Mathematics Class 5

Term 3

Pupil's Book

Ministry of Education, Youth & Sports
Bikenibeu, Tarawa, Republic of Kiribati

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CONTENTS

Please do not write in this book.
Write the answers in your exercise book.

UNIT 23:   GRAPHS

Lesson 1:   Collecting and Organising Information into a Data Table

Group Work

Favourite Pets	Tally	Frequency
Dog	ΝΝΙ ΝΝΙ ΙΙ	12
Cat	ΝΝΙ ΙΙΙ	8
Pig	ΙΙΙΙ	4
Fowl	ΝΝΙ ΝΝΙ ΙΙΙΙ	14

Record information in a table following the teacher's example above.

Group 1 will collect and organise information in a data table on **Favourite Games.**
Group 2 will collect and organise information in a data table on **Favourite Kinds of Food**.

Make your table on a chart. Show your chart to the other group. Keep the table for use in Lesson 2.

Individual Application
Fill in the correct information to complete this data table.

Children's Transport to School	Tally	Frequency
On Foot	ΝΝΙ ΝΝΙ ΝΝΙ Ι	
Bicycle		13
Motorbike		9
Truck	ΝΝΙ ΝΝΙ ΝΝΙ	
Bus	ΝΝΙ ΝΝΙ ΝΝΙ ΝΝΙ ΙΙ	
Saloon car		7

Additional Exercise

Make your own data table. Collect and organise information on the months in which your classmates were born.

Lesson 2: Interpreting Information from a Data Table

Group Work

Work in the same group as yesterday. Using your data table from yesterday's lesson, make up your own questions about it and write them under your data table.
Then give your work to the other group. They will answer your questions and you will answer their questions.

Display your chart in the classroom.

Individual Application

Answer the questions, using the table below.

Children's Transport to School	Tally	Frequency
Foot	Ң Ң Ң I	16
Bicycle	Ң Ң III	13
Motorbike	Ң IIII	9
Truck	Ң Ң Ң	15
Bus	Ң Ң Ң Ң	20
Saloon Car	Ң II	7

1. What information does this table classify?
2. How many kinds of transport does the table show?
3. Name the kind of transport that occurs most often.
4. Which kind of transport is the slowest?
5. What kind of transport occurs the least often?
6. How many children are there altogether?
7. How many more children go by bus than on foot?

Additional Exercise

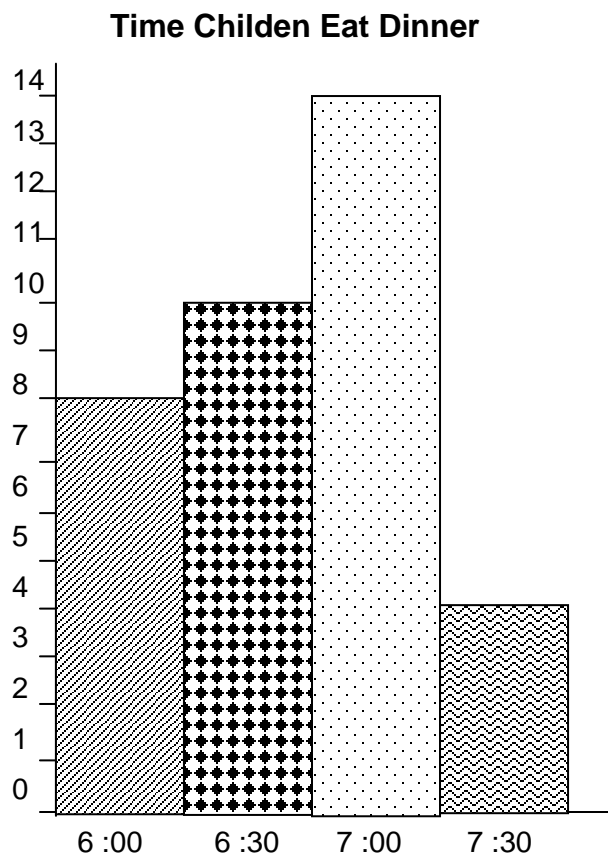Make a data table from the information given below:

In a bag there are 5 red marbles, 7 blue marbles, 11 yellow marbles, 9 green marbles and 13 white marbles. How can you make your table?

Colours of Marbles	Tally	Frequency
Red	⊮	5
Blue	⊮ ||	7
Yellow	⊮ ⊮ |	11
Green	|||| ||||	9
White	⊮ ⊮ |||	13

Lesson 3: Constructing and Interpreting a Bar/Column Graph

Group Work

Time Children Eat Dinner	Tally	Frequency
6 :00	ᚋ ǀǀǀ	8
6 :30	ᚋ ᚋ	10
7 :00	ᚋ ᚋ ǀǀǀǀ	14
7 :30	ǀǀǀǀ	4

Time Childen Eat Dinner

Go into the same group as yesterday. Use the data table from Lessons 1 and 2 to construct a bar/column graph on a chart as shown in the example above.

Make up some questions about your graph. Then each of you works out the answers to the questions.

Display and hang up your group graph with your data table.
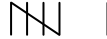
Individual Application

1. Construct a bar/column graph from this data table.

Children's Age	Tally	Frequency
Ten	ＮＮ ＮＮ ｜｜	12
Eleven	ＮＮ ｜｜｜｜	9
Twelve	ＮＮ ｜	6

2. Use your graph to answer these questions.

a) How old is the biggest group of children?
b) How many more children are aged 10 years than 12 years?
c) What age are the oldest children?
d) How many children are shown in the graph?

Additional Exercise

Construct a horizontal bar/column graph from this data table and then make up three questions about your graph.

Favourite Colour	Tally	Frequency
Blue	｜｜｜｜	4
Red	ＮＮ ｜	6
Yellow	ＮＮ ｜｜｜	8

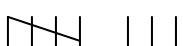# Lesson 4: Constructing a Scaled Picture Graph or Pictograph

Group Work

Your teacher will divide you into groups and give you one of the data tables below. Working together, construct your own scaled picture graph based on the data in the table.

Group 1:

Transport to School	Tally	Frequency
Bus	⊬⊬ ||	7
Walk	⊬⊬ ||||	9
Bike	||||	4
Motorbike	||	2

Group 2:

Favourite Pets	Tally	Frequency
Dog		8
Cat		6
Pig	⊬⊬ |||	3

Group 3:

Classroom Furniture	Tally	Frequency
Table	||||	4
Chair	||	2
Desk	⊬⊬ |||	8

Individual Application

Construct your own scaled picture graph from this data table and write three questions about it.

Dog's Lunch	Tally	Frequency
Fish	||||	4
Coconut	||	2

Additional Exercise

Construct your scaled picture graph from the information below:

There are 5 mackerel tins, 3 bottles, 4 battery boxes and 2 bottle lids.

Lesson 5:   Assessment

Group Work

Working together, make a data table about the time you go to bed.
Collect the data and record it on a chart.

Individual Application

1. Fill in the correct information to complete this data table.

Favourite Game	Tally	Frequency
Football		14
Volleyball		8
Basketball	⅃Ⅎ ⅃Ⅎ ⅃Ⅎ I	
Table Tennis	⅃Ⅎ ⅃Ⅎ III	
Tennis		9

2. Answer these questions from the table in No. 1.

a) How many children preferred football?
b) Which game is the least popular?
c) Name the games in the table that are enjoyed by the children.
d)   How many more children chose basketball than table tennis?
e) Find the difference between the most popular game and the least popular.

3. Construct a horizontal bar/column graph from this data table.

Our Writing Hand	Tally	Frequency
Right hand	⅃Ⅎ III	8
Left hand	IIII	4

4. Construct a scaled picture graph from this data table.

Home Pets	Tally	Frequency
Dog	II	2
Pig	IIII	4
Cat	I	1
Fowl	III	3

UNIT 24:   SYMMETRY
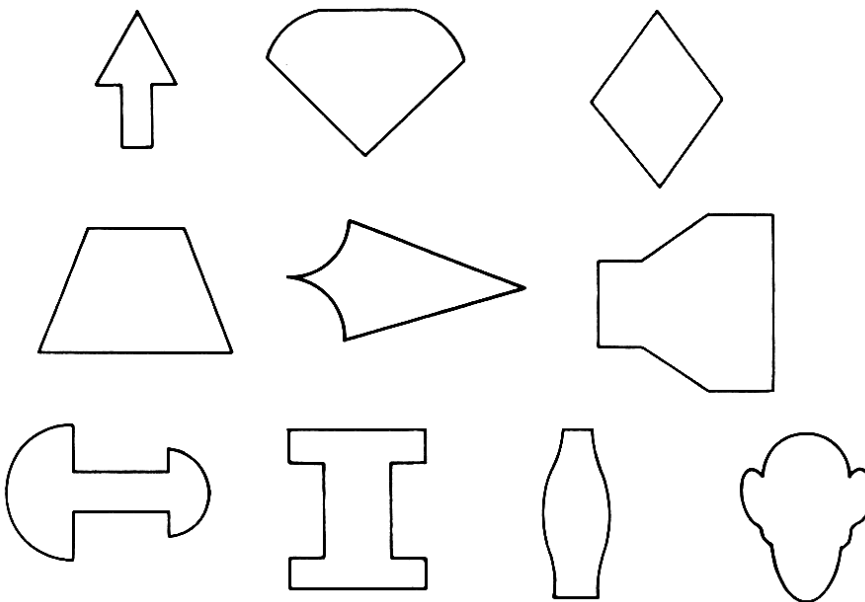
Lesson 1:   Lines of Symmetry

Group Work

Work together to fold a sheet of paper, then fold it in half again. Draw any shape on it, as your teacher has shown you, making sure that the edge of the shape you draw is against the last fold. Cut out the shape, being careful not to cut along the fold, and then open out the paper.

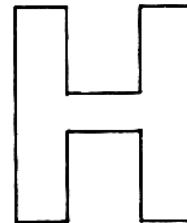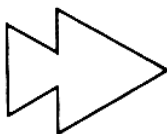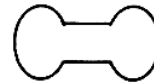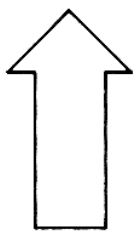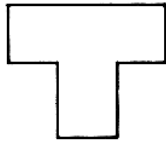How many lines of symmetry does your opened-out shape have?

Individual Application

Trace these figures and draw the lines of symmetry. Some shapes have more than one.

Additional Exercise

Copy these shapes into your books and draw the lines of symmetry with a dotted line.

Lesson 2:   Rotational Symmetry

Group Work

Work together. Draw an equilateral triangle on a piece of plain paper.
Trace the shape and cut it out with a pair of scissors.
Mark one corner of the cut-out triangle and push a pen through the centre of the triangle.
Put it on top of the triangle drawn on the plain paper and rotate it. Then count how many times the cut-out triangle has fitted onto the triangle on the paper by the time it has returned to its original position.
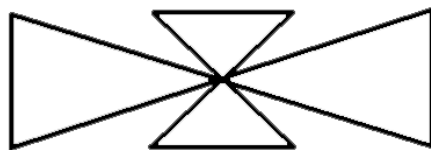Record your answers.
Present your findings.

Individual Application

Complete the table.

Shapes	Number of Axes of Symmetry	Order of Rotational Symmetry
Square		
Rectangle		
Parallelogram		
Isosceles Triangle		
Equilateral Triangle		
Regular Pentagon		

Additional Exercise

1. How many axes of symmetry has the shape above?
2. What is the order of rotational symmetry of this shape?

Lesson 3: Lines of Symmetry in Regular Polygons

Group Work

Your teacher will give your group sheet of paper, a pair of scissors and a protractor.
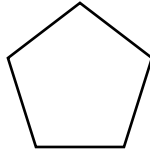Draw these polygons inside a circle as shown above:

1. a regular pentagon
2. a regular hexagon
3. a regular octagon

Cut out the regular shapes. Fold them to find the lines of symmetry.
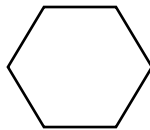Choose a reporter to present your findings to the class.

Individual Application

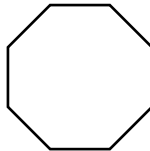Copy these shapes into your book and draw their axes of symmetry.

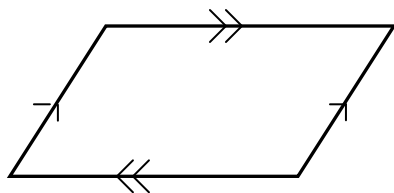1. a regular pentagon

2. a regular hexagon

3. a regular octagon

Additional Exercise

Draw any three regular polygons and mark their lines of symmetry with dotted lines.

Lesson 4:   Lines of Symmetry in Irregular Polygons

Group Work

In your group, trace this parallelogram and cut out the figure.

By folding, try to find an axis of symmetry.
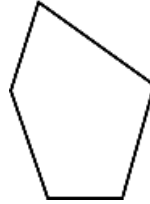Groups present their findings.

Individual Application

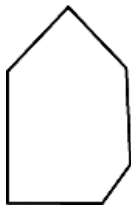Mark the lines of symmetry with dotted lines for these figures.

An irregular triangle   an irregular pentagon

an irregular hexagon

Additional Exercise

Draw any two irregular polygons and mark their lines of symmetry with dotted lines.

Lesson 5:   Assessment

Group Work

In your group, fold a sheet of paper, then fold in half again. Draw any shape. Remember to make sure the shape you draw fits against the last fold.

Cut out the shape and then open the paper.

How many lines of symmetry does the opened-out shape have?

Individual Application

How many lines and orders of rotational symmetry has each of these figures?

1

2

3

4

5

6

7

8

9

10

11

UNIT 25:   FRACTIONS

Lesson 1:   Introduction and Comparison of Fractions

Group Work

Work together to provide five equivalent fractions for each of these fractions.

$\frac{2}{5}$, ——, ——, ——, ——, ——

$\frac{1}{4}$, ——, ——, ——, ——, ——

$\frac{1}{6}$, ——, ——, ——, ——, ——

$\frac{3}{5}$, ——, ——, ——, ——, ——

$\frac{1}{3}$, ——, ——, ——, ——, ——

Choose a reporter from your group to present the group's work.

Individual Application

Put >, or < or = in the box to make the statement correct.

1. $\frac{3}{4}$ ☐ $\frac{7}{8}$ 6. 1 ☐ $\frac{14}{16}$

2. $\frac{1}{2}$ ☐ $\frac{1}{8}$ 7. $\frac{8}{8}$ ☐ $\frac{4}{4}$

3. $\frac{16}{16}$ ☐ 1 8. $\frac{2}{4}$ ☐ $\frac{5}{8}$

4. $\frac{1}{4}$ ☐ $\frac{1}{8}$ 9. $\frac{2}{2}$ ☐ $\frac{5}{8}$

5. $\frac{6}{8}$ ☐ $\frac{3}{4}$ 10. $\frac{3}{8}$ ☐ $\frac{3}{16}$

Additional Exercise

Write five for each of the following.

1. Proper fractions   ___, ___, ___, ___, ___.
2. Improper fractions   ___, ___, ___, ___, ___.
3. Mixed fractions   ___, ___, ___, ___, ___.
4. Equivalent fractions   ___, ___, ___, ___, ___.

Lesson 2:   Converting Fractions into Decimals

Group Work

Working together, convert these fractions into decimals and vice versa. Show working out as shown above.

1. $\frac{4}{10}$

2. $\frac{3}{6}$

3. $\frac{4}{5}$

4. $\frac{3}{4}$

5. $\frac{5}{8}$

Groups present their work.

Individual Application

Convert these fractions into decimals and vice versa. Show your working out.

Example: $\frac{4}{5} = 0.8$ ➜ $\frac{8}{10} = \frac{4}{5}$

1. $\frac{6}{10}$

2. $\frac{2}{5}$

3. $\frac{3}{5}$

4. $\frac{1}{4}$

5. $\frac{3}{8}$

Additional Exercise

Match the fractions with decimal fractions.

1.	$\frac{7}{10}$	0.5
2.	$\frac{5}{6}$	0.7
3.	$\frac{1}{5}$	0.875
4.	$\frac{2}{4}$	0.83
5.	$\frac{7}{8}$	0.2

Lesson 3:   Converting Fractions to Percentages

Group Work

Work together to convert these fractions into percentages and vice versa.

1. $\frac{20}{100}$ 4. $\frac{25}{100}$

2. $\frac{6}{10}$ 5. $\frac{4}{5}$

3. $\frac{15}{100}$

Individual Application

Write these fractions as percentages.

1. $\frac{3}{5}$ 6. $\frac{11}{25}$

2. $\frac{3}{20}$ 7. $\frac{3}{10}$

3. $\frac{7}{25}$ 8. $\frac{15}{20}$

4. $\frac{4}{8}$ 9. $\frac{4}{10}$

5. $\frac{27}{50}$ 10. $\frac{3}{12}$

Additional Exercise

Write each of the following percentages as a fraction with a denominator of 100.

1. 25%   6. 75%

2. 20%   7. 4%

3. 5%   8. 40%

4. 12%   9. 50%

5. 30%   10. 35%

Lesson 4:   Adding Mixed Numbers with Like Denominators

Group Work

Work together to work out the following addition sums:

1. $1\frac{1}{4} + 1\frac{1}{4}$
2. $1\frac{1}{5} + 2\frac{2}{5}$
3. $2\frac{2}{7} + 3\frac{1}{7}$
4. $2\frac{2}{5} + 3\frac{1}{5}$
5. $3\frac{3}{7} + 2\frac{2}{7}$

Individual Application

Calculate the sum.

1. $4\frac{1}{12} + 2\frac{5}{12}$
2. $4\frac{3}{11} + 2\frac{7}{11}$
3. $2\frac{7}{20} + 6\frac{11}{20}$
4. $3\frac{3}{5} + 4\frac{1}{5}$
5. $2\frac{4}{10} + 4\frac{5}{10}$

Additional Exercise

Work out the sum.

1. $3\frac{3}{5} + 4\frac{1}{5}$
2. $2\frac{4}{10} + 4\frac{5}{10}$
3. $3\frac{9}{15} + 7\frac{3}{15}$
4. $1\frac{1}{4} + 2\frac{3}{4}$
5. $4\frac{2}{3} + 2\frac{2}{3}$
6. $4\frac{5}{8} + 3\frac{3}{8}$
7. $2\frac{3}{5} + 1\frac{4}{5}$
8. $1\frac{2}{3} + 2\frac{2}{3}$
9. $5\frac{4}{5} + 6\frac{3}{5}$
10. $3\frac{3}{4} + 2\frac{3}{4}$

Lesson 5:   Subtracting Mixed Numbers with Like Denominators

Group Work

Work together to find the differences.

1. $4\frac{6}{10} - 1\frac{3}{10}$
2. $5\frac{5}{6} - 3\frac{2}{6}$
3. $7\frac{8}{9} - 6\frac{1}{9}$
4. $6\frac{4}{8} - 3\frac{3}{8}$
5. $9\frac{6}{12} - 4\frac{5}{12}$

Individual Application

Calculate the difference.

1. $4\frac{5}{12} - 2\frac{1}{12}$

2. $4\frac{7}{11} - 2\frac{3}{11}$

3. $6\frac{11}{20} - 2\frac{7}{20}$

4. $4\frac{3}{5} - 3\frac{1}{5}$

5. $4\frac{5}{10} - 2\frac{4}{10}$

Additional Exercise

Work out the difference.

1. $4\frac{3}{5} - 3\frac{1}{5}$

2. $4\frac{5}{10} - 2\frac{4}{10}$

3. $7\frac{9}{15} - 3\frac{3}{15}$

4. $2\frac{3}{4} - 1\frac{1}{4}$

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

6. $4\frac{5}{8} - 3\frac{3}{8}$

7. $2\frac{4}{5} - 1\frac{1}{5}$

8. $2\frac{2}{3} - 1\frac{2}{3}$

9. $6\frac{4}{5} - 5\frac{3}{5}$

10. $3\frac{3}{4} - 1\frac{1}{4}$

Lesson 6:   Adding and Subtracting Mixed Numbers with Like Denominators

Individual Application

Work out these additions.

1. $1\frac{5}{6} + 4\frac{3}{6}$

2. $2\frac{4}{5} + 3\frac{1}{5}$

3. $4\frac{3}{7} + 2\frac{2}{7}$

4. $3\frac{3}{8} + 1\frac{4}{8}$

5. $4\frac{4}{9} + 1\frac{3}{9}$

6. $8\frac{3}{5} - 4\frac{1}{5}$

7. $5\frac{3}{4} - 1\frac{1}{4}$

8. $3\frac{4}{7} - 2\frac{1}{7}$

9. $6\frac{4}{8} - 3\frac{2}{8}$

10. $5\frac{7}{9} - 2\frac{6}{9}$

Additional Exercise

Put either (-) or (+) in the box.

1. $6\frac{4}{10} \ \boxed{} \ 2\frac{3}{10} = 8\frac{7}{10}$

2. $6\frac{4}{10} \ \boxed{} \ 2\frac{3}{10} = 4\frac{1}{10}$

3. $3\frac{1}{4} \ \boxed{} \ 1\frac{2}{4} = 4\frac{3}{4}$

4. $5\frac{3}{4} \boxed{} \ 2\frac{1}{4} = 3\frac{2}{4}$

5. $6\frac{5}{8} \boxed{} \ 4\frac{3}{8} = 2\frac{2}{8}$

Lesson 7:   Multiplying Proper Fractions

Group Work

Work out the following.

1. $\frac{1}{3}$ x $\frac{1}{4}$ =

2. $\frac{2}{5}$ x $\frac{5}{6}$ =

3. $\frac{3}{4}$ x $\frac{4}{3}$ =

4. $\frac{1}{5}$ x $\frac{5}{8}$ =

5. $\frac{3}{5}$ x $\frac{4}{6}$ =

Individual Application

Find the product.

1. $\frac{4}{10}$ x $\frac{2}{5}$ =

2. $\frac{6}{13}$ x $\frac{1}{4}$ =

3. $\frac{5}{6}$ x $\frac{6}{9}$ =

4. $\frac{4}{6}$ x $\frac{3}{5}$ =

5. $\frac{7}{8}$ x $\frac{2}{3}$ =

6. $\frac{1}{6}$ x $\frac{3}{7}$ =

7. $\frac{2}{3}$ x $\frac{4}{5}$ =

8. $\frac{6}{8}$ x $\frac{2}{6}$ =

9. $\frac{4}{12}$ x $\frac{3}{4}$ =

10. $\frac{1}{10}$ x $\frac{5}{8}$ =

Additional Exercise

Calculate the product.

1. $\frac{1}{10}$ x $\frac{4}{5}$

2. $\frac{5}{6}$ x $\frac{7}{8}$

3. $\frac{1}{5}$ x $\frac{3}{4}$

4. $\frac{4}{7}$ x $\frac{5}{15}$

5. $\frac{1}{7}$ x $\frac{6}{3}$

6. $\frac{4}{6}$ x $\frac{2}{7}$

7. $\frac{5}{8}$ x $\frac{3}{4}$

8. $\frac{9}{10}$ x $\frac{3}{5}$

9. $\frac{1}{2}$ x $\frac{6}{8}$

10. $\frac{4}{10}$ x $\frac{5}{8}$

Lesson 8:   Dividing Fractions

Group Work

Solve these division sums together.

1. $\frac{2}{3}$ ÷ $\frac{3}{1}$ =

2. $\frac{1}{2}$ ÷ $\frac{1}{5}$ =

3. $\frac{6}{8}$ ÷ $\frac{2}{16}$ =

4. $\frac{7}{21}$ ÷ $\frac{1}{3}$ =

5. $\frac{14}{15}$ ÷ $\frac{7}{3}$ =

Individual Application

Work out the quotient.

1. $\frac{1}{3} \div \frac{1}{3} =$ 6. $\frac{3}{7} \div \frac{1}{7} =$

2. $\frac{1}{2} \div \frac{3}{2} =$ 7. $\frac{3}{5} \div \frac{6}{5} =$

3. $\frac{2}{4} \div \frac{3}{4} =$ 8. $\frac{3}{4} \div \frac{5}{4} =$

4. $\frac{2}{3} \div \frac{4}{3} =$ 9. $\frac{4}{8} \div \frac{3}{8} =$

5. $\frac{3}{5} \div \frac{1}{5} =$ 10. $\frac{4}{9} \div \frac{2}{9} =$

Additional Exercise

Work out the answers.

1. $7 \div \frac{14}{20} =$ 4. $6 \div \frac{3}{4} =$

2. $8 \div \frac{4}{5} =$ 5. $9 \div \frac{3}{5} =$

3. $5 \div \frac{5}{8} =$

Lesson 9:   Multiplying and Dividing Fractions

Individual Application

Work out the following.

1. $\frac{3}{4} \div \frac{3}{2} =$ 6. $\frac{2}{3}$ x $\frac{3}{3} =$

2. $\frac{2}{5} \div \frac{3}{5} =$ 7. $\frac{3}{2}$ x $\frac{1}{2} =$

3. $\frac{2}{7} \div \frac{4}{7} =$ 8. $\frac{2}{4}$ x $\frac{1}{4} =$

4. $\frac{5}{9} \div \frac{2}{3} =$ 9. $\frac{5}{2}$ x $\frac{1}{2} =$

5. $\frac{3}{8} \div \frac{3}{4} =$ 10. $\frac{3}{5}$ x $\frac{2}{5} =$

Additional Exercise

Calculate the following.

1. $\frac{3}{5}$ x $\frac{1}{5} =$ 6. $\frac{9}{7} \div \frac{3}{14} =$

2. $\frac{4}{3}$ x $\frac{2}{3} =$ 7. $\frac{5}{3} \div \frac{15}{21} =$

3. $\frac{3}{2}$ x $\frac{3}{2} =$ 8. $\frac{9}{20} \div \frac{7}{12} =$

4. $\frac{4}{3}$ x $5 =$ 9. $10 \div \frac{5}{6} =$

5. $\frac{3}{5}$ x $7 =$ 10. $12 \div \frac{6}{4} =$

Lesson 10: Assessment

Group Work

  Work together to find out the answers

   1. $3\frac{1}{2} + 4\frac{2}{2} =$ 4. $\frac{8}{10} \div \frac{1}{2} =$

   2. $6\frac{3}{4} - 3\frac{1}{4} =$ 5. $\frac{3}{4} \div 5 =$

   3. $\frac{8}{20} \times \frac{2}{3} =$

Individual Application

   1. Write the simplest equivalent fraction for each of the following.

  a) $\frac{12}{24} =$ d) $\frac{6}{18} =$

  b) $\frac{10}{40} =$ e) $\frac{6}{36} =$

  c) $\frac{14}{21} =$

   2. Write these fractions as decimal fractions.

  a) $\frac{3}{6} =$ d) $\frac{2}{8} =$

  b) $\frac{3}{5} =$ e) $\frac{3}{4} =$

  c) $\frac{1}{10} =$

   3. Convert these fractions into percentages.

  a) $\frac{2}{3} =$ d) $\frac{3}{8} =$

  b) $\frac{4}{5} =$ e) $\frac{1}{2} =$

  c) $\frac{3}{10} =$

   4. Change these decimals into fractions.

  a) $0.3 =$ d) $0.25 =$

  b) $0.15 =$ e) $0.07 =$

  c) $0.8 =$

   5. Work out the following.

  a) $3\frac{1}{4} + 2\frac{3}{4} =$ f) $5 \times \frac{3}{10} =$

  b) $7\frac{3}{5} + 2\frac{4}{5} =$ g) $4 \div \frac{1}{4} =$

  c) $4\frac{6}{8} - 2\frac{4}{8} =$ h) $\frac{5}{8} \div \frac{2}{5} =$

  d) $9\frac{5}{6} - 7\frac{3}{6} =$ i) $\frac{3}{4} \div 3 =$

  e) $\frac{7}{10} \times \frac{2}{4} =$ j) $\frac{6}{7} \times 7 =$

UNIT 26:   SCALE DRAWING

Lesson 1:   Finding Actual Lengths

Group Work

Your teacher will give your group a centimetre ruler and some objects to be measured. Working together, measure each object then draw pictures with the actual lengths.
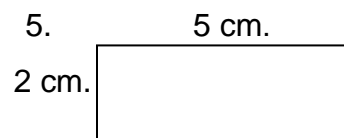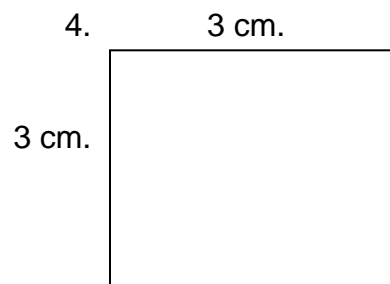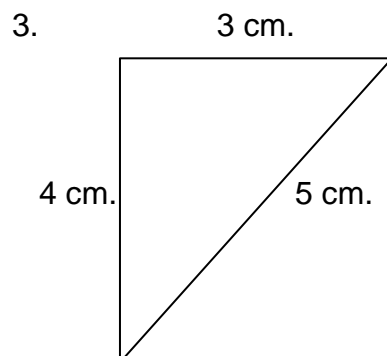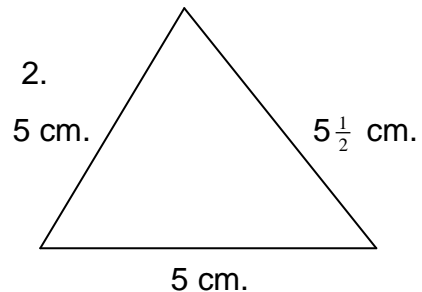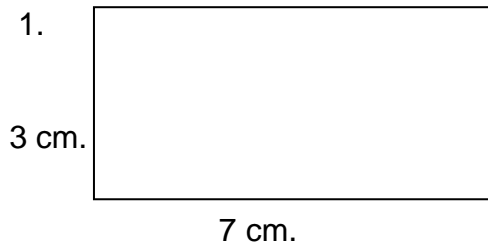Present their work.

Individual Application

Draw pictures according to these measurements. Use a ruler to check that the measurements are correct.

1. a bottle 5 cm. long.
2. a pencil 10 cm. long.
3. a spoon 15 cm. long.
4. a knife 12 cm. long.
5. a line $9\frac{1}{2}$ cm. long.

Additional Exercise

Draw the length of each side of the following shapes. Write the measurements.

1.

3 cm.
7 cm.

2.

5 cm. $5\frac{1}{2}$ cm.
5 cm.

3.   3 cm.

4 cm.   5 cm.

4.   3 cm.

3 cm.

5.   5 cm.

2 cm.

Lesson 2:   Using Scales

Group Work

Working in your group, draw a scaled-down plan of the following using the scale 1cm. rep. 4 m.

1.   a school library 24 metres long and 12 metres wide.
2.   a table of 12 metres long and 8 metres wide.

Choose a reporter to present the group's work.

Individual Application

Using the scale of 1cm. rep. 3 m., draw rectangles representing the following.

1.   a house 6 metres long and 3 metres wide.
2.   a playing field 12 metres long and 9 metres wide.
3.   *te mwaneaba* of 27 metres long and 12 metre wide.

Additional Exercise

This tree is drawn to a scale of 5 mm. rep. 1 metre. What is the actual height of the tree?

Lesson 3:   Using Proportions
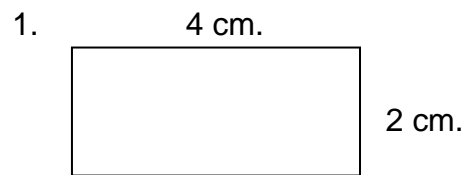
Group Work

Construct two triangles with proportional length on a chart. Write the measurement of each side.
Choose a reporter to present your group's work.

Display your chart.

Individual Application

Using the constant multiplying factor of 3, construct one shape that is proportional to each of the following.

1.

4 cm.

2 cm.

2.

3 cm   3 cm.

3 cm.

3.

3 cm.

5 cm.   4 cm.

4.

2 cm.

4 cm.

5.

3 cm.

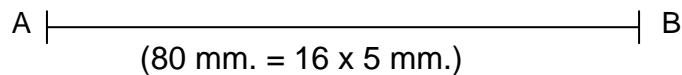4 cm. $5\frac{1}{2}$ cm.

Additional Exercise

1.   Write two sets of numbers that are proportional.
2.   Draw two triangles that are proportional.
3.   Draw two rectangles that are proportional.

Lesson 4:   Interpreting Information from the Scaled Diagram

Group Work

Work together to find the actual length of the following.

1.   The scale used to represent the distance from Bauro's house (A) to Toto's house (B) is 5 mm. rep. 100 m.

A |————————————————————| B
(80 mm. = 16 x 5 mm.)

Measure the line then find out the following:

1.   What is the actual distance in metres?
2.   What is the actual distance in kilometres?

Individual Application

Using the scale of 1cm. rep. 2 m., find the actual length of five classrooms represented by these plans.

1. $3\frac{1}{2}$ cm.

2.   3 cm.

3.   5 cm.

4. $5\frac{1}{2}$ cm.

5.   6 cm.

Additional Exercise

The distance from Are's house to the school is 85 metres.

1. Using the scale of 1cm. rep. 5m draw a line representing that distance.

2. Draw another line representing the same distance using the scale of 1cm. rep. 10m.
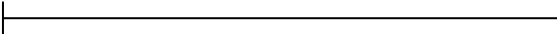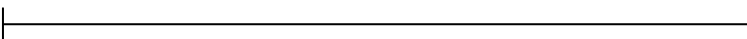
Lesson 5:   Assessment

Group Work

Working in your group, draw a plan for a *mwaneaba* whose length is 22 metres and whose breadth is 15 metres using the scale of 1cm. rep. 2m.

Individual Application

1. Measure these lines and write answers in centimetres.

a) ├───────────────────────┤

b) ├──────────────────────────────┤

2. Using the constant multiplying factor of 3.2. Construct another rectangle that is proportional to this one.

a)   3 cm.

.
1.5 cm

3. The scale used to draw this plan of a rectangular building is 1cm. to represent 3 metres. Measure the sides and find the actual length of sides.

4. The scale used for this plan is 1cm. to represent 5 metres.

Calculate: a)   the actual length
              b)   the actual width of the building.

5. Using a scale of 1cm to represent 4 metres, draw a plan of a rectangular building whose length is 24 metres and width is 10 metres.

UNIT 27:   PROBABILITY

Lesson 1:   Introduction to Probability

Group Work

Your teacher will provide you with a coin.
Toss the coin ten times and record the outcomes in a table.

Heads	Tails

Work out the probability of getting:
1.   a tail
2.   a head

Choose a reporter to present the group's work.

Individual Application

Toss a coin ten times to complete the table below.

Possible Outcome Tossing a Coin		
Activity	Head	Tail
1.		
2.		
3.		
4.		
5.		
6.		
7.		
8.		
9.		
10.		

Additional Exercise

Using this formula:

Probability =   number of ways the event occurs
                        number of possible outcomes

Work out the probability that when you take one card from the pack it will
be:
1.   a king   2.   a spade

Lesson 2:   Experimental Probability

Individual Application

1. The table shows the results of a mental mathematics test in a class of 30 pupils.

Number correct	10	9	8	7	6
Number of pupils	5	11	9	4	1

a) Find the probability that if the teacher closes her eyes and chooses a pupil, she will select someone who has scored 10.

b) Write down the probabilities that the teacher chooses pupils with the other scores.

Additional Exercise

1. Obtain a die with the numbers 1 to 6 marked on the faces. Roll the die 30 times and note down the number of times that each number appears on top.
   Put your results in a table.

Score	1	2	3	4	5	6
Frequency						

2. Obtain a pack of playing cards. After shuffling the cards ask a friend to pick any card from the pack. Do this 40 times. Keep a tally of the number of spades, clubs, diamonds and hearts drawn out and record them in a table.

Card	Spade	Club	Diamond	Heart
Frequency				

Based on your experiment, list the probabilities of selecting each of the different types of cards.

Lesson 3: Theoretical Probability

Group Work

Work together to solve these problems.

1. Drawing a marble from a bag
    The bag contains 3 red and 2 black marbles. There are 5 marbles altogether and any one of the five has an equal chance of being drawn.

    a) What is the probability of selecting a red marble?

    b) What is the probability of selecting a black marble?

Individual Application

1. A normal pack contains 52 cards. These consist of 13 spades, 13 clubs, 13 diamonds and 13 hearts.

    a) Work out the probability of selecting a heart.

    b) Work out the probability of selecting a diamond.

    c) Work out the probability of selecting a club.

    d) Work out the probability of selecting a spade.

2. A bag contains 5 black and 3 red marbles. If one is chosen from the bag, what is the probability that it is:

    a) black?

    b) red?

Additional Exercise

A bag contains 2 black, 3 red and 4 white marbles. One is selected from the bag. What is the probability that it is:

1. black?   4. not black?

2. red?   5. not red?

3. white?   6. not white?

Lesson 4: Experimental and Theoretical Probability

Group Work

Use a die with the numbers 1 to 6 marked on the faces. Roll the die 30 times and note down the number of times that each number appears on top. Put your results in a table.

Score	1	2	3	4	5	6
Frequency						

From this table, write the experimental probability of throwing each of the numbers 1 to 6 for this die.

Individual Application

Answer these questions.
One card is selected from a pack of playing cards.
What is the probability that it is:

1. a spade?

2. a heart?

3. an ace?

4. a six?

5. the six of hearts?

6. a king?

7. a picture card?

Additional Exercise

In a box there are 20 pieces of cardboard, with the numbers 1 to 20 written on them. A person picks out one of these. What is the probability that it is:

1. the number 6?

2. the number 7?

3. an even number?

4. a number less than 5?

5. a number less than 12?

6. a number greater than 12?

Lesson 5:   Assessment

Group Work

Toss a coin 20 times. Make sure you take turns. Record the results in a table as follows:

Possible Outcomes	
Heads	**Tails**

Work out the probability of getting:
1.   a tail
2.   a head

Individual Application

1.   Ten cards are numbered 1 to 10. If one card is drawn at random, what is the probability that the card will be:

a)   card number 4?

b)   a number greater than 4?

c)   a number less than 4?

2.   You have 3 red beads, 4 blue beads and 2 green beads in a bag. If you take out a bead without looking, what is the probability that it will be blue?

3.   What is the probability that the sun rises in the west?

4.   Five red marbles and two yellow marbles are placed in a box.

a)   How many marbles are in the box?

b)   How many are red?

c)   How many are yellow?

d)   What is the probability of picking a red marble?

e)   What is the probability of picking a yellow marble?

UNIT 28:   PERCENTAGES

Lesson 1:   Changing Fractions into Percentages

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Group Work

Put children into groups of six.
Write these fractions as percentages, to one decimal place.

1. $\frac{1}{2}$ 4. $\frac{2}{3}$

2. $\frac{3}{10}$ 5. $\frac{1}{4}$

3. $\frac{4}{12}$

Individual Application

Change these fractions into percentages.

1. $\frac{6}{10}$ 6. $\frac{4}{20}$

2. $\frac{3}{7}$ 7. $\frac{3}{4}$

3. $\frac{5}{8}$ 8. $\frac{1}{6}$

4. $\frac{5}{6}$ 9. $\frac{9}{10}$

5. $\frac{7}{10}$ 10. $\frac{8}{20}$

Additional Exercise

Write these fractions as percentages, to two decimal places.

1. $\frac{1}{10}$ 6. $\frac{15}{20}$

2. $\frac{1}{7}$ 7. $\frac{2}{6}$

3. $\frac{1}{8}$ 8. $\frac{3}{5}$

4. $\frac{5}{8}$ 9. $\frac{1}{20}$

5. $\frac{5}{7}$ 10. $\frac{7}{8}$

Lesson 2:   Changing Percentages to Fractions

Individual Application

Write these percentages as fractions.

1.	11%	6.	58%
2.	23%	7.	69%
3.	35%	8.	72%
4.	8%	9.	80%
5.	43%	10.	98%

Additional Exercise

Change these percentages into fractions.

1.	13%	6.	54%
2.	25%	7.	63%
3.	39%	8.	77%
4.	6%	9.	86%
5.	41%	10.	91%

Lesson 3:   Changing Fractions into Percentages and Percentages to Fractions

Group Work

Work together to change these fractions into percentages and vice versa. Show the working out.

1. $\frac{3}{5}$

2. $\frac{6}{10}$

3. $\frac{12}{20}$

Individual Application

Change these fractions into percentages and vice versa. Show your working out.

1.	$\frac{2}{5}$	4.	$\frac{5}{8}$
2.	$\frac{4}{10}$	5.	$\frac{25}{50}$
3.	$\frac{14}{20}$		

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Additional Exercise

Turn these fractions into percentages and vice versa.

1. $\frac{1}{5}$ 4. $\frac{15}{20}$

2. $\frac{8}{10}$ 5. $\frac{6}{8}$

3. $\frac{5}{20}$

Lesson 4: Changing Decimals to Percentages

Group Work

Work together to change these decimals into percentages.

1. 0.75   4. 0.2
2. 0.8   5. 0.6
3. 0.25

Choose a reporter to present the group's work.

Individual Application

Write these decimals as percentages. Show your working out.

1. 0.15   4. 0.55
2. 0.7   5. 0.3
3. 0.20

Additional Exercise

Write these decimals as percentages.

1. 0.4   6. 0.42
2. 0.9   7. 0.50
3. 0.40   8. 0.32
4. 0.22   9. 0.02
5. 0.35   10. 0.08

Lesson 5: Changing Percentages to Decimals

Group Work

Work together to convert these percentages to decimals.

1. 5%   4. 40%
2. 24%   5. 55%
3. 35%

Individual Application

Change these percentages to decimals by writing the missing figures in the boxes.

1. $70\% \rightarrow \dfrac{\boxed{}}{100} \rightarrow$ $100\overline{)\,700}$ with $.7$ above, and empty box below.

2. $30\% \rightarrow \dfrac{30}{100} \rightarrow$ $100\overline{)\,300}$ with $.3$ above, and empty box below.

3. $\boxed{}\% \rightarrow \dfrac{25}{100} \rightarrow$ $\boxed{}$ above $100\overline{)\,250}$
$$\underline{200}$$
$$500$$
$$\underline{500}$$

4. $4\ \% \rightarrow \dfrac{\boxed{}}{100} \rightarrow$ $\boxed{}$ above $100\overline{)\,400}$
$$\underline{400}$$

5. $6\% \rightarrow \boxed{} \rightarrow$ $.06$ above $100\overline{)\,\boxed{}}$
$$\underline{600}$$

Additional Exercise

Change these percentages into decimals.

1.   42%   6.   60%

2.   8%   7.   66%

3.   12%   8.   2%

4.   84%   9.   9%

5.   90%   10. 19%

40

Lesson 6: Further Work on Changing Decimals to Percentages

Group Work

Work together to convert these decimals into percentages.

1. 0.04
2. 0.70
3. 0.88

4. 0.23
5. 0.6

Individual Application

Fill in the boxes.

1. $0.02 \rightarrow \dfrac{2}{\boxed{}} \times \dfrac{100}{1} = \dfrac{\boxed{}}{1}$

   $= 2\%$

2. $0.39 \rightarrow \dfrac{\boxed{}}{100} \times \dfrac{100}{1} = \dfrac{39}{1}$

   $= 39\%$

3. $\boxed{} \rightarrow \dfrac{7}{\boxed{}} \times \dfrac{100}{1} = \dfrac{70}{1}$

   $= 70\%$

4. $0.80 \rightarrow \dfrac{\boxed{}}{100} \times \dfrac{\boxed{}}{1} = \dfrac{80}{1}$

   $= 80\%$

5. $0.01 \rightarrow \boxed{} \times \dfrac{100}{1} = \dfrac{1}{1}$

   $= 1\%$

Additional Exercise

Write these decimals as percentages.

1. 0.11
2. 0.09
3. 0.3
4. 0.78
5. 0.60

6. 0.51
7. 0.06
8. 0.44
9. 0.1
10. 0.20

Lesson 7:   Percentage of a Quantity

Group Work

In your group work out the following.

1. 50% of $84
2. 20% of $84
3. 15% of $84
4. 90% of $84
5. 5% of $84

Individual Application

Calculate the following.

1. 2% of 80
2. 52% of 50
3. 24% of 100
4. 65% of 25
5. 20% of 10

Additional Exercise

Work out the following.

1. 10% of 200
2. 56% of 250
3. 18% of 65
4. 32% of 75
5. 45% of 300
6. 6% of 125
7. 40% of 40
8. 70% of 45
9. 22% of 30
10. 77% of 10

Lesson 8:   More Work on a Percentage of a Quantity

Individual Application

Work out the following.

1. 4% of 40
2. 35% of 200
3. 69% of 100
4. 20% of 90
5. 2% of 50

Additional Exercise

Match a problem in A with the answer in B.

A	B
75% of 44	4.2
30% of 84	21
6% of 70	146
21% of 100	33
73% of 200	25.2

Lesson 9:   Revision on Percentages

Individual Application

1.   Write these fractions as percentages.

a) $\frac{1}{4}$ b) $\frac{25}{50}$ c) $\frac{3}{8}$

2.   Change these decimals into percentages.

a)   0.56   b)   0.35   c)   0.08

3.   Change these percentages into decimals.

a)   75%   b)   40%   c)   4%

4.   Calculate these.

a)   2% of 75

b)   72% of 80

c)   60% of 150

Additional Exercise

1.   Write $\frac{4}{10}$ as a percentage.

2.   What is 0.25 as a percentage?

3.   35% as a fraction is ____.

4.   5% as decimal fraction is ____.

5. Find:
   a) 5% of 15

   b) 21% of 76

   c) 34% of 90

   d) 77% of 85

   e) 65% of 50

   f) 83% of 350

Lesson 10:   Assessment

Group Work
In your group, work out the following.

1. 30% of $60   4.   61% of $150

2. 25% of $25   5.   92% of $100

3. 44% of $45

Individual Application
1. Write these as percentages.

a) $\frac{1}{6}$ f)   0.8

b) $\frac{3}{10}$ g)   0.07

c) $\frac{11}{25}$ h)   0.47

d) $\frac{15}{30}$ i)   0.30

e) $\frac{75}{100}$ j)   0.22

2. Change these into decimal fractions.

a) 74%   d)   40%

b) 9%   e)   27%

c) 11%

3. Calculate.

a) 99% of 200   d)   84% of 65

b) 20% of 124   e)   71% of 80

c) 15% of 70

UNIT 29:   ANGLES

Lesson 1:   Acute Angles

Group Work

> Work together to make a protractor out of cardboard.
> Draw a straight line 10 cm. long on the cardboard.
> Mark the middle of the line.
> Take a pair of compasses and set the distance to 5 cm.
> Place the point of the compasses at the mid point of the line and the pencil at one end of the line. Draw a semi-circle to the other end of the line.
> Cut along the line with a pair of scissors.
> Use the picture of a protractor on the back of your textbook to mark the numbers on your protractor.

Individual Application

> Construct these five acute angles.

> 1. 30°   4.   65°
> 2. 55°   5.   70°
> 3. 40°

Additional Exercise

> Measure these angles.

Lesson 2:   Obtuse Angles

Group Work

Work together to construct any three obtuse angles.
Measure the angles using a protractor, and write down the answers.

Individual Application

Measure these angles with a protractor.

1.

2.

3.

4.

5.

Draw these obtuse angles.

1. 150°   4. 155°
2. 175°   5. 140°
3. 160°

Lesson 3:   Straight Angles

Group Work

Work in your group. List down any ten objects in the classroom which have an angle of 180°.
Choose a reporter to present the group's findings.

Individual Application

Measure these angles using a protractor.

1.   2.

3.   4.

Additional Exercise

Write **True** or **False**.

1. There are two right angles in a straight angle.
2. A straight angle is less than an obtuse angle.
3. A straight angle equal half a circle.
4. A straight angle is greater than an acute angle.
5. A straight angle is always 180°.

Lesson 4:   Reflex Angles

Group Work

Work in your group. List five objects in the classroom which have reflex angles. A group reporter presents your group's findings.

Individual Application

Draw these reflex angles using a protractor.

1.   185°   4.   345°
2.   275°   5.   310°
3.   300°

Additional Exercise

Measure these angles.

1.

2.

3.

4.

5.

Group Work

Work together to draw two obtuse and two acute angles. Write the names and the angles beside each diagram.
Choose someone to present your work.

Individual Application

Measure these angles. Write their names and measurements.

1.

Angle:

Name:

2.

Angle:

Name:

3.

Angle:

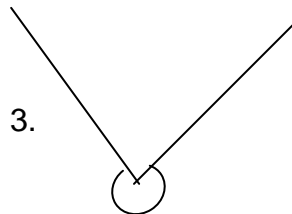Name:

4.

Angle:

Name:

5.

Angle:

Name:

Additional Exercise

Write **True** or **False**.

1. An obtuse angle is greater than an acute angle.
2. An acute angle is less than an obtuse angle.
3. An obtuse angle is between 0° and 90°.
4. An obtuse angle is between 90° and 180°.
5. An acute angle is between 0° and 90°.

Lesson 6: Straight and Reflex Angles

Group Work

Work together to draw two straight and reflex angles. Write the names of the angles beside each diagram.
Choose a reporter to present the group's work.

Individual Application

Measure these angles. Write the names and angles.

1.

Angle:

Name:

2.

Angle:

Name:

3.

Angle:

Name:

4.

Angle:

Name:

5.

Angle:

Name:

50

Additional Exercise

Write **True** or **False**.

1. A straight angle is always 180°.
2. A reflex angle is always 300°.
3. A straight angle is less than a reflex angle.
4. A reflex angle is between 180° and 360°.
5. A straight angle is half a reflex angle.

Lesson 7: Revision of the Four Kinds of Angles (Acute, Obtuse, Straight and Reflex)

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Individual Application

Measure and name the following angles.

1.

Angle:

Name:

2.

Angle:

Name:

3.

Angle:

Name:

4.

Angle:

Name:

5.

Angle:

Name:

Additional Exercise

Match the diagrams with the sizes of the angles. Write the number of the angle with the letter of the correct answer.

1.

a) 280°

2.

b) 330°

3.

c) 130°

4.

d) 180°

5.

e) 65°

Lesson 8:   Estimating and Measuring Angles

Group Work
Put children in groups of five or six.
1.   In your group, estimate, then measure these angles.

a)

b)

c)

2.   List the answers in a table like this:

Angle	Estimation	Measurement	Difference
a)		80°	
b)		100°	
c)		90°	

Individual Application

1. Fill in the table below by estimating then measuring the given angles. Calculate the difference.

Angle	Estimation	Measurement	Difference
1.			
2.			
3.			

Given angles:

1.   2.   3.

Additional Exercise

Draw three angles of your own choice.
Estimate the angles first, then measure them and finally calculate the difference. Put your results in a table, as in Individual Application (above).

Lesson 9: More Practice in Estimating and Measuring Angles

Group Work

Working together, draw 2 acute, 2 obtuse and 2 reflex angles on a chart. Choose a group member to report on your work to the class.

Individual Application

Sit in your group around the chart you have just drawn, so that you can use it . Work by yourself to copy the table below into your exercise book and complete it.

Type of angle	Estimation	Measurement	Difference

Additional Exercise

Name, estimate, measure then calculate the difference of these angles.

1.

2.

3.

4.

5.

Angle	Estimation	Measurement	Difference
1.			
2.			
3.			
4.			
5.			

Lesson 10:   Assessment

Group Work

Work in your group to draw each of these angles. Write the names for each angle.

1.   40°   2. 100° 3. 180°

4.   180°   5.   285°

Individual Application

1. Name these angles.

a)

b)

c)

d)

e)

2. Estimate, then measure the angles in Question 1. Calculate the difference. Record answers in the table below.

Angle	Type of angle	Estimation	Measurement	Difference
a)				
b)				
c)				
d)				
e)				

UNIT 30:   PERIMETER AND AREA

> ## Lesson 1:   Finding the Perimeter of a Square, Rectangle and a Triangle

Group Work

Work together to find different objects that are square, rectangular and triangular. Measure their sides, then draw and calculate their perimeter on a chart. Display your work for the other groups to see.

Individual Application

Calculate the perimeter of these shapes.

a)

5 cm.

10 cm.

b)

8 cm.

c)

12 cm.

d)

8 cm.

6 cm.

5 cm.

Additional Exercise

Solve these problems.

1.   A rectangular garden has a length of 8 metres and a width of 6 metres. Calculate its perimeter.

2.   A square tile measures 25 cm. by 25 cm. What is its perimeter?

3.   A pyramid has triangular faces. Calculate the perimeter of one face if its sides are 9 m. by 6 m. by 4.5 m.

Lesson 2:   Finding the Perimeter of a Circle

Group Work

Use circular-faced objects to draw circles on your chart. Measure the diameter or the radius. Help each other to calculate its perimeter (circumference). Display your work .
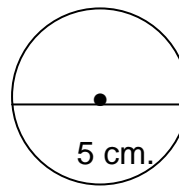
Individual Application
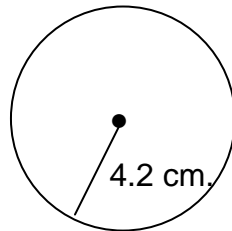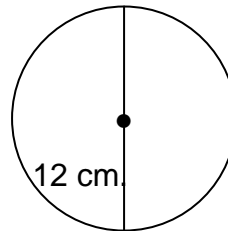
Work out the perimeter of these circles. Use πD or $2\pi R$.

1.

3 cm.

2.

5 cm.

3.

4.2 cm.

4.

12 cm.

Additional Exercise

Solve these problems. Use either πD or $2\pi R$.

1.   A circular tank has a diameter of 3.2 metres. Find its circumference.

2.   A bicycle wheel has a radius of 35 cm. What is its circumference?

3.   A coffee bottle lid has a radius of 4 cm. Calculate its circumference.

Lesson 3:   More Work on Finding the Perimeter/Circumference of a Circle
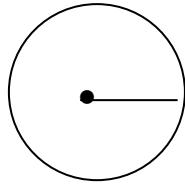
Group Work

Collect two cylindrical objects and find the circumference of their ends. Make sure each of you helps in doing the calculation. Write out the calculation of the circumference step by step on a chart.

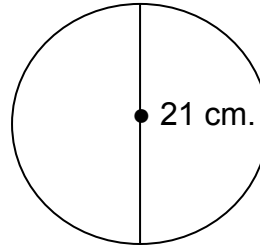Display it for members of the other groups to check the calculations.

Individual Application

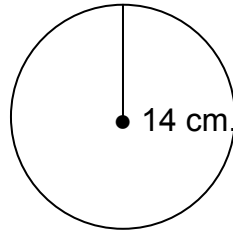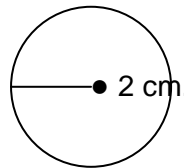Calculate the circumference of these circles. Use $\pi = \frac{22}{7}$.

1.

2.

21 cm.

3.

14 cm.

4.

2 cm.

Additional Exercise

Solve these problems. Use $\pi = \frac{22}{7}$.

1.   A circle has a circumference of 24 cm. What is its diameter?

2.   A motorbike wheel has a perimeter of 88 cm. Use $\pi = \frac{22}{7}$ to calculate the radius.

3.   A circular face of a milk tin has a diameter of 12 cm. Use $\pi = \frac{22}{7}$ to calculate its circumference.

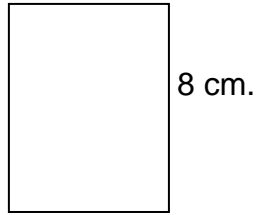## Lesson 4:   Finding the Area of a Square and a Rectangle

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Group Work

Your teacher will give your group a square-faced object and a rectangular-faced object.
Help each other to calculate step-by-step on a chart the areas of the faces.
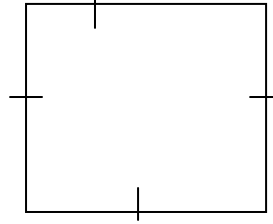Exchange the work for children in other groups to check.
Display your chart.

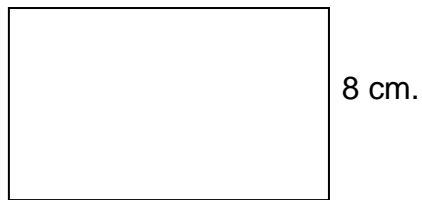**Individual Application**

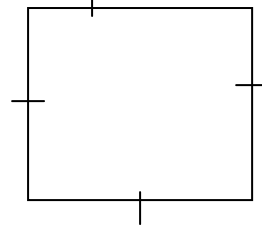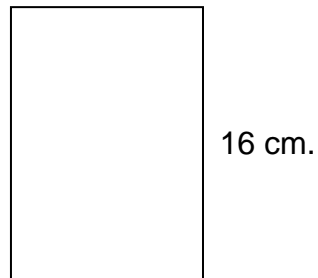Compute the areas of these shapes.

1. 5 cm.

8 cm.

2. 8 cm.

3. 12 cm.

8 cm.

4. 7 cm.

5. 3 cm.

16 cm.

Additional Exercise

Fill in the table below with correct answers.

No.	L	B	Area
1.	6 cm.	9 cm.	___
2.	9 cm.	___	81 cm^2
3.	___	12 cm.	60 cm^2
4.	7 cm.	8 cm.	___
5.	4 cm.	___	72 cm^2
6.		11 cm.	132 cm^2

Individual Application

Find the missing length.

1.

A

Area = 17.6 cm.^{2}

2.2 cm.

A = 17.6 cm.^{2}
L = ?
B = 2.2 cm.

2.

A = 36 cm.^{2}
S = ?

3.

7 cm.

?

Area = 105 cm.^{2}
B   = 7 cm.
L   = ?

4.

Area = 144 cm.^{2}
S = ?

5.

88.2 cm.^{2}

?

14 cm.

Area = 88.2 cm.^{2}
L   = 14 cm.
B   = ?

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Circle the correct answer.

1.   3.2 cm. by 5 cm. =   a)   16.4cm.

                             b)   16 cm^2

                             c)   16 cm.

2.   4.5 cm. by 4 cm. =   a)   18 cm^2

                             b)   9 cm^2

                             c)   9 cm.

3.   2.7 cm. by 6 cm. =   a)   17.4 cm^2

                             b)   16.2 cm.

                             c)   16.2 cm^2

4.   8 cm. by 5.1 cm. =   a)   408 cm^2

                             b)   40.8 cm.

                             c)   40.8 cm^2

5.   9 cm. by 7.3 cm. =   a)   6.57 cm^2

                             b)   65.7 cm^2

                             c)   657 cm^2

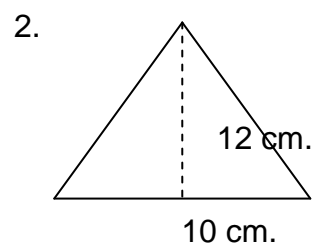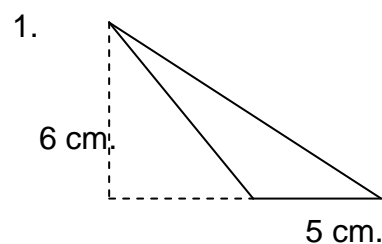# Lesson 6:   Finding the Area of a Triangle

Group Work

Working in your group, copy the triangular shapes from your teacher's chart onto your own chart. Mark the base and height.
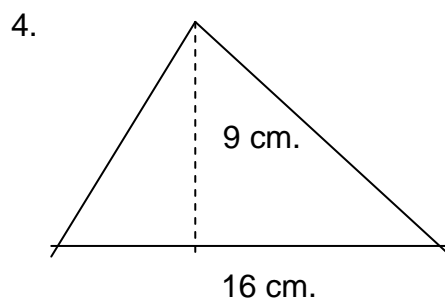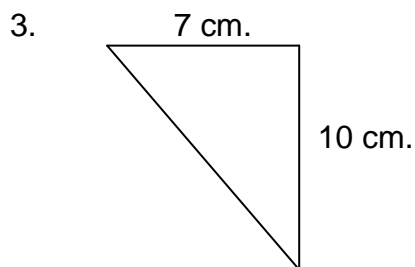Use the two formulae for finding the area of the triangle as done in the teacher's example.
Work out the calculations step by step and write them down.

Individual Application

Calculate the area of these triangles. Choose which formula you want to use.

1.

6 cm.

5 cm.

2.

12 cm.

10 cm.

3.   7 cm.

10 cm.

4.

9 cm.

16 cm.

Additional Exercise
Match the base and height of each triangle to its area.

A	B
8 cm. by 9 cm.	48 cm^2
12 cm. by 8 cm.	30 cm^2
6 cm. by 14 cm.	54 cm^2
4 cm. by 15 cm.	36 cm^2
9 cm. by 12 cm.	42 cm^2

Lesson 7:   More Work on Finding the Area of a Triangle

Individual Application
Calculate the missing height of these triangles.

1.   Area = 16 cm^2, base = 4 cm.   height = ?
2.   Area = 20 cm^2, base = 8 cm.   height = ?
3.   Area = 32 cm^2, base = 16 cm.   height = ?
4.   Area = 54 cm^2, base = 12 cm.   height = ?

Additional Exercise
Solve these problems.

1.   A triangular board has an area of $7\frac{1}{2}$ m^2 and a height of 5m., what is its base?

2.   A garden in the form of a triangle has a base of 7m. and a height of 8m. Calculate its area.

3.   One side of the roof is triangular. Find its area when the base is 4m. and the height is 5m.

4.   A triangular field has an area of 48m^2. Find the base when the height is 8m.

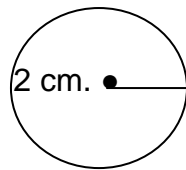## Lesson 8:   Finding the Area of a Circle

Group Work

Your teacher will give you a circular-faced object, a chart and rulers. Use the circular object to draw circles on a chart. Measure the radius or diameter. Write the steps in calculating the area of the circle. Then display your work for membersof the other groups to check.
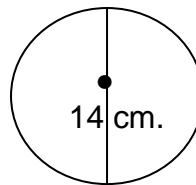
Individual Application

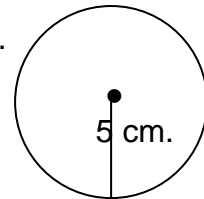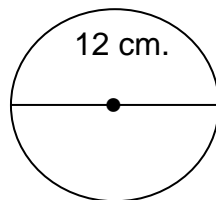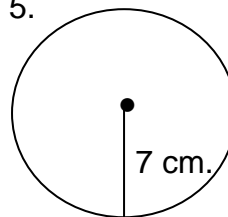Calculate the area of these circles. (Use $\pi = \frac{22}{7}$)

1.

2 cm.

2.

14 cm.

3.

5 cm.

4.

12 cm.

5.

7 cm.

Additional Exercise

Solve these problems. Use $\pi = \frac{22}{7}$

1. A milk tin has a circular base. It has a radius of 7 cm. What is its area?
2. The top of a kerosene drum has a diameter of 56 cm. What is its area?
3. The circular base of a circular tank has a radius of 2m. Calculate its area.

Lesson 9:   More Work on Finding the Area of the Circle

Individual Application

Calculate the area of these circles. Use $\pi = 3.1$

1.   r = 5 cm   4.   d = 14 cm

2.   r = 6 cm   5.   r = 9 cm

3.   d = 8 cm

Additional Exercise

Write **True** or **False**.

1.   A circle with an area of 12.56 cm^2 has a radius of 2 cm. (Use π = 3.14)
2.   The formula for finding the area of a circle is $2\pi r^2$.
3.   A circle with a diameter of 14 cm has an area of 308 cm^2.
4. r^2 means r + r.
5.   The value of π is not exact, but approximated.
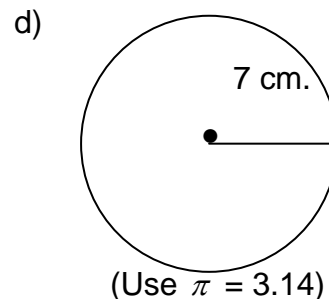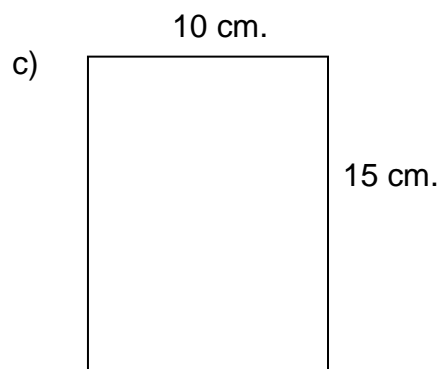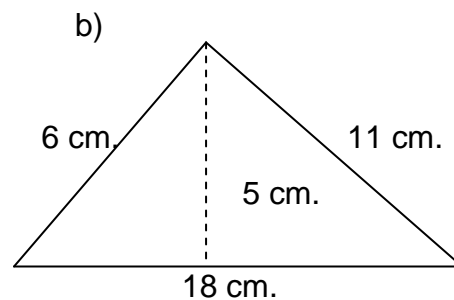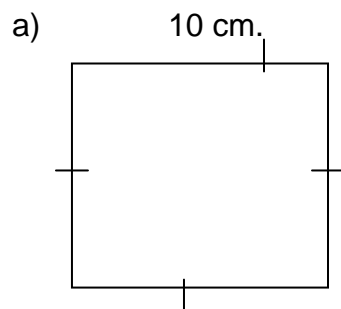
Lesson 10:   Assessment

Group Work

Find any triangular-faced object in the classroom.
Work together to find the area using the two formulae you have been given.

Individual Application

1.   Calculate the perimeter of the shapes below. Use the formulae you have studied in previous lessons.

a)   10 cm.

b)

6 cm   11 cm.

5 cm.

18 cm.

10 cm.

c)

15 cm.

d)

7 cm.

(Use π = 3.14)

2. Calculate the missing length of these shapes. Use the method from previous lessons.

a) Rectangle: A = 84 cm^2 b)   Square: A = 144 cm^2
  B = 7 cm   S = ?
  L = ?

c) Rectangle: A = 73.6 cm^2 d)   Square: A = 169 cm^2
  B = 8 cm   S = ?
  L = ?

3. Solve these problems.

a) A rectangular field has a length of 24 m. and a width of 18 m. What is its area?

b) A triangular banana plantation has a base of 15 m and a height of 12 m. What is its area?

c) A square board has sides of 14 cm. Calculate its area.

d) The table top has an area of 6 m^2. Find its length when its breadth is 2 m.

4. Find the area of these triangles.

a) B = 8 cm.
   H = 6 cm.

b) B = 9 cm.
   H = 7 cm.

c) B = 12 cm.
   H = 9 cm.

d) B = 13 cm.
   H = 10 cm.

5. Calculate the area of these circles. Use π = 3.1

a) R = 4 cm.
b) D = 10 cm.
c) R = 9 cm.
d) D = 20 cm.

6. Match the measurements in column A with the correct area in column B.

A	B
12 cm. by 9 cm.	169 cm^2
B = 10 cm., H = 14 cm.	314 cm^2
13^2	108 cm^2
π = 3.14, R = 10 cm.	104 cm^2
B = 13 cm., H = 16 cm.	70 cm^2