Smart Skills

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Syllabus
Academic Session 2016-17

April - May
1. Whole Numbers
   ● Introduction to the concept of whole numbers
   ● Conversion of units
   ● Closure, commutative, associative properties with respect to four basic operations
   ● Identity (for addition and multiplication)
   ● Distributive property

2. Basic Geometrical Ideas
   ● Line, line segment, ray
   ● Open and closed figures
   ● Types of angles, triangles, quadrilaterals
   ● Circles

3. Fraction
   ● Addition, subtraction, multiplication and division of fractions
   ● Word problems

July
4. Decimals
   ● Addition, subtraction, multiplication and division of decimals
   ● Word problems

5. Playing with numbers
   ● Divisibility tests and their applications
   ● Finding HCF by long division method
   ● Word problems based on HCF and LCM
   ● Relation between HCF and LCM of two or more numbers

August
6. Integers
   ● Introduction of negative numbers
   ● Representation of integers on a number line
   ● Properties of integers
   ● Addition and subtraction of integers

September
Revision for first term examination
October

7. Understanding Elementary Shapes
   ● Parallel, intersecting and perpendicular lines
   ● Types of angles, triangles and polygons
   ● 3 dimensional shapes

November

8. Mensuration
   ● Perimeter of plane figures
   ● Area of irregular shapes.
   ● Area of rectangle and square

9. Algebra
   ● Introduction to the concept of constants and variables
   ● Types of Algebraic expressions
   ● Solving simple equations

December

10. Data Handling
    ● Pictograph
    ● Bar graph

January - February

11. Ratio and Proportion
    ● Concept of ratio
    ● Proportion as equality of two ratios
    ● Unitary method

12. Practical Geometry
    ● Angles and their bisectors
    ● Perpendicular and Perpendicular bisector

Revision for final examination
OBJECT:
- Observation and identification of 2-D symmetrical objects for reflection symmetry.
- Operation of reflection (taking mirror images) of simple 2-D objects.
- Recognizing reflection symmetry (identifying axes).

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 the delay in the submission of the project.
- This project should be submitted as a file/folder including a Cover page and the activities mentioned below.

ACTIVITY 1: INTRODUCTION
Give a brief introduction of Symmetry and supplement your content with pictures/diagrams.

ACTIVITY 2: NAME SKELETON
Fold a white paper in half, write your name in cursive, and cut out around the name (this forms the body of the skeleton). Now add the head, arms and legs. And then mount the "name skeleton" on a black sheet.

For example:

![Name Skeleton Image]

ACTIVITY 3: SYMMETRY IN NATURE
Collect and paste three leaves of different plants/trees. The leaves should be SYMMETRICAL. Also show their line of symmetry.

ACTIVITY 4: INK BLOT
Make symmetrical figures using ink blot activity. Take a piece of paper. Fold it in half. Open the fold. Spill a few drops of ink on one half side. Now press the halves together. Use your creation and give it a meaning. What do you see? Is the resulting figure symmetric? If yes, draw the line of symmetry.
For example:

Activity 5: LINE OF SYMMETRY
Q1. Draw lines of symmetry on the shapes below using different colours (some shapes may have more than one line of symmetry).

a.  

b.  

c.  

d.  

e.  

f.  

g.  

h.  

i.  

Q2. Find the mirror image with respect to the given mirror line and colour following figures. Also, show the line of symmetry with a different colour.

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(Note: Take photocopy of Q1 and Q2 of Activity 5)
RUBRIC FOR THE SYMMETRY PROJECT

<table>
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<td>Activities</td>
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<tr>
<td><strong>Activity 1: Introduction</strong></td>
<td>All information is correct and relevant with proper examples/figures.</td>
<td>Most information is correct and relevant with proper examples/figures.</td>
<td>Some information is correct and relevant with proper examples/figures.</td>
</tr>
<tr>
<td><strong>Activity 2: Name Skeleton</strong></td>
<td>The picture is neat and as per the instructions given.</td>
<td>The picture is neat but some requirement is missing.</td>
<td>The picture lacks neatness and instructions are not followed properly.</td>
</tr>
<tr>
<td><strong>Activity 3: Symmetry in Nature</strong></td>
<td>All the leaves are symmetrical and line of symmetry is shown for all of them.</td>
<td>Leaves are symmetrical but line of symmetry is not shown for some.</td>
<td>Leaves are not symmetrical.</td>
</tr>
<tr>
<td><strong>Activity 4: Ink Blot</strong></td>
<td>The drawing is neat/creative/as per the guidelines.</td>
<td>The drawing is neat and creative but all requirements are not met.</td>
<td>The drawing is neat but lacks creativity.</td>
</tr>
<tr>
<td><strong>Activity 5: Line of Symmetry</strong></td>
<td>All the questions are attempted correctly.</td>
<td>Most of the questions are attempted correctly.</td>
<td>Some questions are attempted correctly.</td>
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Assignment No. 1
Whole Numbers

1. Convert:
   a. 5 km to mm                        d. 46.5 g to kg
   b. 457 cm to mm                     e. 78 m 7 cm to cm
   c. 8945 ml to l                          f. 125 km 50 m to km

2. Find the sum by suitable rearrangement:
   a. 165+578+335
   b. 373+227+667
   c. 268+415+332
   d. 557+288+143+12

3. Find the product using the properties of multiplication:
   a. 625 × 3 × 16
   b. 25 × 89 × 40
   c. 4 × 1365 × 25
   d. 4 × 2 × 25 × 5

4. Use distributive property and find:
   a. 535 × 98                                                d. (35 × 14) + (15 × 14) - (50 × 14)
   b. 105 × 68                                                e. (578 × 1055) - (578 × 55)
   c. 279 × 93 + 7 × 279                                     f. 96 × 73 - 94 × 73

5. There are 15 boys and 15 girls in a class. They are collecting money for a cause. Each boy collected Rs 253 and each girl collected Rs 247. How much money was collected by the class?

6. Neha buys 456 books and 544 notebooks. If the cost of a book and a notebook is Rs 25 each, find how much total money does she spend? (Use suitable property)

7. Name the property:
   a) \((13 + 6) + 8 = (8 + 13) + 6\)
   b) \(15 \times (100 - 2) = (15 \times 100) - (15 \times 2)\)
   c) \(5 \times 6\) is a whole number.
   d) \(3 \times (8 \times 9) = 3 \times (9 \times 8)\)

Brain-Teasers
1. From a basket of mangoes when counted in twos there was one extra, counted in threes there were two extra, counted in fours there were three extra, counted in fives there were four extra, counted in sixes there were five extra. But counted in sevens there were no extra. At least how many mangoes were there in the basket?
2. Which two digit numbers when added to 27 get reversed?
3. There is a number which is very peculiar. This number is three times the sum of its digits. Can you find the number?
1. In the given figure:
   a. Name any two rays?
   b. Name the opposite rays formed.
   c. Name the point of intersection of ray OA and ray OF.

2. Draw a circle with diameter 7cm and then:
   a. Mark the centre.
   b. Draw a chord.
   c. Show the major arc with blue colour and minor arc with red formed by the chord.
   d. Colour the minor segment as yellow and major segment as green.
   e. Draw a secant.

3. Illustrate, if possible, each one of the following with a rough diagram:
   a. A simple closed curve that is not a polygon.
   b. An open curve made up entirely of line segments.
   c. A polygon with two sides.
   d. A polygon with minimum number of sides.
   e. A closed curve made up of line segments and is not a polygon.

4. From the given figure:
   a. Give one pair of parallel sides.
   b. Name 2 diagonals.
   c. Give one pair of adjacent sides.
   d. Name all the vertices.
   e. Name the shape ABCD.

5. From the given figure, give full names of the following angles:
   a. \( \angle 1 \)
   b. \( \angle 2 \)
   c. \( \angle 3 \)

Web Resources: Practice measuring of angles using protractor using
- http://goo.gl/0fIk3A
- http://goo.gl/PEsdqT
- http://goo.gl/KQ6KFV
1. Write the fraction of the shaded portion:

<table>
<thead>
<tr>
<th>Column A</th>
<th>Column B</th>
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</thead>
<tbody>
<tr>
<td><img src="https://example.com/shaded.png" alt="Shaded Fraction" /></td>
<td>![Blank.png]</td>
</tr>
</tbody>
</table>

2. Antra bought one dozen eggs and used seven of them in baking a cake. What fraction of the total number of eggs was used by her?

3. What fraction of numbers from 1 to 15 are prime numbers?

4. Find the missing number to make the fractions equivalent.
   
a. \( \frac{5}{12} = \frac{x}{24} \)
   
b. \( \frac{6}{48} = \frac{1}{x} \)

5. Which pair of fractions are equivalent:
   
a. \( \frac{9}{15} , \frac{3}{10} \)
   
b. \( \frac{3}{11} , \frac{15}{33} \)

6. Reduce the following to its simplest form:
   
a. \( \frac{12}{30} \)
   
b. \( \frac{6}{15} \)
   
c. \( \frac{2}{5} \)
7. Write each improper fraction as a mixed fraction:
   a. \( \frac{29}{4} \)  
   b. \( \frac{63}{10} \)  
   c. \( \frac{89}{9} \)

8. Write each mixed fraction as an improper fraction:
   a. \( 5\frac{3}{4} \)  
   b. \( 6\frac{4}{9} \)  
   c. \( 12\frac{1}{8} \)

9. Mrs. Gupta distributed a bag of chocolates amongst four children. Payal got \( \frac{3}{15} \) of the chocolates, Shubh got \( \frac{3}{8} \) of the chocolates, Raj got \( \frac{3}{20} \) of the chocolates and Lara got \( \frac{3}{10} \) of the chocolates. Arrange the names of the children in the order from who got the least to who got the maximum number of chocolates.

10. Find:
    a. \( \frac{3}{11} \) of Rs.44  
    b. \( \frac{4}{13} \) of 65cm  
    c. \( \frac{5}{6} \) of 54 weeks
Assignment No.3(B)

Fraction

Addition and Subtraction

1. Add and express your answer in the simplest form:
   a) \( \frac{2}{5} + \frac{4}{5} \)
   b) \( \frac{3}{5} + \frac{13}{20} \)
   c) \( \frac{1}{8} + \frac{5}{12} + \frac{5}{6} \)
   d) \( 3\frac{1}{2} + 5\frac{3}{8} \)
   e) \( 13\frac{2}{3} + 1\frac{1}{4} + 4\frac{5}{12} \)

2. Subtract and express your answer in simplest form:
   a) \( \frac{26}{35} - \frac{12}{35} \)
   b) \( 1 - \frac{3}{4} \)
   c) \( \frac{5}{9} - \frac{3}{7} \)
   d) \( 23\frac{5}{8} - 16\frac{5}{6} \)
   e) \( 12\frac{15}{16} - 7\frac{3}{4} \)

3. A wheel barrow can hold upto \( 26\frac{1}{4} \) kg. Four rocks that weigh \( 6\frac{1}{8} \) kg, \( 8\frac{1}{2} \) kg, \( 4\frac{3}{4} \) kg and \( 7\frac{3}{4} \) kg are to be loaded into the wheel barrow. Can the wheel barrow hold all four rocks?
4. The sum of two fractions is $6 \frac{1}{6}$. If one of the fractions is $2 \frac{1}{3}$, find the other fraction.

5. Naina bought a plant that was $4 \frac{2}{3}$ cm tall. In the first week, it grew $1 \frac{7}{8}$ cm and the next week it grew $3 \frac{1}{2}$ cm. Now how tall is Naina’s plant?

6. Rashmi bought $\frac{3}{4}$ metre of cloth and Madhu bought $\frac{3}{5}$ metre of cloth. Who bought more cloth and by how much?

7. Joginder was given $\frac{3}{8}$ of a basket of apples. Vinod got $\frac{1}{3}$ of the basket. The rest of the basket was given to Amit. What fraction of the basket was given to Amit?

8. Saransh purchased books worth Rs. $65 \frac{3}{4}$ and gave Rs. 100 to the shopkeeper. Find the amount of money returned by the shopkeeper.
Assignment No.3(C)

Fractions—Multiplication and Division

1. Solve and give the answer in the lowest term.

   (a) \( 10 \times \frac{2}{5} \)   (b) \( 8 \times \frac{3}{10} \)  (c) \( \frac{2}{2} \times \frac{4}{3} \)  (d) \( \frac{2}{9} \div 3 \)  (e) \( 100 \div \frac{3}{10} \)

2. Seema reads \( 3\frac{1}{2} \) pages of a book in one hour. How many pages will she read in \( 2\frac{1}{4} \) hours?

3. A satin ribbon \( 7\frac{1}{2} \) m long was cut into 5 equal parts. Find the length of each part.

4. The cost of \( 5\frac{1}{2} \) kg of grapes is Rs 550. At what price per kg are they being sold.

5. From a rope that is 20m long, Rohit cut off 3 pieces of \( 2\frac{1}{3} \) m each and Nanda cut off 2 pieces of \( 4\frac{1}{2} \) m each. What length of the rope is left?

6. Reeta walks \( \frac{5}{7} \) km in 1 hour. How far does she walk in \( 3\frac{1}{2} \) hours?

7. The product of two fractions is \( 68\frac{3}{5} \). If one of them is 49, find the other?

8. Lakshay reads a story book for \( 2\frac{3}{4} \) hours every day. He reads the entire book in 8 days. How many hours did he take to read the entire book?
Assignment No.4
Decimals

1. Convert the following fractions to decimals
   (a) \frac{47}{8}    (b) \frac{3}{5}

2. Convert the following decimals to fractions
   (a) 0.872    (b) 5.005

3. Write as a decimal:-
   a. \frac{3}{1000}    b. \frac{245}{1000}

4. Write in decreasing order:-
   75.4, 75.39, 75.258, 75.5, 75.20, 75.75

5. Write as a fraction (lowest term):-
   a. 2.8    b. 1.25

6. Madan walked 12.65 km on Monday, 13km50m on Tuesday and 11.025 km on Wednesday. How much distance did he walk in all?

7. Farida went to market and spent Rs 105.50 on vegetables and Rs 89.75 on fruits. If she had taken Rs 200 with her, how much money did she bring back?

8. Shamla bought 10.75 kg of potatoes and 11.23 kg of onions while Sameera bought 8.52 kg of fruits and 15.31 kg of Rice. Who had more weight to carry and by how much?

9. Simplify
   (a) 4.89 \times 10    (b) 0.045 \times 1000    (c) 100 \times 95.3    (d) 99 \times 1.63
   (e) 0.07 \times 83.5    (f) 9192.02 \times 100    (g) 0.5 \times 10    (h) 2.11 \times 1000
   (i) 117.6 \times 21    (j) 79.74 \times 3.6

10. Evaluate the following
    (a) \frac{188.8}{8}    (b) \frac{2.568}{12}    (c) \frac{370.8}{0.9}    (d) \frac{1.274}{0.13}

11. Eleven books are stacked on top of each other. If each book is 2.35cm thick, find the height of the stack.

12. Purab covers 17.25km in 1.5 hours on his bicycle. Find how many kilometers will Purab cover in one hour.

Web Resources: Revise conversion of Fractions to Decimals with
- http://goo.gl/DOXM3w
- http://goo.gl/J5SWNp
Fun Corner
Each expression between the consecutive spokes of the cycle wheel represents the number at the centre of wheel. Similarly, complete the other wheels.

BHASKARACHARYA - Indian Mathematician

- **Bhaskara** (1114 A.D. -1185 A.D.) or Bhaskaracharya is the most well known ancient Indian mathematician.
- He was born in a village of Mysore district.
- He was the first to declare that any number divided by zero is infinity and that the sum of any number and infinity is also infinity.
- He has written a lot about zero, surds, permutation and combination.
- He wrote, “The hundredth part of the circumference of a circle seems to be straight. Our earth is a big sphere and that’s why it appears to be flat.”
- He is famous for his book *SiddhantaSiromani* (1150 A.D.). It is divided into four sections - *Leelavati* (a book on arithmetic), *Bijaganita* (algebra), *Goladhayaya* (chapter on sphere -celestial globe), and *Grahaganita* (mathematics of the planets).
Assignment No. 5
Playing with numbers

1. Test the divisibility of the following numbers by 11.
   a. 7169803          b. 901351          c. 818950

2. Test the divisibility of the following numbers by 12.
   a. 7632              b. 8432             c. 14382.

3. Test the divisibility of the following numbers by 15.
   a. 63150             b. 45108            c. 34560

4. Determine the size of the longest tape which can be used to measure exactly the lengths
   7m, 3m 85cm and 12m 95cm.

5. Find the least number which can be divided by 25, 40 and 60.

6. Three bells ring at a time interval of 25, 40 and 50 seconds. If they rung together now, after
   how long will they next ring together?

7. The HCF of 210 and 390 is 30. Find their LCM.

8. Find the largest number which divides 868, 651, 1302 and 1085 exactly.

9. The LCM of two numbers is 840 and their HCF is 4. If one number is 28, find the other.

10. The HCF of two numbers is 12 and their product is 4320. What is their LCM? If one of the
    numbers is 60, what is the other number?

Do you know?

PERFECT NUMBERS
A perfect number is a number that equals the sum of all its factors, excepting the number itself. The
perfect number 6 is the sum of 1, 2 and 3. The first five perfect numbers are 6, 28, 496, 8128 and
33550336.

- Find the factors of first four perfect numbers and check the definition.
- The existence of an odd perfect number is not known.
- Numbers, which are not perfect, are either deficient or abundant depending on whether
  the sum of its proper divisors is less than the number or more than the number in
  question.
ENRICHMENT TIME

• Take any multiple of 9. Now separate the digits of the multiple and add them. Repeat the process with the result until you obtain a one digit number. What is it? Is it the same number every time?
• Think of any whole number. Multiply the number by itself. To the product of the number add the number you started with. Now add 17. What is the number? Is your answer a prime number?

HAILSTONE NUMBERS
Many mathematicians like playing with numbers, and sometimes they discover weird patterns that are hard to explain. Here’s a mysterious one you can try:
Pick any whole number. If it’s odd, multiply the number by 3, then add 1. If it’s even, divide it by 2. Now, apply the same rules to the answer that you just obtained. Do this over and over again, applying the rules to each new answer.

For example, suppose you start with 5. The number 5 is odd, so you multiply it by 3 to get 15, and add 1 to get 16. Because 16 is even, you divide it by 2 to get 8. Then you get 4, then 2, then 1, and so on. The final three numbers keep repeating.

Try it with another number. If you start with 11, you would get 34, 17, 52, 26, 13, 40, 20, 10, 5, 16, 8, 4, 2, 1, and so on. You eventually end up at the same set of repeating numbers: 4, 2, 1. Amazing!

The numbers generated by these rules are sometimes called “hailstone numbers” because their values go up and down wildly—as if, like growing hailstones, they were being tossed around in stormy air—before crashing to the ground as the repeating string 4, 2, 1.
1. Simplify:
   a. \(-25 + 30\)  
   b. \(-28 - 32\)  
   c. \(45 - 55\)  
   d. \(-5 - 94\)  
   e. \(-85 + 98\)

2. Simplify:
   a. \((-1) + (-8)\)  
   b. \((-111) - (+55)\)  
   c. \(46 + (-84)\)  
   d. \(-23 - (-44)\)  
   e. \(35 - (-70)\)

3. Simplify the following:
   a. \(27 - (-49) + 36\)  
   b. \(-16 - (-6)\)  
   c. \(-7 - (-5)\)  
   d. \(-10 - (-12) + (-3)\)

4. From the sum of 830 and \(-250\), subtract the additive inverse of 970.

5. Sia made a profit of Rs546 from the candles she sold in Diwali mela in 2005. Subsequently, the next two years were not as lucky for her as she had to suffer loss of Rs285 and Rs315 in 2006 and 2007 respectively. What was the status of her account at the end of 2007?

6. Simplify the following:
   a. \(-26 + [-3 + 14 - (-8)]\)  
   c. \(-(-450) + [(-70) + (-45)]\)
   
   b. \((-24) + 67 - 187\)  
   d. \([56 - 45 + (-11)] - [-45 - (-15)]\)

7. a. What is the additive inverse of \(-(-4)\)?  
   b. Add the successor of \((-88)\) and the predecessor of 8.

8. The following were the scores of Sanskriti school team in the five rounds of inter school quiz: \(+10, -5, +5, +15, -1\) What was the final score?

9. A car traveled 55 km east and from there 138 km towards west. And, from there again the car traveled 42 km towards east. What is the final position of the car?

10. A man deposited Rs 5000 in his bank account. He withdrew Rs 3824 from the account on the next day. Later he deposited Rs 1534. What is his final balance in the account?

**Web Resources:** Let’s get introduced to Negative Numbers by
- [http://goo.gl/ZF7tNI](http://goo.gl/ZF7tNI)
Going Up and Down with Integers

Tanya is riding on an elevator in a building that has many floors and one basement floor underground. Answer these questions regarding Tanya’s adventure riding the elevator up and down the building.

1) From the first floor, Tanya goes up 8 floors and then down 3 floors. What floor is she now on?
2) Tanya is on the 18th floor. She goes down 10 floors and then up 13 floors. What floor is she now on?
3) Tanya is on the 7th floor. She then goes up to the 19th floor. How many floors did she go up?
4) Tanya is on the 2nd floor. She goes down 3 floors. What floor is she now on?
5) From the top floor, Tanya goes down to the 8th floor, traveling 17 floors. What is the top floor?
6) Tanya does not know what floor she is on. She presses the button to go to the 10th floor and the elevator travels 4 floors. What floor was she on originally?

ENRICHMENT TIME

• $p$ and $q$ are two integers such that $p$ is the predecessor of $q$. Find the value of $p - q$. 
Assignment No.7  
Understanding Elementary Shapes

1. Identify the odd one out:
   
   (a) [Diagram of a square]  (b) [Diagram of a triangle]  (c) [Diagram of a triangle]  (d) [Diagram of a triangle]

2. Which of the following figures is not a polygon:
   
   (a) [Diagram of a triangle]  (b) [Diagram of a square]  (c) [Diagram of a pentagon]  (d) [Diagram of a triangle]

3. How many right angles do you make if you start facing:
   
   a. South and turn clockwise to the west?
   b. West and turn to west?

4. Name the types of following triangles:
   
   a. \(\triangle ABC\) with \(AB = 8.7\) cm, \(AC = 4\) cm and \(BC = 6\) cm.
   b. \(\triangle PQR\) such that \(PQ = QR = PR = 5\) cm.
   c. \(\triangle XYZ\) with \(\angle Y = 90^\circ\) and \(XY = YZ\).
   d. \(\triangle LMN\) with \(\angle L = 30^\circ\), \(\angle M = 70^\circ\) and \(\angle N = 80^\circ\).

5. Shekhar is moving towards north-west direction. In which direction will he be if he turns through:
   
   a. 2 right angles?
   b. a complete angle?

6. In the given figure, BE is parallel to CD; AB = AE = 3cm and BF = EF = 5cm.

   What kind of quadrilateral is:
   (i) BCDE
   (ii) AEFB

7. Fill ups:-
   
   a. A triangular prism has ______ number of edges.
   b. A quadrilateral having one pair of opposite sides parallel is called ________.
   c. Eight sided polygon is called ________.
   d. A rhombus with all its angles as right angles is called ________.
   e. A cuboid has ______ vertices while cylinder has ______.
   f. 190° is a ________ angle.

8. Identify the solids whose Nets are given below:

   a. [Diagram of a net for a cube]  b. [Diagram of a net for a cylinder]
ENRICHMENT TIME

• Explore the properties of diagonals of various quadrilaterals and answer the following questions:

1. If the diagonals of a quadrilateral are bisect each other at 90°, then this quadrilateral is
   i. A rectangle
   ii. A rhombus
   iii. A kite
   iv. None of these

2. A square has its diagonals _______ (equal / unequal)

3. State true or false:
   The diagonals of a rectangle are perpendicular to each other.

Web Resources: Explore the third dimension by
• http://goo.gl/9V2Iyw
Assignment No.8

Mensuration

1. A playground is 100m long and 70m broad. How much distance does a girl run when she runs five times around the ground?

2. The perimeter of a square is 120m. Find its area.

3. The area of a rectangle of breadth 48m is 8304sqm. Find its perimeter.

4. Find the area of the shaded portion.

All measurements are given in centimeters.

5. A room is 10m long and 6m wide. How many tiles of 20cm by 10cm are required to cover its floor?

6. A wire in the shape of an equilateral triangle of side 16 cm is rebent into a square. Find the side of the square.

7. Floor tiles are 25cm squares. How many tiles will be needed for a rectangular lawn 12m long and 10m wide. Find the total cost at the rate of Rs8 per tile.

8. Find the Perimeter of fig(1) and area of fig(2) on the graph shown along side.

   One square represents one sq cm.

Web Resources: Let's revise Perimeter using
- http://goo.gl/Cq20k8
ENRICHMENT TIME

- The cost of fencing a rectangular field at Rs.30/m is Rs.2400. If the length of the field is 24 m, then find its breadth.
- The length of the diagonal of a square is 20 m. Find its area.
- Maya has a square swimming pool in her garden, with four beautiful trees at the corners. She would like to exactly double the area of the pool, but she doesn’t want the trees to be cut down. How can she do it? (try dividing the square into 4 equal triangles)
- The rectangle in fig1. is cut along the middle. The two pieces are rejoined to form another rectangle as shown in fig2.

What will definitely be same for fig1 and fig2, Area or Perimeter or Both?
Assignment No.9
Algebra

1. Write an algebraic expression for the following:
   a. 7 added to x.
   b. 5 subtracted from y.
   c. x subtracted from 2.
   d. The product of y and z.
   e. The quotient of x by 3.

2. Write an algebraic expression for the following:
   a. Twice of z subtracted from y.
   b. 4 subtracted from -x.
   c. 15 less than the quotient of x by 3.
   d. The product x and y divided by 5.
   e. 5 times x increased by 7 times y.

3. There are n students in a team and r is sanction to each for refreshment, what is the total amount sanctioned?

4. Shalu is 3yrs less than 5 times Raju’s age. Find Shalu’s age if Raju is y years old.

5. Asha covers x cm in one step. How much does she cover in y steps?

6. An apple weighs 75gm and an orange weighs 35gm. If there are m apples and n oranges, write an expression to calculate their total weight.

7. Solve the following equations:
   a. $x - 7 = 6$
   b. $8x = 24$
   c. $\frac{x}{5} = 12$
   d. $3a - 7 = -4$
   e. $5y - 15 = 25$
   f. $4m + 7 = 15$
   g. $z + 3 = -2$
   h. $\frac{3n}{4} = 12$
   i. $\frac{x}{4} - 2 = 4$
   j. $7x = 56$
ENRICHMENT TIME

- From the sum of $a - b$ and $b - c$ subtract $c - a$.
- Asha went to the market and bought 5 pencils and 2 story books for Rs 200. Salim bought 6 pencils and 3 story books for Rs 400. Write out the equations for what Asha and Salim bought individually. Also give an equation for the total number of books and the pencils bought and the money spent.
- Think of a number between 1 to 10. Square it. Then add 28. Now subtract 10 from it. Subtract the square of the number. Halve the number that you have got. You are left with 9! Now try and figure out how the answer 9 is arrived. Is it the same answer every time? Can you form a suitable equation for it?

ARYABHATTA - Indian Mathematician

- Aryabhatta was born in 476 A.D in Kusumpur, India.
- He completed his studies at the University of Nalanda.
- He was the first person to say that Earth is spherical and it revolves around the sun.
- He gave the value of $\pi$ as 3.1416, claiming, for the first time, that it was an approximation. (He gave it in the form that the approximate circumference of a circle of diameter 20000 is 62832.)
- He also wrote a text book for astronomical calculations, Aryabhatasiddhanta. Even today, this data is used in preparing Hindu calendars (Panchangs).
- In recognition to his contributions to astronomy and mathematics, India's first satellite was named Aryabhata.
1. The following data gives the number of children in 40 families:

1, 2, 6, 5, 1, 5, 1, 3, 2, 6, 2, 3, 4, 2, 0, 4, 4, 3, 2, 2, 0, 0, 1, 2, 2, 4, 3, 2, 1, 0, 5, 1, 2, 4, 3, 4, 1, 6, 2, 2

Represent it in the form of a frequency distribution.

2. In a village five persons sold the following number of fruit baskets in a particular season:

Here 1 🍎 represents 100 baskets.

<table>
<thead>
<tr>
<th>NAME</th>
<th>NUMBER OF BASKETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Salma</td>
<td>🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎🍎apple represents 100 baskets.</td>
</tr>
</tbody>
</table>

Now answer the following questions:

(a) Who sold the maximum number of baskets?
(b) What is the difference between the number of baskets of Salma and baskets of Neha?
(c) What amount did Reeta get if she sold each basket for Rs 300

3. Read the bar graph and answer the following questions:

- **Radio**
- **TV Sets**
- **Music Systems**
- **Microwaves**
- **Cellphones**
a. What information is given in the bar graph?
b. Which is the highest selling electronic?
c. What is the difference between the highest and the lowest selling electronic?

4. Draw the bar graphs for the following data using appropriate scale:

a. | Class | VI | VII | VIII | IX | X |
---|---|---|---|---|---|
| No. of absentees | 5 | 8 | 0 | 3 | 9 |

b. | Section | 6A | 6B | 6C | 6D | 6E |
---|---|---|---|---|---|
| No. of students | 22 | 26 | 19 | 33 | 25 |

c. | Transport | Car | Bike | Bus | Train | By Air |
---|---|---|---|---|---|
| No. of people | 750 | 270 | 520 | 410 | 900 |

5. The female literacy rate in 5 states is given below. Represent the data with the help of a bar graph:

| State | Kerala | Madhya Pradesh | Bihar | Chandigarh | Himachal |
---|---|---|---|---|---|
| Female literacy (in %) | 87 | 50 | 33 | 76 | 68 |

Which state is leading in programs for encouraging education of the girls?

6. The following data represents the different modes of transport used by the children of a locality to reach their school.

| Mode of transport | Car | Bus | Bicycle | Walk | Rickshaw |
---|---|---|---|---|---|
| Number of children | 2 | 7 | 17 | 11 | 10 |

Represent the given data using Bar graph and answer the following questions:
a. Which mode of transport is used by maximum number of students?
b. How many children of the locality do not use bus or car for going to school?

Web Resources: Let’s learn how to draw Bar Graphs with
  • [http://goo.gl/WQlL4X](http://goo.gl/WQlL4X)
Assignment No.11
Ratio and proportion

1. Find the ratio of:
   a. 55 paise to Re 1.
   b. 500 ml to 2 litres.
2. Is the proportion true?
   a. 200 ml : 2.5 litres :: Rs 4 : Rs 50.
   b. 6 min : 25 sec :: 15 cm : 80 mm.
3. Are 30, 40, 45 and 60 in proportion?
4. The sum of the angles of a triangle is 180 degrees. The angles of the triangle are in the ratio 1:2:3.
   a. Find the measure of each angle.
   b. Classify the triangle on the basis of angles.
5. 25 oranges are shared by 10 persons. How many oranges are shared by 2 persons?
6. A car travels 90 km in 2 hours and 30 minutes.
   a. How much time is required to cover 30 km with the same speed?
   b. Find the distance covered in 2 hours with the same speed.
7. Which of the following pairs of ratios are equivalent?
   a. 4:12 and 2:6
   b. 10:33 and 18:44
   c. 9:12 and 21:28
8. A man earns Rs7500 a year and spends Rs6300 a year. Find the ratio of
   a. his income to his expenditure
   b. his saving to his income
9. Divide:
   a. Rs84 in the ratio 5:7
   b. 450g in the ratio 5:4
10. Vivek’s recipe for fruit punch requires 5 parts of water and 2 parts of punch mix. Set up a proportion and find out how much water did he need for 8 cups of punch mix.

Web Resources: Interesting videos to learn the concept of Ratio and Proportion
- http://goo.gl/s1R9lm
- http://goo.gl/Wfsh5s
Optional Enrichment

1. The ratio of speeds of two vehicles is 2 : 3. If the first vehicle covers 50 km in 3 hours, what distance would the second vehicle cover in two hours?
2. The ratio of income to expenditure of Mr. Natrajan is 7 : 5. If he saves Rs 2000 a month, what could be his income?
3. The ratio of the length to breadth of a lawn is 3 : 5. It costs Rs 3200 to fence it at the rate of Rs 2 per metre. What would be the cost of developing the lawn at the rate of Rs 10 per square metre?
4. At 10 am, a two metre high pole gives a shadow of 2m 60cm. A tall tree in the same street at the same time gives a shadow of length 15.6m. What is the height of the tree?
5. The length and breadth of a rectangular field are in the ratio 2:3. If its perimeter is 150m, then what is the area of the field?

Chocolate Calculator Cake (Serves 15)

Ingredients:
50g margarine
125g soft brown sugar
150g self-raising flour
1.25ml (4 tsp) bicarbonate of soda
1 egg
2 ripe bananas
2.5ml (1/2 tsp) vanilla essence
100g Cadbury Dairy Milk chocolate
40-60ml (2-3 Tbs) milk

Filling and icing:
1 large Cadbury Flake
1 pkt dessert topping mix
125ml (1/4 pt) cold milk
60ml (3 Tbs) Cadbury Drinking Chocolate
1 large packet Cadbury Buttons (milk chocolate)

Questions about the Calculator Cake

1. How many grams of flour would be in each slice of cake?
2. What fraction of an egg would be in each slice?
3. The recipe says to use between 40 and 60ml of milk. How much would you need to use to make sure that each slice contained 4ml of milk?
4. If 2.5ml is equivalent to $\frac{1}{2}$ a teaspoon, what is the ratio of ml to tsp in its simplest form?
5. If 125ml is about $\frac{1}{4}$ of a pint, how many ml are there in a pint?
6. How much drinking chocolate would be in each slice?
7. This recipe is for a cake that serves 15 people. How many bananas would you need to use for a cake that serves 30 people?
8. How much bicarbonate of soda would you need to use?
9. How much vanilla essence would you need to use?
10. If you wanted to make a Calculator Cake to serve 60 people, how many eggs would you need?
11. How much margarine would you need to use?
12. How much brown sugar would you need?

An interesting fact - A Strange Prime Number

The Prime number 73,939,133 has a very strange property. If you keep removing a digit from the right hand end of the number, each of the remaining numbers is also prime. It’s the largest number known with this property. Take a look: 73,939,133 and 73,93,913 and 7,39,391 and 73,939 and 7,393 and 739 and 73 and 7 are all prime: (Thanks to Toby Howard)
Assignment No.12  
Practical Geometry

1. Construct the following angles using protractor:
   a. 78°  
   b. 136°  
   c. 94°  
2. Construct the following angles using compass and ruler:
   a. 150° 
   b. 75°  
   c. 105°  
3. Construct the following angles and their angle bisectors using compass and ruler:
   a. 60°  
   b. 30°  
4. Construct a perpendicular to a line from a point outside it using a compass and a ruler.  
5. Draw a circle of radius 4 cm. Draw any two of its chords. Construct the perpendicular bisectors of these chords. Where do they meet?

Web Resources: Watch step by step constructions on  
• http://goo.gl/R6rs9X

ENRICHMENT TIME

1) Let A, B be the centres of two circles of equal radii. Draw them so that each one of them passes through the centre of the other. Let them intersect at C and D. Examine whether AB and CD are at right angles.  
2) Construct an angle of 120° with vertex O. Take a point A on one of its arms and B on another such that OA = OB. Draw the perpendicular bisectors OA and OB. Let them meet at P. Is PA = PB?
Fun corner - Some Calculator Tricks

Pocket and desk calculators are not only useful; they also can be used to surprise and entertain yourself and your friends. Here is a choice selection of some of the calculator amusement.

a. Select any number key (other than 0) and press it three times. Divide the number on display by 3, and then divide the result by the number on the key you first punched. The result? 37.

b. Put 1443 on display. Ask someone to tell you her age. (She must be older than 9). Multiply 1443 by her age, then multiply by 7. The computer will “stutter” her age.

c. When certain numbers in the readout are viewed upside down, they make words. Here are two of such tricks. In each case, after you do the math, turn your calculator around to read what it says.
   i. Say ‘hi’ to the machine. Then divide 6.1872 by 8.
   ii. What did Santa Claus say when Rudolf showed him one of these stunts?

RAMANUJAN – Indian Mathematician

• He was born on 22nd of December 1887 in a small village of Tanjore district, Madras. He failed in English in Intermediate, so his formal studies were stopped but his self-study of mathematics continued.
• He sent a set of 120 theorems to Professor Hardy of Cambridge. As a result he invited Ramanujan to England.
• He used to write his ideas and results on loose sheets. His three filled notebooks are now famous as Ramanujan’s Frayed Notebooks.
• Ramanujan showed that any big number can be written as sum of not more than four prime numbers.
• He showed that how to divide the number into two or more squares or cubes.
• When Mr Littlewood came to see Ramanujan in taxi number 1729, Ramanujan said that 1729 is the smallest number which can be written in the form of sum of cubes of two numbers in two ways, i.e. $1729 = 9^3 + 10^3 = 1^3 + 12^3$ since then the number 1729 is called Ramanujan’s number.
Math is Fun

Activity Sheets
Activity 1:

Cross “Calcuword” Puzzle

This “Calcuword” puzzle is different from any crossword puzzle you’ve ever done. To discover which words to fill in, you must solve the equations below with your calculator. Turn the calculator upside down after you solve each equation and read the word that appears in the answer screen. If a word is not familiar to you, look it up in a dictionary. The first problem has been done for you.

ACROSS

1) $22 \times 29 = 638 \Rightarrow BEG$
2) $12,335 + 19,403 = 31,738$
3) $96 \times 3,923 = 377,216$
4) $31.5 \div 50 = 0.63$
5) $692 - 85 = 607$
6) $15 \times 23 = 345$
7) $756,327.4 \times 5 = 3,781,638$
8) $8,100 - 995 = 7,105$
9) $2,568 + 3,095 = 5,663$
10) $3 \times .269 = .797$

DOWN

1) $2 \times 27,689 = 55,378$
2) $76 \times 501 = 38,066$
3) $12,969 - 5,231 = 7,738$
4) $161 + 156 = 317$
5) $611 - 97 = 514$
6) $457 + 253 = 710$
7) $4,032 \div 12 = 336$
8) $13 \times 31,507 = 411,591$
9) $4,506,849 \div 9 = 501,016$
10) $89,652 + 484,165 = 573,817$
11) $70.5 + 100 = 170.5$
12) $.21 + .16 = .37$
13) $1 - .94 = .06$
14) $20 \times 27,679 = 553,580$
15) $.222 + .385 = .607$
16) $269 \times 3 = 807$. 
Activity 2: MaTh–PUzzLeS

Fill the boxes with numbers to solve the following puzzle:

Fill the boxes with numbers or operations (+, -, ×, ÷) to solve the following puzzle:
Look at the given figure and answer the following questions:

1. Number of radii
2. Number of chords
3. Name an arc
4. Name the longest chord
5. Sum of the angles in the nose of the figure
6. Shade a major segment
7. Colour two minor segments as red.
8. Name four collinear points.
Activity 4: FRACTION WORD SEARCH

[Word search grid with the following words:
ADDITION, CANCELLATION, COMMON,
CONVERTING, DECIMALS, DENOMINATOR,
DIVISION, FRACTION, IMPROPER,
MIXED, MULTIPLICATION, NUMBERS,
NUMERATOR, PERCENTS, PROPER,
RECIProCAL, SUBTRACTION, SIMPLIFY]
Activity 5:

**FLOW CHART SECRET CODE**

A flow chart describes a step-by-step process. If you follow the steps in the flow charts below, your answers will spell out the answer to the riddle below in Mike’s Math Club code.

I’ve completed one flow chart to get you started. Good luck!

<table>
<thead>
<tr>
<th>Mike’s Math Club Secret Coded Letter Values</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 = '</td>
</tr>
<tr>
<td>1 = F</td>
</tr>
<tr>
<td>2 = M</td>
</tr>
<tr>
<td>3 = H</td>
</tr>
<tr>
<td>4 = G</td>
</tr>
<tr>
<td>5 = O</td>
</tr>
<tr>
<td>6 = A</td>
</tr>
<tr>
<td>7 = S</td>
</tr>
<tr>
<td>8 = E</td>
</tr>
</tbody>
</table>

What does every person in the world do at exactly the same time?

When you answer the question in the octagon, follow the arrows until your answer points you to the gray box. (You might need to repeat the last step more than once.)
Activity 6: AREA OF IRREGULAR POLYGONS

Find the areas of the following irregular figures. Assume that each small square is 1cm².
Activity 7: THE GARDEN

The garden in the picture below is open every day from 10:00 am to 5:00 p.m. It costs Rs 2.00 per visitor to walk through the garden.

Which amounts are variables? Write a “V” next to them.

1. The area covered by the garden. _____
2. The number of people who visit the garden each day. _____
3. The amount of sunlight that falls on the garden each day. _____
4. The number of hours the garden is open each day. _____
5. The amount of water in the pond. _____
6. The amount of plant food the gardeners use each week. _____
7. How much money each person pays to visit the garden. _____
8. The length of the path through the garden. _____
9. The number of bees in the garden. _____
10. The amount of rain that falls on the garden each day. _____
Activity 8: MATH CROSSWORD

ACROSS
4. answer to an addition problem
9. answer to a subtraction problem
11. 3, 19, 37, and 131 are all __ numbers
12. bottom number of a fraction
14. polygon with five sides
16. straight lines that never cross
17. having the same size and shape
18. shape of a soup can
19. distance around a figure
20. Hindu-Arabic numeral for LXII

DOWN
1. answer to a division problem
2. twelve
3. five lines passing through the same point
5. shape of a tennis ball
6. line intersecting the circle at two distinct points
7. answer to a multiplication problem
8. another name for a cuboid
10. nine_____seven equals 63
13. 90 degree angle
15. top number of a fraction
MULTIPLE CHOICE QUESTIONS (TERM I)

1. The product of a number and 109 is 109. The number is.
   a) 1  b) 0  c) \(\frac{1}{109}\)  d) 109

2. \(8 \times (10 + 9) = (8 \times 10) + (8 \times 9)\) is an example of __________ property.
   a) Associative  b) Closure  c) Commutative  d) Distributive

3. In the set of whole numbers, 1 is the identity element for
   a) Addition  b) Subtraction  c) Multiplication  d) Division

4. 205 \(\times\) 12 is not the same as
   a) \((200+5) \times 12\)  b) \(205 \times (10+2)\)  c) \((300-95) \times 12\)  d) \(200 + 5 \times 12\)

5. Which one of the following does not represent the digit 0?
   a) \(5 \times 0 + 0\)  b) \(\frac{3-3}{3}\)  c) \(\frac{2 \times 0}{5}\)  d) \(3 - 3\)

6. A fraction equivalent to \(\frac{13}{27}\) is
   a) \(\frac{26}{27}\)  b) \(\frac{13}{54}\)  c) \(\frac{39}{54}\)  d) \(\frac{26}{54}\)

7. \(\frac{12}{25} + \frac{13}{25}\) is
   a) 1  b) \(\frac{1}{25}\)  c) \(\frac{26}{25}\)  d) \(\frac{24}{25}\)

8. \(\frac{1}{4}\) of 1 kg is
   a) 500 g  b) 250 g  c) 750 g  d) 100 g

9. Rs 13.09 is equivalent to
   a) 1390 p  b) 1309 p  c) 13090 p  d) 130900 p

10. 25 litres 7 ml is equal to
    a) 25.7 litres  b) 25.07 litres  c) 25.007 litres  d) 25.70 litres
11. \( 12 \frac{7}{100} \) can be written as
   a) 12.7  b) 12.07  c) 12.70  d) 12.007

12. Sum of three negative integers will be
   a) +ve     b) -ve     c) 0     d) May be +ve or may be -ve

13. \( 12 - (-18) \) is
   a) -6      b) -30     c) 6      d) 30

14. \( -28 - (+25) \) is
   a) -3      b) +3      c) -63    d) -53

15. \( +28 - (+78) \) is
   a) 50      b) -50     c) -106   d) 106

16. \(|15| + |15| \) is
   a) 30      b) 0       c) -30    d) 10

17. The additive inverse of -3 is
   a) \( \frac{1}{3} \)  b) \( \frac{1}{-3} \)  c) 3      d) -3

18. In a given plane, two distinct intersecting lines can intersect at the most at
   a) 2 points   b) 0 point   c) 1 point   d) 3 points

19. A triangle having two acute and one obtuse angle is
   a) Acute angled b) Obtuse angled c) Right angled d) Zero angled

20. Which of the following represents a natural number?
   a) 35 ÷ 0   b) 35 ÷ 35   c) 0 ÷ 35   d) 35 - 35

21. 6 kg 5 g is equivalent to
   a) 6.5 kg   b) 6.05 kg   c) 6.500 kg   d) 6.005 kg

22. A triangle can have ____________.
   a) 2 acute angles   b) 2 obtuse angles   c) 2 right angles   d) none of these
23. The additive inverse of $-5$ is __________.
   a) -5                       b) 5                     c) 1/5                   d) 5+(-5)

24. The interior together with boundary of a curve is called __________.
    a) interior                  b) exterior              c) region               d) all of these

25. Every ___________ number has at least one even prime factor.
    a) even                     b) odd                   c) prime                d) whole

26. Prime factorization of 30 is
    a) $1\times2\times3\times5$  b) $2\times3\times5$        c) $6\times5$           d) $15\times2$

27. The least number exactly divisible by 2, 3, 4, 6 and 9 is
    a) 18                       b) 24                    c) 36                    d) 72

28. Which of the following numbers is divisible by 6?
    a) 5024                     b) 7125                  c) 3018                  d) 7123

29. The greatest number which divides 36, 48, 96 and 144 exactly is
    a) 16                       b) 12                    c) 24                    d) 36

30. HCF of two numbers is 8 and their LCM is 144. If one number is 16, then the other is
    a) 48                       b) 24                    c) 72                    d) 144
MULTIPLE CHOICE QUESTIONS (TERM II)

1. In the word MATHEMATICS, the ratio of the number of vowels to the number of consonants is
   a) 4:11  
   b) 7:11  
   c) 4:7  
   d) 7:4

2. If 4:9 :: x : 18 is true, then x is
   a) 2  
   b) 6  
   c) 8  
   d) 40.5

3. If 57: a = 51:85 are in proportion, then a is
   a) 95  
   b) 76  
   c) 114  
   d) none of these

4. If Raju cycles 40 kms in 5 hours and Shalini cycles 36 kms in 4 hours, then the ratio of Shalini’s speed to Raju’s speed is
   a) 10:9  
   b) 9:10  
   c) 9:8  
   d) 8:9

5. The solution of 3m - 3 = 0 is
   a) −3  
   b) −1  
   c) 1  
   d) 3

6. 3a equals
   a) 3 + a  
   b) 3a  
   c) a × a × a  
   d) 3 ÷ a

7. The number of terms in 5x y is
   a) 3  
   b) 2  
   c) 5  
   d) 1

8. I think of a number x, and subtract 3 from it and then divide by 5. The correct algebraic expression is
   a) 3 − x ÷ 5  
   b) x − 3 ÷ 5  
   c) x − 3 ÷ 5  
   d) x ÷ 5 − 3

9. The quotient of x by 3 is multiplied by y is
   a) \( \frac{3}{xy} \)  
   b) \( \frac{x}{3y} \)  
   c) \( \frac{xy}{3} \)  
   d) \( \frac{y}{3x} \)

10. A pen costs Rs 25 and a pencil costs Rs 3. The total cost of m pens and n pencils is
    a) Rs (25+n)  
    b) Rs (25m+ 3n)  
    c) Rs 25m+3n  
    d) Rs 25(m+3n)

11. The value of x in 5x − 3 = 12 is
    a) −1  
    b) 20  
    c) −3  
    d) 3

12. The perimeter of a rectangle 10 cm long and 25 mm wide is
    a) 35 cm  
    b) 70 cm  
    c) 25 cm  
    d) 35 mm
13. A square is 44 m long. Its perimeter is
   a) 1936 m  b) 1936 m\(^2\)  c) 176 m  d) 166 m

14. Area of a square is 100 cm\(^2\). Its side is
   a) 10 cm  b) 40 cm  c) 25 cm  d) 11 cm

15. (Number of zeros in 1 thousand): (Number of zeros in 1 million) = ________________.
   a) 1 : 1  b) 1 : 2  c) 2 : 3  d) 4 : 7

16. The brochure said “Watch your mail!” I watched my mail for 5 days less than 5 weeks.
    For how many days did I watch my mail?
   a) 10  b) 25  c) 30  d) 35

17. A quadrilateral having one and only one pair of parallel sides is called
   a) a parallelogram  b) a kite  c) a rhombus  d) a trapezium

18. Each angle of an equilateral triangle measures
   a) 45\(\circ\)  b) 30\(\circ\)  c) 60\(\circ\)  d) 80\(\circ\)

19. A quadrilateral having two pairs of equal and adjacent sides but unequal opposite sides is called a
   a) trapezium  b) parallelogram  c) kite  d) rectangle

20. If a, b, c are in proportion, then
   a) \(a^2 = bc\)  b) \(b^2 = ac\)  c) \(c^2 = ab\)  d) none of these

21. Which of the following is regular quadrilateral?
   a) A rectangle  b) A rhombus  c) A square  d) A trapezium

22. If \(x/5 = 1\), then \(x =\)
   a) 1/5  b) 5  c) (5+1)  d) none of these

23. Which of the following values satisfy the equation \(x/3 + 5 = 8\)
   a) 3  b) 6  c) 9  d) 12

24. The angles of a triangle are in the ratio 3:1:2. The measure of the largest angle is
   a) 60\(\circ\)  b) 30\(\circ\)  c) 90\(\circ\)  d) 120\(\circ\)

25. The ratio 92:115 in its simplest form is
   a) 23:25  b) 18:23  c) 3:5  d) 4:5
26. The cost of 5 bars of soap is Rs.82.50, then the cost of one dozen bars is
   a) Rs. 208  b) Rs.192  c) Rs.198  d) Rs.204

27. A room is 5 m 40 cm long and 4 m 50 cm broad. Its area is
   a) 23.4 m²  b) 24.3m  c) 25 m²  d) 98.01 m²

28. In the word INTERNATIONAL ratio of vowels to consonants is
   a) 8:5  b) 6:7  c) 5:8  d) 7:6

29. Raj starts counting by 2’s. If he starts counting at -51, what are the two missing numbers?
   -51, -49, __, -45, __, -41
   a) -47, -43  b) -43, -47  c) 47, 43  d) -47, -45

30. If \( 5 : 4 :: 35 : x \) then value of \( x \) is
   a) 42  b) 32  c) 28  d) none of these

31. A line which bisects a given segment at 90° is
   a) \( \perp \) bisector  b) bisector  c) any of a and b  d) none

32. The expression 3 times \( x \) subtracted from 25 is written as
   a) 3\( x + 25 \)  b) 3\( x - 25 \)  c) 25 - 3\( x \)  d) 25 - \( 3/x \)

33. The area of a field is 40 m². If the length of the field is 16 m, its width will be
   a) 25 m  b) 2.5 m  c) 25 cm  d) 2.5 cm

34. Which of the following does not have six faces?
   a) Cuboid  b) Cube  c) Cone  d) A Die

35. Which of the following has one vertex?
   a) Cuboid  b) Cube  c) Cone  d) Cylinder
Question Bank 1

Q1. Using suitable rearrangement, solve:
   a. $25 \times 125 \times 80$
   b. $123+345+477+655$
Q2. Find the value by suitable rearrangement:
   a. $23+ 546 + 377 + 154$
   b. $4 \times 168 \times 250$
Q3. Using distributive property, find the value of:
   a. $785 \times 94$
   b. $968 \times 73 + 968 \times 27$
Q4. Simplify:
   a. $(-25) - [14 - 18]$
   b. $11 + (-12) - (-13)$
Q5. Pooja bought 16 roses and 14 lilies. Cost of each flower is Rs 15. How much money did she spend in all on the flowers? (Use suitable property)
Q6. A box has 5 kg 400g sweets in it. How many jars of capacity 20g each can be filled? Is it healthy to eat sweets?
Q7. Draw a circle of diameter 7cm and show its major and minor segments with different colours.
Q8. Arrange in descending order:
   -12, -15, 14, 0, 2 -5, 8, 9
Q9. A place is 48 m above the sea level and another is 37 m below the sea level. What is the difference of level between the two places?
Q10. 59 chairs and 30 blackboards were purchased for a school. If each chair costs Rs 170 and a blackboard costs Rs 59, find the total amount of the bill. (Use Distributive Property)
Q11. Using suitable property of multiplication, find the value of: (also name the property)
   a) $375 \times 96$
   b) $(14 \times 2 \times 64) + (7 \times 36 \times 4)$
Q12. A shopkeeper has an order of 15000 kg wheat to supply. He has 6 fields and each field produces 2250 kg.
   a) How much wheat does he need to buy more to fulfill the supply?
   b) He packs 600 kg in one box. How many such boxes are required to pack the whole supply?
Q13. Draw a circle of diameter 6.8 cm. In the circle,
   a) Mark the centre.
   b) Draw a chord.
   c) Show the minor and major segments with different colours.
   d) Draw a secant of the circle.
Q14. Fill in the blanks:
   a) _______ is the multiplicative identity of whole numbers.
   b) Three or more points lying on a line are called _______ points.
   c) $(a + b) + c = a + (b + c)$ is the _______ property of addition for whole numbers.
d) _______ is the additive inverse of -14.

Q15. Subtract the sum of $\frac{5}{9}$ and $\frac{1}{3}$ from the sum of $\frac{5}{6}$ and $\frac{1}{9}$.

Q16. A film show lasted for $3\frac{1}{3}$ hours. Out of this time $1\frac{3}{4}$ hour was spent on advertisements. What was the actual duration of the film?

Q17. Express the following fractions as decimals:
   a) $2\frac{1}{10}$
   b) $1\frac{27}{100}$

Q18. Convert each of the following decimals into a fraction in its simplest form:
   a) 0.625
   b) 0.06

Q19. Ramesh purchased a book worth Rs 146.75 from a bookseller and gave him a 500-rupee note. How much balance did he get back?

Q20. A car travelled 60 km north of Patna and then 90 km to the south of it. How far from Patna was the car finally? Is it a good idea to travel by individual car or a public transport?

Q21. Solve:
   a) $[-13-(-17)] + [-22-(-40)]$
   b) $37 - [11-(-30)+4]$

Q22. Find the value of:
   a) $(-1)(-8)$
   b) $(-47)+(36)$

Q23. There are 250 flowers in a garden. The garden has roses, lilies and orchids. Half of the flowers in the garden are roses. The lilies $\frac{1}{5}$th are of the number of roses and the remaining are orchids. How many orchids are there?

Q24. Subtract the sum of $-34$ and $-15$ from $19$.

Q25. In the given figure:
   a) Name four rays.
   b) Name the line.

Q26. The sum of two integers is 78 and one of them is $-14$. Find the other.

Q27. Write all the integers between $-27$ and $-32$. Which is the largest of these?

Q28. Find the missing numbers in the blanks and state the property involved in each case:
   a) $(67 + 42) + 38 = 67 + (42 + \_\_\_\_\_)$
   b) $2 \times 63 = \_\_\_\_\_ \times 2$
   c) $437 + \_\_\_\_\_ = 437$
Q29. Rohit buys 552 badminton rackets and 448 cricket bats. If the cost of a badminton racket and a cricket bat is Rs 140 each, find how much total money does he spend? (Use Distributive Property)

Q30. Simplify: 
\[-27 - (-54)] + [-43 + (-52)]

Q31. Study the given figure and answer the following:
(a) Name the vertex of \( \angle BAC \).
(b) Find how many angles are formed at the vertex A and name them?

Q32. (a) Test the divisibility of 19083625 by 11.
(b) Test the divisibility of 723405 by 15.

Q33. There are 527 apples, 646 pears and 748 oranges. These are to be arranged in heaps containing the same number of fruits. Find the greatest number of fruits possible in each heap.

Q34. The L.C.M and H.C.F of two numbers is 2175 and 145 respectively. If one of the number is 725, find the other.

Q35. The L.C.M of a pair of numbers is 108. If the product of the numbers is 1944, what is the H.C.F of the numbers?
Question Bank 2

Q1. Find the perimeter and area of the given figure:

Q2. Two equal sides of an isosceles triangle are 8 cm each. The perimeter of the triangle is 40 cm. Find the third side.

Q3. Priya runs around a square park of side 60m. Satish runs around a rectangular park with length 50m and breadth 45m. Who covers more distance and by how much?

Q4. A dice was thrown 30 times and the following outcomes were noted:
2, 1, 2, 4, 6, 1, 2, 3, 6, 5, 4, 4, 3, 1, 1, 1, 5, 6, 6, 2, 2, 3, 4, 2, 5, 5, 6, 4
Prepare a frequency table

Q5. The following pictograph shows the number of students who were absent in class during last week.

Day     (Boy, Girl)
Monday  
Tuesday 
Wednesday 
Thursday 
Friday   
Saturday 

From this we see that
(a) The maximum number of students were absent on ____________
(b) The total number of boy absentees in that week was ______________
(c) The total number of girl absentees in that week was ______________

Q6. Use the given data to draw a pictograph.
At a biscuit baking competition, Elsa baked 13 batches of biscuits, Hanna baked 1, Ivan baked 5, Jackie baked 10, and Peter baked 11.
Q7. Poppy read 3 comic strips on Tuesday, 8 comic strips on Wednesday, 7 comic strips on Thursday, 7 comic strips on Friday, and 9 comic strips on Saturday. 
Represent this data using a bar graph.

Q8. A transport company charges Rs 175 to carry 25 tonnes of weight. What will it charge to carry 35 tonnes?

Q9. Find the ratio in the simplest form:
   a. 24 minutes to an hour.
   b. 3 m 5 cm to 90 cm.

Q10. The boys and girls in a school are in the ratio 5 : 9. If the total strength of the school is 448. Find the number of girls. What does it tell you about the people of the place where the school is? Do they want to educate their daughters as they want to educate their sons?

Q11. Is the proportion true?
   a. 30 cm : 18 m = 20 hours : 20 minutes.
   b. Rs20 : 18 paise = 6 litres : 5 ml.

Q12. A designer uses 15 m cloth to make 25 dresses. How much cloth does he use to make 60 dresses?

Q13. Write an expression for the total of k and 99

Q14. Solve for x in each problem.
   a) \( x + 9 = 16 \)
   b) \( x / 2 = 1 \)
   c) \( 5 + x = 10 \)
   d) \( x + 4 = 8 \)

Q15. Find x:
   a) \( x + 10 = 20 \)
   b) \( x / 4 = 1 \)

Q16. Write the algebraic expression for:
   a. Sum of x and the quotient of y by 5.
   b. Puran’s age 5 times three years hence if he is y years now.

Q17. Solve:
   a. \( 20 + 4x = 32 \)
   b. \( 8x - 56 = -40 \)

Q18. The area of a rectangle is 540 sq cm and its length is 36 cm. Find its width and perimeter.

Q19. Draw an angle of 145° using protractor and bisect it.

Q20. Which words describe this shape? Choose all that apply.

Parallelogram  quadrilateral  rhombus  square

Q21. Solve for s.
\( s + 9 = 93 \)

Q22. A wire of length 120cm is bent to form a regular hexagon. What is the length of each of its sides?

Q23. Divide 6kg 600g in the ratio 5 : 6.

Q24. Meera is \( x \) years old. Express the following in algebraic form:
   (i) Four times Meera’s age four years ago.
   (ii) The present age of Meera’s friend, if her friend is two years less than thrice of Meera’s age.
Q25. Write an expression for 8 less than \( q \).

Q26. A geography class recorded the number of neighbouring countries each country has. Use the data in the table to construct a bar graph.

<table>
<thead>
<tr>
<th>Neighbouring countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
</tr>
<tr>
<td>Niger</td>
</tr>
<tr>
<td>Turkey</td>
</tr>
<tr>
<td>Germany</td>
</tr>
</tbody>
</table>

Q27. Some friends compared the sizes of their sticker collections. Use the data in the table to construct a bar graph.

<table>
<thead>
<tr>
<th>Sticker collections</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
</tr>
<tr>
<td>Denise</td>
</tr>
<tr>
<td>Tamir</td>
</tr>
<tr>
<td>Darnay</td>
</tr>
<tr>
<td>Carrie</td>
</tr>
<tr>
<td>Karen</td>
</tr>
<tr>
<td>Rowan</td>
</tr>
</tbody>
</table>

Q28. Draw a circle with centre O and radius 3.5cm. Construct a perpendicular bisector of its diameter. Does it pass through O?

Q29. What is the area of the shaded region?

Q30. In a class there are 45 students. Out of which, 24 are boys and rest are girls. Find the ratio in the simplest form:
(i) girls to boys
(ii) boys to all students
Q31. Complete the table:

<table>
<thead>
<tr>
<th></th>
<th>No. of faces</th>
<th>No. of vertices</th>
<th>No. of edges</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cylinder</td>
<td>(a) _____</td>
<td>0</td>
<td>(b) _____</td>
</tr>
<tr>
<td>Square pyramid</td>
<td>5</td>
<td>(c) _____</td>
<td>(d) _____</td>
</tr>
<tr>
<td>Cone</td>
<td>(e) _____</td>
<td>1</td>
<td>(f) _____</td>
</tr>
</tbody>
</table>

Q32. Find the total area of the shaded region. (In the figure, all angles are right angles.)

[Image of a shaded region]

Q33. The cost of 5 kg of rice is Rs 36.25. What will be the cost of 4 kg of rice?

Q34. The perimeter of a rectangle is 42 inches. If the width is 8 inches, what is the length?

Q35. How many envelopes can be made out of a sheet of paper 324 cm by 172 cm, if each envelope requires a piece of paper of size 18 cm by 12 cm?

Q36. Answer questions regarding the graphs.

1. What is the title of the graph?
2. Which summer camps have the same number of sign-ups?

Q37. Construct:
   a. An angle of 45° using a compass and a ruler.
   b. A perpendicular to a line through a point on it using a compass and a ruler.

Q38. A path is to be paved with square tiles. The length of the path is 7.5m and its breadth is 2.5m. Find the number of tiles required to pave the path if side of the square tile is 25cm.
Q39. Construct using a compass and a ruler:
   a. An angle of 75°.
   b. A perpendicular to a line from a point outside it.
   c. A perpendicular to a line segment of length 6 cm such that it bisects the segment as well.

Q40. Name the shape:
   a. A parallelogram with all four sides equal.
   b. A quadrilateral with only one pair of opposite sides parallel.
   c. A 3D shape with no vertices and no edges
   d. A quadrilateral with two pairs of adjacent sides equal.

Q41. Shalu is 3 yrs less than 5 times Raju’s age. Find Shalu’s age if Raju is 8 yrs old.

Q42. Write the following algebraic expressions using signs and symbols
   (a) Sum of numbers a and b subtracted from product of x and y.
   (b) 15 less than quotient of x by 3.

Q43. The sides of a triangular field are 20cm, 15cm and 12cm. Find the total distance traveled by
   the boy in taking 2 complete rounds of this field.

Q44. Find the cost of fencing a rectangular garden of dimensions 15 m by 12m, if the fence is put five
   times all around and cost of fencing is Rs 5 per m.

Q45. Seth Tejalal divided Rs 5,02,002 between his son and daughter in the ratio 4:5.
   (a) How much did each of them get?
   (b) What do you think about Sethji as a person?

Q46. A man earns Rs 4900 in one week. How much will he earn in 10 days?

Q47. Solve the following equations:
   (a) 4x - 7 = -3
   (b) 8 = 6x - 4

Q48. Find the cost of carpeting the floor of a room which is 4m 20cm long and 3m 65cm wide at the
   rate of Rs 1215 per sq m.

Q49. Seema can type 150 words in 3 minutes. Find out
   (a) In how much time can she type 375 words?
   (b) How many words can she type in 9 min 30 seconds?

Q50. Find the area of the following figure:
Sample Paper 1 (Term 1)

Section A

1. Find the common factors of 12 and 72.
2. Write the identity element of whole numbers with respect to multiplication.
3. Find the integer which is 5 less than -4.
4. Reduce 2472 to its lowest term.
5. Find the value of 0 ÷ 9.

Section B

6. Find the H.C.F of 18 and 45 using prime factorization method.
7. Anup went for shopping. He spent 12 of his money on books and 18 on his food. What fraction of his money did he spend and what fraction was left?
8. If 25 tins of oil weigh 412.5kg, find the weight of one tin of oil.
9. Find the value of (-4)+ 7 on the number line.
10. Is 5089942 divisible by 11? Show the required working using the divisibility rule.
11. Prime factorize 360.
12. Find the value by suitable rearrangement—
   (a) 2×127×50
   (b) 98 + 77 + 2 + 103
13. The school canteen charges Rs 25 for lunch and Rs 7 for milk each day. How much money do you spend in 5 days on these things?
14. Jasika went to the market with Rs 1000. She bought a school bag for Rs 350.75 and a water bottle for Rs 235.50. Find the amount left with her.
15. In the given fig
   (a) Name the collinear points.
   (b) Name the concurrent lines.

Section C

16. A car traveled 75km north of Delhi and then 115km to the south of it. How far from Delhi was the car finally? Is it a good idea to travel by individual car or by public transport? Give reasons to support your answer.
17. A box of medicines contains 2,00,000 tablets each weighing 20mg. What is the total weight of all tablets in the box in grams and in kilograms?
18. A truck driver filled his truck fuel with 45litres of petrol on Monday. The next day, he filled the tank with 55litres of petrol. If the petrol costs Rs64 per litre, how much did he spend in all on petrol? (use distributive property)
19. Find the difference between the greatest and the smallest fractions among the following:—
\[
\frac{17}{3}, \frac{5}{6}, \frac{23}{9}, \frac{7}{6}
\]
20. The L.C.M and H.C.F of two numbers is 1989 and 13 respectively. If one of the numbers is 117, find the other.
21. Look at the figure of the circle with centre and answer the following:
   (a) Name three chords.
   (b) Name two angles having the centre of the circle as the vertex.
   (c) Name three equal line segments.

22. Find the greatest number which can divide 36, 81 and 108 exactly.

23. Sunita travels 15km 268m by bus, 7km 7m by taxi and 500m by foot in order to reach her office. How far is her office from her residence?

25. Draw two concentric circles with diameters 8cm and 11cm respectively.

Section D

26. (a) Subtract the sum of ( - 8 ) and ( - 28 ) from the sum of ( - 15 ) and 35.
   (b) Write all the integers between ( - 4 ) and 5.

27. Draw a circle with centre O and radius 5cm. Also draw and name the following:-
   (a) longest chord of the circle.
   (b) a small area enclosed between the two radii and an arc.
   (c) a line cutting the circle.
   (d) a small portion of the circumference of the circle with points P,Q and R.

28. Three cabs leave at the same time in the morning at 7 am. Cab A leaves every 15 minutes, Cab B leaves every 20 minutes, Cab C leaves every 25 minutes. When will the three cabs leave together next after 7 am. Will they leave together at 1 pm as well?

29. Three farmers have 490kg, 588kg and 882kg of wheat respectively. Find the maximum capacity of a bag so that the wheat can be packed in exact number of bags. Find also the number of bags required to pack this wheat. If farmer was given a choice to choose between poly bags and jute bags to pack the wheat, which type of bag should he choose and why?

30. Simplify:
   
   
   (0.365 + 12.895)-(14.567- 11.2345)+12.72
Sample Paper II (Term I)

Section A

1. What is the minimum number of sides required to make a Polygon?
2. The whole number which cannot be used as divisor is ____________.
3. -81 ___ 18 (put > or <)
4. What fraction of a day is 8 hours?
5. Find $4 \times 1625 \times 25$ by suitable rearrangement.

Section B

6. Draw a rough figure and label suitably:
   a) Line l contains points A and B but not C.
   b) OA and OB meet at O.
7. Are whole numbers commutative under division? Give one example to justify your answer.
8. Evaluate: $|17| - |-15|$
9. Seema purchased $7 \frac{1}{2}$ kg of rice at the rate of Rs. $38 \frac{3}{4}$ per kg. How much money did she pay to the shopkeeper?
10. Convert the following:
    a) 4.5 Km to cm
    b) 36 mg to gram
11. State whether the following statements are true or false.
    a) Radius is also a chord.
    b) Infinite lines can pass through two given points.
    c) A circle can have infinite chords
    d) Diameter is twice the radius.
12. The Mount Everest is 29,018 feet above sea level. The deepest point in the Indian Ocean is the Java Trench at 23,376 feet. Find the distance between the two.
13. Find the L.C.M of 75, 150 and 200 using prime factorization.
14. Arrange the numbers in ascending order:
    -6, 0, -7, 3, -10, 4
15. Subtract 29 from the additive inverse of -127.
Section C

16. In the given figure:
   a) Name a diagonal
   b) Name one pair of adjacent sides
   c) Name the shape ABCDE

17. Find the value using suitable property:
   (a) 55315 X 85 + 15 X 55315
   (b) 627 X 995

18. Use the number line to add:
   ( -3 ) + ( - 8)

19. Tushar spent 2 ¼ hrs. for completing his homework while sunny took 2 2/5 hrs. Who took more time and by how much?

20. Find the difference between a temperature of 7 ° C above zero and a temperature of 10° C below zero.

21. Sheela had Rs.50,000 with her. She ordered 35 radio sets. If the cost of one radio set is Rs. 1300, find the amount left with her.

23. Find the value using suitable rearrangement:
   a) 2062 + 353 + 1438 + 547
   b) 4 X 2893 X 250

24. How many angles are there in the given figure? Name them.

25. Santosh a physical education teacher, arranged three groups of 140, 91, and 63 students for march past. He arranged the same number of students in each row. What was the number of students he arranged in each row?
26. a) Subtract the sum of 865 and – 493 from the difference of – 380 and 675.
    b) The sum of two integers is 45. If one of the integer is -23, find the other integer.
27. Akshat’s school bag weighs 4 7/12 kg. he takes out his Maths book weighing 1 ¾ kg and Science book weighing ½ kg from the bag. What is the weight of the bag now?
28. Draw a circle with centre O and diameter 6 cm. Also draw and name the following:
    a) A small area enclosed between a chord and an arc of the circle.
    b) A small portion of the circumference with points X, Y, Z
    c) A longest chord of the circle.
    d) A line cutting the circle
29. When an army commander arranged to transport his battalion of soldiers, he considered 30-seater, 40-seater and 50-seater buses. In all three cases, he found that 10 seats were left vacant. What is the smallest number of soldiers in his battalion? Give two advantages of joining army.
30. What must be added to the difference of 22.7 and 10.078 to get their sum?
SAMPLE PAPER 1 (TERM II)

Section A

1. How many terms are there in $5xy$?

2. The area of a rectangle is 468 sqm and length is 26 m. Find the width of this rectangle.

3. Write the given statement as expression
   
   Three times a number ‘a’ subtracted from the quotient of the number and 5.

4. The bisector of an angle always divides it into two ________ angles.

5. If each side of a regular octagon is ‘a’, then its perimeter is ________

Section B

6. Construct a perpendicular to a line from a point above it (using compass and ruler).

7. Find the area of a square whose perimeter is 168 cm.

8. I am d years old. Write an algebraic expression for the following:
   
   (a) My age 5 years ago.

   (b) 6 years more than 3 times my age.

9. Are 21, 6, 35 and 10 in proportion? Show the required working.

10. Find the side of an equilateral triangle whose perimeter is 54 cm.

11. Read the following bar graph and answer the following questions:

   ![Bar Graph]

   a) Which is the favorite color amongst students?

   b) How many students like green color?

12. Of all the months in an year, find the ratio of the months with 30 days to the months with 31 days.
13. Read the given frequency table and answer the questions:

<table>
<thead>
<tr>
<th>Mark</th>
<th>Tally</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td></td>
<td></td>
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<tr>
<td>6</td>
<td></td>
<td></td>
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<tr>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

a) How many students got marks more than 8?

b) How many students scored less than or equal to 5?

14. Complete the table (write only the answers):

<table>
<thead>
<tr>
<th>Shape</th>
<th>No. of faces</th>
<th>No. of vertices</th>
<th>No. of edges</th>
</tr>
</thead>
<tbody>
<tr>
<td>(a)</td>
<td>1</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Triangular prism</td>
<td>(b) 5</td>
<td>6</td>
<td>(c) 10</td>
</tr>
<tr>
<td>Cylinder</td>
<td>(d) 3</td>
<td>0</td>
<td>2</td>
</tr>
</tbody>
</table>

15. Find the cost of fencing a rectangular park of length 350m and breadth 250m at the rate of 18.50 per metre.

16. Solve the following equations:

(a) \(-14 + 3r = -10\)

(b) \(\frac{2}{3}r = 30\)

17. How many rectangular tiles 50 cm by 16 cm will be needed to cover a square hall of side 30 m.

18. Using compass and ruler, construct \(\angle ABC = 75^\circ\) or \(\angle DEF = 105^\circ\)

19. The ratio of the number of children playing video games to the number of children playing outdoor games is 10:11. If there are 168 children in all, find the number of children playing:

(a) video games
(b) outdoor games
(c) Why is it important for the children to play outdoor games as well? Give two points.

20. The weight of 20 students (in kg) are given below:
Prepare a frequency distribution table.

21. A rectangle and a square are equal in area. The side of the square is 24m. Find the width of
   the rectangle if it is 36m long. Are their perimeters equal?

22. The cost of 15 stamps is Rs22.50.
   (a) What will be the cost of 24 such stamps?
   (b) How many stamps can be bought in Rs60?

23. Sheela, Raju, Sally and Santosh collect stamps. Read the following pictograph and answer
   the questions.

   **Stamp collection**
   \[\text{= 40 stamps}\]

<p>| | | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Sheela</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Raju</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Sally</td>
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<td></td>
</tr>
<tr>
<td>Santosh</td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

   (a) How many stamps were collected altogether?
   (b) How many more stamps does Raju have than Santosh?
   (c) Who has the least number of stamps?

24. Fill in the blanks:
   (a) ___________ is a quadrilateral with only one pair of opposite sides parallel.
   (b) 4:7 _____ 7:10 (Put <, > or = )
   (c) The value of x in 4 + x = -2 is _________.

---

Class VI /Mathematics/64
25. Find the area of the shaded portion:

26. (a) Construct a circle of diameter 8 cm. Draw a chord CD and construct its perpendicular bisector (using compass and ruler). Does it pass through the center of the circle?
(b) Construct an angle of $130^\circ$ using a protractor and bisect it using compass and ruler.

27. In the given figure AB = 4 cm, AF = 5 cm, ED = 2 cm and DC = 6 cm.
(a) Find its perimeter.
(b) Find the cost of painting 10 such blocks at Rs3 per square cm.

28. Seema was asked to find the number of students playing different games in the school. The information collected by her is as follows:

<table>
<thead>
<tr>
<th>Game</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Football</td>
<td>30</td>
</tr>
<tr>
<td>Cricket</td>
<td>45</td>
</tr>
<tr>
<td>Badminton</td>
<td>15</td>
</tr>
<tr>
<td>Basketball</td>
<td>40</td>
</tr>
<tr>
<td>Volleyball</td>
<td>25</td>
</tr>
</tbody>
</table>
(a) Represent the above information in a pictograph.

(b) Write two advantages of playing games.

29. Five square flower beds each of side 1.3m are dug on a piece of land 5.2m long and 4.2m wide. What is the area of remaining part of the land? (Draw the required fig)

30. In the half-yearly examination, the marks obtained by Rahul in each subject out of 100 is given below-

<table>
<thead>
<tr>
<th>Subject</th>
<th>English</th>
<th>Hindi</th>
<th>Mathematics</th>
<th>Science</th>
<th>Social-studies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks</td>
<td>80</td>
<td>67</td>
<td>89</td>
<td>81</td>
<td>53</td>
</tr>
</tbody>
</table>

Represent the above data by a bar-graph.
SAMPLE PAPER 2 (TERM II)

Section A

1. If the scale is 1cm = 300km on the Y-axis, then 300km is represented by
   (a) 30cm (b) 3 small divisions (c) 300cm (d) 3cm
2. The area of a rectangle is 30 cm². Write a possible combination of its length and breadth.
3. Priya is x years old. Write an algebraic expression for her age 3 years ago.
4. What type of angle is made by the minute hand of a clock when it moves from 10 to 7?
5. Complete the following by writing equivalent ratios of 13 : 15
   a) ____ : 30
   b) 39 : ____

Section B

6. A wire 64m long is bent to form a regular octagon. What will be the measurement of the side of the octagon?
7. a) Find the measure of the given angle using a Protractor.
   b) Draw \( \angle PQR = 52° \) using a Protractor.
8. The enrollment in the secondary level of a school in the year 2015 was as under. Draw a bar graph for it.

<table>
<thead>
<tr>
<th>Class</th>
<th>VI</th>
<th>VII</th>
<th>VIII</th>
<th>IX</th>
<th>X</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enrollment</td>
<td>50</td>
<td>44</td>
<td>38</td>
<td>40</td>
<td>28</td>
</tr>
</tbody>
</table>

   a) Which class had the maximum enrollment?
   b) What is the total number of enrollment for classes VI, VII and VIII?
9. Draw a segment PQ = 8.5 cm. Take a point M above the segment PQ. Construct a perpendicular from M to PQ using scale and compass only.
10. Mother wants to divide Rs 360 among her sons Ravi and Suraj in the ratio of their ages. If Ravi is 25 years old and Suraj is 20 years old, find the amount each will get.
11. Construct an angle of 75° using compass.
12. Rajesh went to a store and picked up some stationary items given below:

<table>
<thead>
<tr>
<th>Item</th>
<th>Ball pens</th>
<th>Erasers</th>
<th>Sharpmers</th>
<th>Scales</th>
<th>Pencils</th>
</tr>
</thead>
<tbody>
<tr>
<td>Numbers</td>
<td>7</td>
<td>10</td>
<td>5</td>
<td>6</td>
<td>12</td>
</tr>
</tbody>
</table>

Represent the data in the form of a pictograph.

13. Find the ratio of 2 dozen to 4 scores.

14. The following data shows the amount of money spent by the students of Class VI in the school canteen on a particular day:

3, 2, 3, 5, 7, 4, 10, 2, 5, 6, 3, 4, 8, 5, 10, 6, 7, 5, 4, 5, 3, 5, 2, 7, 8, 5, 4, 2, 4, 7.

(a) Make a table for the above data using tally marks.
(b) Give two reasons why every school should have a canteen.

15. Calculate the area of the following figure: (Taking 1 box as 1 cm²)

16. The following table shows the number of erasers sold during a week at a school book shop. Draw a pictograph to represent the data:

<table>
<thead>
<tr>
<th>Day</th>
<th>Monday</th>
<th>Tuesday</th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
<th>Saturday</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>15</td>
<td>18</td>
<td>13</td>
<td>16</td>
<td>14</td>
<td>04</td>
</tr>
</tbody>
</table>

17. Pooja’s mother says “To calculate your pocket money, multiply your age by itself and then double it”. If Pooja is x years, write an algebraic expression representing her pocket money. Also, Give your opinion about pocket money.
18. Two boxers have to fight in a square arena of side 30m. Four poles are stuck into the ground at the four corners of the boxing arena and a rope fence is put up around the poles to keep the spectators away. Find the length of the rope required if 2m rope is used up for tying the knots around the poles. Write an advantage of playing sports.

19. Cost of 12 bananas is Rs 36 and cost of 7 oranges is Rs 28. Find the ratio of cost of an orange to the cost of a banana.

20. Draw a rough sketch of a Hexagon. Connecting any three of its vertices, draw a triangle. Identify the type of the triangle you have drawn.

21. Mrs. Rao was making cookies for an Orphanage. She needs 144 cookies to distribute equally among all the children. Her recipe for 36 cookies requires 4 eggs. Write a proportion and solve it to find how many eggs she needed for 144 cookies. What value of Mrs. Rao’s character is depicted here?

22. Draw a line segment AB of length 7.8 cm. Take a point P outside this line and construct its perpendicular.

23. In the half yearly examination, the marks scored in each subject out of 100 are given below:

<table>
<thead>
<tr>
<th>Subject</th>
<th>English</th>
<th>Hindi</th>
<th>Maths</th>
<th>Science</th>
<th>SST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Marks scored</td>
<td>70</td>
<td>65</td>
<td>88</td>
<td>81</td>
<td>72</td>
</tr>
</tbody>
</table>

Represent the above data by a bar graph and answer the following questions:
(a) In which subject the maximum marks are obtained?
(b) In which subject the students have to improve?
(c) What is the difference between the maximum and minimum marks?

24. Draw an angle of measure 164° using protractor and divide it into two equal parts using compass.

25. Complete the following table by writing number of Edges, Faces and Vertices of the given shapes.

<table>
<thead>
<tr>
<th>S.NO.</th>
<th>SHAPE</th>
<th>FACES</th>
<th>EDGES</th>
<th>VERTICES</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Square Pyramid</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2. Triangular Prism</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Section D

26. Two plots of land have the same perimeter. One is a square plot of side 60m while other is rectangular whose breadth is 50m. Which of the plots has greater area? (Show the required working)
27. Construct a circle with centre O and radius 4 cm. Take a point P on the circumference of the circle and taking it as centre construct another circle with the same radius. Now join the intersection points of the two circles and name it as XY. Construct a perpendicular bisector of XY, let it meet XY at Z. Is \(ZO = ZP\)?

28. Car A covers 240 km in 5 hours and Car B covers 180 km in 4 hours.
   a) Find the ratio of speed of both the cars. b) Find which car has a better speed. c) How much distance will car B cover in 35 hours? d) How much time car A takes to cover 480 km?

29. Draw a circle of radius 5 cm. Draw any two of its chords. Construct the perpendicular bisectors of these chords. Where do they meet?

30. Rahul is planning to renovate his house. He wants to put square tiles of side 3m on the floor of given room. (a) How many such tiles are needed to cover the entire floor? (b) What will the cost of tiling @ Rs 5.50 per square m?
ANSWERS

Assignment No. 1: Whole numbers
1) a. 5000000mm  b. 4570mm  c. 8.945 l  d. 0.0465kg  e. 7807cm  f. 125.050km
2) a. 1078  b. 1267  c. 1015  d. 1000
3) a. 30,000  b. 89000  c. 136500  d. 1000.
4) a. 52430  b. 7140  c. 27900  d. 0  e. 57800  f. 146
5) 7500  6) 25000

Assignment No. 3(A): Fractions (warm up)
1) .  2)   3)   4) a. 35  b. 8  c. 40 , 25 , 5
5) a. No  b. Yes  c. Yes
6) a. 5  b. 5  c. 5
7) a. $\frac{7}{4}$  b. $\frac{63}{10}$  c. $\frac{125}{7}$
8) a. $\frac{31}{4}$  b. $\frac{58}{9}$  c. $\frac{103}{8}$
9) Raj , Payal , Lara , Shubh
10) a. Rs 12  b. 20 cm  c. 45 weeks.

Assignment No. 3(B): Fractions (Addition and Subtraction)
1) a.  b.  c.  d.  e. 
2) a.  b.  c.  d.  e. 
3)  No
4)
5)
6) Rashmi , cm
7)
8) Rs

Assignment No. 3(C): Fractions (Multiplication and Division)
1) a. 34  b.  c.  d.  e. 
2) 3)
4) Rs 100
5) 4m
6) 2km
7) 5
8) 22hrs

Assignment No. 4: Decimals
1) a. 5.875  b. 0.6 2) a. 225  b. 200 3) a. 6.003  b. 0.245
4) 75.75 , 75.5, 75.4, 75.39, 75.258, 75.20 5) a. $\frac{14}{5}$  b. $\frac{5}{4}$
6) 36.725
8) Sameera, 1.85kg
9) a. 48.9  b. 45  c. 9530  d. 161.37  e. 5.845
h. 2110  i. 2469.6  j. 287.064
10) a. 23.6  b. 0.214  c. 412  d. 9.8
11) 25.85cm
12) 11.5km
### Assignment No. 5: Playing with numbers

1) a. Not divisible  b. Divisible  c. Divisible  
2) a. Divisible  b. Not Divisible  c. Divisible  
3) a. Divisible  b. Not Divisible  c. Divisible  
4) 35cm  
5) 607  
6) After 200 sec  
7) 2730  
8) 217  
9) 120  
10) 360, 72

### Assignment No.6: Integers

1) a. 5  b. -60  c. -10  d. -99  e. 13  
2) a. -21  b. -166  c. -38  d. 21  e. 105  
3) a. 112  b. 10  c. -12  d. 13  
4) 1550  
5) Loss of Rs54  
6) a. -7  b. -144  c. 335  d. 30  
7) a. -4  b. -80  
8) 24  
9) 41 km west  
10) Rs 2710

### Assignment No.7: Understanding Elementary Shapes

1) (d)  
2) (c)  
3) a. 1  b. 4  
4) a. Scalene  b. equilateral  c. Right angled isosceles  d. acute angled  
5) a. south-east  b. north-west  
6) i) Trapezium  ii) kite  
7) a. 9  b. Trapezium  c. Octagon  d. Square  e. 8,0 f. reflex  
8) a. Cube  b. Triangular prism

### Assignment No.8: Mensuration

1) 1700m  
2) 900 sq m  
3) 442 m  
4) 86 sq.cm.  
5) 1800  
6) 12cm  
7) 1920 tiles, Rs 15360  
8) Perimeter = 16 cm, Area = 15 sq.cm.

### Assignment No.9: Algebra

1) a. x+7  b. y-5  c. 2-x  d. yz  e. x/3  
2) a. y-2z  b. -x-4  c. x/3 - 15  
3) nr  
4) (5y-3) years  
5) xy cm  
6) 75m + 35n  
7) a. 13  b. 3  c. 60  d. 1  e. 8  f. 2  g. -5  h. 16  i. 24  j. 8

### Assignment No.11: Ratio & Proportion

1) a. 11:20  b. 1:4  
2) a. Yes  b. No  
3) yes  
4) a. 30°, 60°, 90°  b. Right Angled Triangle  
5) 5  
6) a. 50 min  b. 72km  
7) (a), (c)  
8) a. 25:21  b. 4:25  
9) a. 35, 49  b. 250g, 200g  
10) 20 parts