THINKING MATHEMATICS 2B

Consultants:
Prof. Foong Pui Yee • Dr. Fan Liang Huo

Authors:
Foong Pui Lin (BSc., Dip. Ed.) • Chong Yee Lin (BSc.)

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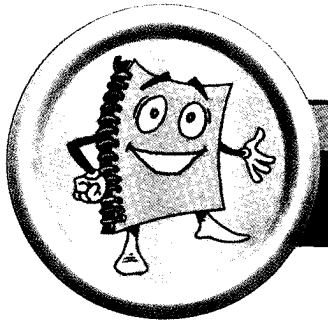


PREFACE

The *Thinking Mathematics* series is based on the latest primary mathematics syllabus. In this series, the concrete-pictorial-abstract format is used to introduce new concepts. The spiral approach is used throughout the series to consolidate and link mathematical concepts.

The series comprises textbooks and workbooks at each level. Textbook 2B comprises 7 units. Each unit is prefaced by a relevant situation from daily life and followed through with the following sections:

Do You Know? Relevant, *thought-provoking* questions are asked with regard to the real life situation presented at the beginning of each unit to *link mathematics and daily life.*

Let's Learn New concepts are explained in a straight-forward and interesting way. *Creative* and *critical thinking,* as well as *an awareness of problem-solving strategy* are developed through worked examples in this section.

Let's Try Guided sums are provided to confirm and consolidate the concepts taught.

Practice Exercises involving *critical* and *creative thinking* are provided to encourage pupils to look for alternative strategies in problem-solving and thus help them grow into *independent and active learners.*

In-Class Activity Active participation from pupils and creative *application of mathematics to daily life,* including *IT* and hands-on activities, helps to develop lifelong learners. Cooperation and team spirit are encouraged through *group and pair work.*

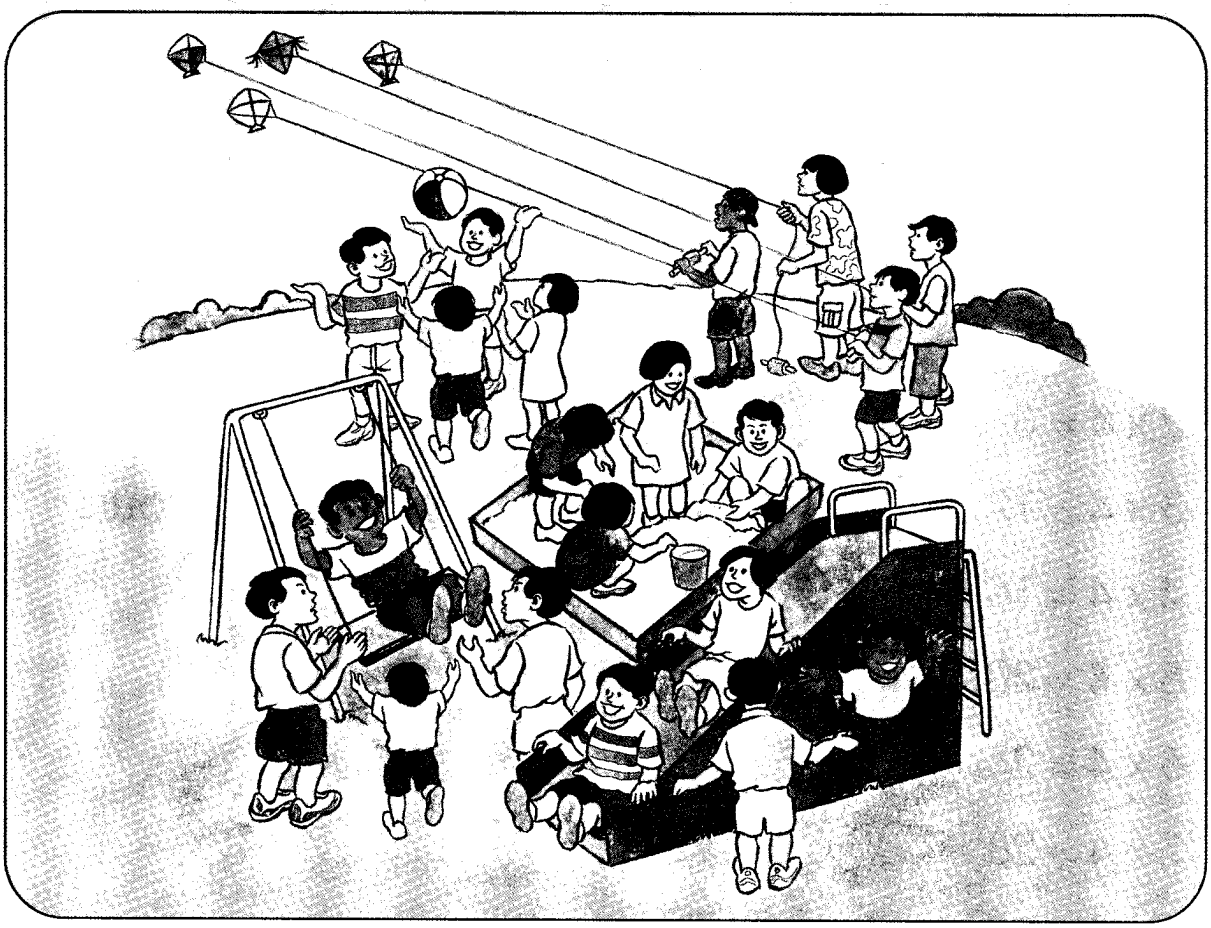
Fun With Maths Mathematical concepts are extended beyond the boundaries of the classroom and brought into the realm of exploration and experiment to further engage and develop the pupil's interest in mathematics.

Other features of this series include:

National Education This is integrated, whenever applicable, into the series to promote a sense of nationality in the pupils.

Revision Exercises are provided to assist pupils in reviewing the concepts and skills learnt as part of examination preparation.

MULTIPLICATION AND DIVISION II



Do You Know?

How many groups of children are there altogether?

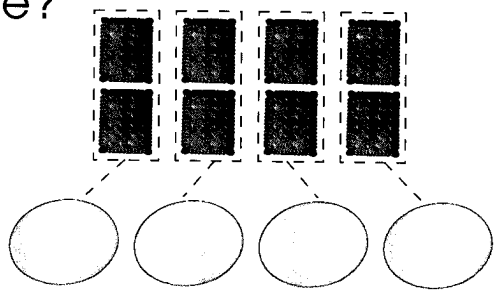
How many children are there in a group?

Division

Maria puts 8 cookies on 4 plates equally. How many cookies are there on each plate?

We divide 8 by 4 :

$$8 \div 4 = 2$$



There are 2 cookies on each plate.

IN-CLASS ACTIVITY

Can you count on in fours?
Get ten chairs in your classroom and count the legs.

1 chair has 4 legs: **4 x 1= 4**
2 chairs have 8 legs: **4 x 2 = 8**
3 chairs have 12 legs: **4 x 3 = 12**

Use the chairs to write the multiplication table of four and present it in class.

4 x 1= 4	

How many chairs are there if 40 legs are counted?

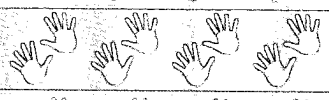
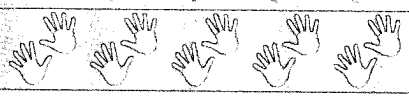
Let's Learn

Multiplication and division by 5

Multiplication

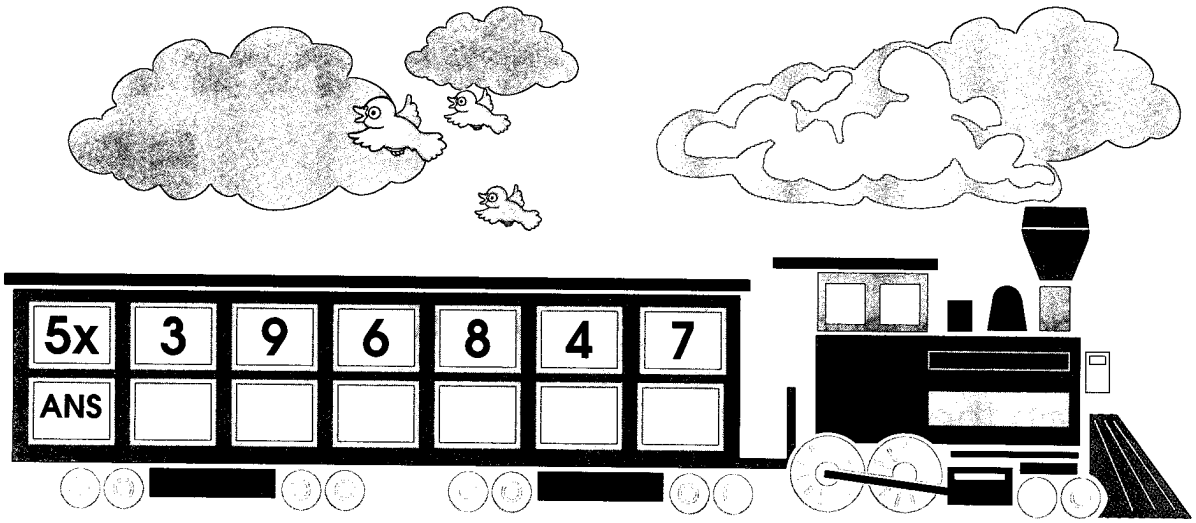
There are 5 fingers on 1 hand.

How many fingers are there on 2 hands?
How many fingers are there on 5 hands?
Use the multiplication table of 5 to find your answer.

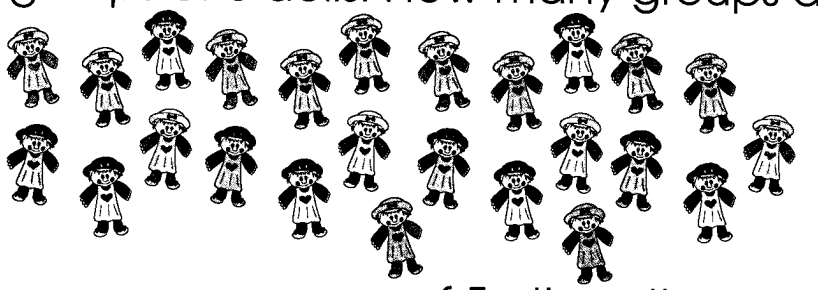
Multiplication Table of 5		**We Say**
1 x 5 = 5		1 five
2 x 5 = 10		2 fives
3 x 5 = 15		3 fives
4 x 5 = 20		
5 x 5 = 25		
6 x 5 = 30		
7 x 5 = 35		
8 x 5 = 40		
9 x 5 = 45		
10 x 5 = 50		

Let's Try

1. Complete the following table:



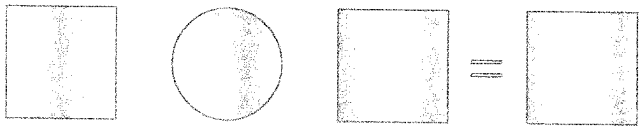
2. Circle groups of 5 dolls. How many groups are there?



There are _____ groups of 5 altogether.

Practice 1B

1. Share these balloons equally among 5 children.
How many balloons does each child get?



Each child gets _____ balloons.

Let's Learn

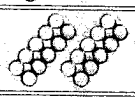
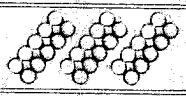
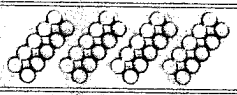
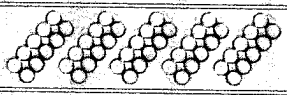
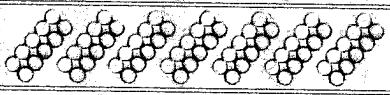
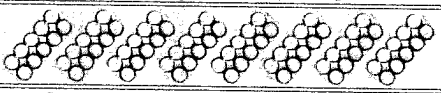
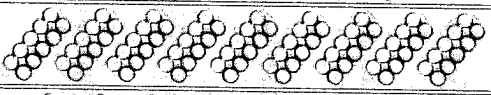
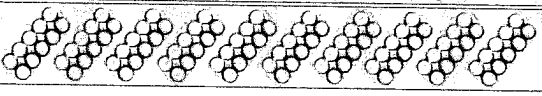
Multiplication and division by 10

Multiplication

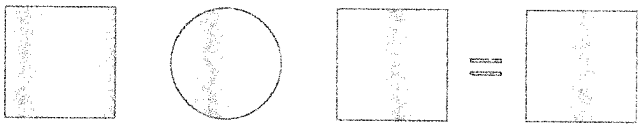
There are 10 eggs in 1 packet.

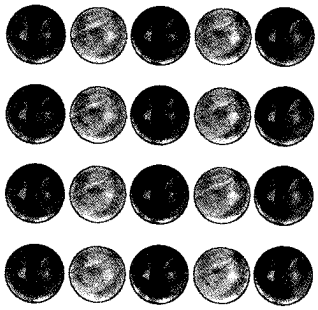
How many eggs are there in 2 packets?
How many eggs are there in 5 packets?
Use the multiplication table of 10 to find your answer.

Multiplication Table of 10

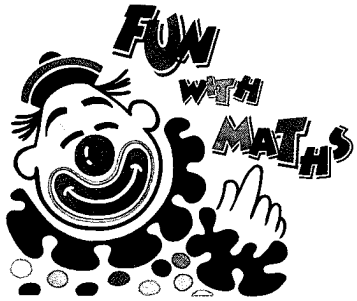
		We Say
1 x 10 = 10		1 ten
2 x 10 = 20		2 tens
3 x 10 = 30		3 tens
4 x 10 = 40		
5 x 10 = 50		
6 x 10 = 60		
7 x 10 = 70		
8 x 10 = 80		
9 x 10 = 90		
10 x 10 = 100		

2. Tom and his brother share 20 marbles equally between them. How many marbles does each of them get?

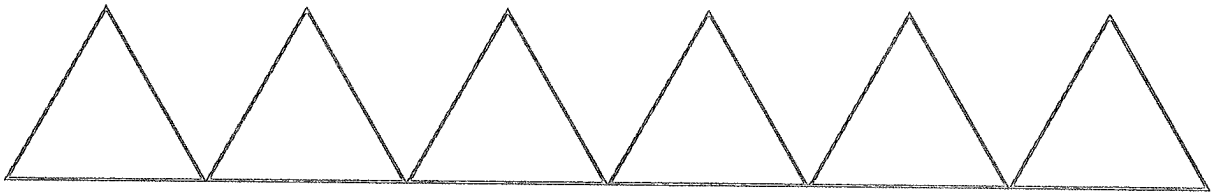




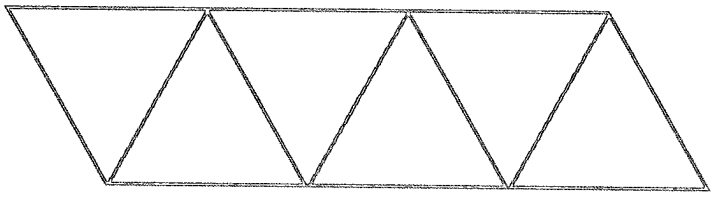
Each of them gets _____ marbles.



How many toothpicks do you need to make this pattern?

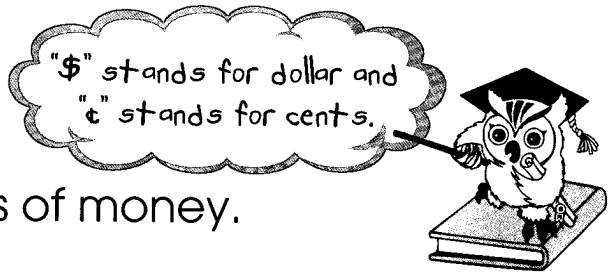


No. of triangles	1	2	3	4	5	6
No. of toothpicks						



Let's Learn

Dollars and cents



Dollars and cents are units of money.

1 dollar is equal to 100 cents.

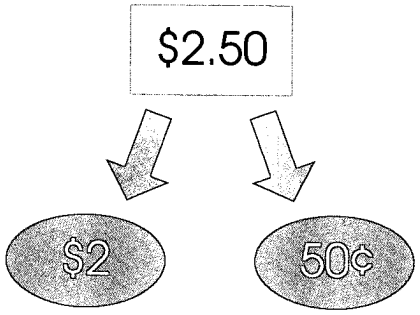
We write: 5¢ or $0.05
We say: "five cents"
or "a nickel"

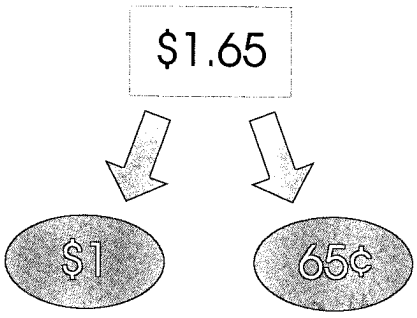
We write: 25¢ or $0.25
We say: "twenty-five cents"
or "a quarter"

We write: $1.00
We say: "one dollar"

We write: $5.00
We say: "five dollars"

The dot(.) separates the cents from the dollars.



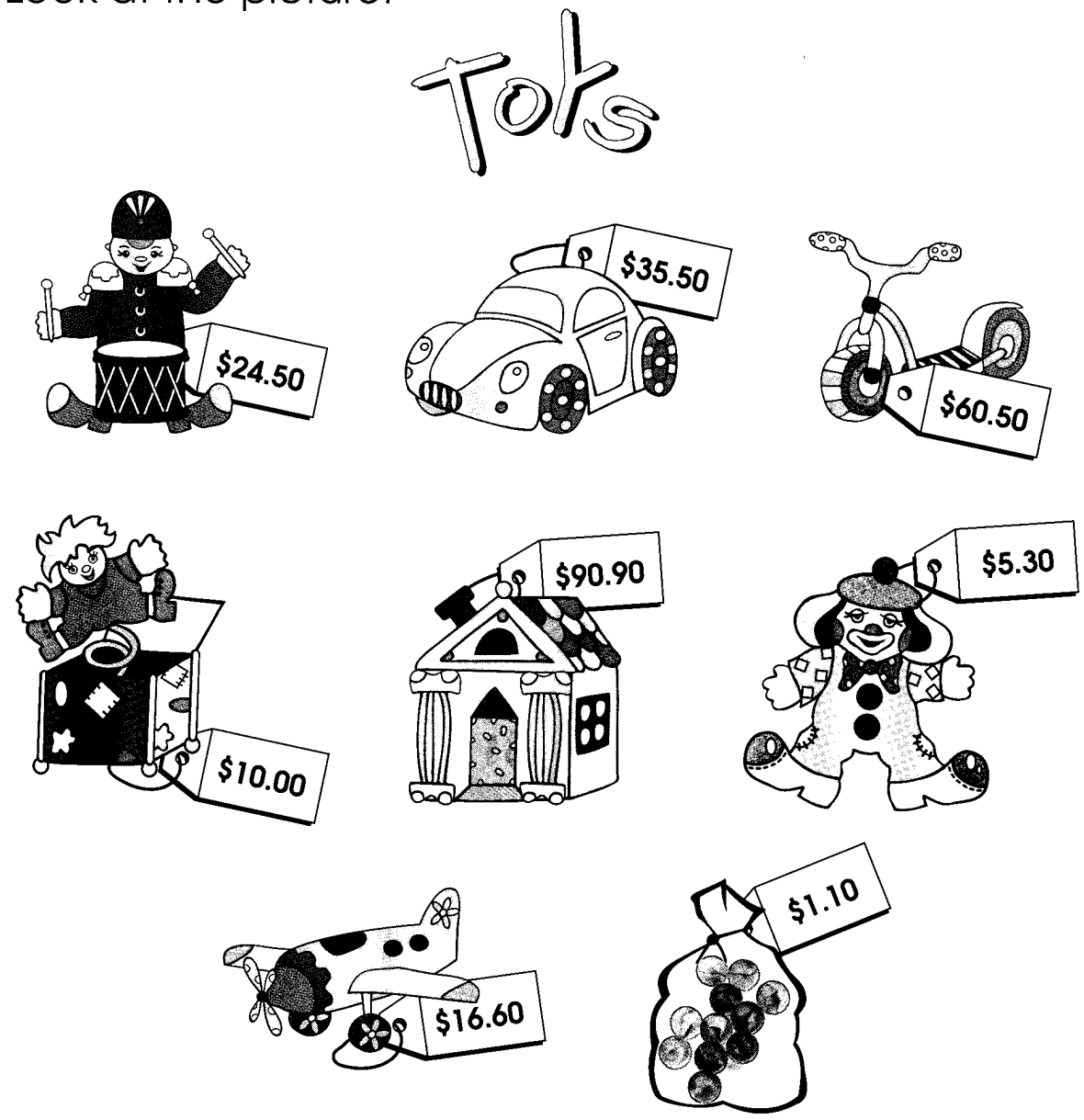


We write two dollars and fifty cents as $2.50.

We write one dollar and sixty-five cents as $1.65.

IN-CLASS ACTIVITY

Look at the picture.



Get into your groups.
Choose any 3 toys that your group would like to buy.
Tell the class what your group has chosen and the cost of each of the toys.

3. Circle the largest amount of money.

a) $1.20 $2.10 $1.10

b) $67.50 $50.80 $77.00

Let's Learn

Adding money

$2.00 + $0.50 = $2.50

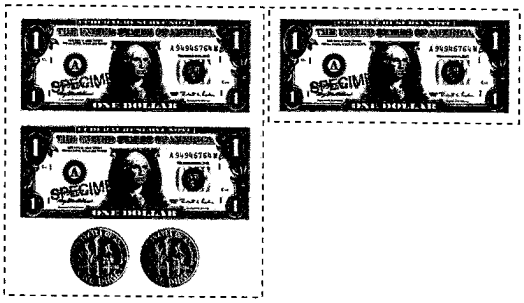
IN-CLASS ACTIVITY

Collect all the coins from your group and and tell the class the amount of money that your group has.

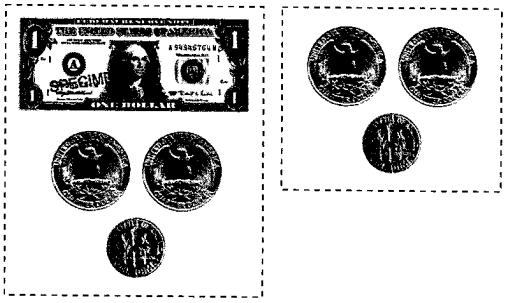
Let's Try

1. Do the following sums.

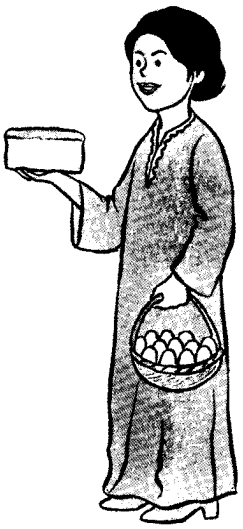
a) $2.20 + $1 = _____



b) $1.60 + $0.60 = _____



2. Fatimah bought a dozen eggs for $2.50.
She also bought some bread for $0.90.
How much did Fatimah have to pay in all?



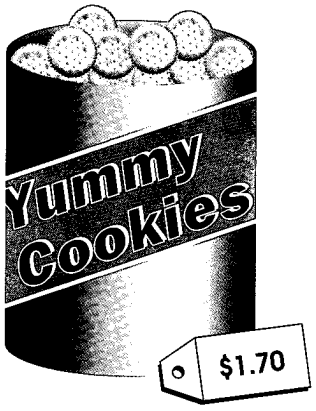
Fatimah paid $_____in all.

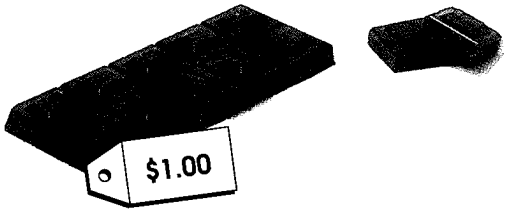
b) Ahmed has four quarters and three dimes in his pocket. How much money does he have in all?

Ahmed has _____ in all.

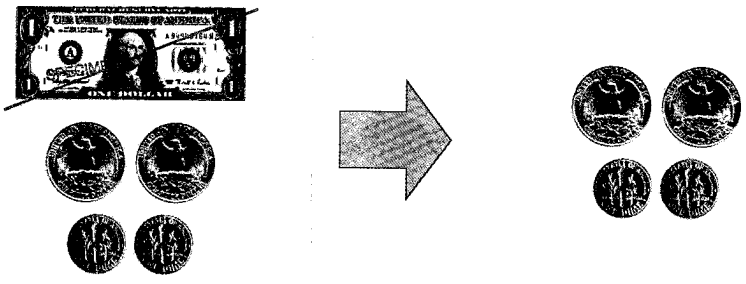
Let's Learn

Subtracting money





The cookies cost more than the chocolate.

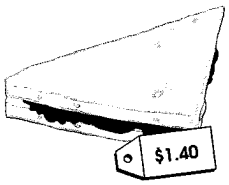


$\$1.70 - \$1.00 = \$0.70$

Let's Learn

Getting change

LUNCH MENU



John bought a cup of coffee. How much change did he receive?

Method 1:

How much money must be added to 60¢ to make $1.00?

$0.60 + _____ = $1.00

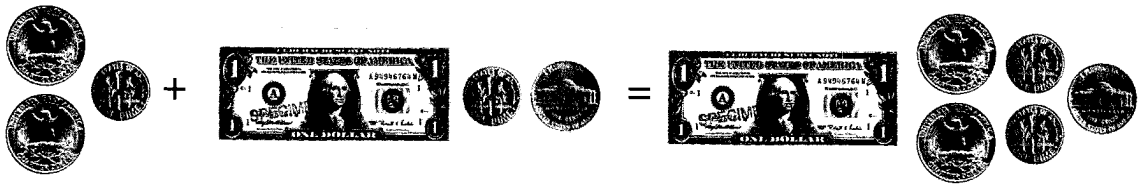
Method 2:

How much money is left when 60¢ is taken away from $1.00?

$1.00 - $0.60 = $0.40

Let's Try

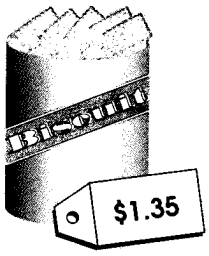
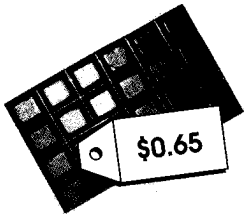
1. Mary has $1.75.
She buys a sandwich for 60¢.
How much change did she receive?



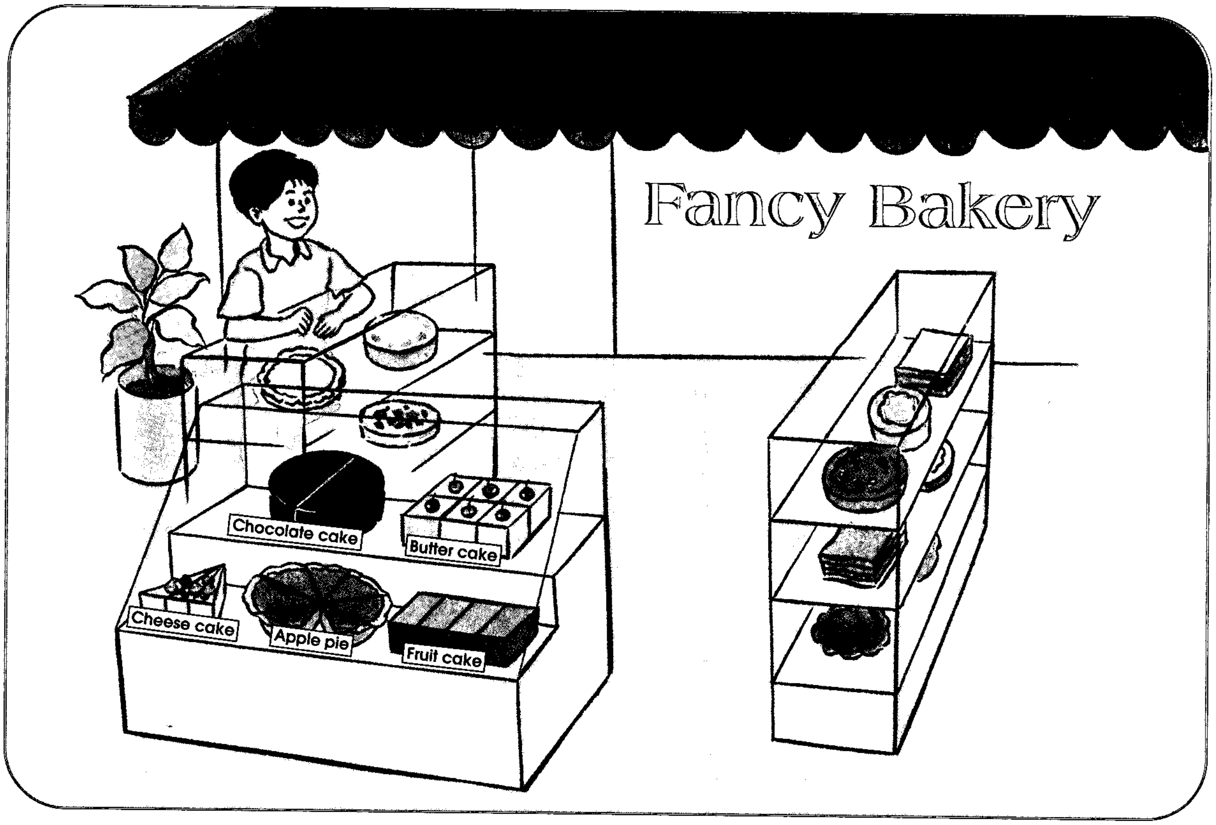
She received_____ in change.

Can you solve this problem using other methods?

2. Complete the table.

Bought	Paid	Change
		_____
		_____
		_____

FRACTIONS



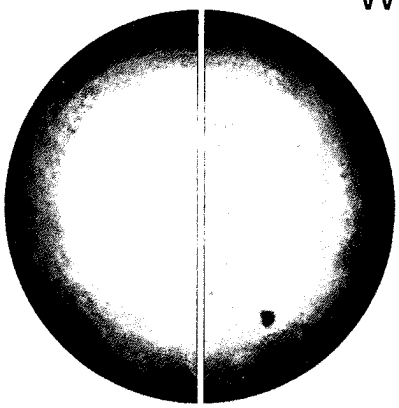
Do You Know?

How many equal parts is the chocolate cake cut into?

How many equal parts is the fruit cake cut into?

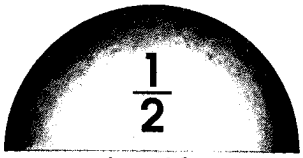
The egg tart is cut into **2** equal parts.
Each part is **half** of the whole egg tart.

We write this as:



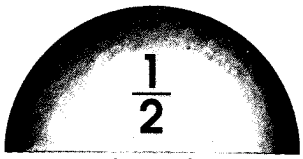
Number of equal parts we want to have. ⟶ **1**

Number of equal parts altogether. ⟶ **2**



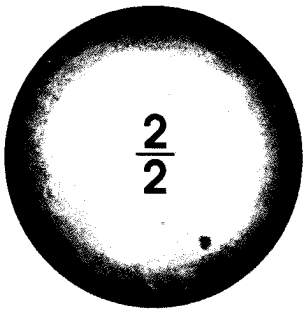
$\frac{1}{2}$ half

and



$\frac{1}{2}$ half

is



$\frac{2}{2}$ 1 whole

$\frac{1}{2}$ is 1 out of 2 equal parts.

$\frac{1}{3}$	$\frac{1}{3}$	$\frac{1}{3}$

A rectangle is cut into **3** equal parts.
Each piece is a **third** of the whole.

We write this as $\frac{1}{3}$.

$\frac{1}{3}$	and	$\frac{1}{3}$	and	$\frac{1}{3}$	is	$\frac{3}{3}$

1 whole

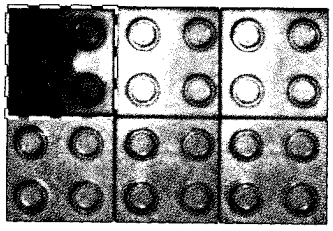
Fraction Chart

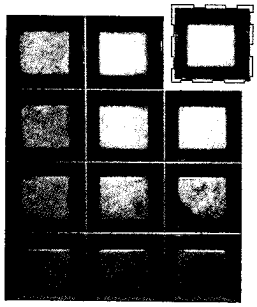
Fraction	Ways of Folding
1 whole	
half	
third	
quarter	

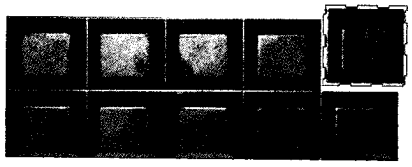
Compare your chart with your classmates. Did they fold the papers in the same way?

Let's Try

Look at the following figures.
Can you tell the fraction of each dotted part?

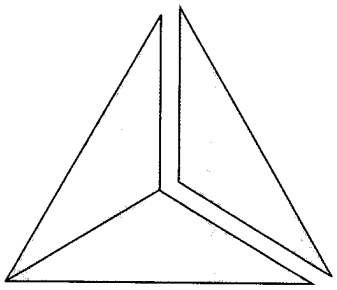
(1) 

(2) 

(3) 

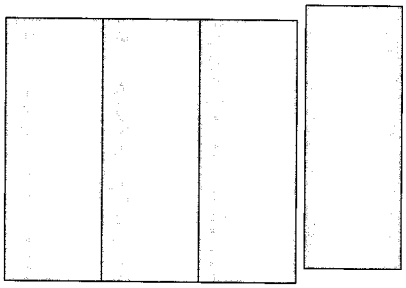
5. Complete the following.

(a)



$\frac{2}{3}$ and $\frac{\square}{3}$ make $\frac{3}{3}$.

(b)



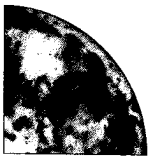
$\frac{1}{4}$ and $\frac{\square}{4}$ make 1 whole.

Let's Learn

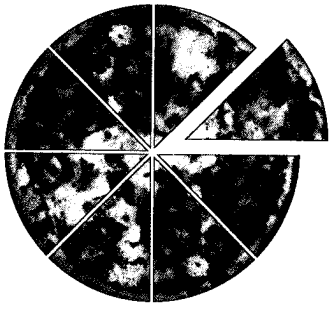
Comparing and ordering fractions

$\frac{1}{2}$ of a pizza

is greater than



$\frac{1}{4}$ of a pizza

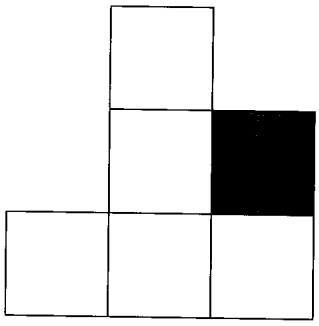


Is $\frac{1}{8}$ of the pizza bigger or smaller than $\frac{1}{4}$ of the pizza?

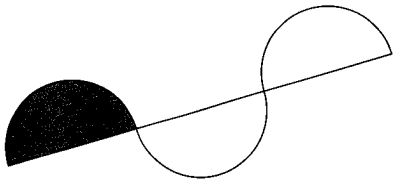
Let's Try

1. Can you say what fraction of each figure is shaded?

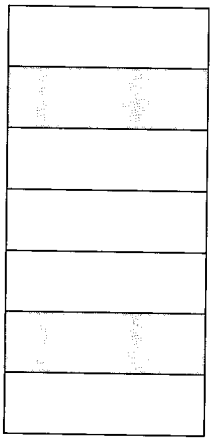
a)



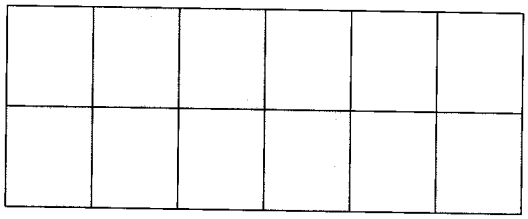
b)



c)



d)



2. Look at the following fractions.
Arrange them in order from the smallest to the largest.

a)

$\frac{1}{2}$ $\frac{1}{2}$

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

$\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$ $\frac{1}{5}$

_____, _____, _____
smallest

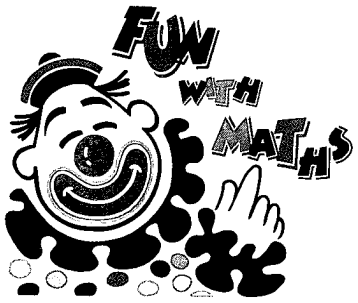
b)

$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$

$\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$

$\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$ $\frac{1}{9}$

_____, _____, _____
smallest



Try to draw this 'Fraction City' using the computer.
The instructions are given below.

Fraction City

Start 'Microsoft Word' on your computer and open a new document.

2. Click 'Table'.
3. Click 'Insert Table'.
4. For 'number of columns' choose '1'.
5. For 'number of rows' choose '10'.
6. Click 'OK'.

The Table is drawn by the computer!

7. Use the mouse to move over the second row.
8. Click on the second row.
9. Click 'Table'.
10. Click 'split cells'.
11. For 'number of columns' choose '2'
12. Click 'OK'

The row is divided into 2 parts!

13. Use 'split cells' for the remaining rows and try to divide each row into different parts. Choose the number of columns that you want .

My Fraction City

3. Fill in the blanks.

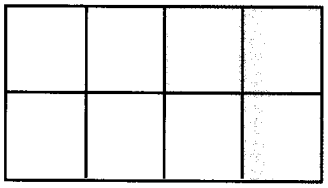
a) 188 cents = $_____

b) \$2.30 = _____ dollars _____ cents

c) 5 dollars 55 cents = $_____

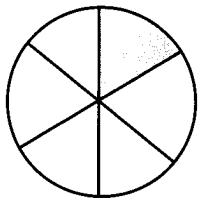
d) \$7.68 = _____ cents

4. Fill in box A with the fraction of the figures that is shaded. Fill in box B with the number of equal parts of each figure.



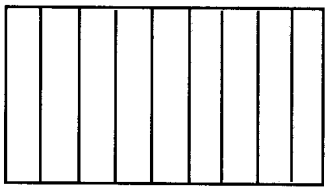
A

B



A

B



A

B

Exercise 2

5. Do the following problems.

a) 4 boys caught 7 spiders each. Howmany spiders are there altogether?

=

There are _____ spiders altogether.

b) Al puts 50 eggs equally in 5 trays. How many eggs are there in each tray?

=

There are _____ eggs in each tray.

Exercise 3

8. Do the following problems.

a) Don has 3 one dollar notes and 3 quarters. He wants to buy a toy which costs $5.00. How much more money does he need?

He needs _____ more.

b) Ramon spent $4.00. Mel spent $3.60 more than Ramon. How much did Mel spend ?

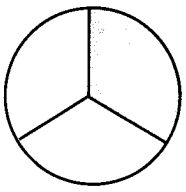
He spent _____ .

9. The box of soda is 5 times as heavy as the watermelon. The watermelon weighs 3 kg. How much does the box of soda weigh?

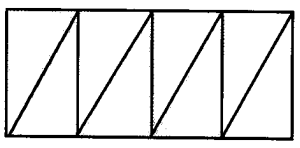
□ ○ □ = □

The box of soda weighs _____.

10. Fill in the blanks.

a) 

$\frac{2}{3}$ and _____ make 1 whole.

b) 

Take away $\frac{3}{8}$ from 1 whole and _____ is left.

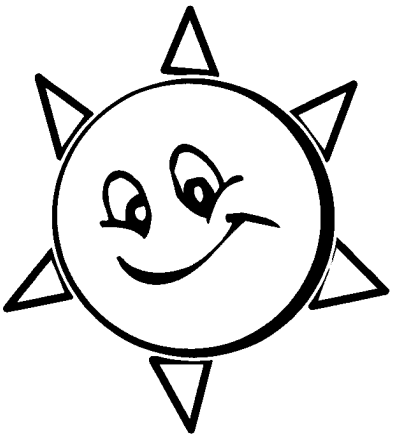
Let's Learn

a.m. and p.m.

When it is exactly mid-day, we say it is '12 noon'.

'a.m.' means '**before noon**'.

'p.m.' means '**after noon**'.



Let's Try

1. Complete the table.

"a.m." Activities	**"p.m." Activities**
• brushing teeth • • •	• sleeping • • •

2. Fill in the blanks with 'a.m.' or 'p.m.'.

a) Mother arrived home after work at 6 o'clock in the evening. She arrived home at 6.00 _____.

b) Ravi and Tim went jogging in the morning at 7 o'clock. They went jogging at 7.00 _____.

c) Susan went grocery shopping at 2 o'clock in the afternoon. She went grocery shopping at 2.00 _____.

At 6.15 a.m., Mary eats her breakfast.

It is **six fifteen**.
We say that the time is **6.15 in the morning**.
We write it as **6.15 a.m.**

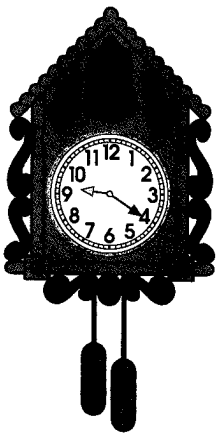
IN-CLASS ACTIVITY

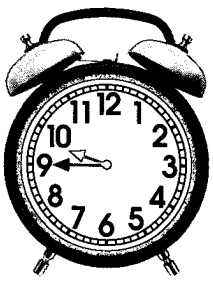
What are the different ways to tell times?
List down as many ways as you can think of.

Then read out the times.

Example:

It is 9.20 a.m.
It is 9.20 in the morning.
It is nine twenty.





It is _____ p.m.

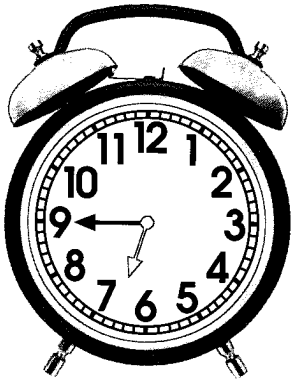
_____

_____

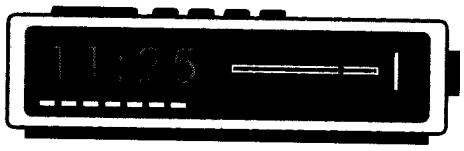
Practice 4A

1. How would you read the times shown?

a)

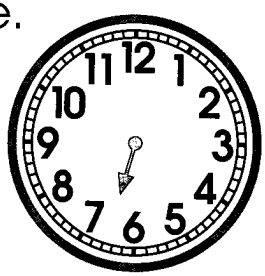


b)

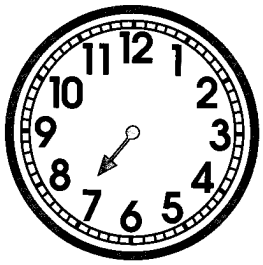


2. Draw the missing hand on the clock face.

a) Felix reaches school at 6.35 a.m.



b) Mr. Wang reaches back home from work at 7.15 p.m.

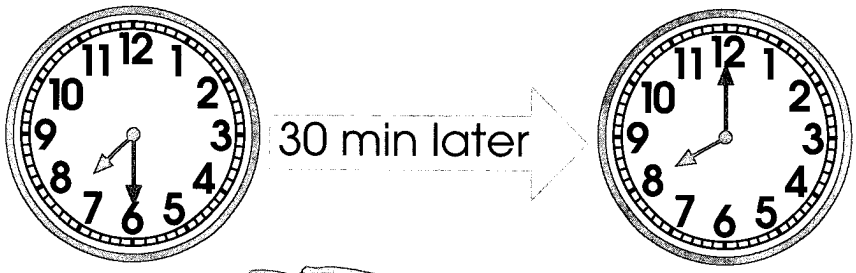


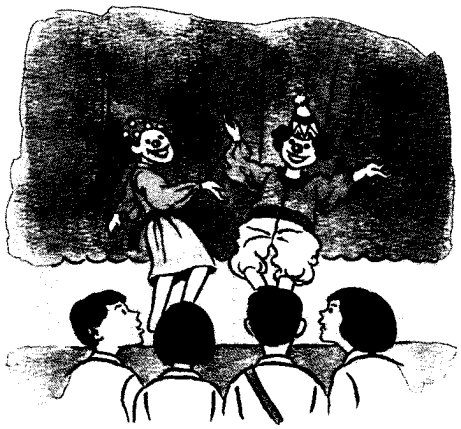
3. Fill in the blanks with a.m. and p.m.

a) Siti finished her homework at 3 o'clock in the afternoon. She finished her homework at 3.00 _____.

b) Sue went to the doctor at half past 10 in the morning. She went to the doctor at 10.30 _____.

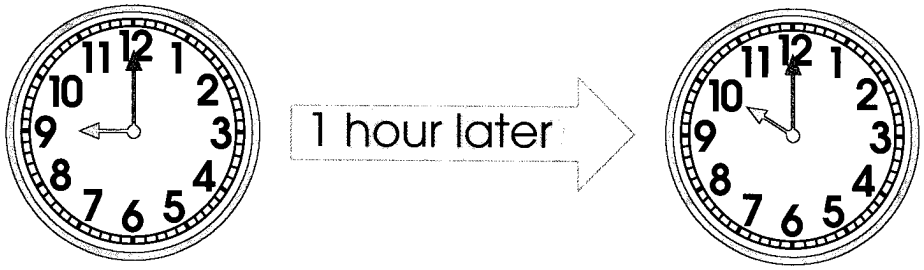
The 'Puppet Show' starts at 7.30 p.m. and ends at 8.00 p.m.





We say 7.30 p.m. is half an hour **before** 8.00 p.m.
8.00 p.m. is half an hour **after** 7.30 p.m.

Mrs. Lee arrived at the market at 9.00 a.m.
By the time she completed marketing, it was 10.00 a.m.

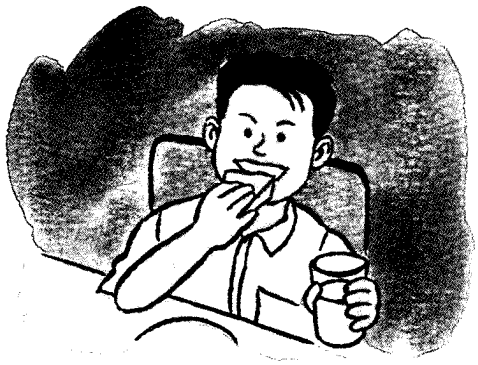


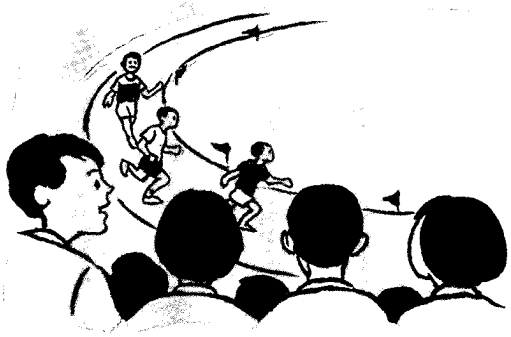
9.00 a.m. is 1 hour **before** 10.00 a.m.
10.00 a.m. is 1 hour **after** 9.00 a.m.

IN-CLASS ACTIVITY

Work in pairs to complete the following.

Look at these activities. Discuss how long they usually take. Put a tick to show whether the activity takes minutes or hours to complete.

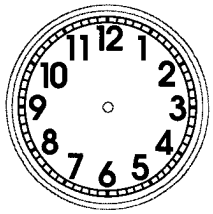




Activity	Activity that takes minutes	Activity that takes hours
Eat a sandwich		
Read one page of a story book		
Attend your school 'Sports Day'		
Have a good night's sleep		

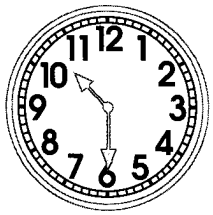
Practice 4B

1. John started his homework at 2.00 p.m. He completed it at 3.00 p.m. Draw the missing hands on the clock to show the time he completed his homework.



John completed his homework at ____ p.m.

2. A computer lesson started at 10 a.m. and ended 30 minutes later. The time is shown on the clock on the right. At what time did the lesson end?



The lesson ended at ____ a.m.

3. Complete the table.

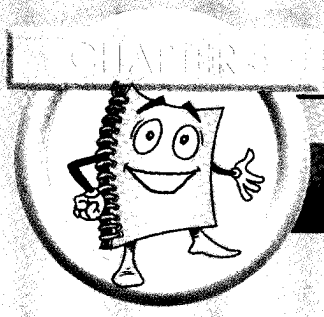
Start		End
10.00 a.m.	30 min later	
12.00 p.m.	30 min later	
8.00 a.m.	1 h later	
2.00 p.m.	1 h later	

4. Fill in the blanks.

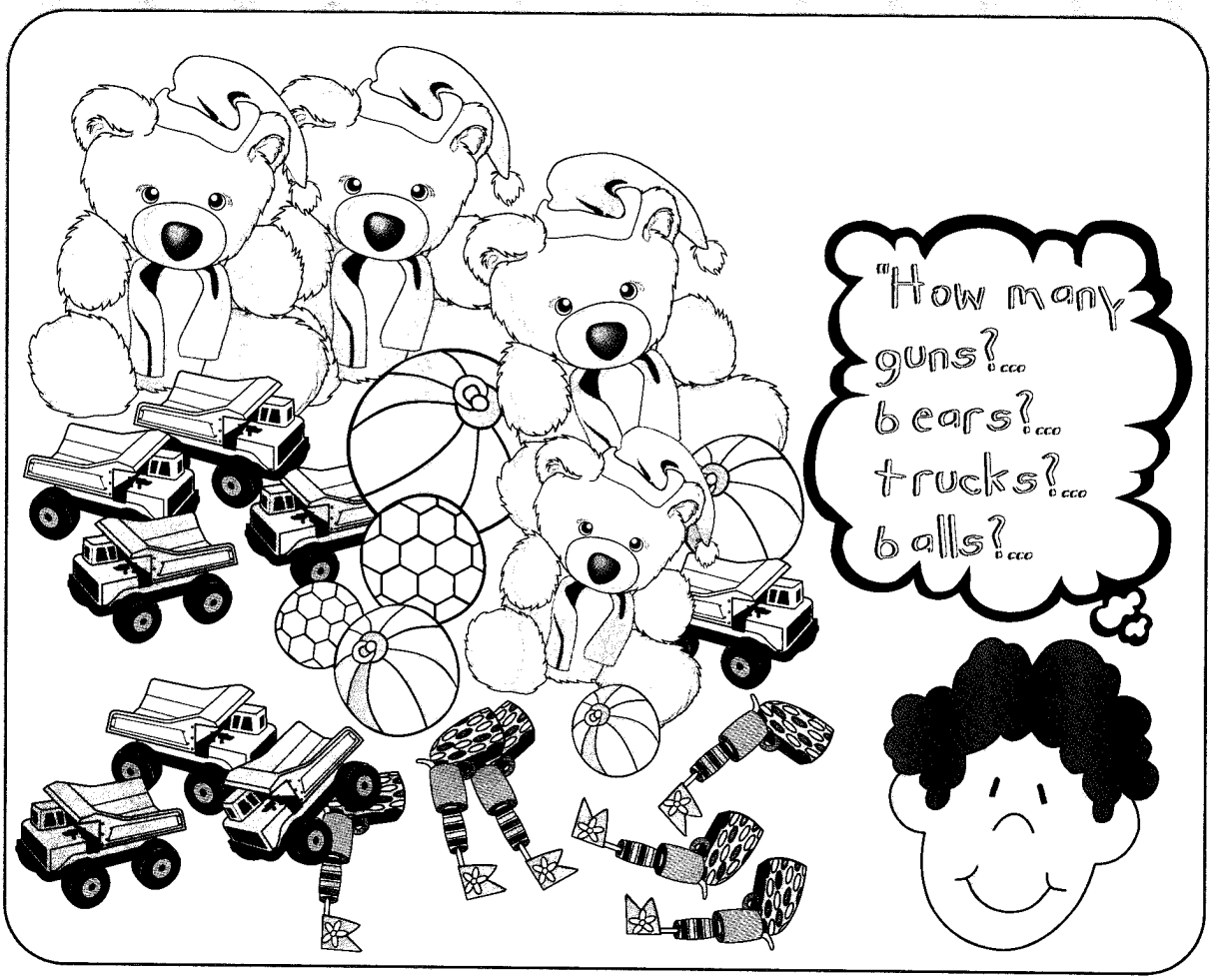
a) 12.30 p.m. is _____ min after 12.00 noon.

b) 2.00 p.m. is_____ h after 1.00 p.m.

c) 10.30 a.m. is_____ min before 11.00 a.m.



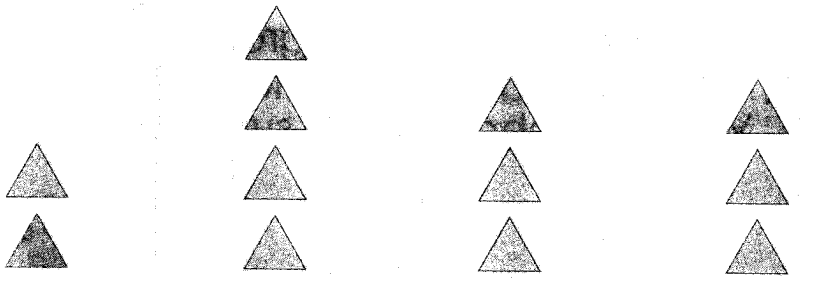
PICTURE GRAPHS



Do You Know?

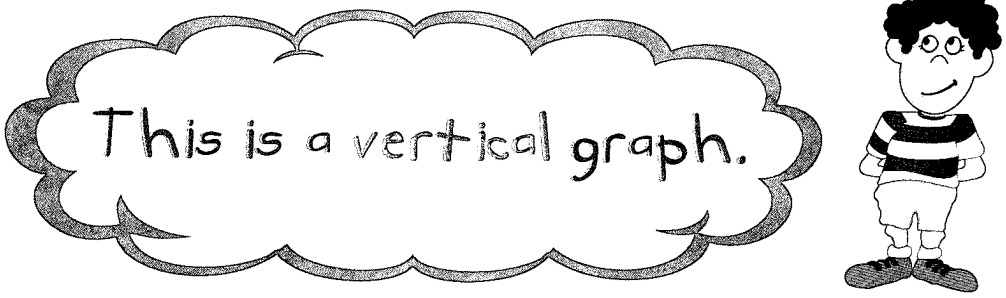
Help Tommy to count each kind of toys.
Can you draw a picture graph to show each kind of toys that Tommy has?

This picture graph shows the number of each kind of toy Tommy has.



Bears Trucks Balls Guns

Each ▲ stands for 2 toy.



Jimmy kept a record of the cups of tea that his family drank on 4 days last week.

Monday ■■■■

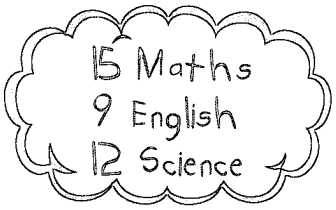
Tuesday ■■■■■

Wednesday ■■

Thursday ■■■■■■

2. Complete the picture graph to show the different kinds of books Kevin has.

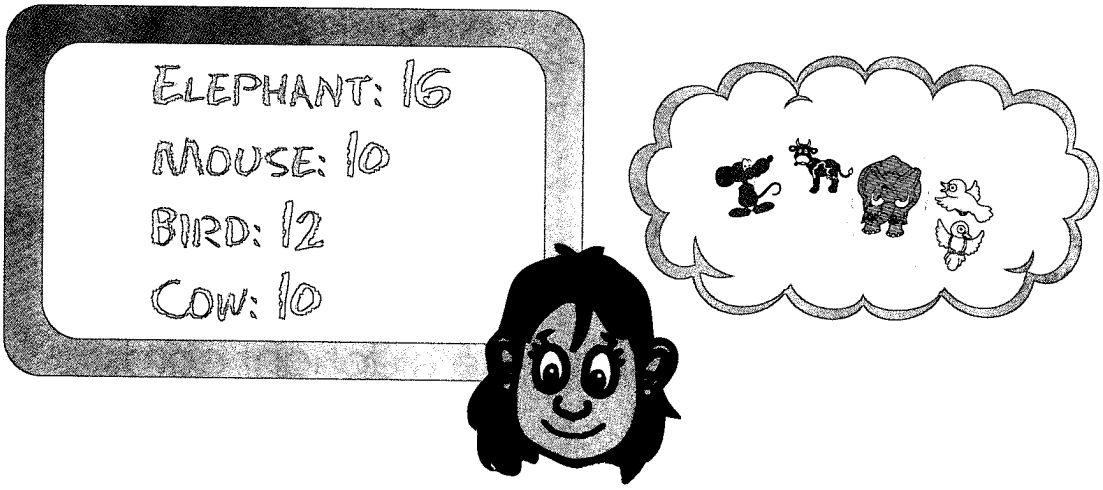
Each( )stands for _____ books.		



Let's Learn

Understanding picture graphs with scales

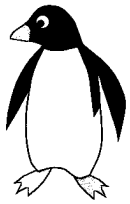
Siti counted her picture cards.



IN-CLASS ACTIVITY

Do you know which of these 3 animals is the favorite in your class?


Tiger


Penguin


Giraffe

Let's make a guess .....

The most popular animal

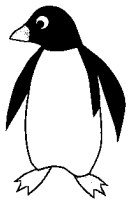
The least popular animal

Tell your teacher what your favorite animal is.

Your teacher will tell you the number of pupils who like tiger, penguin or giraffe.

Write this number in the boxes below.


Tiger


Penguin

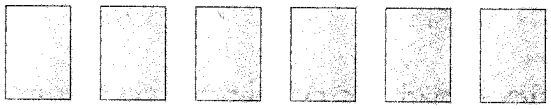
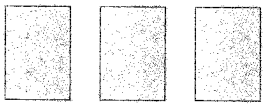
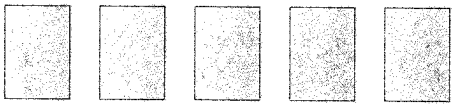
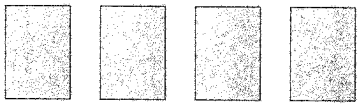

Giraffe

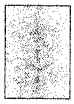
Make a horizontal picture graph with a scale to show your favorite animal.

Why is a picture graph so useful?

Practice 5B

1. This picture graph shows the different kinds of fruits at Mr. Lee's fruit stall.

Apple	
Mango	
Orange	
Watermelon	

Each  **stands for 10 fruits.**

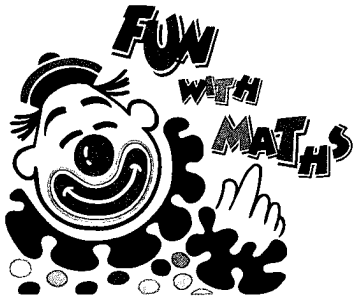
Look at the picture graph and answer the following questions.

(a) How many kinds of fruits are there?

(b) How many more apples than watermelons are there?

(c) How many fewer oranges than apples are there?

(d) How many fruits does Mr. Lee have altogether?



Let's learn to draw graphs on the computer

1. Start the program 'Microsoft Excel' on your computer.

2. Type the following in each cell as shown:

Oranges	8
Bananas	6
Lemons	2

3. Use the mouse to highlight all the cells that you have typed in.

4. Select the 'Chart Wizard' icon at the Toolbar. (Note: It looks like a mini graph).

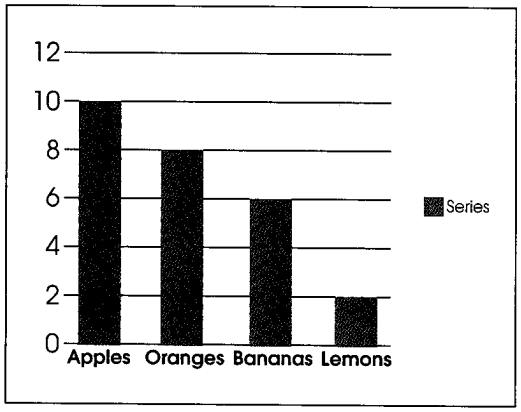
5. Choose 'Column', then select 'Next'.

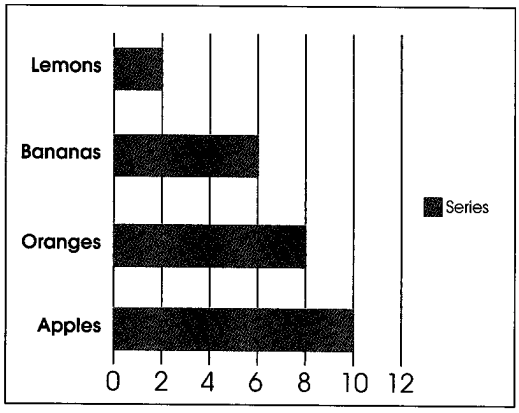
6. Select 'Next', two more times.

7. Then select 'Finish'.

Your vertical column graph is automatically drawn for you!

8. Now, repeat the steps but this time for step 5, choose 'Bar'. You will get a 'Horizontal Bar Graph' drawn for you!

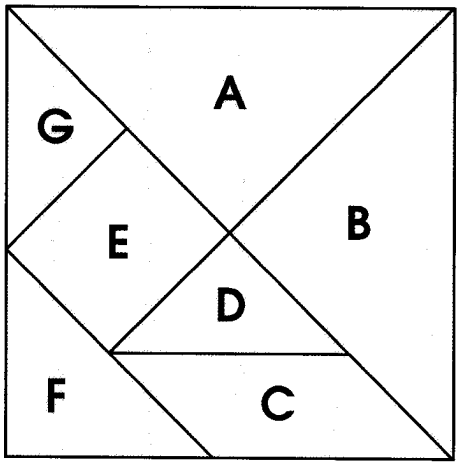




Let's Learn

Making shapes

This is a tangram.

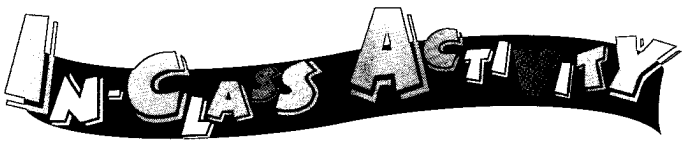


A tangram is made up of different shapes.

What is the shape of the whole tangram?

What are the 3 different shapes that make up the tangram?

_____, _____, _____.

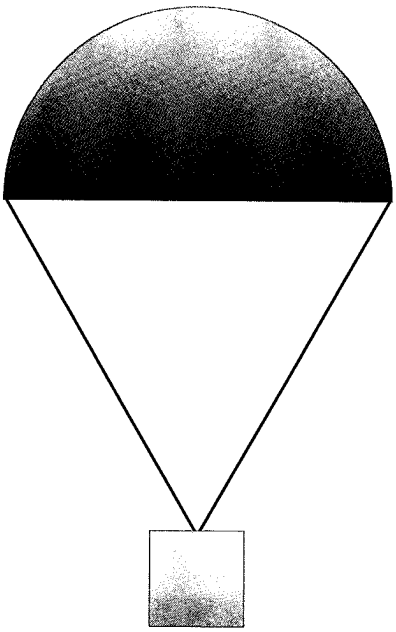


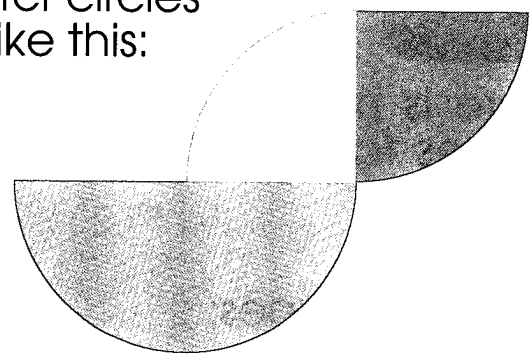
You will be given a tangram. Cut along the lines. Label the different shapes as shown above.

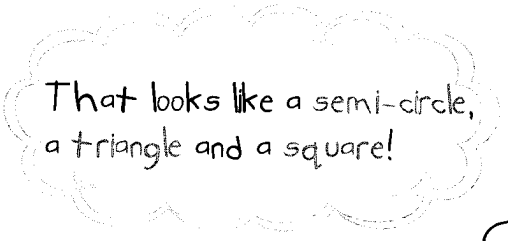
Use two or more pieces of the tangram to form a
a) triangle **b)** square

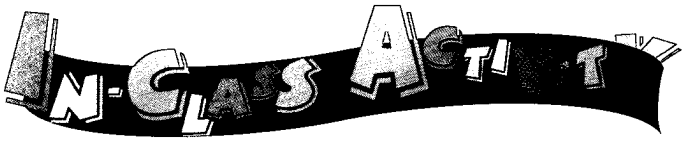
How many ways can you form these shapes?

1 semi-circle and 2 quarter circles can be fitted together like this:



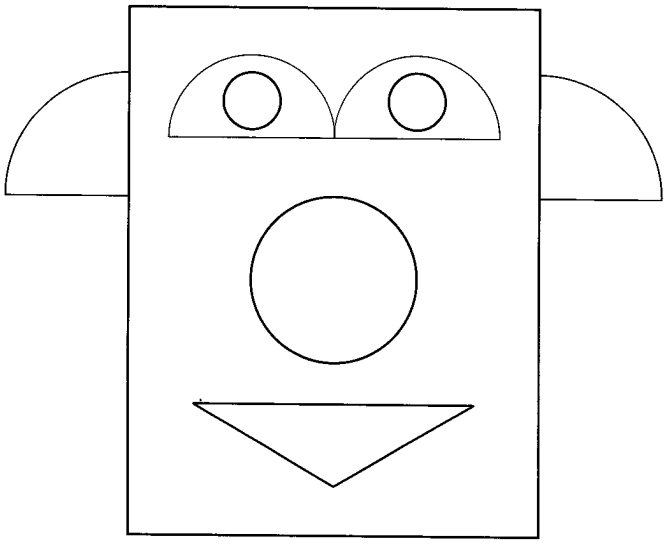






Color as follows:

Semi-circle: Yellow
Quarter circle: Green
Circle: Red
Triangle: Blue

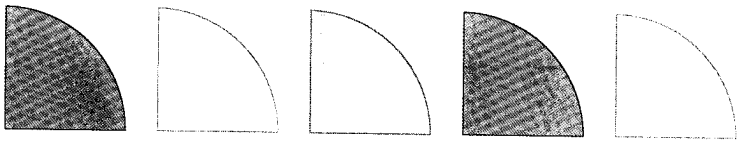


Let's Learn

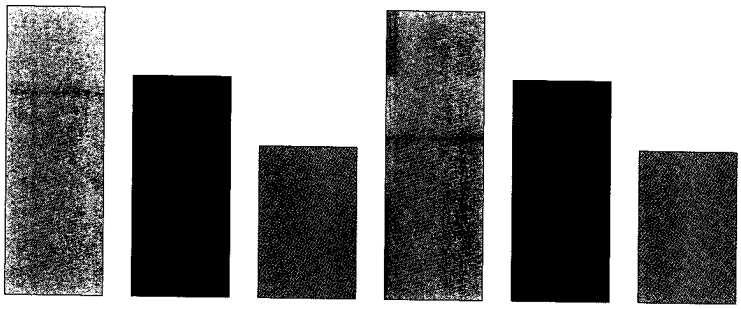
Identify Patterns

Look at these patterns.
What is next?

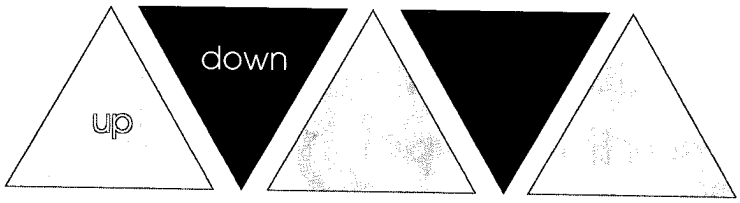
Triangle, (circle) or rectangle?



Green, yellow or pink quarter circle?



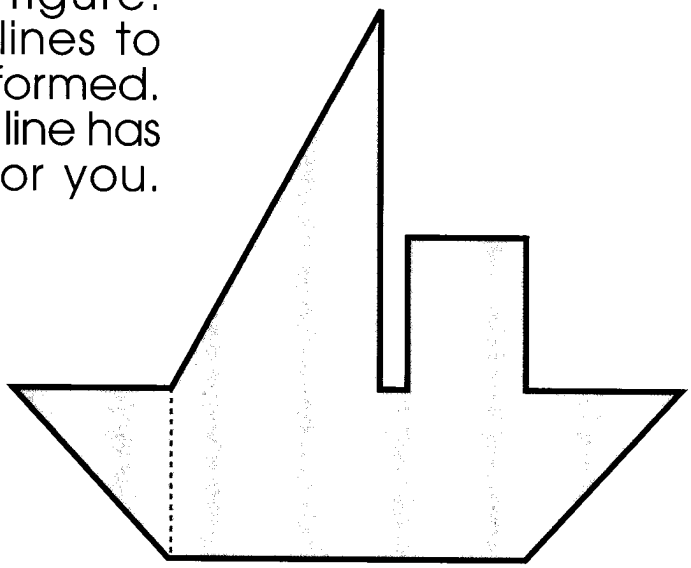
Tallest, tall or short rectangle?



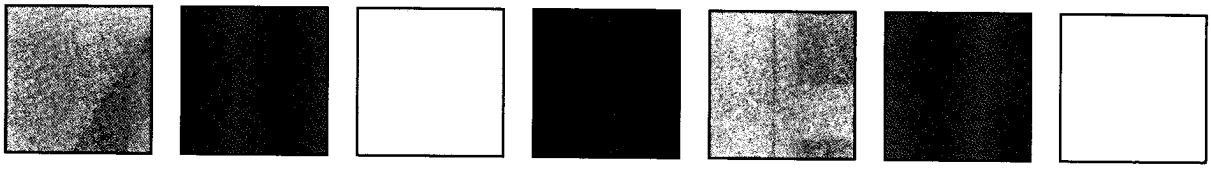
Triangle "up" or triangle "down"?

Practice 6B

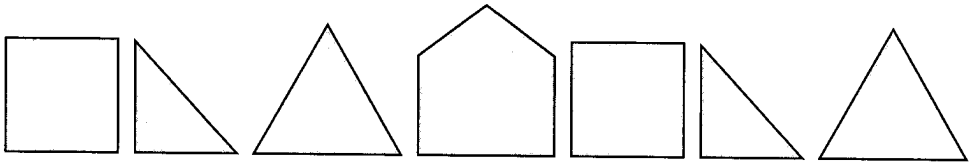
1. Look at this figure. Draw dotted lines to show how it is formed. The first dotted line has been drawn for you.

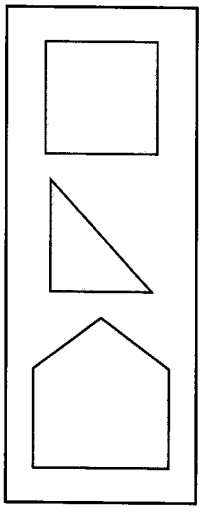


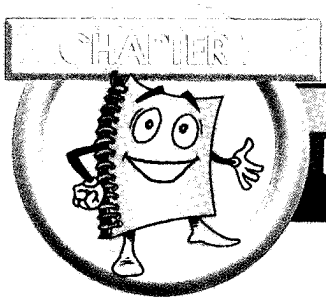
2. Look at the color pattern carefully. Color the object correctly.



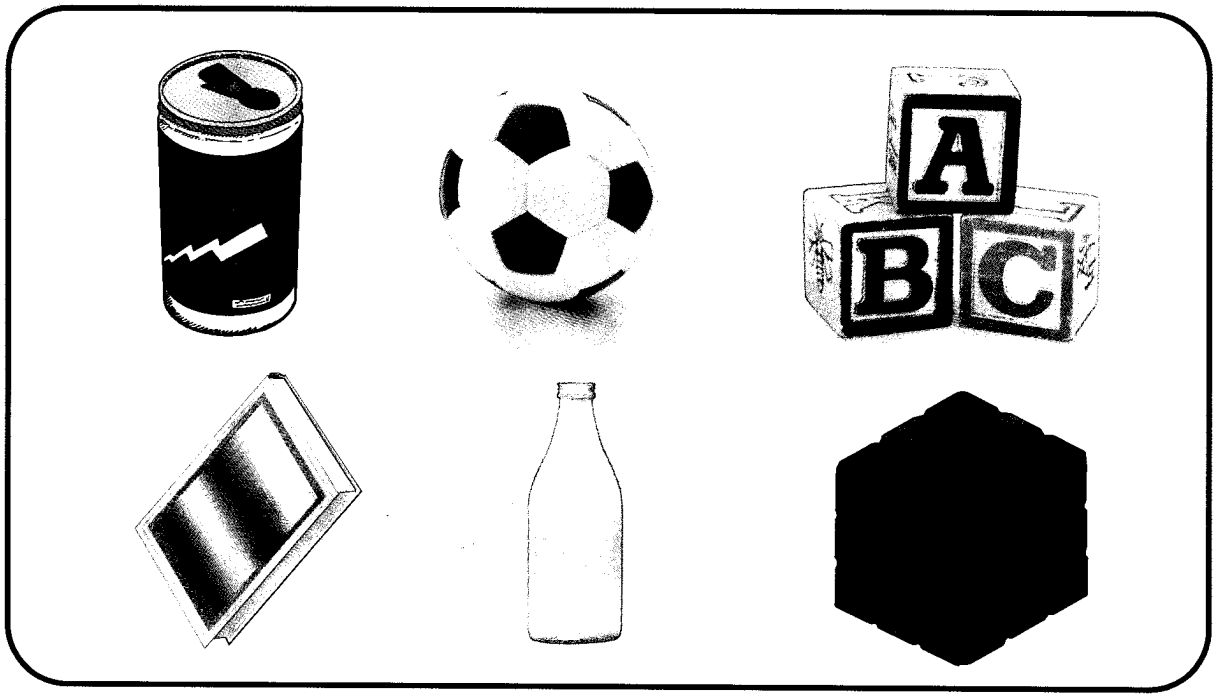
3. Circle the object that comes next.







LINES, CURVES AND SURFACES

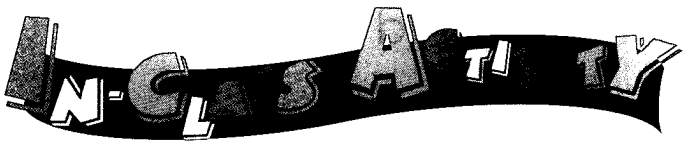


Different things have different shapes and faces.

Do You Know?

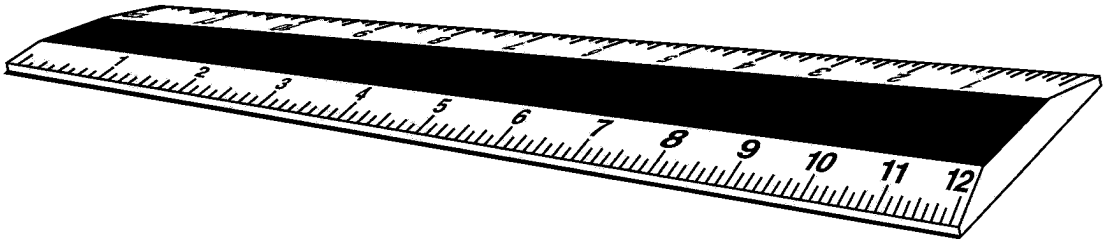
How many faces do you see on each object?

The teacher will show you the faces of each object. What are the shapes of the faces?



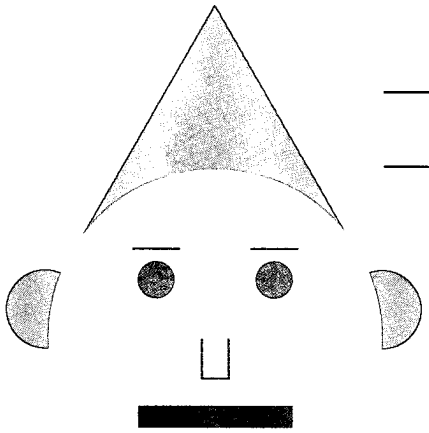
Use a ruler to draw straight lines of the following lengths.

a) 5 cm **b)** 2 cm **c)** 11 cm



Let's Try

Count the number of straight lines and curved lines in the figure shown.



_____ straight lines.

_____ curved lines.

Practice 7A

1. Draw a straight line 12 cm in length.

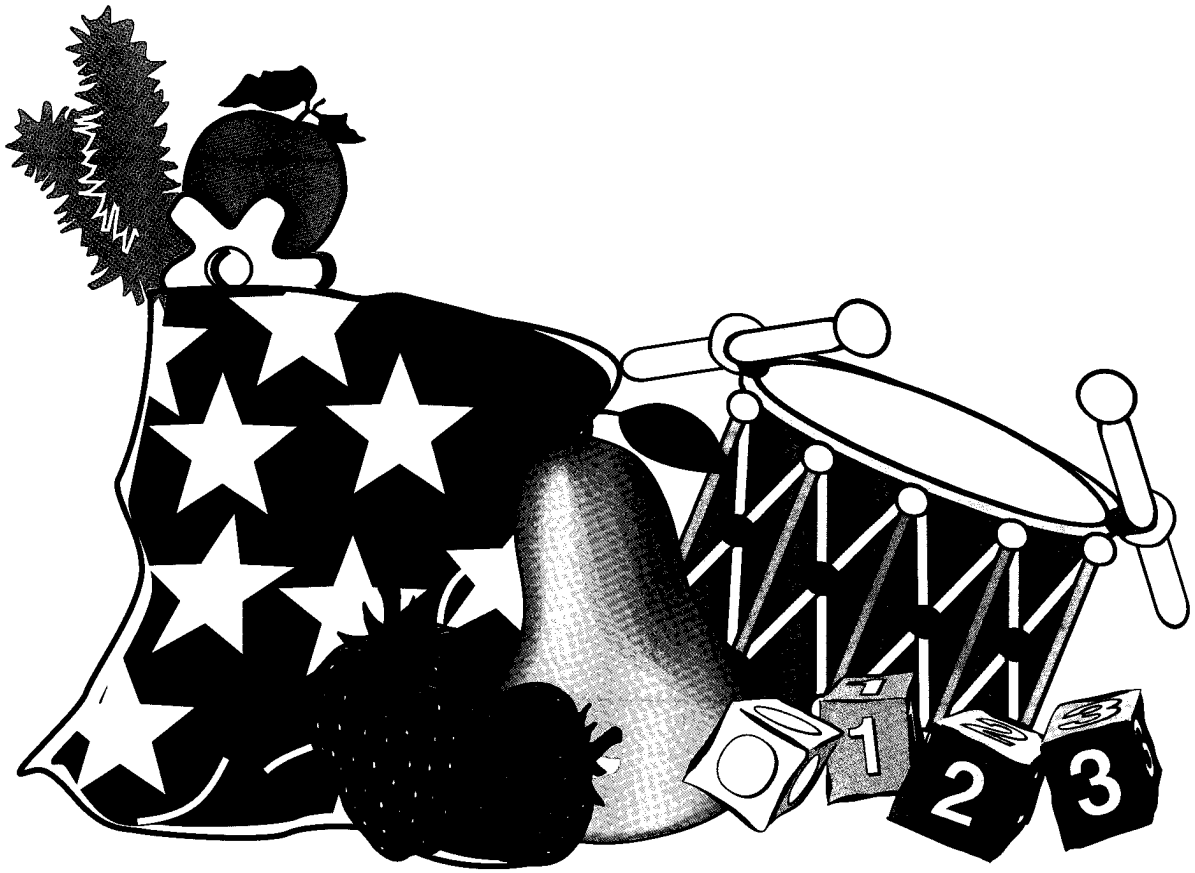
In-Class Activity

Your teacher will carry a bag around the class. The bag has different objects.

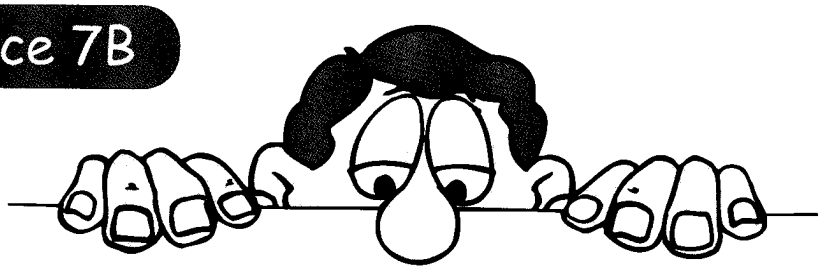
Put your hands in the bag and feel the objects.

Did the objects have curved surfaces?

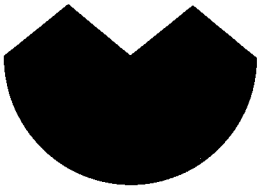
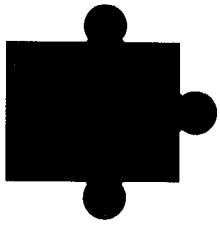
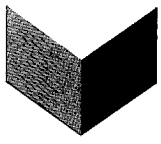
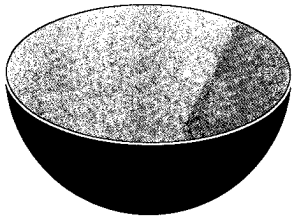
Were there objects with flat surfaces?

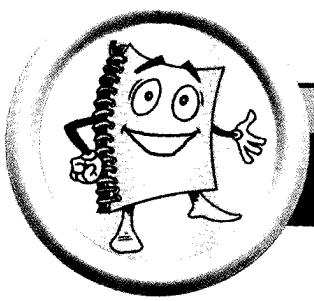


Practice 7B



Look carefully at the pictures of the toys.
Count the number of flat and curved surfaces for each toy. Then complete the table by writing in the unshaded section.

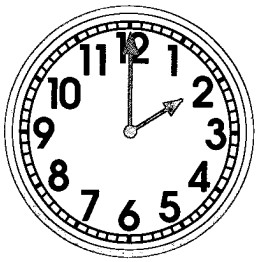
Toy	Number of: straight lines	curve lines	flat surfaces	curve surfaces
				
				
				
				



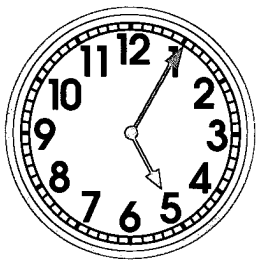
REVISION 2

Exercise 1

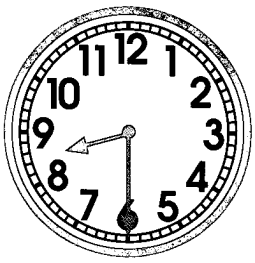
1. Write the time shown.

a) 

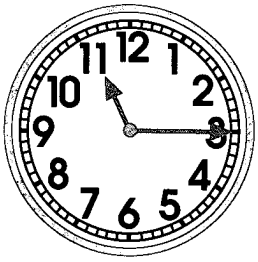
_____

b) 

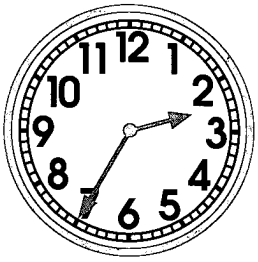
_____

c) 

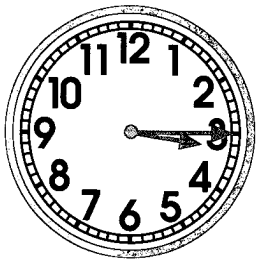
_____

d) 

_____

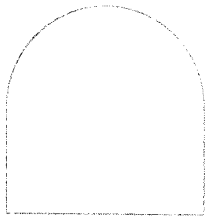
e) 

_____

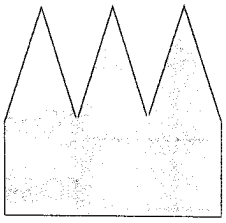
f) 

_____

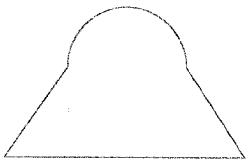
2. What are the shapes which make up the figures ?

a) 

_____
_____
_____

b) 

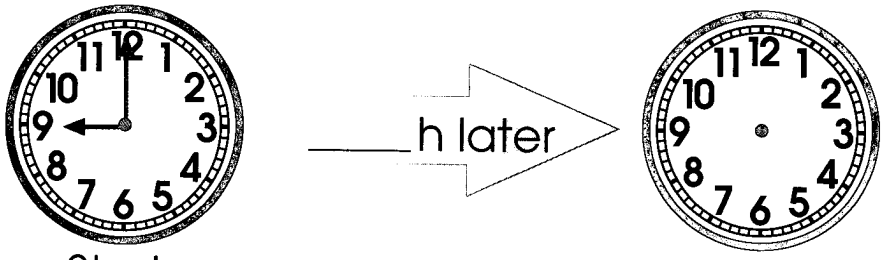
_____
_____
_____

c) 

_____
_____
_____

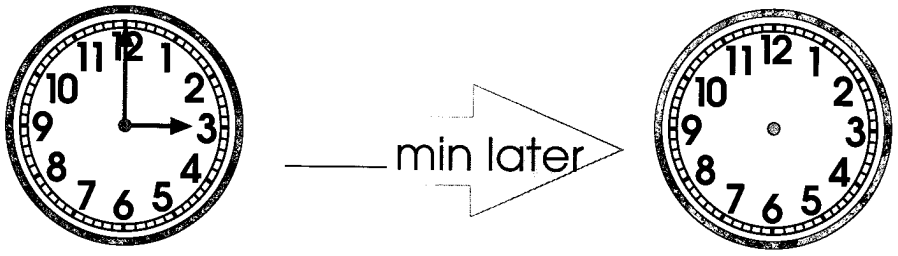
5. Fill in the missing parts.

a) Jane started walking at 9.00 a.m. She finished at 10.00 a.m. Show the time when Jane finished walking.



Start Finish

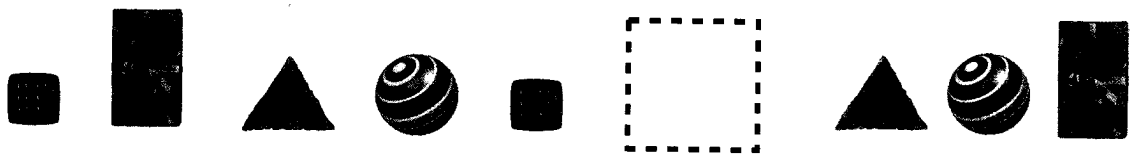
b) Ali went cycling at 3.00 p.m. He finished cycling at 3.30 p.m. Show the time when he finished.



Start Finish

6. Which object is next? Tick the correct answer.

a)



b)