Shoe size No 6 ------ **1 mark**

Mode of the given data ------ **1 mark**

Or

Repetition of the data is the highest ------ **1 mark**

ii. What type of graph would you use to represent the data given in question 3 (a)? **[1]**

Sample Response:

Bar graph/chart or Stem and leaf plot or Line graph

[1 mark for any one of the given names]

b) In the year 2019 a farmer in Phobjikha produced about 5 tonnes of potatoes and sold at the rate of Nu 24 per kg. How much did the farmer earn? **[2]**

Sample Response:

1 tonne = 1000 kg ------ **0.5 mark**

5 tonnes = (1000 × 5) kg

= 5000 kg ------ **0.5 mark**

If 1 kg = Nu 24

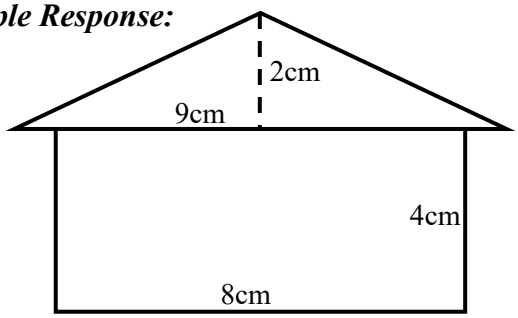
5000 kg = Nu 24 × 5000 kg ------ **0.5 mark**

Farmer earned Nu 120,000 ------ **0.5 mark**

Question 4

a) Design a house and calculate the total area. **[3]**

Sample Response:



[0.5 mark for the appropriate diagram and 0.5 mark for correct labeling]

Area of a Triangle = (9 cm × 2 cm) ÷ 2

= 9 cm^2 ------ **0.5 mark**

Area of a Rectangle = 8 cm × 4 cm

= 32 cm^2 ------ **0.5 mark**

Total are of the 2-D house design = 9 cm^2 + 32 cm^2 ------ **0.5 mark**

= 41 cm^2 ------ **0.5 mark**

b) Two students volunteered to clean the classroom. Student A cleaned $\frac{1}{3}$ and Student B cleaned $\frac{2}{5}$ of the floor. **[2]**

What part of the floor is left uncleaned?

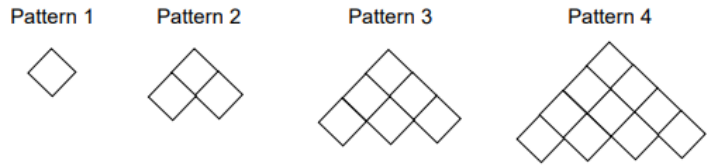
Sample Response:

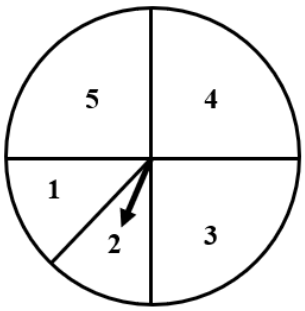
Student A; $\frac{1}{3} = \frac{1\times 5}{3\times 5} = \frac{5}{15}$ ------ **0.5 mark**

Student B; $\frac{2}{5} = \frac{2\times 3}{5\times 3} = \frac{6}{15}$ ------ **0.5 mark**

Altogether they cleaned; $\frac{5}{15} + \frac{6}{15} = \frac{11}{15}$ ------ **0.5 mark**

Floor Left uncleaned; $1 - \frac{11}{15} = \frac{4}{15}$ ------ **0.5 mark**	
Question 5 a) Yugyel says, if we rotate any 2-D shape $\frac{3}{4}$ turn ccw or $\frac{1}{4}$ turn cw will form same image. Do you agree? Justify, ***Sample response:*** Yes ------ **1 mark** If turn centre remains the same then the image formed will be same. ------- **1 mark** Or No ------ **1 mark** If the turn centre is different for each rotation, then the image formed will be different. ------ **1 mark** **[Provide 1 mark for any reasonable explanation]**	**[2]**
b) A private firm bought 5 chairs at the cost of Nu 1349.99 for each. i. Estimate the total cost to the nearest whole number. ***Sample response****:* Cost of each chair Nu 1349.99 ≅ Nu 1350 **------ 0.5 mark** Cost of 5 chairs 5 × 1350 About Nu 6,750 **------ 0.5 mark**	**[1]**
ii. Find the total cost. ***Sample response:*** Cost of each chair Nu 1349.99 Cost of 5 chairs 5 × 1349.99 5 × 134,999 hundredth **------ 0.5 mark** 674,995 hundredth **------ 0.5 mark** **Or**	**[2]**

5 × 1349.99 **------ 0.5 mark** Showing correct usage of multiplying method for the above factors **------ 0.5 mark** Nu 6,749.95 **------ 1 mark**	
Question 6 a) i. What is the sum of the interior angles for any given triangles? ***Sample response:*** Sum of the interior angles will be 180°-----**1 mark**	**[1]**
ii. A group of students used toothpicks to create the following pattern.  How many squares will be there in pattern 6? ***Sample response:*** Pattern 5  **OR** Pattern 1 = 1 Pattern 2 = 1 + 2 Pattern 3 = 1 + 2 + 3 Pattern 4 = 1 + 2 + 3 + 4 Pattern 5 = 1 + 2 + 3 + 4 + 5 Pattern 6 = 1 +2 + 3 + 4 + 5 + 6 Pattern 6 	**[2]**

	There are **21 squares** in pattern 6. [**Provide 1 mark for pattern drawn or the number pattern used and 1 mark for the final answer**]	
b)	Tashi solved the equation as shown below. $2x + 3 = 7$ $2x = 10$ $x = 5$ Do you think Tashi solved the equation correctly? Justify ***Sample response:*** No ------ **0.5 mark** $2x + 3 = 7$ $2x = 7 - 3$ **------ 0.5 mark** $2x = 4$ **------ 0.5 mark** $x = 2$ **------ 0.5 mark** **Or** No ------ **0.5 mark** Instead of subtracting 3 from 7, Tashi has added 3 to 7. [**1.5 marks for any reasonable justification**]	**[2]**
Question 7		**[2]**
a)	For the spinner below, what is the probability of spinning 2?  ***Sample response:*** P (2) = $\frac{1}{8}$ **------ 2 marks** **[Provide 1 mark if the child has divided the spinner into 8 parts/denominator 8 and 1 mark for the final answer]**	

b) Write at least three differences between line of symmetry and plane of symmetry. **[3]**

Line of symmetry	**Plane of symmetry**

Sample response:

Line of symmetry	**Plane of symmetry**
Divided 2-D shapes into two symmetrical halves.	Divides 3-D shapes into two symmetrical halves.
Example square has four lines of symmetry.	Example cube has nine planes of symmetry.
A shape is divided by a line	An object is divided by a plane
1-dimensional concept	2-dimensional concept

[Provide 0.5 mark each for any 3 reasonable statements or drawings about line of symmetry and 0.5 mark each for any 3 reasonable statements or drawings about plane of symmetry].