Activities

A Solve the grid.

Conceptual Understanding, Critical Thinking, Application of Knowledge

YOU WILL NEED: an A4 sheet of paper, a pencil, ruler and eraser

1. Work in pairs. Draw the given grids on an A4 sheet of paper.

+	x	y	z
a			
b			
c			

−	x	y	z
a	$a-x$		
b			
c			

×	x	y	z
a			
b			
c			

÷	x	y	z
a	$a\div x$		
b			
c			

2. Interchange your sheet with another pair of students.
3. On their sheet of paper, assign the values of x, y, z, a, b and c in the form of rational numbers.
4. Return the sheet of paper to its owners.
5. Solve the grids. The pair that does this first is the winner.

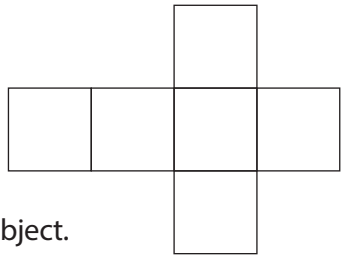
Note to the teacher: The teacher should check the grids to announce the winner.

B To view 3-D objects from different angles

Conceptual Understanding, Creativity, Application of Knowledge

YOU WILL NEED: A4 sheets of paper, a pencil, notebook, ruler, pair of scissors, eraser and Sellotape

1. Work in pairs. On an A4 sheet of paper, draw the net of a cube as shown.



2. Cut the net along its outline. Fold it inward along the lines to form a cube, which is a 3-D object. Join the edges with Sellotape.
3. Make 5-6 such cubes and stack them in 3-4 different ways.
4. View each stack of the cubes from different angles to get its 2-D views from the front, side and top. Then draw these views in the given table.

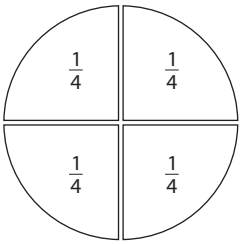
	Top view	Side view	Front view
Stack 1			
Stack 2			
Stack 3			
Stack 4			

C To understand equivalent fractions

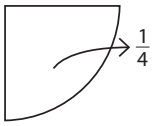
Conceptual Understanding, Creativity, Application of Knowledge

YOU WILL NEED: sheets of paper, an eraser, pencil, notebook, ruler, protractor and pair of scissors

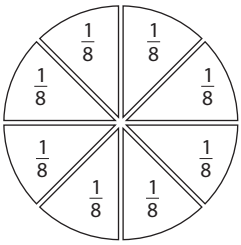
1. Work in groups of three.
2. Each student of the group draws and cuts out a circle of radius 5 cm.
3. Student A divides and cuts the circle into 4 equal parts.



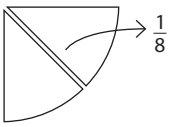
4. Student A picks up one part ($\frac{1}{4}$) of the circle.



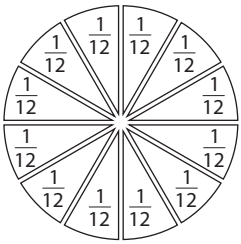
5. Student B divides and cuts the circle into 8 equal parts.



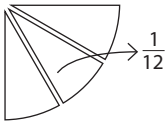
6. Student B picks up 2 parts of the circle, which together make $\frac{2}{8}$.



7. Student C divides and cuts the circle into 12 equal parts.



8. Student C picks up 3 parts of the circle, which together make $\frac{3}{12}$.



9. All the three students then compare the parts of the circles they have picked up. They observe that the parts are equal in size and represent the same fraction, that is, $\frac{1}{4}$. So, $\frac{1}{4}$, $\frac{2}{8}$ and $\frac{3}{12}$ are equivalent fractions.

10. Other groups to divide their circles into *n* number of equal parts to understand equivalent fractions.

D To use algebra to solve a problem

Conceptual Understanding, Critical Thinking, Application of Knowledge

YOU WILL NEED: a notebook, eraser, pencil and ruler

OCTOBER

Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

1. Work in pairs. Student A draws a calendar of any month in the notebook.
2. Student A chooses any four days from the calendar that form a square. For example, 11, 12, 18 and 19.
3. Student A adds these four numbers:
   $11 + 12 + 18 + 19 = 60$.
4. Student A asks Student B to find these four days using the sum.
5. Student B assumes the first number as x. So, the other numbers are $x + 1$, $x + 7$ and $x + 8$.
6. Student B finds the total sum as $x + (x + 1) + (x + 7) + (x + 8) = 4x + 16$.
7. Student B equates this algebraic expression with the sum given by Student A.

   CALCULATION:

   $4x + 16 = 60$

   $4x = 60 - 16$

   $4x = 44 \quad \Rightarrow x = \frac{44}{4} \quad \Rightarrow x = 11$

   So, the days are: $x = 11$, $x + 1 = 11 + 1 = 12$, $x + 7 = 11 + 7 = 18$ and $x + 8 = 11 + 8 = 19$.

   Thus, the days are 11, 12, 18 and 19.

   Next it's the turn of Student B to repeat steps 1–4 with another set of numbers and Student A to calculate.

Projects

A Make a kaleidoscope to observe symmetry.

Multidisciplinary Approach, Creativity, Application of Knowledge

A kaleidoscope is a tube-shaped optical instrument that contains mirrors and coloured objects. The reflection of

the coloured objects produces changing patterns when the tube is rotated.

YOU WILL NEED: three small rectangular mirrors of the same size, a thin piece of cardboard, a stiff transparent plastic sheet, small pieces of glass bangles of different colours and Sellotape

1. Tape the long edges of the mirrors together so that they form a triangular tube. The reflecting sides of all the mirrors should face inward.
2. Cut out a triangle of thin cardboard to fit one end of the kaleidoscope and tape it.
3. Use a sharp pencil to poke a hole in the centre of the cardboard. This will serve as the peephole.
4. Tape the cardboard with the peephole to one end of the kaleidoscope.
5. Cut two triangles out of the transparent plastic sheet to fit the other end.
6. Tape two of the edges to form a three-sided pouch and put the pieces of glass bangles inside. Seal the third side with tape.
7. Attach the pouch to the other end of the kaleidoscope.

Aim the kaleidoscope at a light source and look through the peephole. The bangle pieces at the other end will reflect off the mirrors to form symmetric patterns. These patterns will change as you rotate the kaleidoscope.

B Draw a double bar graph.

Conceptual Understanding, Collaboration, Application of Knowledge

Work in groups of five. Record the marks of any six students in Mathematics in their half-yearly and final examinations. Represent the data in the form of a double bar graph.

	Student A	Student B	Student C	Student D	Student E	Student F
Marks obtained in the half-yearly examination						
Marks obtained in the final examination						

Use the data to answer the given questions.

1. Name the student(s) who have shown the maximum improvement.
2. Who has scored the highest mark in the final examination?
3. What is the mean mark of Student D?
4. Did Student B score more than Student F in any of the examinations?

C Use ratio and proportion to scale up a recipe.

Conceptual Understanding, Collaboration, Experiential Learning

Work in groups of four. Collect any three recipes. You can copy them from a recipe book or from newspapers or magazines.

Read the list of ingredients of each recipe and tabulate it. Write the number of people that can be served in each recipe. Create a booklet that includes the given points.

1. Original recipe
2. List of ingredients

3. Number of people served
4. Proportion used to increase recipe to number of servings
5. Scaled recipe – ingredients and new amounts

A sample recipe is given. The ingredients required for six servings are given in the table. How will you scale up the quantity for each ingredient for the given number of people? Fill in the table.

Recipe for Mango Shake				
	Number of servings			
Ingredients	6	8	10	12
Chopped mango	3 cups			
Ice cream	1.5 cups			
Chilled milk	1500 mL			
Sugar	60 g			
Ice cubes	12			

How can you scale down the recipe to serve 2 people?

D Find symmetry.

Multidisciplinary Approach, Experiential Learning, Application of Knowledge

1. Collect pictures of the logos of any 10 products, flags of any 10 countries, 5 monuments of India and some things in nature. You can find these on the internet or in newspapers and old magazines.
2. Paste the pictures in a project file.
3. For each picture, draw the line of symmetry where it exists.
4. Give its rotational symmetry where it exists. Write its order of symmetry.

Share the information in the class and discuss.