CONTENTS

Syllabus

APRIL-MAY:

1. Integers:

- Multiplication and division of integers
- Properties of integers (including identities for addition & multiplication - *commutative, associative* and *distributive)*
- Word problems including integers (all operations)

2. Lines and Angles:

- Pairs of angles (linear pair, supplementary, complementary, adjacent and vertically opposite angles)
- Properties of parallel lines with transversal (alternate, corresponding, interior and exterior angles)

3. Rational Numbers:

- Introduction to rational numbers
- Operations on rational numbers
- Word problems (including all operations)

JULY:

4. Perimeter and Area:

- Area of a square, rectangle, parallelogram and triangle
- Area between two rectangles
- Idea of π
- Circumference and area of circle
- Area between two concentric circles

5. Exponents and Powers:

- Introduction to exponents
- Zero exponent
- Laws of exponents (through patterns)

AUGUST:

6. Data Handling:

- Collection and organization of data
- Mean, median and mode of ungrouped data
- Introduction to Probability
- Drawing bar graphs

REVISION FOR FIRST TERM EXAMS

SEPTEMBER-OCTOBER:

7. Algebraic Expressions:

- Identifying constants, coefficients and powers
- Like and unlike terms, degree of expressions
- Addition and subtraction of algebraic expressions.
- Evaluation of algebraic expressions.

NOVEMBER:

8.Simple Equations:

- Solving linear equations in one variable
- Word problems

9. The Triangle and its Properties:

- Angle sum property
- Exterior angle property
- Triangle inequality property

DECEMBER:

The Triangle and its Properties:

- Pythagoras Theorem

10. Practical Geometry:

- Construction of simple triangles (given three sides, given a side and two angles on it, given two sides and the included angle, given a side and the hypotenuse of a right angle)

JANUARY-FEBRUARY:

11. Congruence of Triangles:

- Introduction to the concept of congruence of figures
- Conditions of congruence of triangles (SAS, SSS, ASA and RHS)

12. Comparing Quantities:

- Understanding percentage as a fraction with denominator 100
- Converting fractions and decimals into percentage and vice-versa
- Application to profit and loss
- Application to simple interest

13. Symmetry: (Through Handout)

- Recalling reflection symmetry
- Rotational symmetry – observations of rotational symmetry of 2D objects (90°, 120°, 180°)
- Rotating given figure about a given point by 90° and 180°

REVISION FOR ANNUAL EXAMS

Assignments

Assignment – 1
INTEGERS

1. (a) The product of two integers is -105. If one of them is 7, find the other.
   (b) What is the difference between the temperature 15 degrees above zero and 20 degrees below zero?

2. Which of the following statements is true and which is false? *Justify each false statement with an example/reason.*
   (a) The collection of integers is closed under division.
   (b) The product of four positive integers is positive.
   (c) The product of four negative integers is negative.
   (d) $24 \div 3(2)$ is same as $24 \div 3 \times 2$.
   (e) $(-1)^{25} = 1$

3. Simplify each of the given expressions:
   (a) [(-8) x (-7)] ÷ [(-10) + (-4)]
   (b) 24 – 42 ÷ 6 x 5 + 3 – 10
   (c) $25-\left[-15-\left(23-4 of 7+10\right)\right]$
   (d) $17+\left[18 \div 3\left(-2-4\right)+1\right]$
   (e) $-125+250 \div 5 \times 10-325$
   (f) $\left(5-2 \times 3\right)-\left[-2-\left\{-10+\left(3+10 \div 2\right)\right\}\right]$
   (g) $-|-12|+|-3|-|5|$

4. Simplify each of the following using a suitable property:
   (a) $15 \times 93+15 \times(-73)$
   (b) $80 \times 665 \times (-125)$
   (c) $-124 \times 25-25 \times(-24)$
   (d) $(-42) \times (-98)$
   (e) $56 \times(-23)-56 \times 76-56$

5. A boy flung a pebble18metres high in the air which fell and settled at the bottom of a pond 14metres deep. By how much distance did the pebble fall?
6. A certain freezing process requires that room temperature be lowered from 45° C at a rate of 6°C every hour. What will be the room temperature 8 hrs after the process begins?
7. Every floor of a 20 storey building is 5 m high. If a lift moves 2 metres every second, how long will it take to move from 3rd floor to the 15th floor?
8. Poonam is an enthusiastic student in her diving class. On the first day, she managed to dive to a depth of 5m. From second day onwards, she managed to dive five meters deeper than the previous day, and so on. How far did she dive on the fifth day?
9. A manufacturer is producing two products A and B. He earns a profit of Rs 36 per unit on Product A and a loss of Rs 8 per unit on product B. If he sells 3000 units of product A and 2500 units of product B, find his overall profit or loss.

WEB RESOURCES:

Multiplication of integers: http://goo.gl/LJW8MM

***Enrichment Exercise* [Optional]:**

1. Fill in the missing positive/negative signs to make each statement true:
   (a) $\_\_15 + \_\_30 = -15$
   (b) $\_\_42 - \_\_9 \times \_\_10 + \_\_9 = -123$
   (c) $\_\_81 \div \_\_9 + \_\_4 = -13$

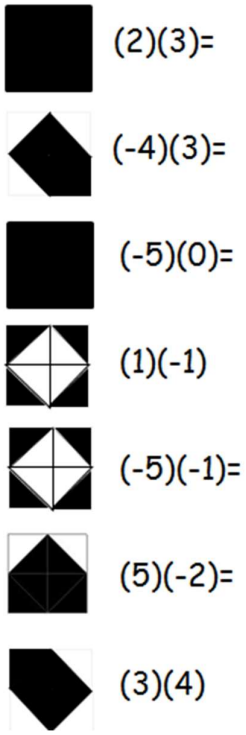
2. In each case, give *two* negative integers and *one* positive integer such that
   (a) their sum is -12
   (b) their product is 500

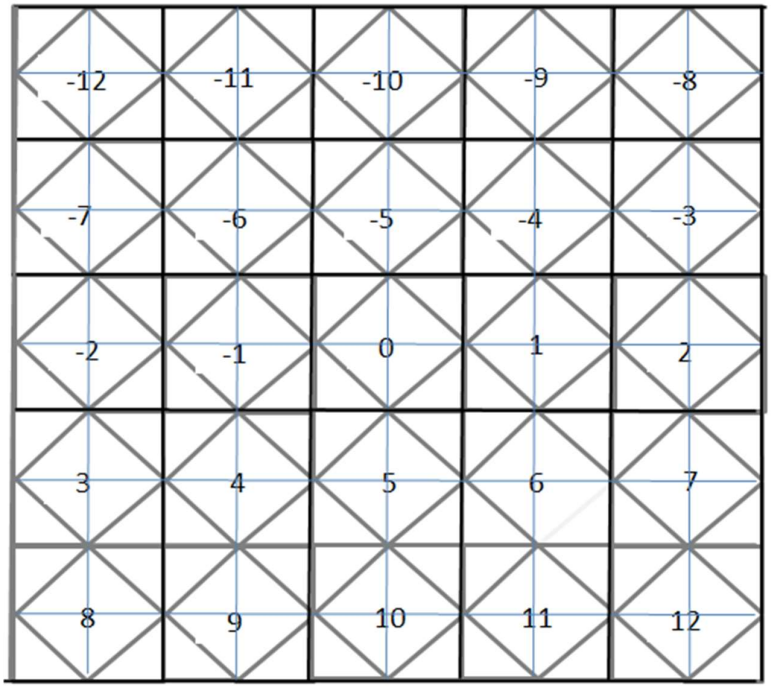
3. If $a = -2$ and $b = 3$, then find the value of $|-a-b| - a \times b$.

Fun Corner

Students must complete each of the questions and then colour in the given pattern corresponding to their answers.

Multiplying Integers



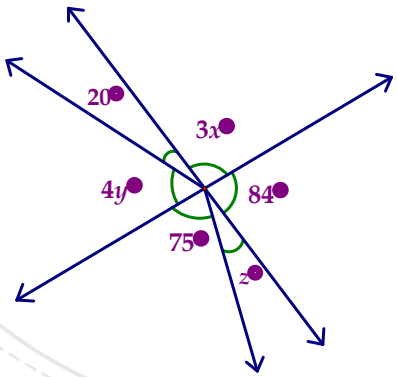


Learning Outcomes:
Student will be able to

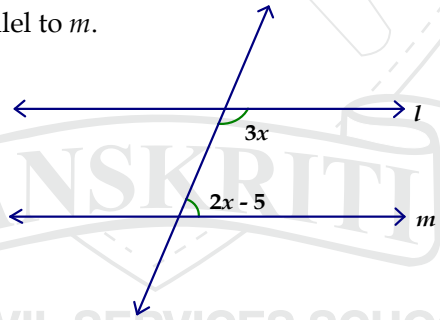
- apply the properties of addition and subtraction of integers.
- find the product of three or more negative integers and assign the appropriate sign to the product of different integers
- find the product and quotient using suitable properties of multiplication & division
- solve application based problems on daily life
- simplify a numerical expression using BODMAS

Assignment – 2
LINES and ANGLES

1. Find the values of x, y and z:

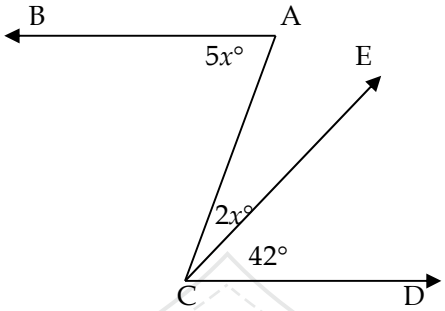


2. Fill in the blanks (*show the working wherever required*):
   (a) A pair of supplementary angles form a _____when placed adjacent to eachother.
   (b) The supplement of an _____ angle is an acute angle.
   (c) The complement of half of 120° is _____.
   (d) If $2x-3$ and $3x+8$ form a linear pair, then the value of x = _____.
   (e) If $7x$ is the complement of $2x-9$, then the value of $3x$ = _____.
   (f) If an angle is less than 60°, its complement will be greater than _____.
   (g) If co-interior angles are not supplementary, the lines are _____.
   (h) $\angle 1$ and $\angle 2$ are complementary angles, $\angle 2$ and $\angle 3$ are supplementary angles. If $\angle 1 = 45°$ then, $\angle 2$ =_____ and $\angle 3$=_____.
3. The difference between two complementary angles is 44°. Find them.
4. Two angles forming a linear pair are in the ratio 17 : 19. Find their difference.
5. Find the value of x if l is parallel to m.



6. State true or false. Justify each *false* statement with an *example/reason*.
   (a) Two angles forming a linear pair are supplementary.
   (b) Two supplementary angles form a linear pair.
   (c) If two lines are intersected by a transversal, then pairs of corresponding angles are equal.
   (d) If a transversal cuts two lines such that the co-interior angles are supplementary, then the lines are parallel.

7. Find the value of x if AB is parallel to CD.



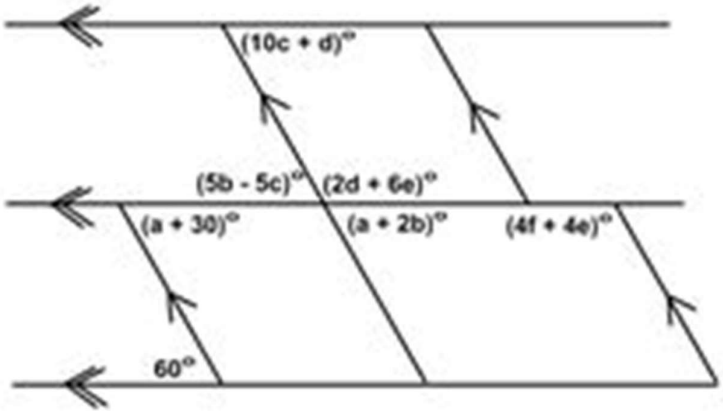
8. Line AB intersects line CD at O. If ∠AOC is twice of ∠AOD, find the measure of all the angles. Draw the required figure.

9. If the transversal l is perpendicular to line a as well as line b, is $a \parallel b$? Construct a diagram to illustrate your answer.

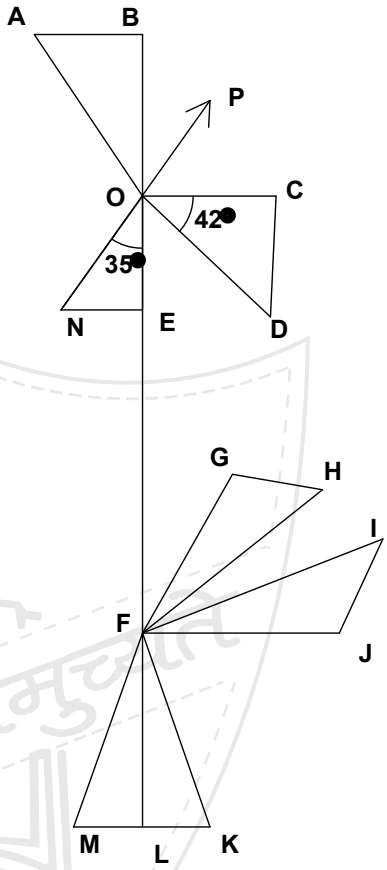
10. When twice an angle is added to 45°, you get the supplement of the angle. Find the angle.

[redacted]

A. Find the value of the unknowns:



B. Look at the given figure and answer the following questions:



1. Name a pair of adjacent angles…….
2. Name a pair of complementary angles……..
3. Name a pair of supplementary angles……..
4. Name a linear pair of angles…….
5. Number of obtuse angled triangles…….
6. Name an acute angled triangle……
7. NE || ……
8. Angle NOE =……..(vertical angle)
9. Measure of angle ONE……
10. Measure of angle POC……

Learning Outcomes :
Student will be able to

- define and identify various pairs of angles.
- differentiate between adjacent angles and linear pairs.
- find the missing angle.
- define transversal.
- identify various pairs of angles made by transversal.
- state and use the properties of parallel lines with transversal.

Assignment – 3
RATIONAL NUMBERS

1. Fill in the blanks (***show the required working***):

   (a) The additive inverse of $\left(\frac{-8}{9}+\frac{7}{3}\right)$ is _____.

   (b) If $\frac{-18}{72}=\frac{x}{16}$, then x = _____.

2. State True or False :

(a) $\frac{-4}{-7}$ is a rational number. (b) $\frac{-3}{8}$ is a fraction.

(c) $\frac{3}{-5}$ is not a rational number. (d) $\frac{-7}{-8}$ is a positive rational number.

(e) 106 is a positive rational number. (f) $\frac{16}{0}$ is a rational number.

3. Arrange in ascending order: $\frac{2}{-3}$, $\frac{-14}{-9}$, $\left|\frac{-5}{6}\right|$, $\frac{7}{12}$

4. $\frac{-11}{24}$ when subtracted from a number gives $\frac{23}{72}$. Find the number.
5. What should be added to $\frac{-1}{2}$ to get nearest natural number?
6. What should be subtracted from $\frac{-2}{3}$ to obtain the nearest negative integer?
7. Write the following as rational numbers in their standard forms:

   (a) 35% (b) 1.2 (c) $-6\frac{3}{7}$ (d) $240 \div (-840)$

8. Taking $x=\frac{-4}{9}$, $y=\frac{5}{12}$ *and* $z=\frac{7}{18}$, find :

   (a) the rational number which when multiplied by y to get x.

   (b) The multiplicative inverse of $(x+y)$

   (c) The rational number which when divided by z gives x.

9. Find the product of the additive inverse of 8, multiplicative inverse of -2 and absolute value of -25 .
10. In a theatre $\frac{1}{2}$ the audience were women and $\frac{1}{3}$ of these women were school girls. If the total audience were 600 in number, how many were school girls?

WEB RESOURCES: THE CIVIL SERVICES SCHOOL

Division by zero undefined: http://goo.gl/aDmGcj

Enrichment Exercise **[Optional]:**

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1. In each case, find a positive and a negative rational number whose

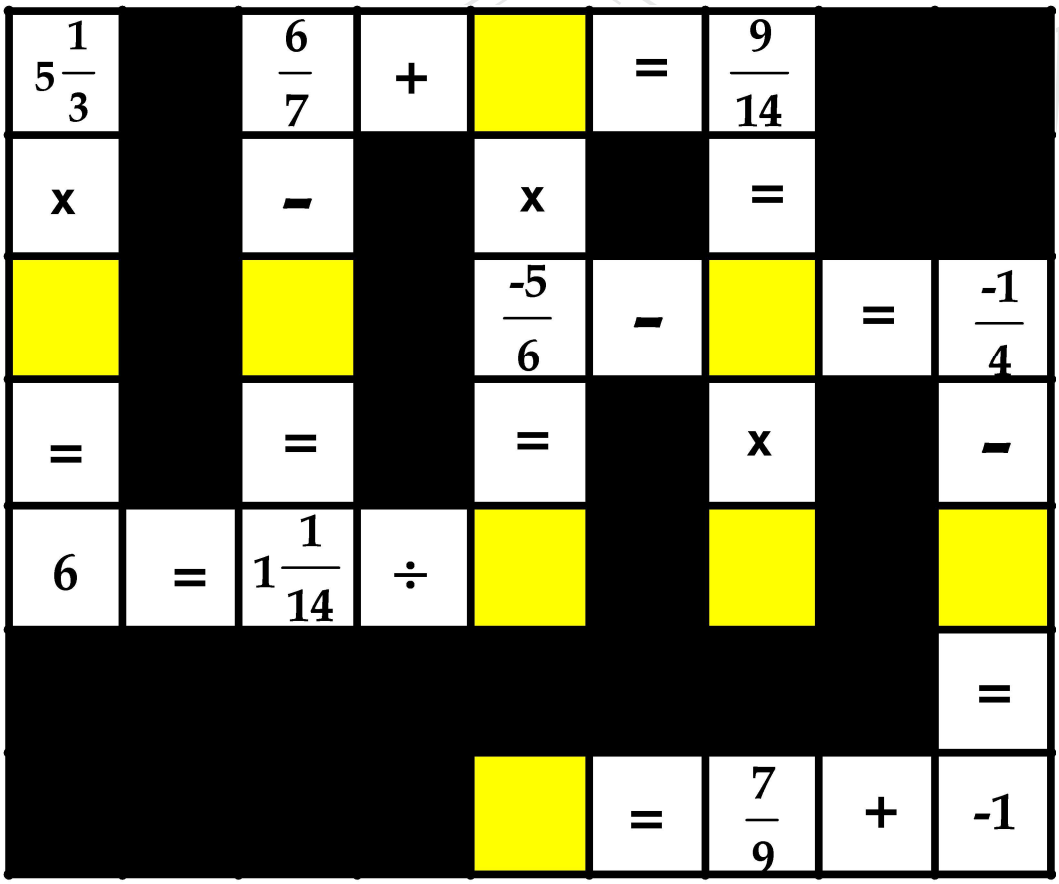
   (a) Sum is $\frac{7}{15}$ (b) Product is $-7\frac{1}{8}$ (c) Difference is $\frac{-8}{21}$

2. Find x in each case:

   (a) $\frac{-3}{7}+x=\frac{8}{3}$ (b) $\frac{-12}{5}-x=\frac{5}{9}$ (c) $x\div\frac{5}{12}=\frac{18}{25}$ (d) $\frac{5}{12}\div x=\frac{18}{25}$

Fun Corner

PUZZLE on Rational Numbers

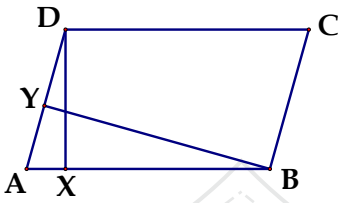


Learning Outcomes :
Student will be able to

- differentiate between positive and negative Rational numbers.
- compare rational numbers and arrange them in order.
- represent a rational number in standard form.
- apply all four operations on rational numbers.
- solve real life problems.

Assignment – 4
PERIMETER AND AREA

1. Find the area of the parallelogram ABCD if DX ⊥ AB, BY ⊥ AD, BY = 30 cm, DX = 20 cm and AD = 25 cm. Also find the length of AB.



2. The area of a parallelogram ABCD is equal to that of another parallelogram PQRS. In ABCD, AB = 40 cm and the corresponding altitude DE = 18 cm whereas in PQRS, QR = 36 cm. Find the corresponding altitude PM.
3. ΔPQR is right angled at P. PS is perpendicular to QR. If PQ = 8 cm, QR =17 cm and PR = 15 cm, find the area of ΔPQR. Also find the length of PS.
4. A garden in the form of a right angled triangle has an area of 72 sq m. If the two sides comprising the right angle are equal, what could be the length of these sides?
5. The area of a parallelogram is420 sq m. If the distance between two parallel sides is 15 m, find the length of these sides.
6. If the perimeter of a parallelogram is 140 m, the distance between a pair of opposite sides is 7 m and its area is 210 sq m, find the length of two adjacent sides of the parallelogram.
7. To fence a circular garden, the total cost is Rs 26,400 at the cost of Rs 50 per metre. Find the radius of the circle.
8. A tablecloth 350 cm long and 200 cm wide has a 15 cm border all around it inside. Find the cost of printing the border at the rate of 50 paise per 10 sq cm.
9. A rectangular garden is 200m long and 160m broad. In its middle, there is a circular tank of radius 28m. Find the cost of covering the remaining portion of the garden with grass at the rate of 50 paise per sq metre. (Take π = 22/7)
10. If the length of the minute hand of a clock is 14cm, find

    (a) The distance covered by its tip in one hour.
    (b) The area swept by it in half an hour.
11. There are two concentric circles. The radius of the outer circle is 10 cm & the radius of the inner circle is 4 cm. Find the area of the shaded portion. (Take π = 22/7)

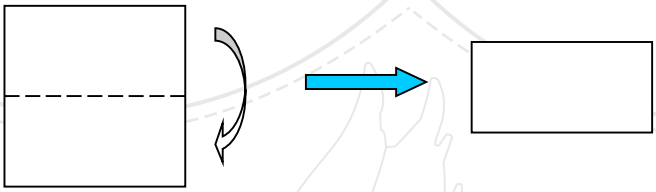
WEB RESOURCES:

CIRCLE &PI : http://goo.gl/8ORvZy

AREA OF CIRCLE: http://goo.gl/WZL8Is

***Enrichment Question* [Optional]:**

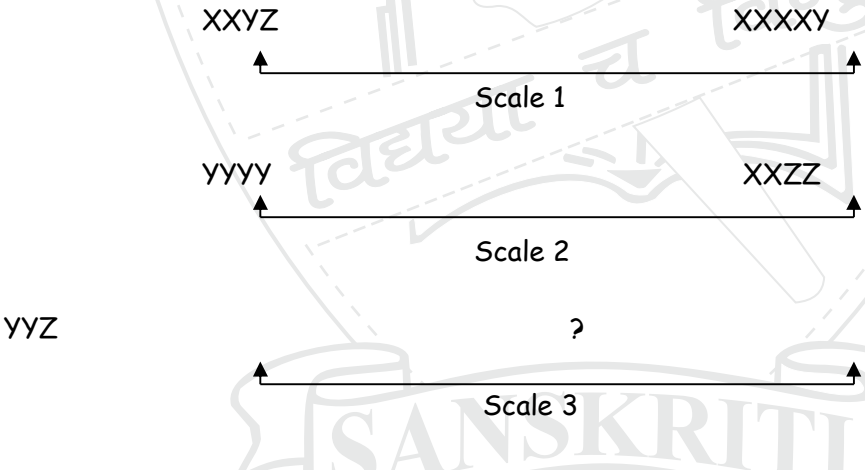
Q. If a square paper is folded into half, the new rectangle has a perimeter of 39 inches. What is the area of the original square? Also, find its perimeter.



Fun Corner

Balancing Act:

Scales 1 and 2 are in perfect balance. How many X's must be put on the right side of Scale 3 to maintain the balance?



* *Egg & Box- answer:* **850 paise** (A pair of egg and box costs 250 paise)

* *Number of triangles - answer*: **48**

Learning Outcomes :

Student will be able to

- find the perimeter and area of a given figure
- calculate area of parallelograms and triangles
- understand the concept of Pi
- calculate circumference and area of a circle
- solve miscellaneous word problems

Assignment – 5

EXPONENTS AND POWERS

1. a) Is the value of $(-3)^5$ and -3^5 same? Give reason.

b) Is the value of $(-3)^6$ and -3^6 same? Give reason.

2. Write 2187 in its exponential form.

3. Find the value of: $2^9 \times 2^{91} - 2^{19} \times 2^{81}$.

4. Find the value of: $2^3 + 2^2 + 2^0$.

5. Simplify the following using laws of exponents:

a) $[125^5 \div 125] \div 5^8$

b) $\left[\left(\frac{-2}{3}\right)^5\right]^3 \times \left[\left(\frac{-2}{3}\right)^2\right]^5 \times \left[\left(\frac{-2}{3}\right)^0\right]^5$

c) $\frac{\left(\frac{4}{7}\right)^5 \times \left(\frac{4}{9}\right)^4}{\left(\frac{4}{9}\right)^2 \times \left(\frac{4}{7}\right)^4}$

d) $5^a \times 25^b$

6. Find x^2 if $x = (-9)^2 \div \left[(-9)^{-2}\right]^0$.

7. Using laws of exponents, determine x so that:

a) $\left(\frac{3}{5}\right)^3 \times \left(\frac{3}{5}\right)^{x+5} = \left(\frac{3}{5}\right)^{14}$

b) $(2^x)^6 = (2^9)^2$

c) $\left[\left(\frac{2}{3}\right)^2\right]^4 = \left[\frac{2}{3}\right]^{3x-1}$

d) $7^{2x-1} \times 7^3 = 49$

e) $6^{x-1} = 1$

f) $x^3 \times (-5)^3 = (-10)^3$

8. Simplify using laws of exponents:

(a) $\frac{(2^2)^3 \times 3^3 \times 5^4}{8^2 \times 3^2 \times 125}$

(b) $\left[729^3 \div 729\right] \div 3^8$

9. If $4^x = 256$, then find the value of 6^{2x-8}

10. Find the value of $\left[(-2)^2\right]^4$

WEB RESOURCES:

Exponents and Powers
http://goo.gl/voUSk

Learning Outcomes:
Students will be able to

- express numbers in the form of exponents
- identify base and exponents.
- state laws of exponents.
- apply laws of exponents.
- solve various problems based on exponents.

Assignment – 6
DATA HANDLING

1. A die was thrown 15 times and the outcomes recorded were
   5, 3, 4, 1, 2, 6, 4, 2, 2, 3, 1, 5, 6, 1, 2
   Find the mean , median and mode of the data.
2. A textile Showroom distributes free saplings to customers who purchase clothes for a minimum amount of Rs.5000. The number of saplings they distributed for a week is shown below:

Day	Mon	Tue	Wed	Thurs	Fri	Sat	Sun
Number of samples	98	72	83	95	100	135	208

   a. Find the average number of saplings distributed by the showroom per day.
   b. Write two sentences on the importance of planting trees.

3. The marks obtained out of 100 by 5 students in mathematics and physics are given below. Draw a double bar graph to represent the data by taking appropriate scale.

Student	Ameena	Babita	Charlie	Susan	John
Mathematics	92	90	86	98	85
Physics	86	94	96	96	80

4. Find the value of x, if the mean of 26, 28, 25, x , 24 is 27.

5. If the median of observations 11, 12, 14, 18, +2 , 20, 22, 25, 61 arranged in ascending order is 21. Find x.

6. The letters of the word "PROBABILITY" are placed in a bag and one letter is taken out.
   (i) There are _____ outcomes?
   (ii) What is the probability of the following being the one taken out?
   (a) P(P) = _____ (b) P(B) = _____ (c) P(vowels) = _____
   (d) P(consonants) = _____ (e) P(X) =_____ (f) P(any letter) =____
7. Write all the possible outcomes of picking a number from the first 10 composite numbers. Find the range of this list. What is the probability of getting an even number?
8. Write all the integers ***between*** –4 and 11. What is the median of this list? Also, find the probability of picking an odd number from this list.
9. An ordinary pack of 52 cards is well shuffled. The top card is then turned over. What is the probability that (a) the top card is a red card. (b) thetop card is a black ace card.
10. What is the probability of:
    (a) getting an ace from a deck of 52 cards?
    (b) getting a number less than 7 when a die is rolled?
    (c) a card of spades from a deck of 52 cards?
    (d) getting at least one heads when two coins are tossed together?
    (e) getting a prime number when a die is roll

WEB RESOURCES:

Introduction to Probability https://goo.gl/SwOU0H

***Enrichment Exercise* [Optional]:**

1. 25 years ago, when my parents got married, their average age was 27 years. Now, the average age of my family, consisting of myself and my parents is 42 years. How old am I?
2. The average attendance of a class from Monday to Wednesday was 39 and that from Wednesday to Saturday was 39.5. What was the attendance on Wednesday, if the average Attendance from Monday to Saturday was 40?
3. The mean, median and mode of four numbers is 8. The smallest number is 7. Find the numbers.

Learning Outcomes :

Students will be able to

- collect and organize data.
- represent data in tabular form.
- calculate mean, median and mode of the given ungrouped data.
- read double bar graphs.
- draw double bar graphs.
- understand the concept of probability by understanding different experiments and their outcomes.
- Find probability for a given event.

Assignment – 7
ALGEBRAIC EXPRESSIONS

1. Write the numerical coefficients of all the terms in the following expression:

   (a) $-pq+7p^2q^2$ (b) $x+3xy-4yz$

2. Fill in the blanks:

   (a) The coefficient of x^2 in $-7x^3+4x^2-10x$ is _____.

   (b) The terms of the expression $-15x^3-4y^3+10x^3y^3$ are _____, _____ and _____.

   (c) $3x^2y$ & $-2yx^2$ are _____terms.

   (d) If $3x=-18$, then $5x$ = _____.

   (e) The coefficient of a^2 in $-21a^2b^3c$ is _____.

3. Arjun bought a rectangular plot with length x and breadth y and then sold a triangular part of it whose base is y and height is z. Find the area of the remaining part of the plot.

4. What will be the value of a if $3x^2+x+a$ equal to 8 when $x=1$?

5. What should be added to $3x-y+5z^2-4$ toget $19y-6-8x$?

6. Subtract the sum of $-7m^2+8n^2-3$ and $4n^2-7$ from the sum of $15m^2+11-6n^2$ and $-10-m^2-n^2$.

7. If $A=2m-5n-7p$, $B=-9n+6m+10p$ and $C=17p-4n+4m$, find $A-B+C$.

8. For $x=-1$, $y=2$ and $z=-3$, evaluate each of the following:

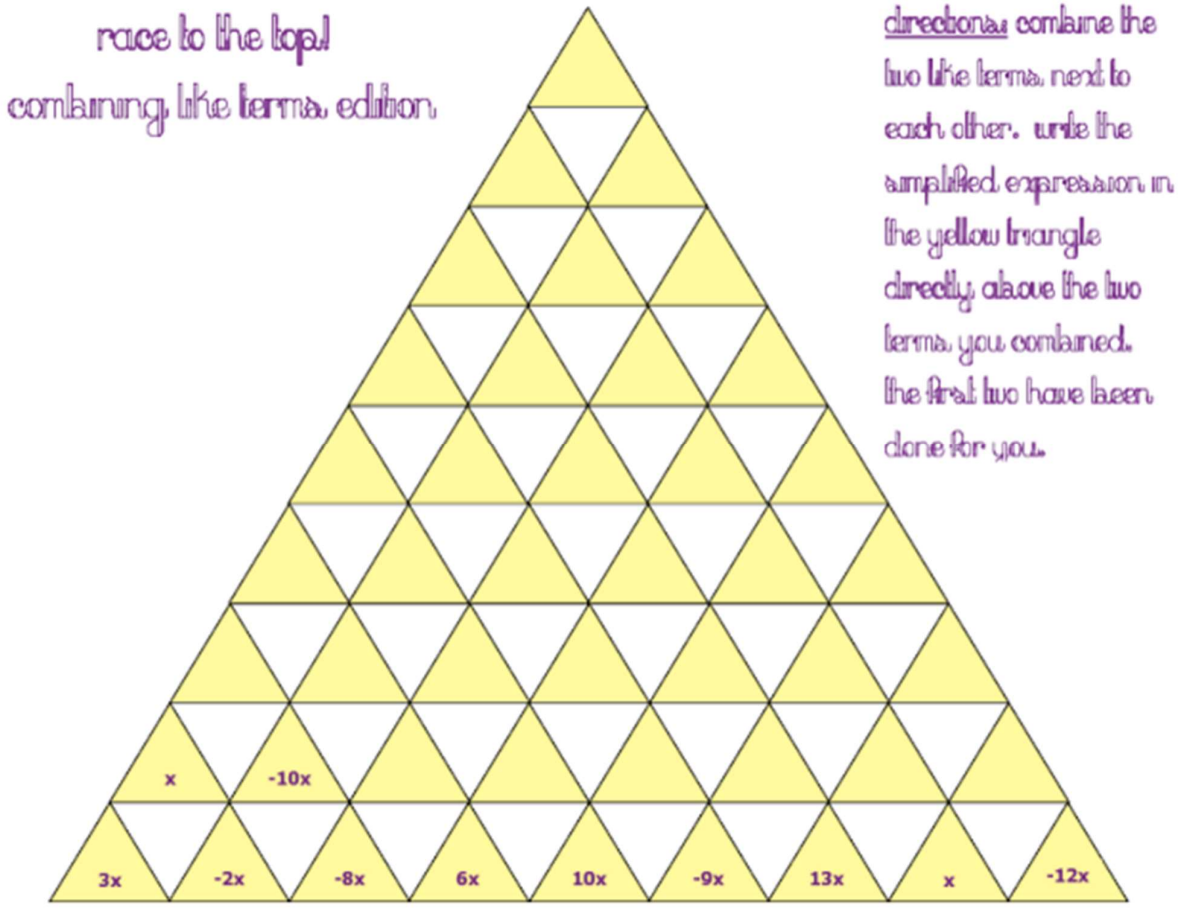
   (a) $xy+z-y^2$ (b) $2x^2-5y^2$ (c) $-xyz+8$ (d) $\frac{y}{2}+\frac{z}{3}$

9. Rohan had $17x^2+4x-3$ rupees with him. He spent $8x^2-7x-9$ rupees for his birthday party. How much money is left with him?

10. Three sides of a triangle are $2x^2+3x+1, x^2+7, and 3x^2-2x+3$. What is its perimeter?

Fun Corner

Combine the two like terms next to each other and write the simplified expression in the yellow triangle directly above the two terms…



Learning Outcomes :

Students will be able to

- define algebraic expression
- identify and separate the terms of an expression and draw factor-tree for each term
- define and identify types of algebraic expressions – monomial, binomial, trinomial and polynomial
- define and identify like/unlike terms
- simplify a given expression by combining like terms
- find the sum and difference of two algebraic expressions
- evaluate an expression for the given values of variables

Assignment – 8
SIMPLE EQUATIONS

Part- I

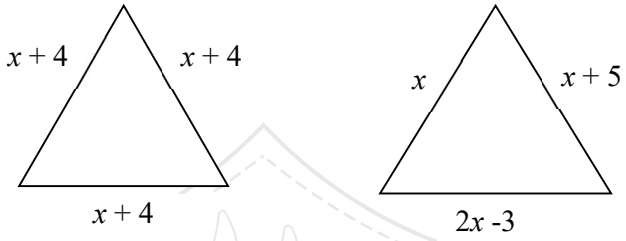
1. Solve the following linear equations:
   a) $2(x-2)+3(x-3)=4(x-5)+(2x-1)$
   b) $\frac{3x}{2}+\frac{1}{10}=\frac{5x}{3}+\frac{1}{15}$
   c) $\frac{2x-5}{3}=\frac{x-3}{2}$
   d) $3.45x-0.75=2.25+0.45x$
   e) $\frac{2x}{3}-\frac{3x}{5}=1-4x$
   f) $\frac{4-3x}{2}=\frac{2x+29}{5}$
   g) $2(x+3)-3x=8-2(2x-5)$
2. If $\frac{5m-2}{2}=-11$, find the value of $2m+3$.

Part- II

1. Three-fourths of a number is more than half of the number by 6. Find the number.
2. Find three consecutive even integers whose sum is 108.
3. The cost of 2 tables and 5 chairs is Rs 2300. If a table costs Rs 30 more than a chair, find price of each.
4. Two angles are supplementary. One is $64°$ more than the other. Find the angles.
5. The length of a rectangular field exceeds its breadth by 10m. If the perimeter of the field is 100m, find the length and breadth of the field.
6. A man left two-thirds of his property to his wife, one-fourth to his daughter and Rs15000 to his son. How much money did the man have?
7. Ram's age is 4 times that of his son. Five years ago, he was 9 times as old as his son was then. What are their present ages?
8. One–third of the length of a pole is under the ground, one–fourth in water and the remaining 5 m above water. Find the total length of the pole.
9. Each of the two equal sides of an isosceles triangle is three times as large as the third side. If the perimeter of the triangle is 28cm, find each side of the triangle.

10. The sum of two numbers is 94. The larger number is 5 less than twice the smaller number. Find the numbers.

11. Find the value of x if the two triangles given below have the same perimeter.

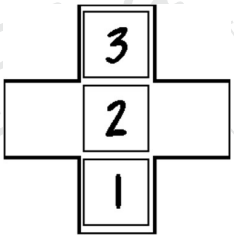


WEB RESOURCES:

Simple Equations http://goo.gl/7JMM5a

Fun Corner

1. The diagram below shows a cross-shaped box containing three numbered blocks.



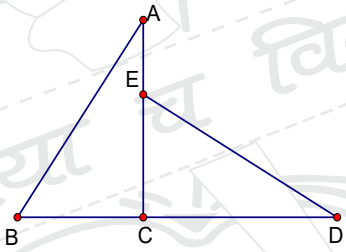
The puzzle is to slide the blocks around the box until the numbers read 1, 2,3 as you go down. How do you do it?

2. Points A, B, C and D are arranged in order on a line such that AB= 3BC = 2CD. What is BD as a fraction of AD?

Learning Outcomes:
Student will be able to :
- identify linear equations in one variable
- solve linear equations using transposition of terms
- transform given word problems into linear equations and solve them.

Assignment – 9
TRIANGLES AND ITS PROPERTIES

1. The angle at the vertex of an isosceles triangle is four times its base angles. Find the angles of the triangle.
2. An exterior angle of a triangle is 100° and one of its interior opposite angles is 3 times the other. Find the measure of each angle of the triangle.
3. One of the angles of an isosceles triangle is 100°. Is this a base angle or avertical angle? Give reasons. Calculate the other two angles also.
4. A 13m long ladder is placed against the wall in such a way that the foot of the ladder is 5m away from the wall. At what height does the ladder reach the wall?
5. An apple orchard is in the form of a rectangle. If its length is 60m and the length of one diagonal is 75m. Find the breadth and perimeter of the orchard.
6. Two poles are on the either sides of the road. Heights of the poles are 10m and 18m respectively. The distance between their tops is 17m. Find the width of the road.
7. In the given figure, find∠ACD and ∠AED if ∠B = 45°, ∠D = 40° and ∠A = 25°.



8. Will sides 3cm, 5cm, 7cm form a ***triangle***? Justify your answer.
9. Will sides 3cm, 5cm, 7cm form a ***right triangle***? Justify your answer.
10. In ΔPQR, PQ = PR and ∠R = 40°. Find the other two angles. **Draw the required figure**.
11. The longest side of a right triangle is 65 cm. If one of the shortest side is 60 cm, find the third side.

WEB RESOURCES:

Properties of Triangles http://goo.gl/7n2UMq

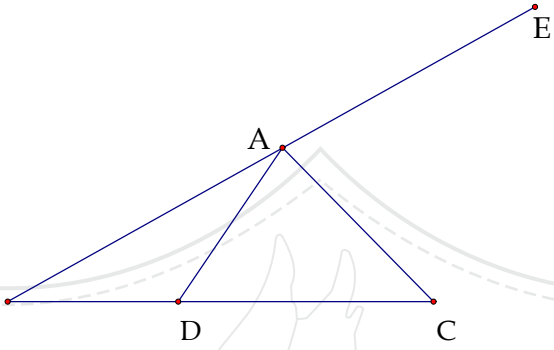
Enrichment Exercise (Optional):

1) A 25m long ladder is placed against a vertical wall inside a room such that the foot of the ladder is 7m from the foot of the wall. If the top of the ladder slides 4m downwards, then the foot of the ladder will slide by

(a) 16m (b) 8m (c) 4m (d) 2m

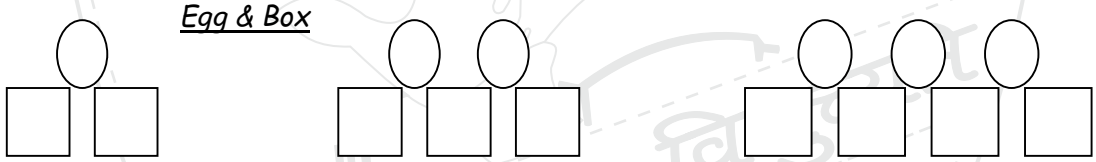
2) Equal sides of an isosceles triangle are 13cm each and base 10cm. Find the altitude from the vertex to the base of the triangle.

3) In the given figure, BD = AD = AC and ∠EAC = 75°. Find the value of ∠ABD.



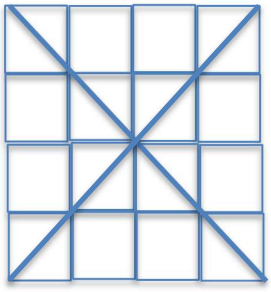
Fun Corner

Egg & Box



350 paise	600 paise	?

Find the number of triangles in the given figure



Learning Outcomes :
Students will be able to

- define median and altitude of a triangle
- state and apply different properties of triangles
- solve problems based on properties of triangles
- state and explain Pythagoras theorem and its converse
- apply Pythagoras theorem and its converse to solve problems

Assignment – 10
PRACTICAL GEOMETRY

1. Construct ΔABC in which AB = 6.5cm and BC = CA = 4.5cm.
2. Construct ΔABC in which AB = 6cm, BC = 5cm and ∠B = 45°.
3. Construct ΔPQR in which PQ = 5.4cm, ∠P = 70° and ∠Q = 80°.
4. Construct ΔPQR in which PQ = 6.3cm, ∠P = 70° and ∠R = 80°.
5. Construct ΔXYZ in which XY = 5cm, XZ = 7cm and ∠Y = 90°.
6. Construct ΔDEF with DE = 5cm, EF = 6.5cm and ∠E = 90°.
7. Construct an equilateral triangle of side 5.2cm.
8. Construct a right – angled triangle in which sides containing the right angles are 6cm and 4.5 cm. Measure the hypotenuse.
9. Construct an isosceles right-angled triangle ABC such that its hypotenuse AC=5.5cm.
10. In each case, check if it is possible to construct a **unique** triangle with the given sides and angles:
    (a) A triangle with sides 7.5cm, 3cm and 4cm.
    (b) A triangle with angles 50°, 60° and 70°.
    (c) A right triangle with sides 4cm, 5cm and 7cm.
    (d) ΔABC with ∠A = 85°, AB = 7cm and ∠B = 95°.

WEB RESOURCES:
Constructions: http://goo.gl/VWwUJk

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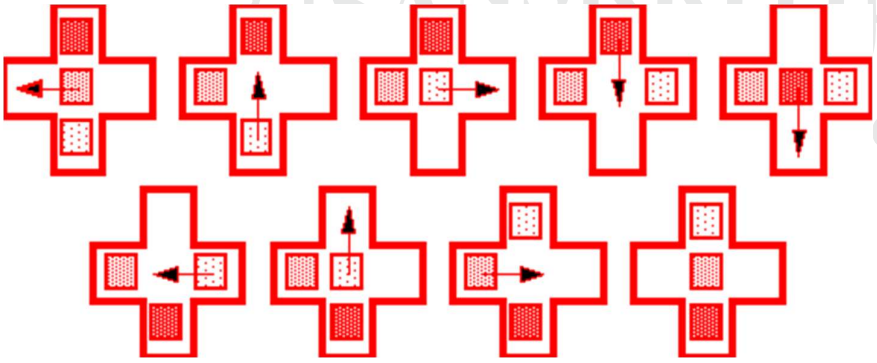
* ***Balancing Act- answer:*** **5 X's will balance YYZ**

* *Fun Corner 1 answer:*

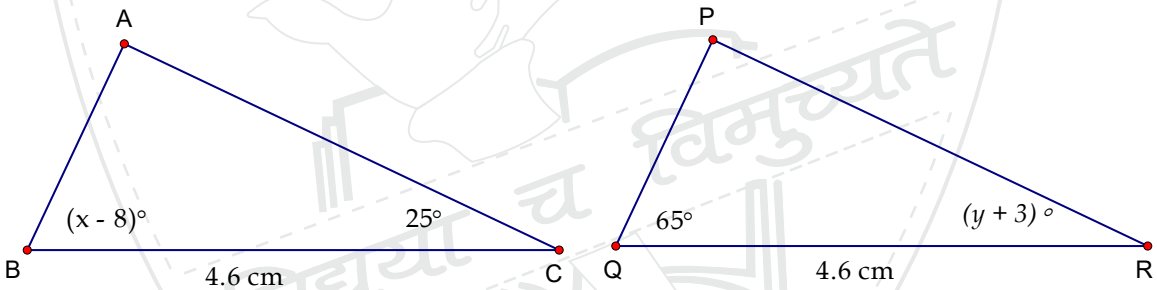


Learning Outcomes :
Students will be able to

- construct a triangle when the following are known:
  - three sides
  - a side and two angles
  - two sides and the included angle
  - a side and the hypotenuse of a right triangle

Assignment – 11
CONGRUENCE OF TRIANGLES

1. State *true* or *false*. Justify each *false* statement with an *example/reason/figure*.
   (a) Two circles with the same radii are congruent.
   (b) If two rectangles have equal areas, they are congruent.
   (c) Two equilateral triangles are congruent.
   (d) If two squares have equal areas, they are congruent.
   (e) Two triangles with angles 50°, 60° and 70° are congruent by AAA criterion.
2. If AB=PQ, AC=PR and $\angle A = \angle P = 40°$, then by which congruence rule $\Delta ABC \cong \Delta PQR$?
3. In ΔABC and ΔPQR, AB=3.5cm, BC= 7.1cm, AC=5cm, PQ=7.1cm, QR=5cm and PR=3.5cm. Then $\Delta BCA \cong$ _____.
4. Find the values of x and $y$if $\Delta ABC \cong \Delta PQR$.



5. In ΔPQR , PS is an altitude and PQ = PR. (*Draw the required diagram*)
   (a) Prove that $\Delta PQS \cong \Delta PRS$.
   (b) Is PS a median also? Why or why not?
   (c) Is $\angle QPS = \angle RPS$? Give reason.
6. In ΔPQR , $\angle P = 58^\circ, \angle R = 72^\circ and PR = 8cm$. In ΔABC , $\angle B = 72^\circ$, $\angle A = 58^\circ$ and $AB = 8cm$. Are the triangles congruent? If so, write the congruence of these triangles in correct correspondence.
7. In ΔABC , AD is the bisector of $\angle A$. If $AD \perp BC$, prove that $AB = AC$.
   (*Draw the required diagram*)
8. $\Delta PQR \cong \Delta LMN$, PQ = $20x$ – 8. If LM= 92cm, find the value of x.
9. If $\Delta ABC \cong \Delta XYZ$, $\angle X = 65°$ and $\angle C = 55°$, then find $\angle Y$.
10. $\Delta PQR \cong \Delta LMN$. Perimeter of ΔLMN is 220 cm. If the sum of two sides of ΔPQR is 130cm, what is the length of the third side of ΔLMN?

Fun and Interesting Facts About Pi

π

1) Pi occurs in hundreds of equations in many sciences including those describing the DNA double helix, a rainbow, ripples spreading from where a raindrop fell into water, superstrings, general relativity, normal distribution, distribution of primes, geometry problems, waves, navigation....

2) Pi is the 16th letter of the Greek alphabet. The first person to use the Greek letter Pi was Welshman William Jones in 1706. He used it as an abbreviation for the periphery of a circle with unit diameter. Euler adopted the symbol and it quickly became a standard notation.

3) Pi is irrational. An irrational number is a number that cannot be expressed in the form (a / b) where a and b are integers.

4) There is no zero in the first 31 digits of Pi.

5) The Babylonians found the first known value for Pi in around 2000BC -They used (25/8).

6) The Bible uses a value of Pi of 3. Here is a verse from I Kings 7,23: And he made a molten

sea, ten cubits from one brim to the other: it was round all about, and his height was five cubits: and a line of thirty cubits did compass it about.

7) Pi day is celebrated on March 14 at the Exploratorium in San Francisco (March 14 is 3/14) at 1:59 PST which is 3.14159.

Here's a Pi limerick:

Three point one four one five nine two
It's been around forever - it's not new
It appears everywhere, here and there.
It's irrational I know but its true !

Learning Outcomes :
Students will be able to

- Define and explain the term congruence
- State and explain the four criteria for congruence(SSS, SAS, ASA, RHS)
- Apply the above criteria to prove congruence of two triangles

Assignment – 12
COMPARING QUANTITIES

1. Ramesh and Satish contested the Delhi assembly elections. Ramesh scored 11,484 votes which was 44% of the total votes. Satish scored 26% of the votes. Calculate the number of votes cast in the village and the number of voters who did not vote for either Ramesh or Satish.
2. Lalit got 50% marks in Hindi, 75% in English and 90 marks in Maths. The maximum marks in each of the subjects were 100, 140 and 160 respectively. Find his aggregate percentage.
3. Rohit sold his chair for Rs 720 at a loss of 10%. For how much did he buy the chair?
4. A computer costing Rs 60,000 one year ago now costs Rs 40,000. Find the percentage increase or decrease in the price.
5. A man bought a car for Rs 60,000 and spent 10% of the cost of the car for the purchase of new tyres. At what price should he sell the car to make a gain of 15%?
6. I bought a washing machine for Rs 7500 and spent Rs 500 on its cartage. Due to some circumstances, I was compelled to sell it for Rs 6000. Find my loss percent.
7. Find the simple interest and amount of Rs 3500 for 2 years at 8% per annum.
8. Raju borrowed Rs 18000 from a moneylender at 12 % per annum for 5 years and Sanju borrowed the same amount at 8% per annum from the bank for 6 years. Who paid more interest and by how much?
9. Nikhil borrowed some money from a moneylender at 10% per annum. He paid Rs 3000 as interest after two years. How much money did he borrow?
10. What is the rate of interest which gives an interest of Rs 250 on a sum of Rs 5000 for 2 years?

Enrichment Exercise **[Optional]:**

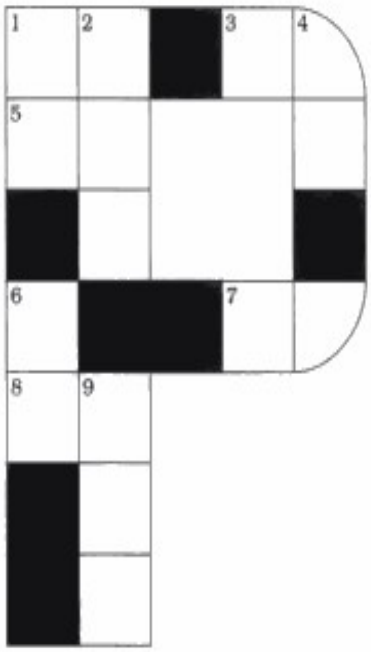
1. The ratio of the cost price and selling price of an article is 5 : 6, find the gain percent.
2. If the simple interest on a certain sum of money for 2 years be one-fifth of the sum, then find the rate of interest per annum.
3. A certain brand of soap powder is sold at Rs 2.50 a sachet. They cost Rs 18 a dozen. What is the gain or loss percent on 3 dozen sachets?
4. A restaurant adds 10% service charge and 12% VAT on the basic price of meals. If the basic price of meal is Rs 1500, how much money do I pay for the meal?
5. Sudhir borrowed Rs 3,00,000 at 12% per annum from a money-lender. At the end of 3 years, he cleared the account by paying Rs 2,60, 000 and a gold necklace. Find the cost of the necklace.

Learning Outcomes:
Students will be able to :

- convert percent to fraction
- convert fraction to percent
- convert decimal to percent and vice-versa
- find profit and loss
- calculate profit and loss percent
- find simple interest

Fun Corner

Percentage Crossword



Across

1. 25% of 128 = _____

3. n% of 12 is 3 n% = _____

5. 12% of n = 7.8 n = _____

7. $66\frac{2}{3}$% of 42 = _____

8. n% of 208 = 108.16 n% = _____

Down

1. 6% of 600 = _____

2. 5% of n = 12.5 n = _____

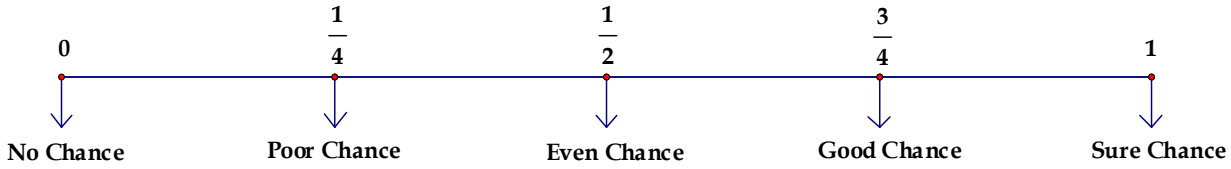
4. n% of 18 is 9.9 n% = _____

6. $\frac{3}{5}$% of 2500 = _____

9. .4% of n = 1.024 n = _____

Handouts

Handout on PROBABILITY



Describe the chance of happening of each of the following events:

1. If today is 8th December, tomorrow will be 9th December. _____
2. You throw a tail with a coin. _____
3. You throw a 3 with a die. _____
4. Throwing an odd number with a die. _____
5. You throw a number greater than 7 with a die. _____
6. A red marble is picked up from a bag containing 7 red & 3 greenmarbles. _____
7. Three lines intersect at 4 points. _____
8. We can draw a triangle whose angles add up to 180 degrees. _____

OUTCOMES: An outcome is the result of a single trial of an experiment.

PROBABILITY: Probability $= \dfrac{\text{Number of Desired Outcomes}}{\text{Number of Total Outcomes}}$

e.g. All possible outcomes when a die is thrown are: 1, 2, 3, 4, 5 and 6

Probability of *getting an even number* $= \dfrac{3}{6}$ → *Getting a 2, 4 or 6*; → *Total outcomes*

$= \dfrac{1}{2}$

Exercise:

1. (a) Write all the possible outcomes of picking an odd number from first 10 whole numbers: _____

   (b) What is the probability of picking 5 from the above list? _____

2. (a) Write all the possible outcomes of picking any letter from the word GAMES:

   _____

   (b) Find the probability of selecting the letter E: _____

Contd..

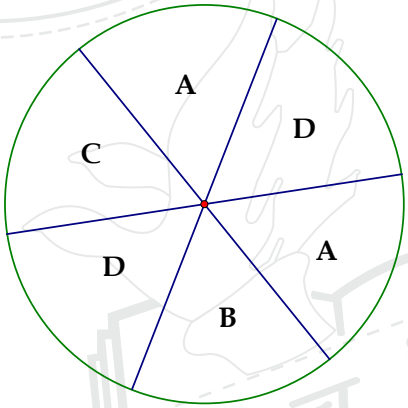
3. Write the probability of picking a vowel from the English alphabets: _____

4. Find the probability of picking the letter M from the word MATHEMATICS: _____

5. Tell whether the probability will be 0 or 1:
   (a) If today is Friday then yesterday was Thursday. _____
   (b) A die when thrown shall land up with number 0. _____
   (c) You are younger today than tomorrow. _____

6. List the outcomes you can see in these experiments:

   (a) Spinning the following wheel: _____



   (b) Tossing two coins together: _____

7. Write the probability of getting D in Question 6(a): _____

8. a) Write all the possible outcomes of picking an integer from –7 to 3:

   _____

   b) What is the probability of getting a positive integer from the above list?

   _____

9. What is the probability of drawing a red card from a deck of cards?_____

10. a) Write all the possible outcomes of getting a multiple of 3 from 20 to 45:

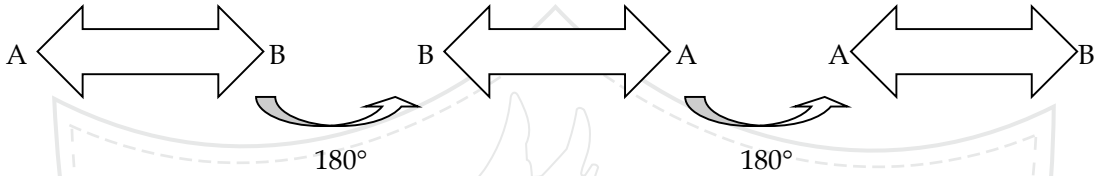
    _____

b) What is the probability of getting an even numberfrom the above list? _____

Handout on SYMMETRY

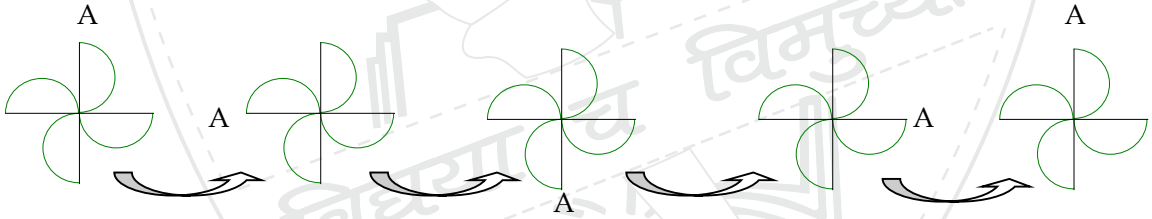
Rotational Symmetry:

A figure is said to have *rotational symmetry* about a point O if, by rotating it about O, it fits its outline *at least once* before it has made a complete round. The fixed point is called the *centre of rotation*. The angle by which the figure rotates is called the *angle of rotation*. The number of times a figure fits onto itself in one complete round (i.e. the number of times a figure *looks exactly the same)* is called the *order of rotational symmetry*. Look at the following figure:



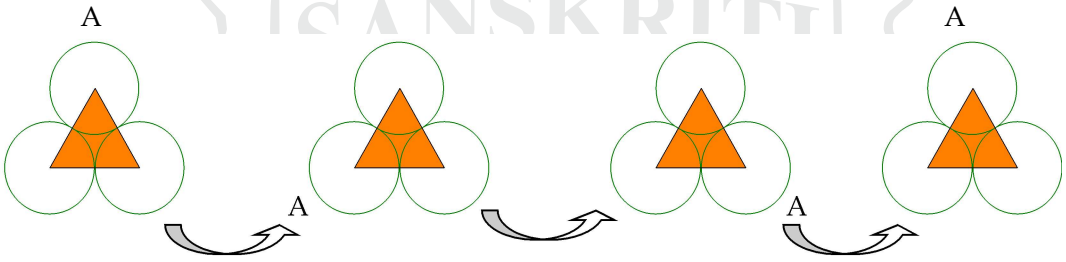
In a full turn, there are precisely **two positions** (on rotation through 180° and 360°) when the left-right arrow looks exactly the same (apart from the points A and B). Here, the *angle of rotation* is **180●** and the *order of rotational symmetry* is **2** (because the figure looked exactly same *twice* before completing a full round).

Now, another example:



Here, there are **four positions** when the figure looks exactly the same before completing a full turn. So, the *order of rotational symmetry* is _____. Mark the *centre of rotation*. Can you guess the *angle ofrotation*? _____. How did you get that? Can you think of a formula to calculate the *angle of rotation*? _____.

Here is one more example:

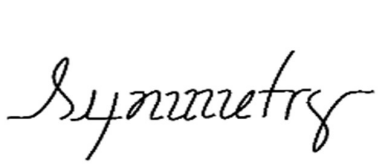


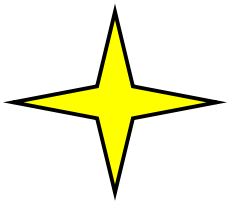
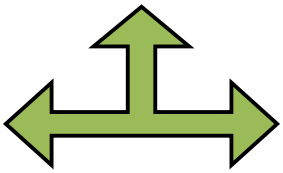
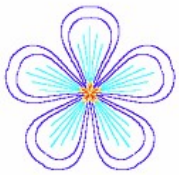
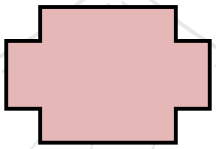
In a full turn, there are precisely **three positions** when the figure looks exactly the same. So, here the *order of rotational symmetry* is _____. Mark the approximate *centre of rotation*. Also, using the above formula, find the *angle of rotation*. _____.

Contd..

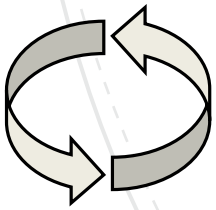
Exercise:

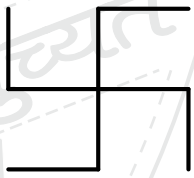
1. Which of the following figures have rotational symmetry of order more than 1?

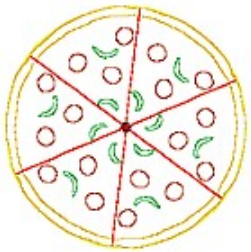
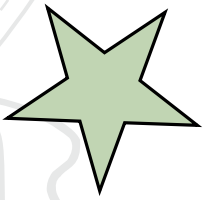
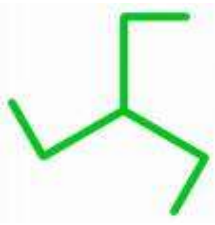
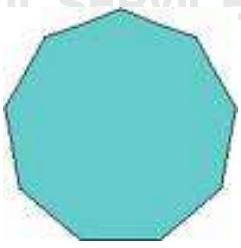
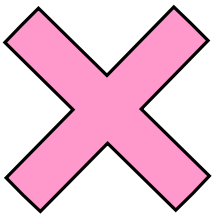



2. State the *order of rotational symmetry* and the *angle of rotation* for each figure:





Contd..

3. Which of the following numbers/letters/figures have *rotational symmetry*?

3

Rotational Symmetry: _____
Order: _____

Z

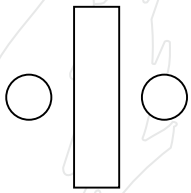
Rotational Symmetry: _____
Order: _____

H

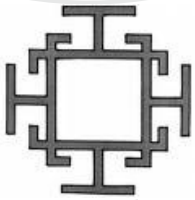
Rotational Symmetry: _____
Order: _____

96

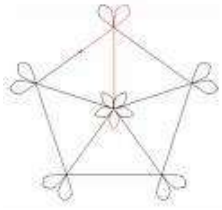
Rotational Symmetry: _____
Order: _____



Rotational Symmetry: _____
Order: _____



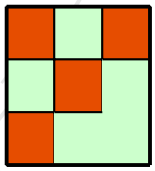
Rotational Symmetry: _____
Order: _____



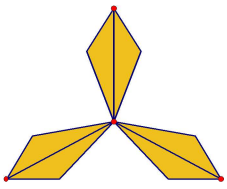
Rotational Symmetry: _____
Order: _____

A

Rotational Symmetry: _____
Order: _____



Rotational Symmetry: _____
Order: _____



Rotational Symmetry: _____
Order: _____

M

Rotational Symmetry: _____
Order: _____

Contd..

Worksheet on SYMMETRY

Colour exactly 6 squares in figures 1, 2 and 3 to make them symmetrical about the mirror line(s).

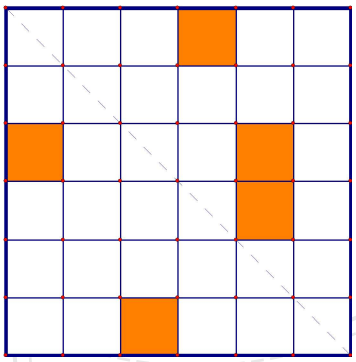


Fig 1

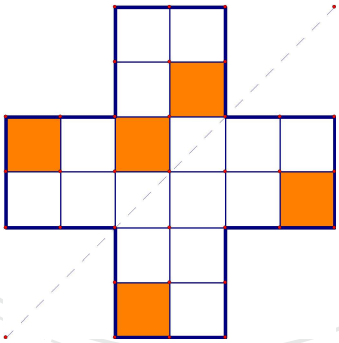


Fig 2

In fig 4, draw as many lines of symmetry as possible. Colour 8 more squares to make the figure symmetrical.

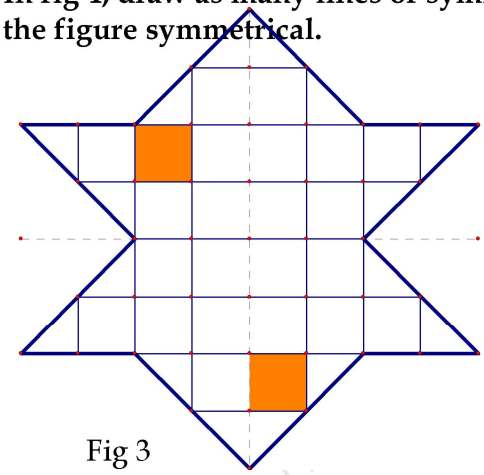


Fig 3

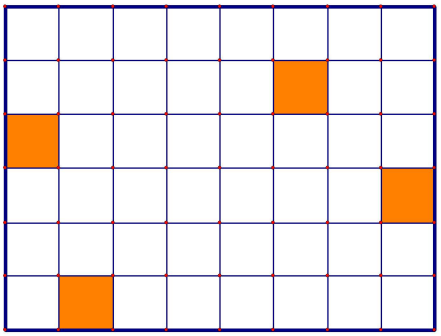
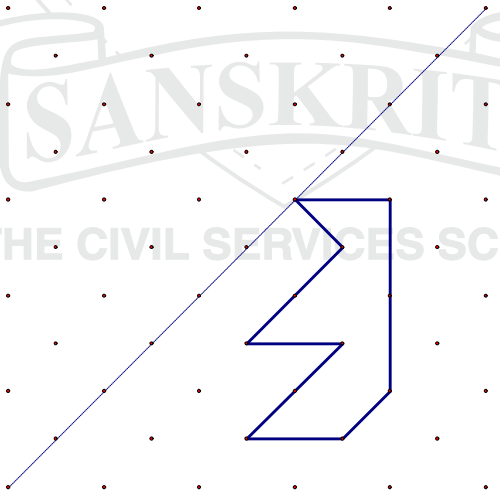
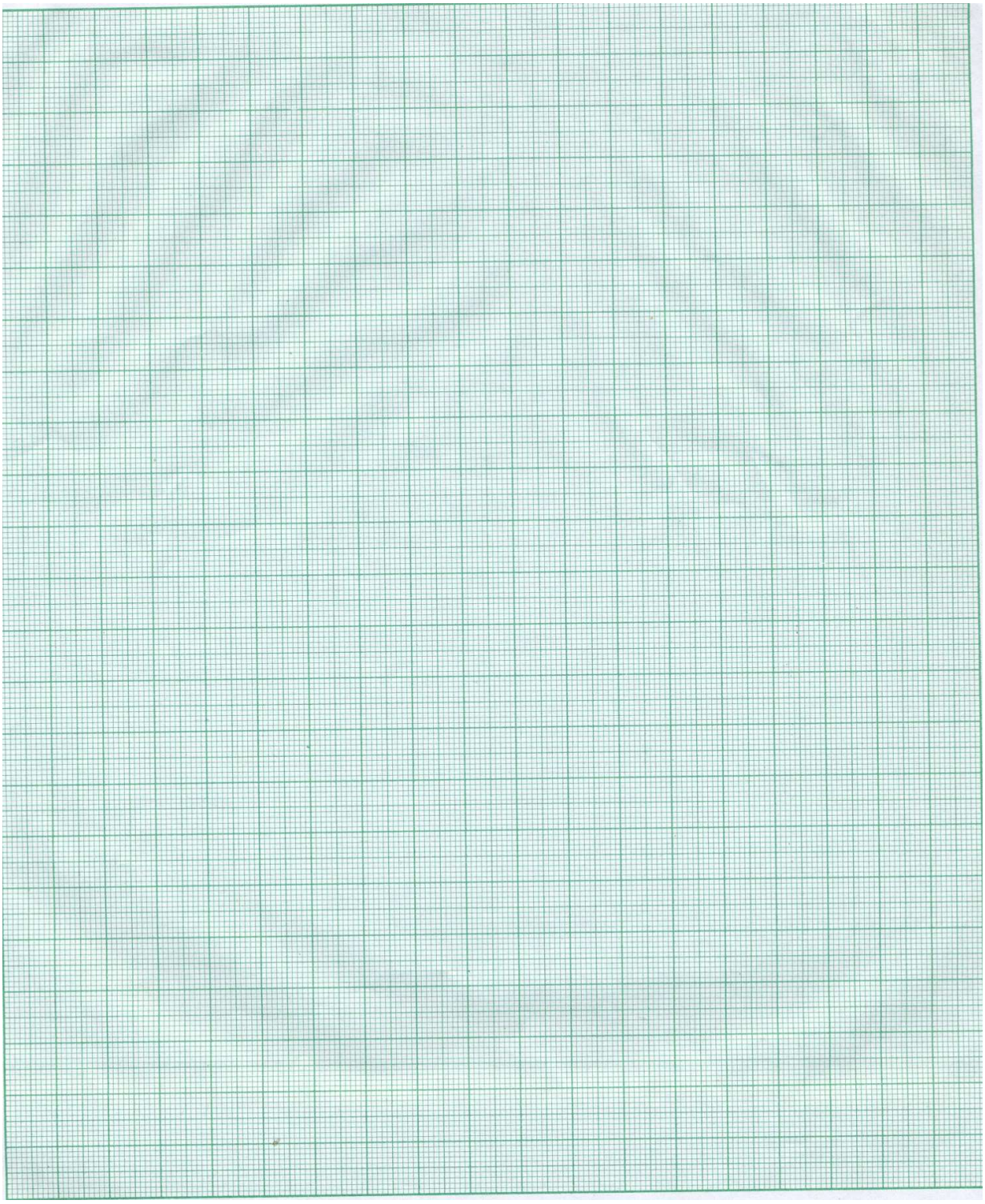


Fig 4

Complete the following figure taking dashed line as the line of symmetry.



Extra Graph Sheet



Project

Project for Second Term (Group Activity)

Visualizing Solid Shapes

Learning Objectives:

- To visualize and describe 3D shapes.
- To investigate nets of various solid shapes.
- To explore various properties related to 3D shapes (in terms of faces, vertices, edges and surface area).
- Mapping Space Around Us.

***Important Notes*:**

- You may refer to your textbook for details on the topic. It is a part of your curriculum but no direct question will be asked in written exam based on this.
- The Rubric for assessment is given at the end of the Project for your reference.
- There will be negative marking for delay in submission of the project.
- This project should be submitted as a file/folder including a Cover page and the activities mentioned below.

List of Activities:

Activity 1: Give a brief introduction of Solid Shapes (Hint questions: What are solid shapes? Why are they called 3D? What are their faces, vertices and edges? etc.) You must supplement your content with pictures.

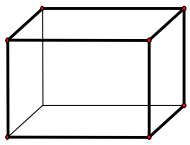
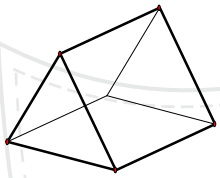
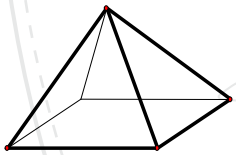
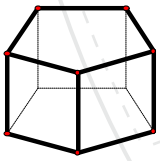
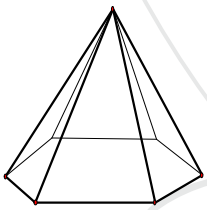
Activity 2: Draw labeled nets of any 3 shapes from the list given below:

- Cuboid
- Cylinder
- Cube
- Prism
- Pyramid
- Cone

Activity 3: Derive the formula of **Surface Area*** for any **one** shape with the help of a 'net'.

****Surface Area of a 3-D shape*** is the sum of the areas of all its surfaces (or Faces).

Activity 4: For each solid, count the number of faces, vertices & edges, and complete the table given below:

3D Shape	Faces	Vertices	Edges
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____
	_____	_____	_____

Can you observe the relation between the number of faces, vertices and edges ofthese solids? What is that? Find the special name given to this relation.

Activity 5: Mapping Space Around us:

- Draw a map of the route from your house to your school showing important landmarks.

OR

- Draw a map giving instructions to your friend so that he/she reaches your house without any difficulty. ***(Hint:*** **You can view a route map overleaf of a marriage invitation card giving the route map for the venue.)**

RUBRIC FOR THE PROJECT ON SOLID SHAPES

Category	Score 4	Score 3	Score 2
ORGANISATION	Content is well organized using headlines to group related material.	The overall organization of topics is not up to the mark.	Content is not logically organized.
MATHEMATICAL CONTENT	Covers topic in depth with details and examples. Subject knowledge is excellent.	Covers topics without providing details and examples. Subject knowledge is sufficient.	Some important facts seem to be missing and there are 1-2 factual errors.
CREATIVITY	Work has been presented in a very creative and visually appealing manner.	Work has been presented in a creative manner.	Work is presented in a casual manner.
PRESENTATION	Very well presented	Good presentation	Satisfactory Presentation
PEER OBSERVATION	If the person did his share of work	If person did less than his share of work	If person did a lot less than his share of work

Activity Sheets

FLOWCHART

Find the missing number:

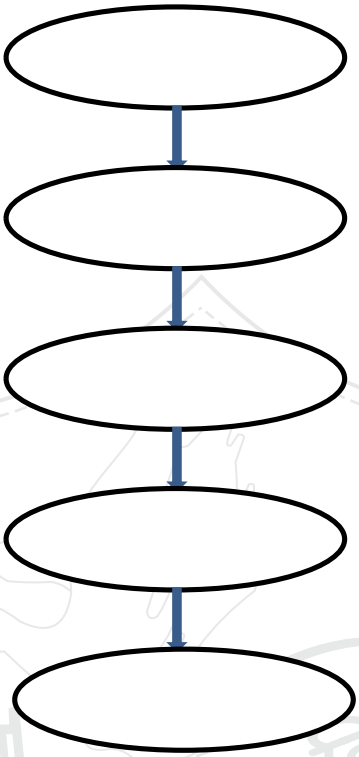
?

Add 13

Multiply by -5

Divide by 10

3



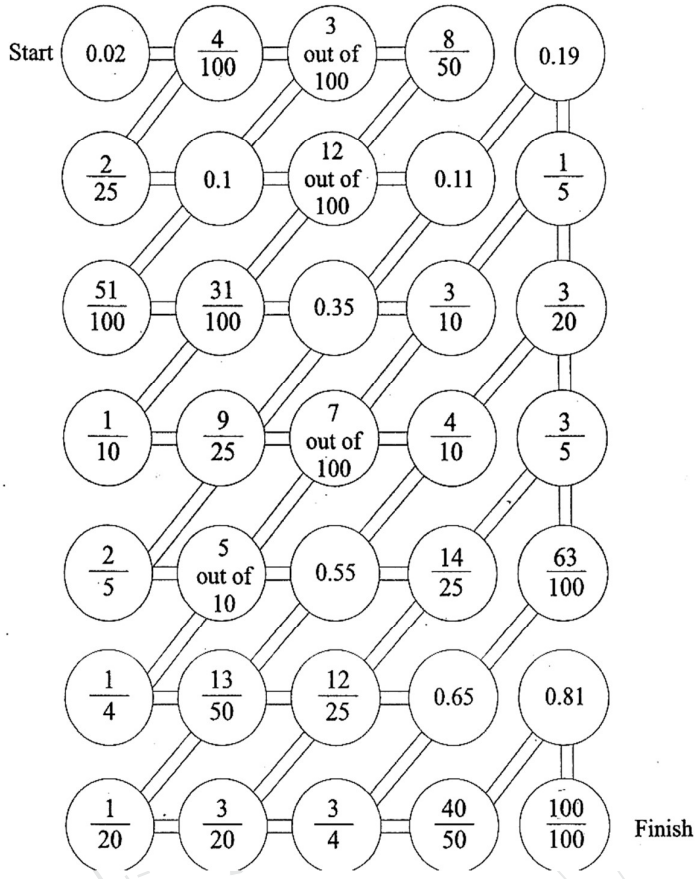
MAGIC SQUARE

A Magic Square is a grid of numbers in which the numbers in each row, column and diagonal add up to the same number. Complete the given magic square.

$2 of 3^2$		-3×-4	$-4+2$
$-19\frac{1}{5}\div\frac{-4}{5}$	$-7\frac{2}{3}-1\frac{1}{3}$		
		21	$\frac{6}{0.3}$
$\lvert-10-4\rvert$			-5

Worksheet on PERCENTAGE

. Express each number as a per cent and from the *Start* position move from a smaller number to a bigger one along the path till you reach the *Finish* point.



'JUMBLE'

Rearrange the letters in these five Jumbles, one letter to each square/circle, to make five words:

OGYPONL

HTENPSEUYO

GTRHI

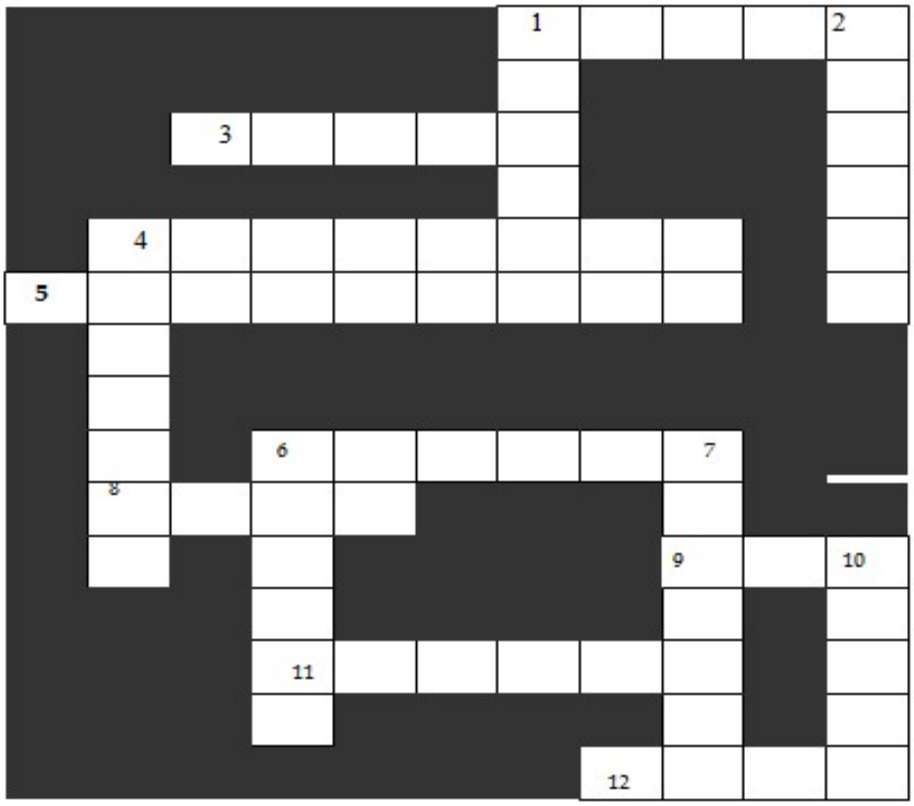
TACGOON

LIRTANAO

Now arrange the circled letters to form the answer to the question:

Name the famous Greek mathematician and philosopher who is also known as 'the father of numbers'.

GEOMETRIC CONCEPTS-CROSS WORD



ACROSS:

1 Line segments forming a polygon
3 Two exactly same triangles joined vertex to vertex (e.g. Kaleidoscope)
4 Lines that do not meet
5 Points lying on the same line
6 Half of diameter
8 A curve whose end-points do not meet
9 Each of the two rays forming an angle is called its _____
11 Angle whose measure is between 90° and 180°
12 Drawings of unfolded 3-D figures are called _____

DOWN:

1 A curve that does not cross itself
2 Football is an example of which 3-D figure?
4 A closed curve made up of line segments only
6 The interior of a curve together with its boundary
7 A triangle with all unequal sides
10 Middle terms of a proportion are also called _____

SUDOKU

Sudoku is a puzzle in which numbers 1 to 9 are inserted in a 9x9 grid subdivided into further nine 3x3 squares in such a way that every number appears only *once* in each row, column and square.

	9	3	1		5	6	4	
7								5
5		1	2		9	3		7
2								3
	3	6	9		7	5	2	
9								1
3		2	4		8	1		9
6								4
	4	7	3		2	8	5	

Word Search

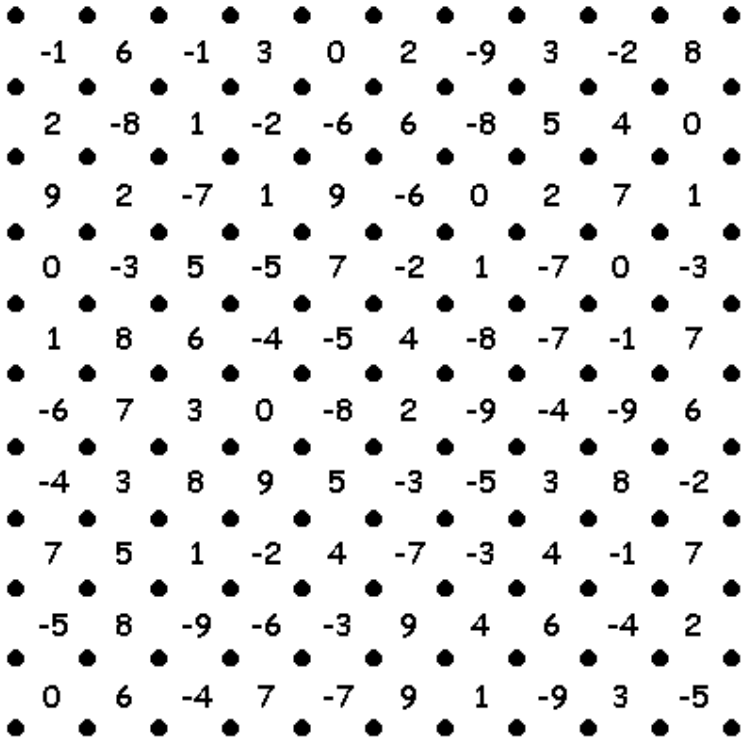
LINEARVARIABLE
ADDITIONRATIO
PERCENTAGENETS
SHAPESPYRAMID
MULTIPLEISOSCELES
PARALLELOGRAMQUADRILATERAL
AREAVOLUME
CONECYLINDER
DIAMETERCUBOID
RADIUSQUARTER
MEDIANMEAN
RECTANGLELOSS
INTEREST

Try to unscramble the words below. Good Luck!

1.	BAGAREL	_____	2.	XTRVEE	_____
3.	MYLPOCNATEIMR	_____	4.	NPHUEOSTYE	_____
5.	GTRIH	_____	6.	YRPMIAD	_____
7.	GTAOCON	_____	8.	AOLSUTEB	_____
9.	TPENNESXO	_____	10.	IATOR	_____
11.	OPTRIOPNOR	_____	12.	ENAIOURMTNS	_____
13.	TENECPREAG	_____	14.	ALIARETLEQU	_____
15.	COSELISES	_____	16.	INEMDA	_____
17.	ODEM	_____	18.	CLICRE	_____
19.	LPMLLEAARORAG	_____	20.	ETINLARG	_____
21.	HRITECTMIA	_____	22.	CONFIASRT	_____
23.	OVIIIDSN	_____	24.	ASBDOM	_____
25.	ECALESN	_____	26.	ILATQEUDLARRA	_____
27.	RSIMP	_____	28.	NRCEDYIL	_____
29.	EONC	_____	30.	OSMDSNNIEI	_____
31.	LALERPLA	_____	32.	RCNTOCCENI	_____
33.	RNRCECUNOT	_____	34.	ESINL	_____
35.	IOPTN	_____	36.	TENGMES	_____
37.	CEOSTR	_____	38.	AUSIRD	_____
39.	ECMALID	_____	40.	DRDNHUE	_____

SQUARES

A game for 2 – 4 players: Players take it in turns to join any two dots with a vertical or horizontal line. A player that completes a square with his line captures that square, places his initials in it and gains another turn. When all the squares are complete, players total the values of each square they have captured. The player with the lowest score wins.



PUZZLE TIME

1) I am a number, Tell my Identity!
   Take me seven times over, and add a fifty!
   To reach a triple century,
   You still need forty!

2) It's a rainy season, Let's think of the reason.
   A unit fraction remains the same,
   When, when, when!

RHYME TIME

Read the following poem and complete by adding your own lines.

Parks and fences
And tiles on the wall,
The frame of a photo
Is something common in all?

Give it a thought,
Don't be a cheater….
Sometimes, we find the area
Sometimes, the perimeter…..

Question Bank

Multiple Choice Questions for First Term

1. The product of $\frac{-7}{9}$ and x is 1. What is the value of x?

   (i) $\frac{16}{9}$ (ii) $\frac{7}{9}$ (iii) $\frac{9}{7}$ (iv) $\frac{-9}{7}$

2. The product of the smallest positive integer and the greatest negative integer is

   (i) 1 (ii) 0 (iii) –1 (iv) None of the above

3. The area of a parallelogram with base 12cm and altitude 6cm is

(i) 36cm² (ii) 72cm² (iii) 27cm²(iv) 63cm²

4. The average of the even numbers from 1 to 30 is

   (i) 17 (ii) 15 (iii) 16 (iv) 19

5. The absolute value of $-17+24\div 4(-2)$ is

   (i) 29 (ii) 5 (iii) 11 (iv) 20

6. 4 bags contain different number of black and white marbles as follows:

   RED bag : 3 white and 4 black
   BLUE bag : 3 white and 6 black
   GREEN bag : 4 white and 5 black
   YELLOW bag : 4 white and 7 black

From which bag do white marbles have the greatest chance of being drawn at random?

(i) Blue (ii) Yellow (iii) Green (iv) Red

7. The area of a triangle is 84cm². Its base is 14cm, the altitude will be

(i) 6cm (ii) 3cm (iii) 12cm (iv) 7cm

8. Which of the following rational numbers is closest to zero?

   (i) $\frac{-5}{12}$ (ii) $\frac{-2}{3}$ (iii) $\frac{-5}{6}$ (iv) $\frac{-3}{4}$

9.The circumference of a circle is 176 cm. Its diameter is

(i) 5. 6 cm (ii) 28 cm (iii) 56 cm (iv) 42 cm

10. If $2^x \times 3^x = 216$, then the value of x is

    (i) 36 (ii) 3 (iii) 6 (iv) 216

11. The product of 10 positive and 10 negative integers is

    (i) Even (ii) Zero (iii) Positive (iv) Negative

12. If $(-1)^x = 1$, then x should be

    (i) Positive (ii) Negative(iii) Odd (iv) Even

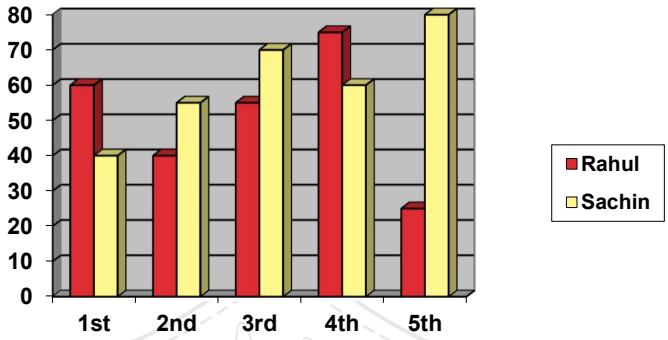
13. The difference between the highest and the lowest observations in a data is its

(i) frequency(ii) width (iii) range (iv) mode

14. Two complementary angles are in the ratio 1:5. What is the difference between their measures?

    (i) 15° (ii) 60° (iii) 75° (iv) 45°

15. The following graph shows the number of runs scored by Rahul and Sachin in 5 matches during a tournament:



In which match did they score the highest number of runs together?

(i) 1st (ii) 3rd (iii) 4th (iv) 5th

16. The range of 3.5, 2, 4.5, 8.7, 1.9, 3.2, 1.9 is

(i) 1.5 (ii) 6.8(iii) 2.6 (iv) 3.2

17. Which of the following statements iscorrect?

(i) Two angles forming a linear pair are supplementary.

(ii) If a transversal cuts two parallel lines, then pairs of alternate interior angles are supplementary.

(iii) Two supplementary angles always form a linear pair.

(iv) The complement of 80° is 100°.

18. The diameter of the wheel of a car is 70 cm. How much distance will it cover in 100 revolutions?

(i)) 220 cm (ii) 2200 cm (iii) 22 m (iv) 220 m

19. If $2^3 + 1^3 = 3^x$, then the value of x is

(i) 2 (ii) 3 (iii) 6 (iv) 1

20. The value of $\left(4^0 - 5^0\right) \times (-6)^2$ is

(i) 36 (ii) –36 (iii) 1 (iv) 0

21. The value of $(4-5)^0 \times (-6)^2$ is

(i) 36 (ii) –36 (iii) 1 (iv) 0

22. The probability of drawing a black ball from a bag containing 5 black and 3 red balls is

(i) $\frac{5}{3}$ (ii) $\frac{3}{5}$ (iii) $\frac{5}{8}$ (iv) $\frac{3}{8}$

23. Mode of a set of observations is the value which

(i) represents the whole data

(ii) is one of the given mid values

(iii) occurs most frequently

(iv) divides the data into two equal parts

24. The value of $\frac{3^0 - 15^0}{3^0 + 15^0}$ is

(i) $\frac{-2}{3}$ (ii) 0 (iii) 1 (iv) Not defined

25. A pair of integers whose sum is -10 is

(i) $-10, 20$ (ii) $10, -20$ (iii) $-5, 15$ (iv) $40, -30$

26. -5^2 is equal to

(i) -10 (ii) -25 (iii) 25 (iv) None of the above

27. The median of 3, 3 , 3 , 7, 10 , 12 , 12 , 14 , 15 , 20 is

(i) 10 (ii) 12 (iii) 11 (iv) 3

28. Linear pair angles are also

(i) complementary angles (ii) supplementary angles (iii) equal angles (iv) none

29. Dilip's front door is 6 feet wide and 8 feet tall. He wants to purchase a circular table. What is the ***maximum*** diameter of the table that can ***fit through*** the front door?

(i) 8 feet (ii) 9 feet (iii) 11 feet (iv) 14 feet

Multiple Choice Questions for Second Term

1. A triangle can be constructed with sides (in cm) :
(a) 4 , 8 , 2 (b) 4 , 4 , 8 (c) 3 , 6 , 3 (d) 7 , 8 , 9

2. In a right angled ΔABC if, $AB^2 = AC^2 + BC^2$ then the right angle is
(a) $\angle BAC$ (b) $\angle ABC$ (c) $\angle ACB$ (d) $\angle CBA$

3. The simple interest on Rs 500 at 10% p.a. for two years is
(a) Rs 550 (b) Rs 50 (c) Rs 100 (d) Rs 150

4. An article is sold at Rs 225 at a loss of 10%. Its cost price is
(a) Rs 235 (b) Rs 250 (c) Rs 240 (d) Rs 275

5. An article bought for Rs 400 is sold for Rs 472. The gain is
(a) 18% (b) 15.25% (c) 15% (d) 19%

6. A chair costing Rs 450 is sold at a gain of 12%. Its selling price is
(a) Rs 54 (b) Rs 595 (c) Rs 504 (d) Rs 395

7. The triplet which does not give a right angled triangle is
(a) 2.5, 1.5, 4 (b) 5, 4, 3 (c) 5, 12, 13 (d) 6, 8, 10

8. MrKhanna had Rsx. He gave one-third of the total money to his wife and one-fourth of the remainder to his son. How much money is left with him?
(a) $\frac{2x}{3}$ (b) $\frac{1x}{6}$ (c) $\frac{3x}{4}$ (d) $\frac{1x}{2}$

9. If $3x$ and $4a$ represent the two opposite sides of the same rectangle, then which of Thefollowing is incorrect?
(a) $3x = 4a$ (b) $x = \frac{4a}{3}$ (c) $a = \frac{3x}{4}$ (d) Area = $3x \times 4a$

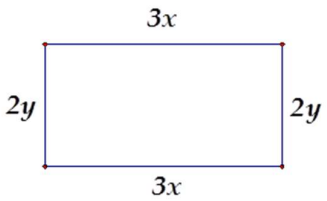
10. If $\Delta ABC \cong \Delta DEF$, then
(a) AC = EF (b) AB = DE (c) BC = DF (d) AC = EF

11. If $\Delta PQR \cong \Delta XYZ$, then
(a) $\angle P = \angle Z$ (b) $\angle Q = \angle X$ (c) $\angle R = \angle Z$ (d) $\angle P = \angle Y$

12. If AB = PQ, $\angle A = \angle P$ & $\angle B = \angle Q$, then $\Delta ABC \cong \Delta PQR$ by
(a) SSS rule (b) SAS rule (c) AAS rule (d)ASA rule

13. In ΔABC, AB = AC and AD $\perp$ BC, then $\Delta ABC \cong \Delta ACD$ by
(a) SSS rule (b) ASA rule (c) SAS rule (d) RHS rule

14. Which expression gives the perimeter of the given rectangle?



(a) $6xy$ (b) $36xy$ (c) $9x + 4y$ (d) $6x + 4y$

15. The algebraic expression for the statement 'product of x and y subtracted from the Productof a and b' is

(a) $xy - ab$ (b) $ab - xy$ (c) $ax - by$ (d) $ay - bx$

16. If $\Delta ABC \cong \Delta PQR$, then which of the following is false?

(a) $\angle ABC = \angle PQR$ (b) AB = QR (c) AC = PR (d) $\angle BCA = \angle PRQ$

17. Which of the following is a true statement?

(a) Two circles are congruent.
(b) Two equilateral triangles are congruent.
(c) Two squares having same perimeters are congruent.
(d) Two rectangles having same perimeters are congruent.

18. $\frac{3}{4}$ when changed to percent, we get

(a) 7. 5% (b) 0. 75% (c) 75% (d) 750%

19. If $\Delta TWN \cong \Delta PRQ$, then $\angle W$ is equal to

(a) $\angle P$ (b) $\angle N$ (c) $\angle Q$ (d) $\angle R$

20. If $m = 1$, $n = 2$ and $k = -1$, then the value of $3k^2m^3n$ is

(a) 6 (b) –6 (c) 9 (d) None

21. If $3x - 4 = 2 + 5x$, then the value of x is

(a) -3 (b) 3 (c) $\frac{3}{4}$ (d) $\frac{-1}{4}$

22. From a ribbon 'y' metre long, a piece of 'x' metre has been cut. The length of the remaining piece (in metre) is

(a) $y + x$ (b) $x - y$ (c) $y \div x$ (d) $y - x$

23. The order of rotational symmetry in the letter N is

(a) 3 (b) 2 (c) 1 (d) 4

24. The result of adding 9 to the twice a number is 31. The number is

(a) 20 (b) 15 (c) 11 (d) 17

25. One of the possible equations of the solution $a = 3$ is

(a) $3a = 6$ (b) $a - 2 = 5$ (c) $a + 3 = 9$ (d) $a + 5 = 8$

26. If $\frac{m+3}{5} = 7$, then the value of m is

(a) 20 (b) 32 (c) $\frac{35}{3}$ (d) None of the above

27. If $\frac{m}{5} + 3 = 7$, then the value of m is

(a) 20 (b) 32 (c) $\frac{35}{3}$ (d) None of the above

28. A triangle has sides of length 2cm, 5cm and 6cm. Which of the following statements is true for the triangle?

(a) The triangle has a 90 degree angle.
(b) The triangle does not have a 90 degree angle.
(c) The hypotenuse is 6cm.
(d) The triangle may or may not have a 90 degree angle.

29. A boy earns Rs. x in a month and spends Rs. y in a month. His savings for the month are:

(a) Rs. (x+y) (b) Rs. (x – y) (c) Rs. (y – x) (d) Rs. (-x – y)

30. The numerical coefficient of x^2 in the expression $x^2 - 7x^2 + 8x + 4$ is

(a) 1 (b) -7 (c) 8 (d) 4

31. Two sides of a triangle measure 7 cm and 9 cm. The length of the third side can be

(a) 17 cm (b) 18.5 cm (c) 2 cm (d) 7.9 cm

32.Two sides of an isosceles triangle measure 5cm and 12cm. Length of the third side can be

(a) 13cm (b) 12cm (c) 5cm (d) 8cm

Question Bank for First Term

1. Find the value of x in each case:

(a) $(3)^{x-1} = 243$ (b) $(2)^{3x} = 64$

(c) $1^3 + 2^3 + 3^3 = x^2$ (d) $\left(\frac{-7}{8}\right)^{15} \div \left(\frac{-7}{8}\right)^{x} = \left(\frac{-7}{8}\right)^{2}$

2. In a quiz, if Shamit gets +10 in *each* of the first *three* rounds, –7 in the next *two* roundseach, +8 in the next *two* rounds each and –4 in each of the last *three* rounds, find his total score at the end of the quiz.

3. Arrange the following in descending order: $-3\frac{4}{3}, \frac{-5}{-6}, -2, \frac{4}{5}$

4. Simplify: $\left[-9-2\{-3\times(-15)\div(-5+2)\}\right]\div 7$

5. If $\frac{p}{q} = \left(\frac{2}{5}\right)^{5} \times \left(\frac{2}{5}\right)^{-2}$, then find the value of $\left(\frac{p}{q}\right)^{2}$.

6. Simplify using suitable property:

(a) $-51\times 48 - 49\times 48$

(b) $23\times 61\times 5 - 61\times 115$

(c) $-21\times(-74)+(-26)\times(-21)$

7. Simplify and answer in exponential form using laws of exponents:

a) $\left(3^3\times 3^2\right)^7$ b) $\frac{3^6\times 7^6\times 11^8}{21\times 11^3}$

c) $\left(\frac{7^8}{7^5}\right)^2$ d) $\left(5^2\times 5^4\right)\div 5^3$

8. The population of Delhi state in different census years is as given below:

Census year	1971	1981	1991	2001	2011
Population (in lakhs)	41	62	94	138	168

Represent the above information by means of a bar graph (taking scale of 10).

9. Find the median and the mode of the given data:

21, 24, 19, 18, 45, 14, 14, 19, 21, 24, 18, 30, 31, 26, 25, 19, 17, 18, 20, 22

10. Find the product using suitable properties:

(i) $(-50)\times 125\times(-6)\times 8$ (ii) $213\times(-35)+(-213)\times 65$

11. Jyoti cuts a 21m long rope into pieces of $3\frac{1}{2}$ m length each. How many pieces of the rope did she get?

12. Two supplementary angles are such that one is $\frac{4}{5}^{th}$ of the other. Find them.

13. Find the value of

(a) $7^0 \times 7^0 \times 7^0 \times (7^0 - 7^0)$ (b) $\frac{2^0 \times 5^0 \times 8^0}{2^0 + 5^0 + 8^0}$

14. Which of the following statements is false and why?

(a) In the pair of complementary angles, both the angles are acute.

(b) In the pair of supplementary angles, both the angles are obtuse.

15. Write the possible outcomes for the following:-

(a) Choose a colour from the colours of the rainbow.

(b) Two coins are tossed simultaneously.

16. Simplify: $14 - \left[3 + \left\{8 \div \left(5 - 3 of\, 2 + 3\right)\right\}\right]$

17. Find x using laws of exponents:

(a) $8 \times 2^{x+2} = 32$ (b) $3^3 \times x^3 = 216$

18. A number is selected at random from a set of natural numbers from 1 to 50. What is the probability that it is an (i) even number (ii) a prime number (iii) a multiple of 5 ?

19. Suman has drawn fig (i) and Sneha has drawn fig (ii). Both of them have marked Line *l* as the transversal. Who is wrong and why?

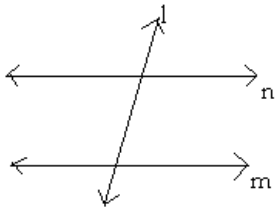


fig (i)

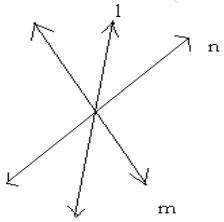


fig (ii)

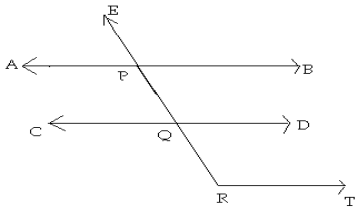
20. The marks obtained by a group of students in science tests are 85 , 74 , 90 , 85 , 39, 48 , 56 , 95 , 80 , 78 and 40. Find

(a) Mean marks obtained by the group.

(b) Median of marks obtained.

(c) Mode and range of marks obtained.

21. In the following figure AB||CD||RT and∠EPA= 50°. Find the value of∠EQC and ∠ERT.



22. (a) An elevator at the ground level descends into a mine shaft at the rate of 5 metre per minute. What will be its position after $2\frac{1}{2}$ hrs?

(b) If it begins to descend from 25 m above the ground, what will be its position after 35 minutes.

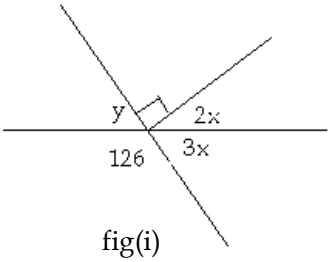
23. The performance of a student in the term examination is given below:

SUBJECT	MARKS
Hindi	72
English	80
Maths	95
Science	75
Social studies	67

Draw a bar graph by choosing an appropriate scale.

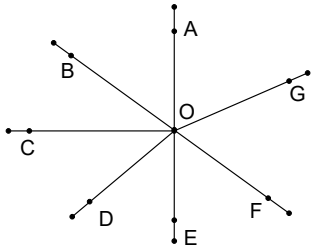
24. Lines m and n are parallel to each other. The two interior angles on the same side of the transversal are $(x-8)^\circ$ and $(5x-4)^\circ$. Find the measure of each angle.

25. Find the measure of all angles in the following figure:



fig(i)

26. In the adjoining figure, name
(i) a pair of complementary angles.
(ii) a pair of vertically opposite angles.
(iii) a pair of adjacent angles.
(iv) a linear pair.
(v) equal supplementary angles.



27. Fill in the blanks:
    (a) $8^0 + 5^0 + 7^0 =$ _____.
    (b) The additive inverse of -1 is _____.
    (c) If$(5^4)^x = 5^{12}$, then $x =$ ____.
    (d) $-36 \div 4\,(3) =$ _____

28. What additional information is needed for the following statements to be true?
    (a) Two supplementary angles form a linear pair.
    (b) If two lines are cut by a transversal, then pairs of alternate interior angles are equal.

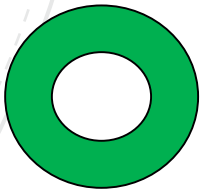
29. A wire in the form of a rectangle with dimensions 70cm & 40 cm is bent into the form of a circle. Find the diameter and the area of the circle.

30. a) The area of a rectangular sheet is 500 cm². If the length of the sheet is 25cm, what is its width? Also find the perimeter of the rectangular sheet.

    b) From that sheet, a right triangle of sides 6cm, 8cm and 10cm and a circle of radius 10.5cm are cut. Find the area of the remaining sheet.

31. If the diameter of a bicycle wheel is 70 cm, find how many times the wheel will revolve in order to cover a distance of 110 m.

32.The figure shows a washer with a hole in it. The outer radius is 10 cm and the inner radius is 4 cm. Find



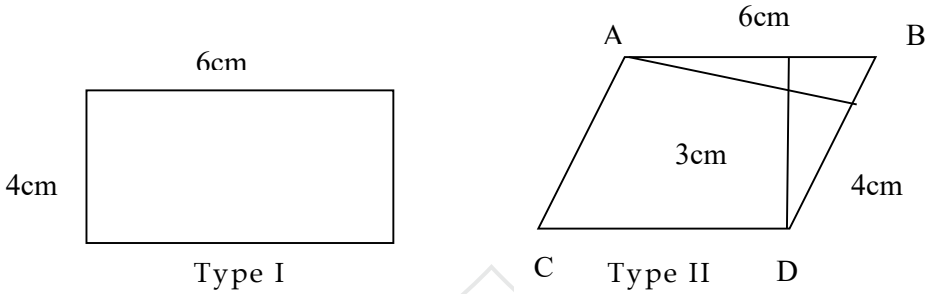
    (1) Area of the metal used.
    (2) Cost of painting each washer at the rate of 10 paise per sq cm.
    (3) Cost of painting 100 such washers.

33. Sonam is wrapping this present.

The ribbon passes around the box in one continuous piece as shown. An extra 40 cm of ribbon is needed for the bow. How much ribbon does Sonam need to wrap this present?

34.A man wants to fence the circular garden of diameter 14m with a rope. He gives Rs500 to his gardener to purchase the rope the cost of which is Rs4per meter. After purchasing the rope, the gardener returnsRs124 as balance.
    (a) Find the length of the rope required to fence the garden.
    (b) Is the gardener an honest man? Give reasons for your answer.

35. The following figures show two types of chocolates.



(a) Identify the shapes of the two types of chocolates.

(b) The company sells both the types of chocolates at Rs24 each. Do you think it is fair to charge the same price for both kinds of chocolates? Give reasons for your answer.

36. Write two integers which are smaller than −3, but their difference is greater than −3.

37. Adjacent angles have common vertex, a common _____ and no common _____.

38. -5^2 = _____.

39. The difference between highest and the lowest observation in the data is _____.

40. The product of $\frac{-8}{9}$ and x is 1. What is the value of x?

41. Write two integers which are smaller than −3, but their difference is greater than −3.

42. Adjacent angles have common vertex, a common _____ and no common _____.

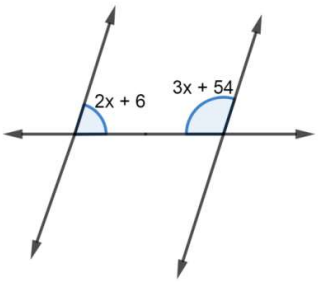
43. -5^2 = _____.

44. The difference between highest and the lowest observation in the data is _____.

45. The product of $\frac{-8}{9}$ and x is 1. What is the value of x?

46. Out of a pair of complementary angles, one is two - third of the other. Find the angles.

47. In the given fig, a pair of parallel lines are cut by a transversal. Find the value of x.



48. Find the height of a triangle whose base is 60 cm and area is 0.06sqm.

49. State true or false:-

(a) $(10+10)^{10} = 10^{10} + 10^{10}$.

(b) $1^0 \times 0^1 = 1$.

(c) $\left(\frac{2}{3}\right)^3 \div \left(\frac{5}{2}\right)^3 = 1$.

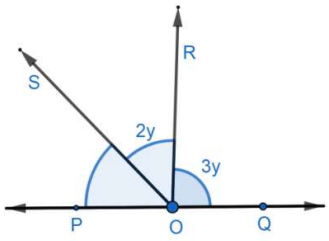
(d) $x^m \times y^m = (x \times y)^{2m}$; where $xandy$are non zero rational numbers and m is a positive integer.

50. Evaluate the following using distributive property:-

(a) -39×99

(b) $73 \times (-9) - (-109) \times 73$

51. In the adjoining figure, POQ is a line , $\angle POS = 30°$, find $\angle ROSand\angle ROQ$.



52. For the given data :-4, 3, 4, 3, 4, 6, 4 find mean, median and mode. Are they equal?

53. Simplify $-7[-3 + 5\ of\ 6 - \{-5 + (6 \times 3 - 8)\}]$.

54. Find, such that $\left(\frac{2}{9}\right)^3 \times \left(\frac{2}{9}\right)^6 = \left(\frac{2}{9}\right)^{2m-1}$.

55. Find the mean of first five prime numbers.

56. Perimeter of a parallelogram shaped land is 96m and its area is 270 sqm. If one of the sides of this parallelogram is 18m, find the length of the other side, Also find the lengths of the altitudes m and l.

57. The number of girls and boys coming from different places of a city for a summer cricket coaching camp is as shown in the table.

Place	A	B	C	D	E

Girls	35	36	30	15	28
Boys	55	44	37	30	39

Represent the above data by a Double bar graph.

58. Simplify and write in the exponential form :-$2^3 \times 3^2 + (-11)^2 + 2^4 \div 2^2 - \left(\frac{-2}{5}\right)^0$.

59. Find the product, using suitable properties:-

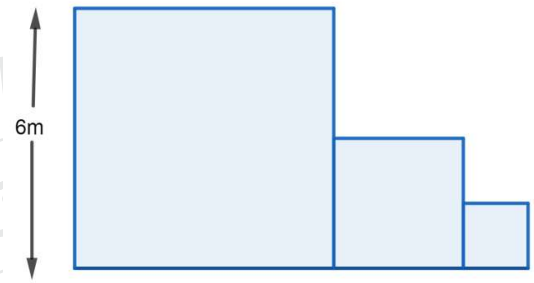
(a) $872 \times 99 + 872$

(b) $-15 \times 25 \times (-4) \times (-10) \times (-1)$

60. Taking $x = \frac{-5}{7}, y = \frac{3}{8} and z = \frac{8}{21}$, find the sum of reciprocals of $xandy$.

61. Find the value of :-$(5^2 - 3^2) \div (-2^3)$

62. Three squares are attached to each other as shown in the following fig. Each square is attached at the midpoint of the side of the square to its left. Find the perimeter of



the complete figure

63. Add the multiplicative inverse of $\left(\frac{1}{2} \times \frac{1}{4}\right) + \left(\frac{1}{2} \times 6\right)$ to the additive inverse of $\left(\frac{3}{13} \div \frac{-4}{65}\right)$.

64. Express 648 as the product of powers of it's prime factors.

65. Write the following as rational numbers in their standard form:-

(a) 45% (b) 1.5 (c) $-4\frac{5}{7}$

66. A circle is inscribed in a semicircle of radius 6cm. Find the area of the unshaded portion and also find the perimeter of the complete figure.

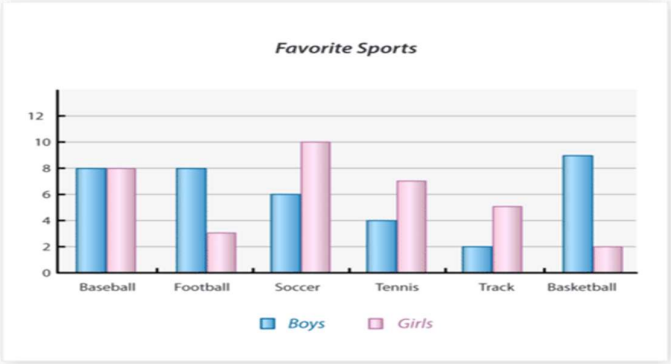
67. (a) Use the bar graph to answer the following questions:

(i) Which sport is liked the most by the girls?

(ii) Find the total number of boys who like Baseball and Basketball.

(iii) Find the ratio of students liking Soccer to Basketball.

(iv) Name any one sport for which the number of boys are less than the number of girls.



(v) Which sport is liked equally by both boys and girls?

(vi) Difference between the number of boys and girls is the highest for which sport?

(b) Observe the data and answer the following questions:

16, 15, 16, 16, 8, 15, 17

(i) Which data value can be put in the given data so that the mode remains the same?

(ii) Find the range of the given data.

68. If we represent the distance above the ground by a positive integer and that below the ground by a negative integer, then answer the following -

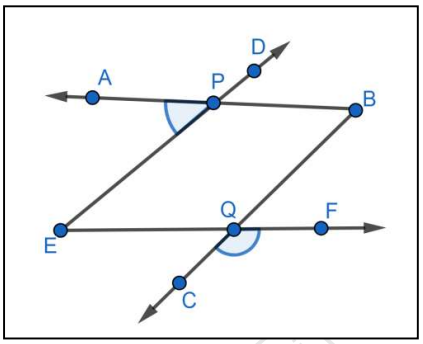
(a) An elevator descends into the mine shaft at the rate of 4m per minute. What will be its position after 1.5 hrs?

(b) If the descend starts from 10m above the ground level, how long will it take to reach the shaft 150m below the ground?

69. Match the following

	Column A	Column B
1.	$\frac{a}{b} \div \frac{a}{b}$	$\frac{-a}{b}$
2.	$\frac{a}{b} \div \frac{c}{d}$	-1
3.	$\frac{a}{b} \div (-1)$	1
4.	$\frac{a}{b} \div \frac{-a}{b}$	$\frac{bc}{ad}$
5.	$\frac{b}{a} \div \frac{d}{c}$	$\frac{ad}{bc}$

70. (A) In the following fig, AB ‖EF , ED ‖ CB and $\angle APE = 39°$. Find $\angle CQF$. (Give reasons)



(B) If the transversal intersects two parallel lines then,

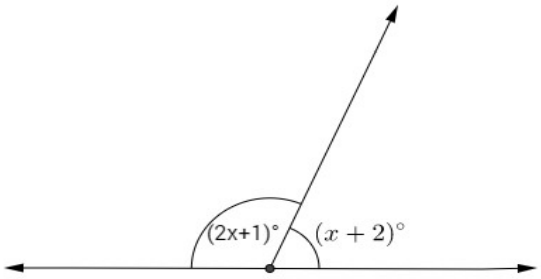
(a) Alternate interior angles have one common_____.

(b) Sum of the interior angles on the same side of the transversal is _____.

71. Write down the list of all the possible outcomes of picking a month of the year having 30 days.
72. Find the angle whose compliment is zero.
73. Write a negative integer and a positive integer whose difference is -9.
74. Among the given rational numbers $\frac{3}{2}, \frac{5}{2}, \frac{-2}{3}, \frac{5}{3}$, find two numbers whose product is $\frac{-5}{3}$.
75. A '4' is required to win a game. What is the probability of winning the game on rolling a dice.
76. Two supplementary angles are in the ratio 3 : 2, find the angles.
77. Simplify $2 - [6 - 7 + 3 - \{2 \times 4 - (21 \div 3 + 1)\}]$
78. Fill in the blanks using >, < or =

    a) $|15| + |-29|$_____$|-8| + 11 - |-25|$.

    b) $12 \div 4 - 7$ _____ $16 \div 8 - 6$.
79. By what number should $\frac{-3}{14}$ be multiplied to get $\frac{-6}{7}$?
80. If the base and altitude of a parallelogram are doubled, what will happen to its area?
81. Find the median of first 10 prime numbers.
82. In the given fig, find x



83. Simplify and express in exponential form: $\left(\frac{5^8}{5^3}\right)^2 \times 5^3$.

84. Find the area of an equilateral triangle, with perimeter equal to 18 cm and altitude measuring 4cm.

OR

If the area of a right triangle is 70 cm^2 and one of the sides containing the right angle is 14cm, find the length of the other side.

85. State True or False.

a) $2^3 < 6^2$

b) $(121)^0 = 0$

c) $5^0 = 9999^0$

d) $(9^2)^3 = 9^5$

86. A bed-sheet measuring 150cm by 110cm is spread on the bed. If 5cm of the bed-sheet is hanging all around the bed, find the area of the top of the bed.

87. If $\frac{a}{b} = \left(\frac{3}{5}\right)^8 \div \left(\frac{3}{5}\right)^6$, find the value of $\left(\frac{a}{b}\right)^2$.

88. What is the probability of –

a) Picking a multiple of 3 from the first 10 odd numbers.

b) Drawing a king of hearts from a deck of cards.

c) Choosing the letter 'P' from the word 'PINEAPPLE'.

89. Seven participants completed a race. The time taken by them is given below (in sec)

23.2, 23.5, 22.9, 22.6, 22.8, 23.1, 22.3

(i) What is the least time taken by the participant?

(ii) What is the range?

(iii) How many participants took more than 22.9 sec to complete the race?

90. What should be added to $\left(\frac{-3}{25} + \frac{7}{15}\right)$ to make it 1?

91. Divide the product of $2\frac{1}{3}$ and $1\frac{3}{14}$ by the sum of $\frac{-2}{5}$ and $3\frac{4}{5}$.

92. An iron rod was heated to 200°C and left for cooling. After every 3 min it cools down by 25°C. What will be the temperature of the iron rod after half an hour?

93. Check whether the given lines are parallel in the given figures

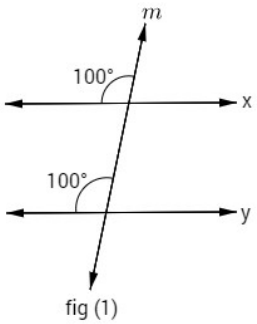


fig (1)

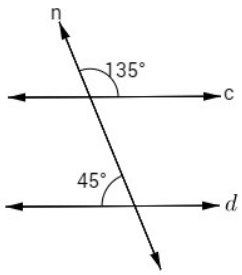


fig (2)

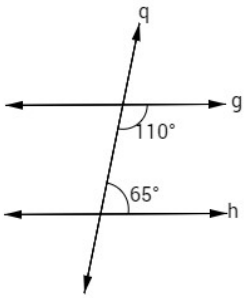


fig (3)

94. (a) Find the value of x: $9^x = 6561$

(b) Which of the following is greater

$\left[\frac{2^2}{3}\right]^2$ or $\left[\frac{2}{3^2}\right]^2$

95. A table top in the shape of a parallelogram was polished at the rate of Rs 2 per sq cm. If the base of the parallelogram is 40 cm and the total cost was Rs 2240, find the altitude of the parallelogram.

96. Grass is to be laid in a rectangular plot 15 m long and 13m wide leaving twotriangular sections at opposite edges for two flower beds. If the flower beds are to be equal right angled isosceles triangles with equal sides measuring 1.5m each, find out how much would it cost to lay grass atRs.8 per sq m.

97. State true or false:-

a) Additive inverse of -5 is 0.

b) Integers are not closed under Division.

c) During addition and multiplication of three Integers, the order makes a difference.

d) $(a - b) - c = a - (b - c)$

e) Integers are not commutative under addition.

98. Simplify the following:-

(a) $\left(\frac{18}{23} \div \frac{90}{69}\right) \times \frac{-15}{32}$

(b) $\left(\frac{-2}{9} \times 1\frac{3}{8}\right) - \left(\frac{7}{12} - \left(\frac{-11}{36}\right)\right)$

99. The maximum and minimum temperature ($in°C$) on a particular day are given in the table below. Draw a double bar graph to represent the given data.

	Delhi	Mumbai	Chennai	Bengaluru
Max Temp $(°C)$	33	31	35	30
Min Temp $(°C)$	25	29	32	17

Answer the following questions:-

a) Which city shows the least difference between the maximum and minimum temperature.

b) Name two cities where the maximum temperature in one city was less than the minimum temperature in the other city.

c) How does increase in temperature effects our plants and animals?

Question Bank for Second Term

1. a) Find 25% of 600m.

   b) Express $1\frac{1}{4}$ as percent.

   c) What percent is 120 cm of 14.4 m?

   d) Find the number which is 27% more than 2000.

2. The sum of 4 consecutive odd numbers is 96. Find the difference between the greatest and the smallest of them.

3. $\Delta QPR \cong \Delta ZYX$, then

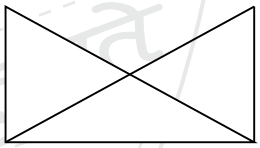
   a) $\angle$R = _____ b) QR = _____ c) XY = _____

4. In ΔPQR, PX is the perpendicular bisector of QR. Show that ΔPQR is an isosceles Triangle. (Draw the required diagram)

5. In the given figure, EF ⊥ FG, HG ⊥ FG and FH = GE.

   a. State the three pairs of equal parts in ΔHGF and ΔEFG.

   b. Prove that ΔHGF ≅ΔEFG.



6. A man purchased a cycle for Rs 800 and sold it for Rs 1040. Find his gain percent.For how much should he have sold it to gain 35%?

7. Is it possible to have a triangle of sides 11cm, 19cm and 8cm? Justify your answer.

8. Is it possible to have a triangle with angles 71°, 64° and 35°? Why or why not?

9. An exterior angle of a triangle measures 150°. If one of the two interior opposite angles is four times the other, find the two angles. Also find the interior adjacent angle. (Show the required working with the help of a diagram)

10. Construct ΔXYZ such that XY = 6cm, $\angle$ZXY = 30° and $\angle$XZY = 105°.

11. Construct a right ΔABC right angled at B such that AC = 7.5 cm and AB = 4.5 cm.

12. The two sides of a triangle are 8 cm and 11 cm. Find the minimum and the maximum possible length (in whole numbers) of the third side.

13. The three angles of a triangle are in the ratio 5 : 6 : 7. Find their measures. What kind of triangle is it?

14. After rotating by 60° about a centre, a figure looks exactly the same as its original position. At what other angles will this happen for the figure?

15. What letters of English alphabet have rotational symmetry about a centre? Also, state the order of rotational symmetry in each case.

16. The price of milk rises from Rs 30 per L to Rs 34.50 per L. Find the percentage increase in the price of the milk.

17. Find the angle of rotation if the order of rotational symmetry is 24.

18. In how much time will Rs 9000 amount to Rs 9810 at 3% p.a. simple interest?

19. Reeta says that she has 7 toffees more than 5 times the toffees Pooja has. If Pooja has 37 toffees, how many toffees does Pooja have?

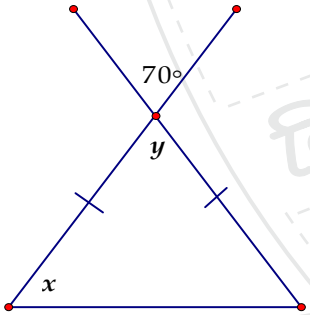
20. A sum of money triples itself in 10 years. Find the rate of simple interest per annum.

21. During break time, two-fifth of the total students play football, one-fourth go to canteen, one-fifth play table tennis and the remaining 6 students stay in class. Find the total number of students in the class.

22. Solve:

(a) $\frac{x-3}{4}=\frac{5-2x}{3}$ (b) $\frac{2m}{5}-\frac{3}{2}=\frac{1}{10}-3m$ (c) $3-5x+2x=-2-2(1-x)$

23.In the given figure, find the values of x and y.



24.In his will, a father divides his property (worth Rs20 lakhs) between his two children and a servant. He gives 20% share each to his son and daughter.

(a) How much does his servant get (in amount)?

(b) What values of the father are reflected in this situation?

(c) Do you think the children and the servant should get an equal share?

(d) What does this reflect about our society's character?

25.A shopkeeper had 150 LCD television sets of different companies. During the festive season, he sold 126 of them on a no return and no guarantee basis and at an attractive price less than the market price. However, all the 126 television sets came out be defective and the shopkeeper had to close down his shop owing to pressure fromangry buyers and the companies.

(a) What is the number of LCD television sets that were notdefective? Express it as a percentage.
(b) Comment on the character of the shopkeeper.

26. Anu donates one-third of her salary to an orphanage and keeps the remaining salary i.e. Rs20,000 to meet her expenses.
(a) Find Anu's salary.
(b)What value of Anu is being depicted here?

27. Solve the following equations:-

a) $13x-14=9x+10$

b) $2(x+3)+3(x+1)=4(2x-3)+3$

c) $\frac{7x}{10}-8=14$

d) $5-2(4-3x)=5x-11$

28. Subtract the sum of $7x^2-4y^2$ and $4x^2+3xy-4y^2$ from the sum of $5x^2-3xy-y^2$ and $x^2+2xy-2y^2$.

29. Simplify (wherever required) and evaluate the given expressions for a = 2, b = –3 and c = 4:

a) $-3a+b+c^2$

b) $5ab+2(-ab+c)-3c$

c) $b^2-ac+a^3-5b^2+3ac$

30. Simplify each of the following:

(a) $-7x-8y^3+3(4-x)-2(y^3+6)$

(b) $12a^2b-(7b^3-5ba^2+8a^2)-(-3b^3+a^2)$

31. What must be subtracted from $4a-3b+2c$ to get the sum of $b-c+2a-1$ and $-6c+a+3-2b$?

32. Subtract A from B if $A=-7\times(-8)-10$ and $B=-15-20\div5+2$.

33. If P = (x^2+7x) and Q = $(-x^2-3x+2)$, find the value of 2P – Q + 8.

Sample Paper for First Term

Section – A

1. The product of two integers is always greater than the sum of two integers. State true or false.
2. If the measure of an angle is same as its supplement, then the angle is _____.
3. The standard form of $\frac{44}{-72}$ is _____.
4. Express $(-3) \times (-3) \times (-3) \times p \times p \times q$ in exponential form.
5. The negative of a negative integer is always a _____ integer.
6. The perimeter of a rectangle = _____.
7. $(12^3 - 11^3)^0$ is equal to _____.
8. Every fraction is a rational number. State True or False.
9. $1\,m^2 =$ _____cm^2
10. Name the pair of angles whose non common arms are opposite rays.

Section –B

11. a) What is the difference between $-14^\circ C$ and $-17^\circ C$?
    b) If $a \times -1 = 22$, then a is _____.
12. Express 343 in exponential form.
13. a) Express $\frac{-4}{-7}$ as a rational number with denominator 35.
    b) Write the multiplicative inverse of $\frac{-3}{5} + \frac{2}{5}$
14. Simplify: $(45 \div 9) - [(-36) \div 9]$
15. The difference between the measures of two angles of a linear pair is 80°. Find the measure of each angle.
16. Find the radius of the circle whose circumference is 308 m.
17. Find the arithmetic mean of all the even numbers between 89 and 101.
18. Simplify using laws of exponents: $\left[\left(\frac{1}{3}\right)^2\right]^3$
19. In fig i) $\angle 1 = 130°$, find all the other angles.

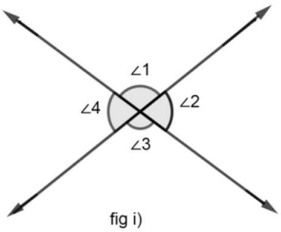


fig i)

Section –C

20. Simplify using laws of exponents $\frac{3^4 \times 9^3 \times 4^4}{2^3 \times 8 \times 27}$
21. By what number $\frac{-8}{13}$ should be multiplied to get $\frac{16}{3}$?

22. Match the following:

a) $\frac{-3}{4} \div \frac{12}{10}$	i) $\frac{-4}{9}$
b) $\frac{-7}{6} \times \frac{24}{-42}$	ii) $\frac{-15}{8}$
c) $-1 + \frac{5}{9}$	iii) $\frac{-5}{8}$
	iv) $\frac{2}{3}$

23. The base of a parallelogram is thrice its height. If the area is 867 cm^2, find the base and height of the parallelogram.

24. Simplify $(2)^{p+1} \times (2)^5 = (2)^9$ and find the value of 2^p

25. The scores in mathematics test (out of 25) of 15 students are as follows
19, 25, 23, 20, 19, 15, 20, 18, 7, 9, 8, 15, 20, 25, 20
Find the modeandmedian of the data. Are they same?

26. A 5 m wide path runs outside and around a rectangular park of length 110 m and breadth 90 m. Find the area of the path.
(Draw the required figure)

OR

Find the area of the shaded region. (refer fig ii)

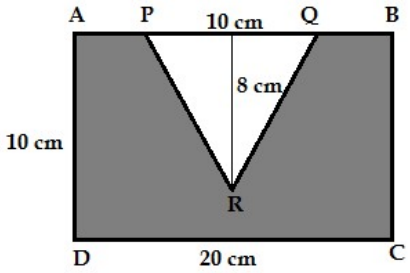


fig ii)

27. a) In the given figure iii), justify whether $l||m$.

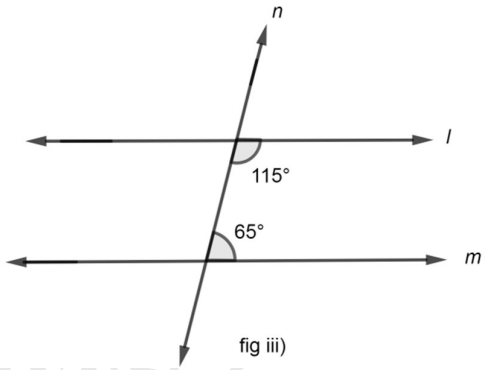


fig iii)

b) In the given figure iv), $AB||CD, BE||CF$ and $\angle ABD = 60°$. Find the value of $\angle CDE, \angle FCD$.

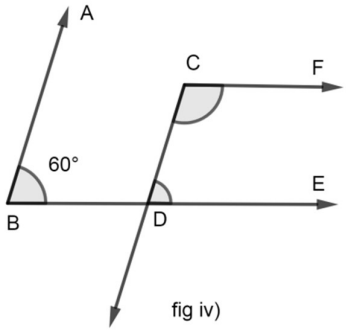


fig iv)

28. a) A cooling machine requires that room temperature to be lowered from 50°C at the rate of 5°C every hour. What will be the room temperature after 8 hours after process begins?

b) Fill in the blank using $<, > or =$ sign

$-24 + 5 + (-7)$ _____ $36 + (-52)$

Section –D

29. a) Arrange the following in ascending order

$$-7, \frac{-3}{4}, \frac{4}{5}, \frac{2}{13}$$

b) A train covers a distance of 180 km in 2 hours. What distance will it cover in $4\frac{2}{3}$ hours?

30. The following data gives the maximum and minimum temperature (in °C) of the cities on a particular day. Plot a double bar graph from this data and answer the questions that follow.

City	Delhi	Bangalore	Srinagar	Mumbai	Chennai
Max. temp (°C)	23	20	10	30	32
Min. temp (°C)	20	19	4	28	27

a) Which city shows the maximum difference in day's temperature?

b) Which are the hottest and the coldest cities?

31. Answer the following:

a) How many pair of adjacent anglesare formed when two lines intersect at a point? Show by drawing

a figure.

b) In figure v), $XY \parallel PQ$, AB is a transversal. $\angle ALY = (2x - 15)°$and $\angle LMQ = (x + 40)°$, find x and y.

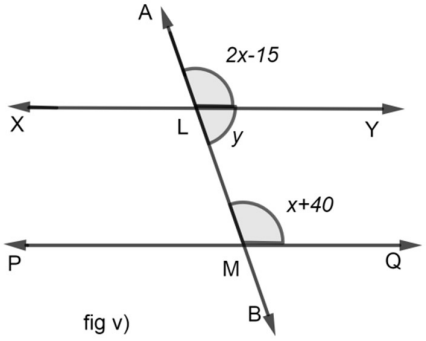


fig v)

32. If the length of the minute hand of a clock is 21 cm, find

a) the distance covered by its tip in one hour.

b)the area swept by it in half an hour.

33. I) Simplify using BODMAS

$$8 \div (5 - 3\ of\ 2 + 3)$$

II) Answer the following. (Use suitable property wherever applicable)

a) $80 \times 665 \times (-125)$

b) $|-8| + 11 - |-25|$

c) Integers are not commutative under _____.

Answers

Assignment – 1 (INTEGERS)

1. (a)–15(b) 35 degrees

3(a) -4(b) -18 (c) 45(d) 17 (e) 50(f) -1 (g) -14

4(a) 300 (b) –6650000 (c) –2500(d) 4116 (e) –5600

5. 32m **6**. $-3^{\circ}C$ **7**. 30 sec **8**.25m **9**. Profit Rs 88000

Assignment – 2 (LINES and ANGLES)

1.$z = 21°$, $x = 32°$, $y = 16°$

2. (a) linear pair (b) obtuse angle (c) 30°(d) 35(e) 33 (f) 30°(g) non-parallel (h)45°, 135° **3.** 23°, 67° **4**.10° **5**.$x = 37°$ **7**. 14°

8. ∠AOD = 60°, ∠AOC = 120°, ∠BOC = 60°, ∠BOD = 120°**10**. 45°

Assignment – 3 (RATIONAL NUMBERS)

1(a) $\frac{-13}{9}$ (b) -4

3. $\frac{2}{-3}, \frac{7}{12}, \left|\frac{-5}{6}\right|, \frac{-14}{-9}$

4.$\frac{-5}{36}$ **5.**$\frac{3}{2}$ **6**$\frac{1}{3}$

7. (a) $\frac{7}{20}$ (b) $\frac{6}{5}$ (c) $\frac{-4}{7}$ (d) $\frac{-2}{7}$

8. (a) $\frac{-16}{15}$ (b) -36 (c) $\frac{-14}{81}$

9. 100 **10**. 100 school girls

Assignment – 4(PERIMETER AND AREA)

1.Area = 750cm², AB = 37.5 cm **2**.PM = 20cm. **3.**Area = 60cm², PS = 7.06cm

4. 12m **5.**28 m **6**.30 m, 40 m **7**. 84m**8**.Rs 780

9. Rs 14768 **10** (a) 88cm (b) 308 sq cm **11.**264cm².

Assignment –5 (EXPONENTS AND POWERS)

1(a)Yes (b) No **2**. 3^7 **3**. 0 **4**. 13 **5**(a) 625 (b) $\left(\frac{-2}{3}\right)^{25}$ (c) $\frac{64}{567}$ (d) 5^{a+2b}

6. 6561 **7**(a) 6 (b) 3 (c) 3 (d) 0 (e) 1 (f) 2

8.(a) 15 (b) 81 **9**. 1 **10.** 256

Assignment –6 (DATA HANDLING)

1. 3.13, 3, 2 **2.** 113 **4.** 32 **5.** 19 **6.** (i) 11 , (ii) (a) $\frac{1}{11}$ (b) $\frac{2}{11}$ (c) $\frac{4}{11}$ (d) $\frac{7}{11}$ (e) 0 (f) 1

7. 4,6,8,9,10,12,14,15,16,18; Range = 14; Probability = $\frac{8}{10} or \frac{4}{5}$

8. -3, -2, -1, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; Median = 3.5; Probability = 7/14 or 1/2.

9. (a) $\frac{1}{2}$ (b) $\frac{1}{26}$

10(a) $\frac{1}{13}$ (b) 1 (c) $\frac{1}{4}$ (d) $\frac{3}{4}$ (e) $\frac{1}{2}$

Assignment – 7 (ALGEBRAIC EXPRESSIONS)

1. (a) -1 , 7 (b) 1, 3, -4 **2.** (a) 4 (b) $-15x^3, -4y^3, 10x^3y^3$ (c) like (d) -30

(e) $-21b^3c$ **3.** $xy - \frac{1}{2}yz$ **4.** $a = 4$ **5.** $20y - 2 - 11x - 5z^2$

6. $21m^2 + 11 - 19n^2$ **7.** 0 **8**(a) –9 (b) –18 (c) 2(d) 0 **9.** $9x^2 + 11x + 6$ **10.**

$6x^2 + x + 11$

Assignment – 8 (SIMPLE EQUATIONS)

PART- 1

1. (a) $x = 8$ (b) $x = \frac{1}{5}$ (c) x = 1 (d) x = 1 (e) $x = \frac{15}{61}$ (f) x = -2

(g) x = 4 2. –5

PART- 2

1. 24 **2.** 34, 36, 38 **3.** 320, 350 **4.** 58°,122° **5.** Length = 30m, breadth = 20m

6. RS 180000 **7.** Ram's age = 32yrs, son's age = 8yrs **8.** Total length of the pole = 12m.

9. 12 cm, 12 cm, 4 cm **10.** 33, 61 **11.** $x = 10$

Assignment – 9 (TRIANGLES AND ITS PROPERTIES)

1. 30°, 30°, 120° **2.** 25 , 75 , 80 **3.** Each base angle = 40° **4.** 12m

5. Breadth=45, perimeter= 210 **6.** 15 **7.** $\angle ACD = 70°, \angle AED = 110°$ **8.** Yes

9. No **10.** ∠P = 100°, ∠Q = 40° **11.** 25

Assignment – 11 (CONGRUENCE OF TRIANGLES)

1 (a) True (b) False (c) False (d) True (e) False

2.SAS Congruence

3.Δ PQR **4**.$x = 73°, y = 22°$ **8**.5cm **9**.60° **10**.90 cm

Assignment – 12 (COMPARING QUANTITIES)

1. 26100 , 7830 **2**. $61\frac{1}{4}\%$ **3**.Rs 800 **4** $33.\frac{1}{3}\%$ **5**.Rs 75900

6. 25% **7**.560 **8**.Raju, Rs 2160 **9**.Rs 15000 **10**. $\frac{1}{4}\%$