Puzzles and problems for Years 3 and 4

Rows of coins

1. Take five coins: 1p, 2p, 5p, 10p, 20p.
   Put them in a row using these clues.
   The total of the first three coins is 27p.
   The total of the last three coins is 31p.
   The last coin is double the value of the first coin.

2. Take six coins: two 1p, two 2p and two 5p.
   Put them in a row using these clues.
   Between the two 1p coins there is one coin.
   Between the two 2p coins there are two coins.
   Between the two 5p coins there are three coins.

   What if you take two 10p coins as well, and between them are four coins?

26

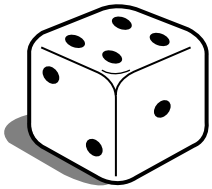
Teaching objectives

Solve word problems involving money.
Explain methods and reasoning.

Roly poly

The dots on opposite faces of a dice add up to 7.

1. Imagine rolling one dice.

   The score is the total number of dots you can see.

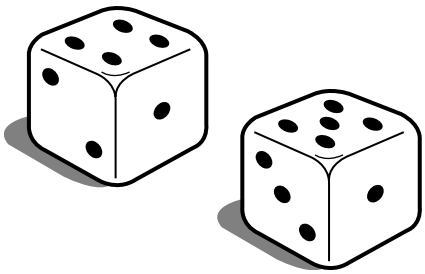
   You score 17.

   Which number is face down?

   How did you work out your answer?

2. Imagine rolling two dice.

   The dice do not touch each other.

   The score is the total number of dots you can see.

   Which numbers are face down to score 30?

Teaching objectives

Solve mathematical problems or puzzles.
Add three or four small numbers.
Explain methods and reasoning.

27

Dan the detective

1. Dan the detective looked for a number.
   He found a two-digit number less than 50.
   The sum of its digits was 12.
   Their difference was 4.
   What number did Dan find?

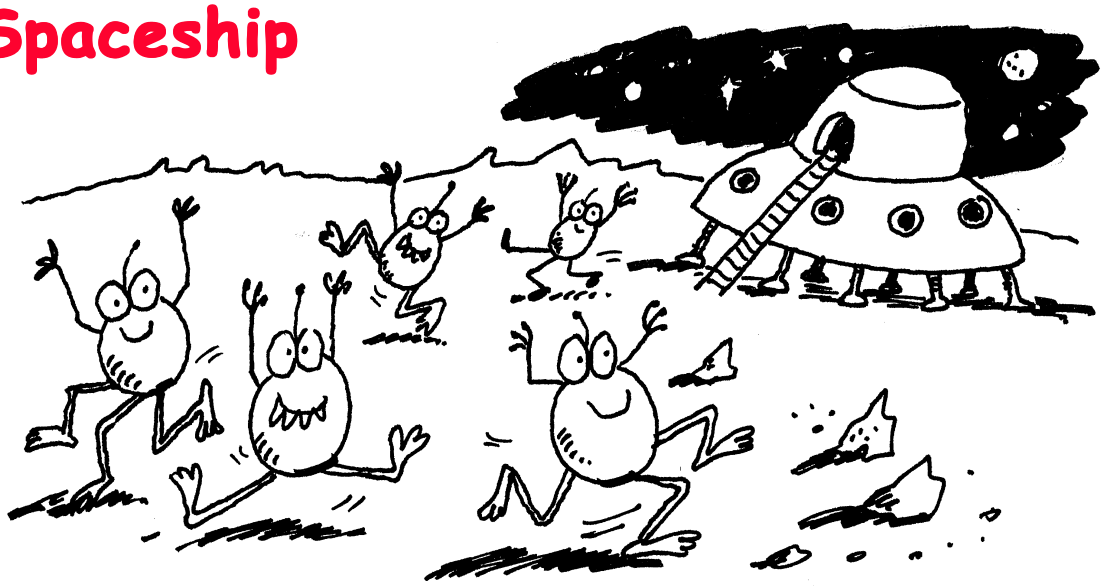
2. Dan found a two-digit odd number.
   One of its digits was half the other.
   The number was greater than 50.
   What number did Dan find?

28

Teaching objectives

Solve a given problem by organising and interpreting data in a simple table.
Write whole numbers in figures; know what each digit represents.

Spaceship



Some Tripods and Bipods flew from planet Zeno.
There were at least two of each of them.

Tripods have 3 legs.
Bipods have 2 legs.
There were 23 legs altogether.

How many Tripods were there?
How many Bipods?

Find two different answers.

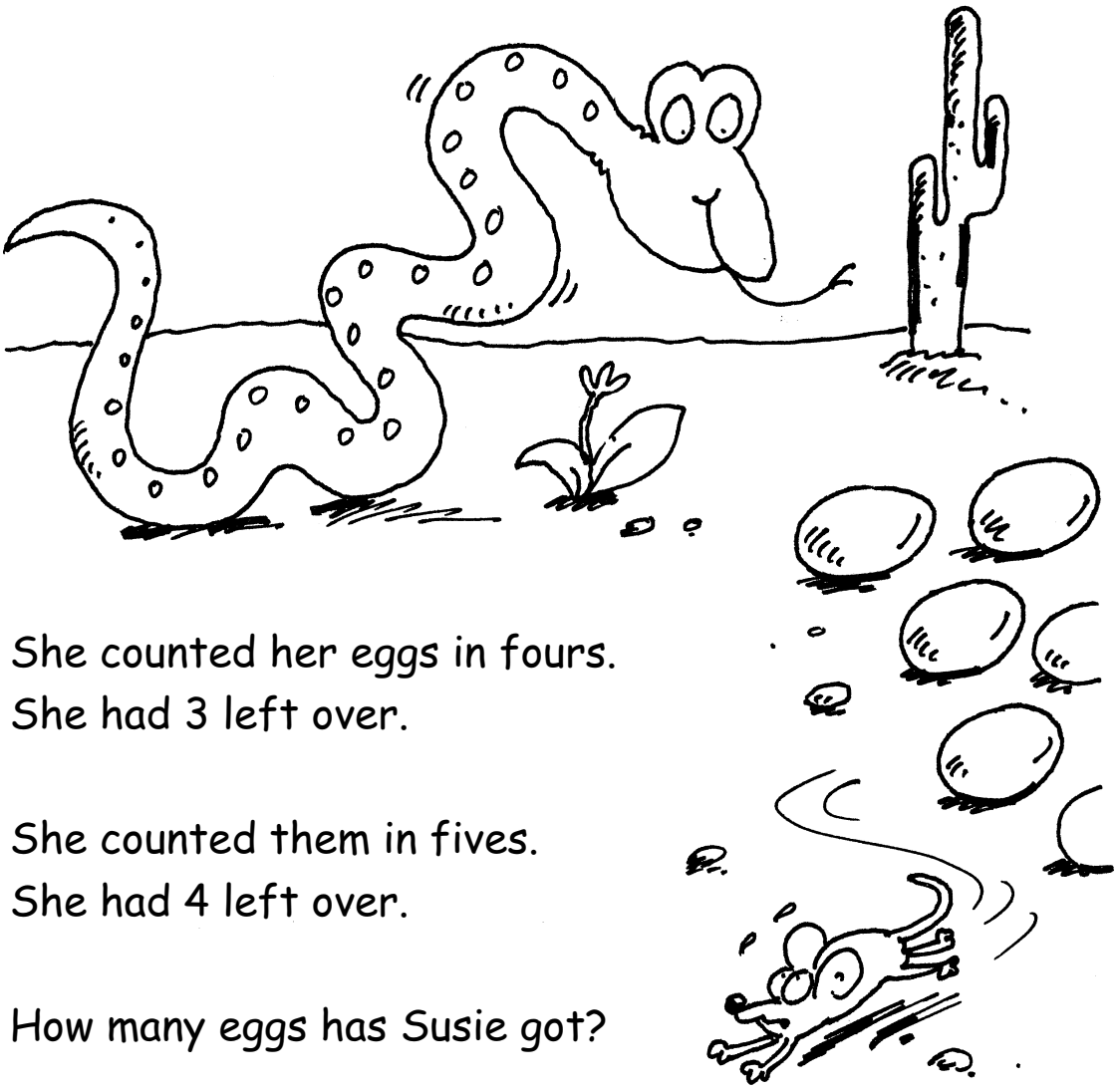
Teaching objectives

Solve mathematical problems or puzzles.
Count on in steps of 2 or 3.
Know multiplication facts for 2 and 3 times tables.

29

Susie the snake

Susie the snake has up to 20 eggs.



She counted her eggs in fours.
She had 3 left over.

She counted them in fives.
She had 4 left over.

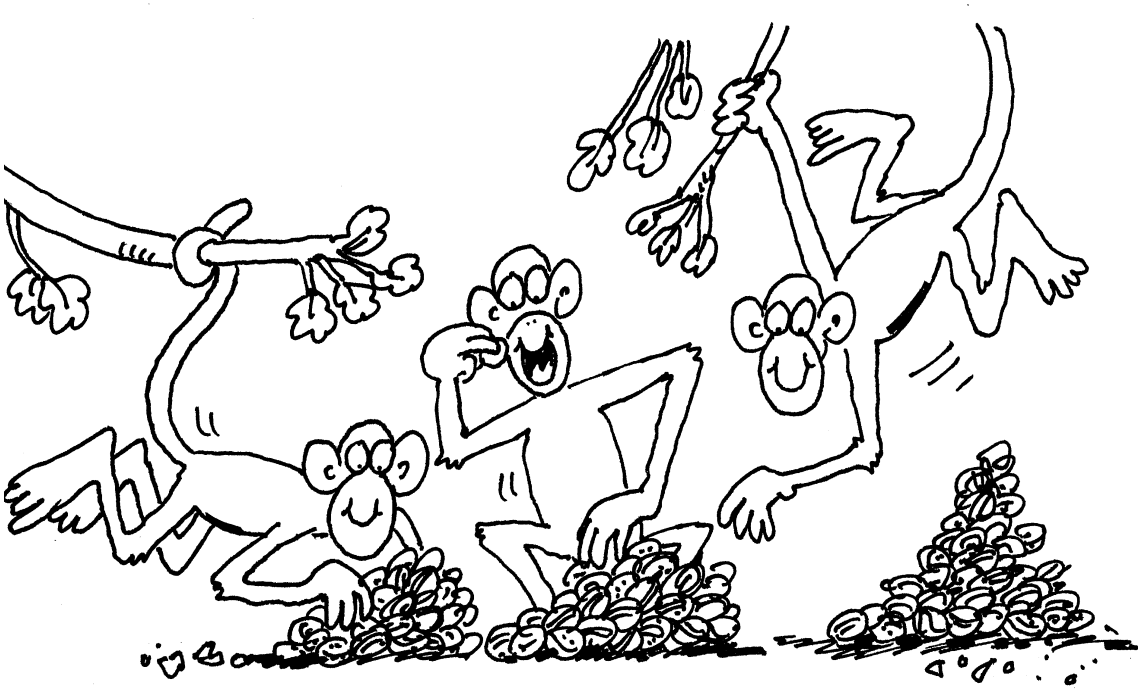
How many eggs has Susie got?

30

Teaching objectives

Solve mathematical problems or puzzles.
Know multiplication facts for 4 and 5 times tables.
Find remainders after division.

Three monkeys



Three monkeys ate a total of 25 nuts.
Each of them ate a different odd number of nuts.

How many nuts did each of the monkeys eat?
Find as many different ways to do it as you can.

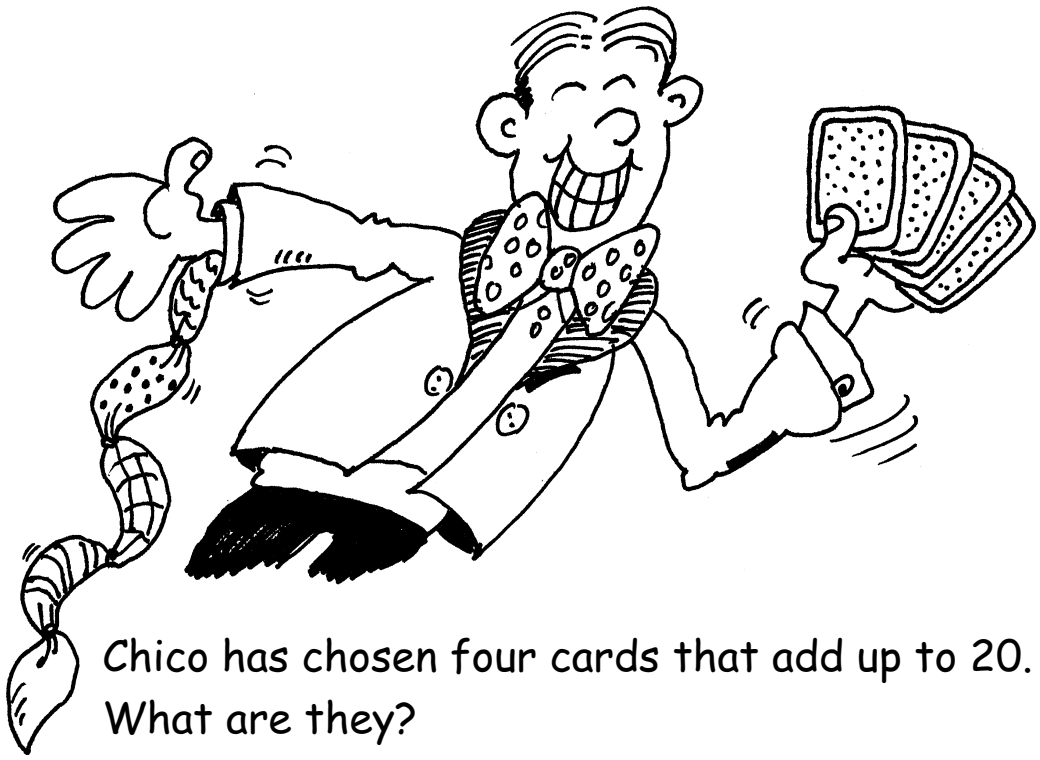
Teaching objectives

Solve mathematical problems or puzzles.
Recognise odd and even numbers.
Add three or four small numbers mentally.

31

Card tricks

Chico's cards are all different.
There is a number from 1 to 8 on each card.



Chico has chosen four cards that add up to 20.
What are they?
There are seven different possibilities.
Try to find them all.

What if Chico has three cards that add up to 16?

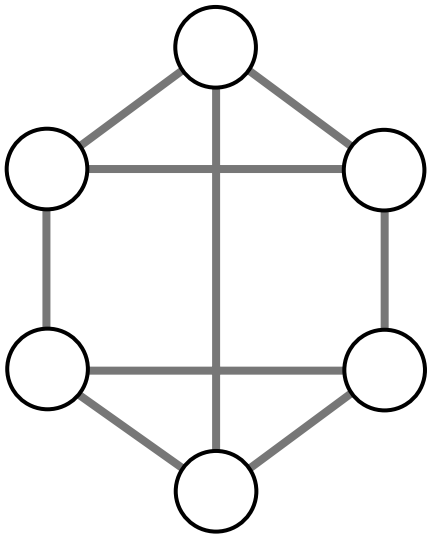
32

Teaching objectives

Solve mathematical problems or puzzles.
Know addition and subtraction facts up to 20.
Add three or four small numbers mentally.

Neighbours

Use each of the numbers 1 to 6 once.
Write one in each circle.



Numbers next to each other must not be joined.
For example, 3 must not be joined to 2 or 4.

1 2 3 4 5 6

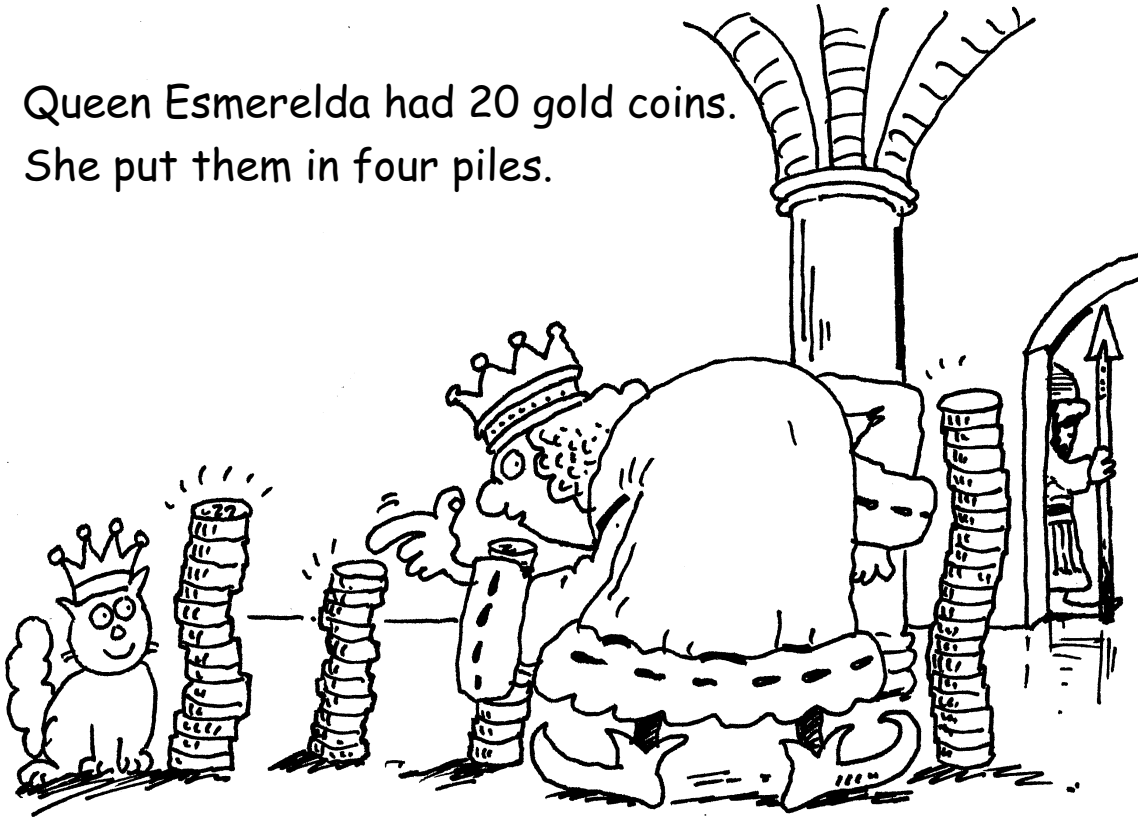
Teaching objectives

Solve mathematical problems or puzzles.
Order numbers 0 to 9.
Explain methods and reasoning.

33

Queen Esmerelda's coins

Queen Esmerelda had 20 gold coins.
She put them in four piles.



- The first pile had four more coins than the second.
- The second pile had one less coin than the third.
- The fourth pile had twice as many coins as the second.

How many gold coins did Esmerelda put in each pile?

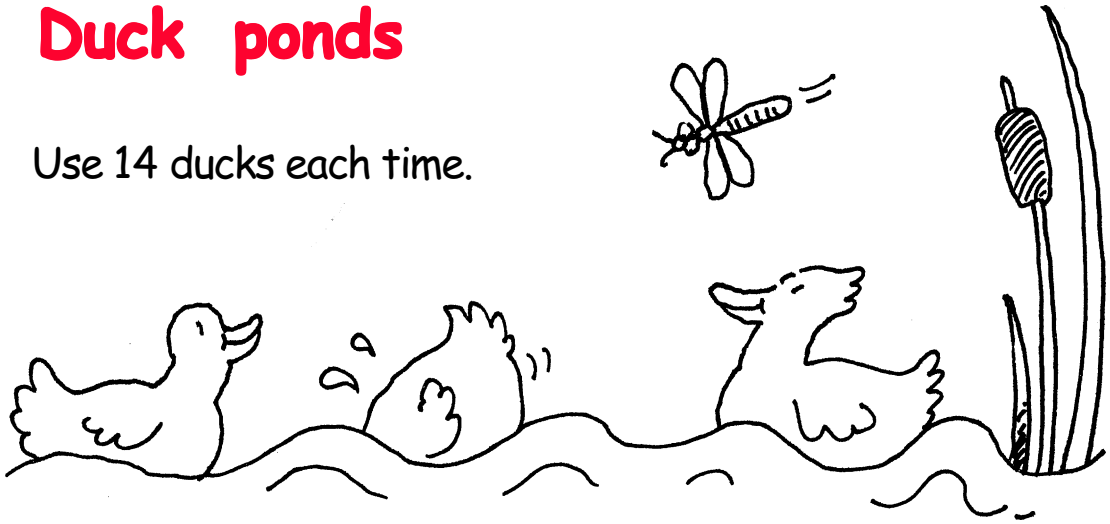
34

Teaching objectives

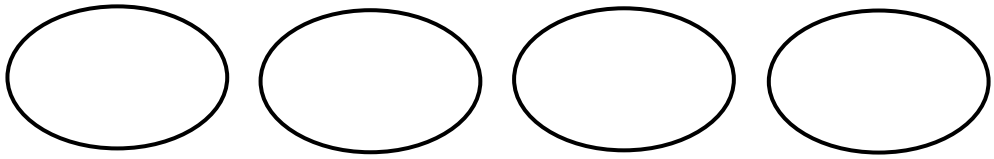
Solve mathematical problems or puzzles.
Use vocabulary of comparing and ordering numbers.
Explain methods and reasoning.

Duck ponds

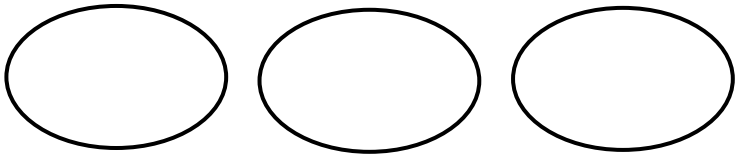
Use 14 ducks each time.



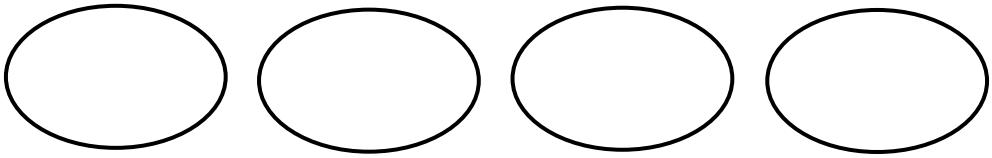
1. Make each pond hold two ducks or five ducks.



2. Make each pond hold twice as many ducks as the one before.



3. Make each pond hold one less duck than the one before.

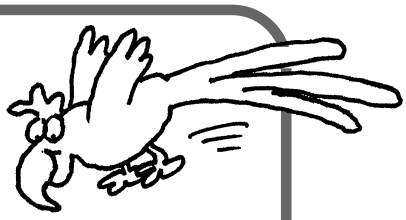


Teaching objectives

Solve mathematical problems or puzzles.
Know multiplication facts for 2 and 5 times tables.
Add three or four small numbers.

35

Treasure hunt



Jed and Jake are pirates.
Between them they have three precious jewels:
a ruby (R), a diamond (D) and an emerald (E).

Complete the table.
Show what jewels each pirate could have.

Jed	Ⓡ							
Jake	Ⓔ Ⓓ							

36

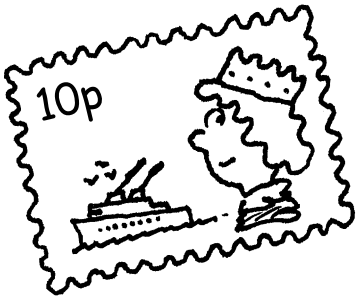
Teaching objectives

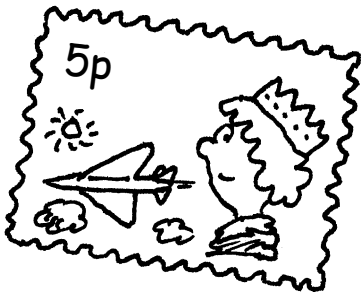
Solve a given problem by organising and interpreting data in a simple table.
Explain methods and reasoning.

Stamps

Tilly's parcel cost 55p to post.

She stuck on eight stamps.
Each stamp was either 10p or 5p.





How many of each stamp did Tilly stick on her parcel?

Make up your own puzzle like this.
Ask a friend to do it.

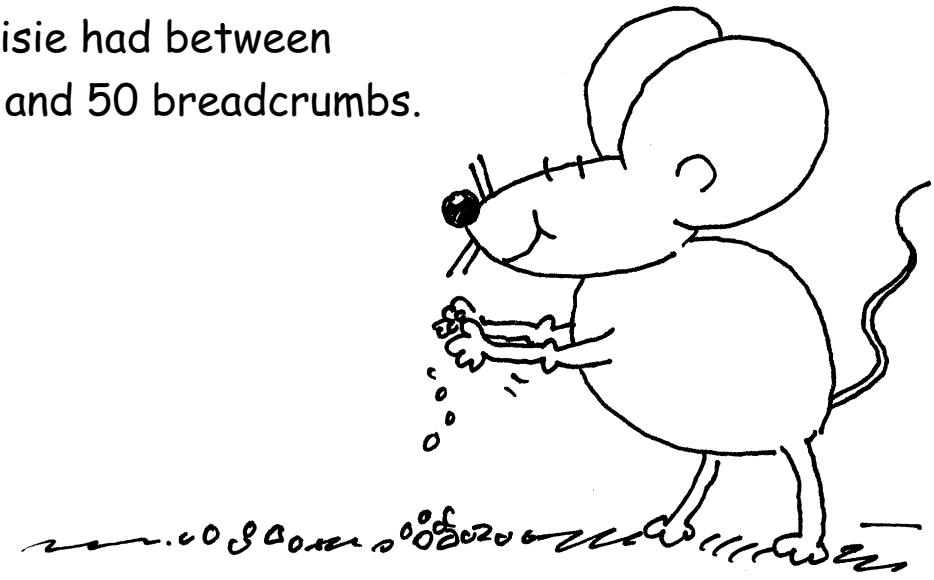
Teaching objectives

Solve mathematical problems or puzzles.
Know multiplication facts for 5 and 10 times tables.

37

Maisie the mouse

Maisie had between
30 and 50 breadcrumbs.



She counted the breadcrumbs in fours.
There were 2 left over.

She counted them in fives.
There was 1 left over.

How many breadcrumbs did Maisie have?

38

Teaching objectives

Solve mathematical problems or puzzles.
Know multiplication facts for 4 and 5 times tables.
Find remainders after division.

Kieron's cats

Kieron has three cats.
Each is a different weight.

The first and second weigh 7 kg altogether.
The second and third weigh 8 kg altogether.
The first and third weigh 11 kg altogether.

What is the weight of each cat?

Teaching objectives

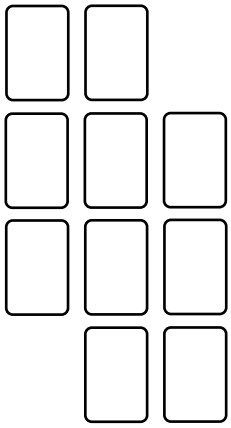
Solve mathematical problems or puzzles.
Know addition and subtraction facts to 20.
Explain methods and reasoning.

39

Next door numbers

Take ten cards numbered 0 to 9.

Arrange the cards like this.



Do it so that no two consecutive numbers are next to each other, horizontally, vertically or diagonally.

There are lots of ways to do it.
How many ways can you find?

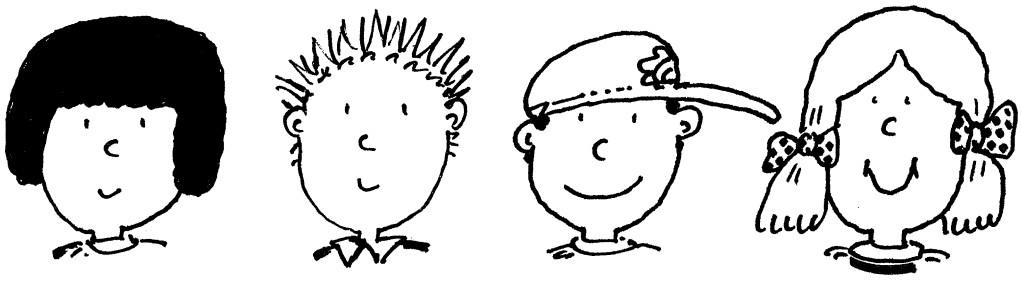
40

Teaching objectives

Solve mathematical problems or puzzles.
Order numbers 0 to 9.
Explain methods and reasoning.

Nick-names

Dawn, Mark, Josh and Tina are friends.



They each have a nick-name.

Their nick-names are Spider, Curly, Ace and Fudgy, but not in that order.

What is the nick-name of each of the friends?

Clues

- Josh plays tennis with Curly and goes swimming with Ace.
- Tina has been on holiday with Curly but travels to school with Fudgy.
- Spider, Curly and Dawn play in the football team.
- Spider sometimes goes to tea with Josh.

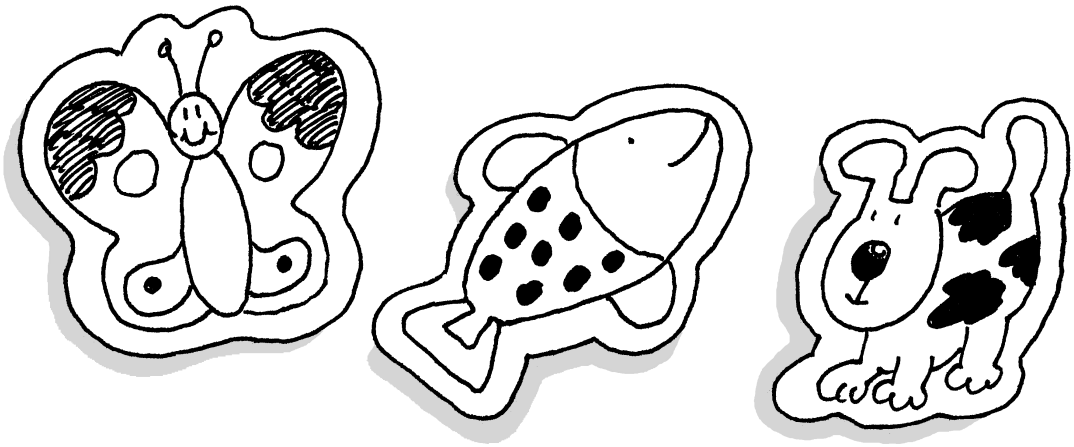
Teaching objectives

Solve mathematical problems or puzzles.
Solve a problem by organising information in a table.
Explain methods and reasoning.

41

Stickers

The twins collected some animal stickers.
They each had the same total number.



Winston had 3 full sheets and 4 loose stickers.
Wendy had 2 full sheets and 12 loose stickers.

Every full sheet has the same number of stickers.
How many stickers are there in a full sheet?

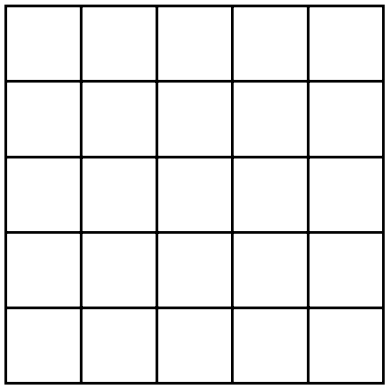
42

Teaching objectives

Solve mathematical problems or puzzles.
Know multiplication facts.
Explain methods and reasoning.

Odds and evens

You need 13 counters or coins.



Draw a 5 by 5 grid.
Put counters on it.
You can put only one counter in each space.

1. Place 13 counters.
   Get an **odd** number of them in each row and column and the two main diagonals.

2. Place 10 counters.
   Get an **even** number of them in each row and column and the two main diagonals.

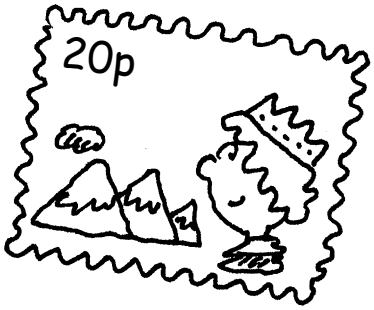
Teaching objectives

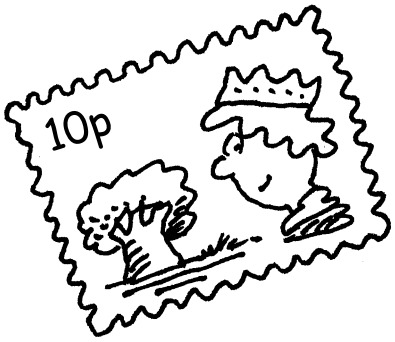
Solve mathematical problems or puzzles.
Recognise odd and even numbers.
Explain methods and reasoning.

43

More stamps

Rosie spent £2 on 10p and 20p stamps.





She bought three times as many
10p stamps as 20p stamps.

How many of each stamp did she buy?

44

Teaching objectives

Solve mathematical problems or puzzles.
Begin to use ideas of simple ratio and proportion.
Explain methods and reasoning.

Sandcastles

Lisa went on holiday.

In 5 days she made 80 sandcastles.

Each day she made 4 fewer castles than the day before.

How many castles did she make each day?

Lisa went on making 4 fewer castles each day.

How many castles did she make altogether?

Teaching objectives

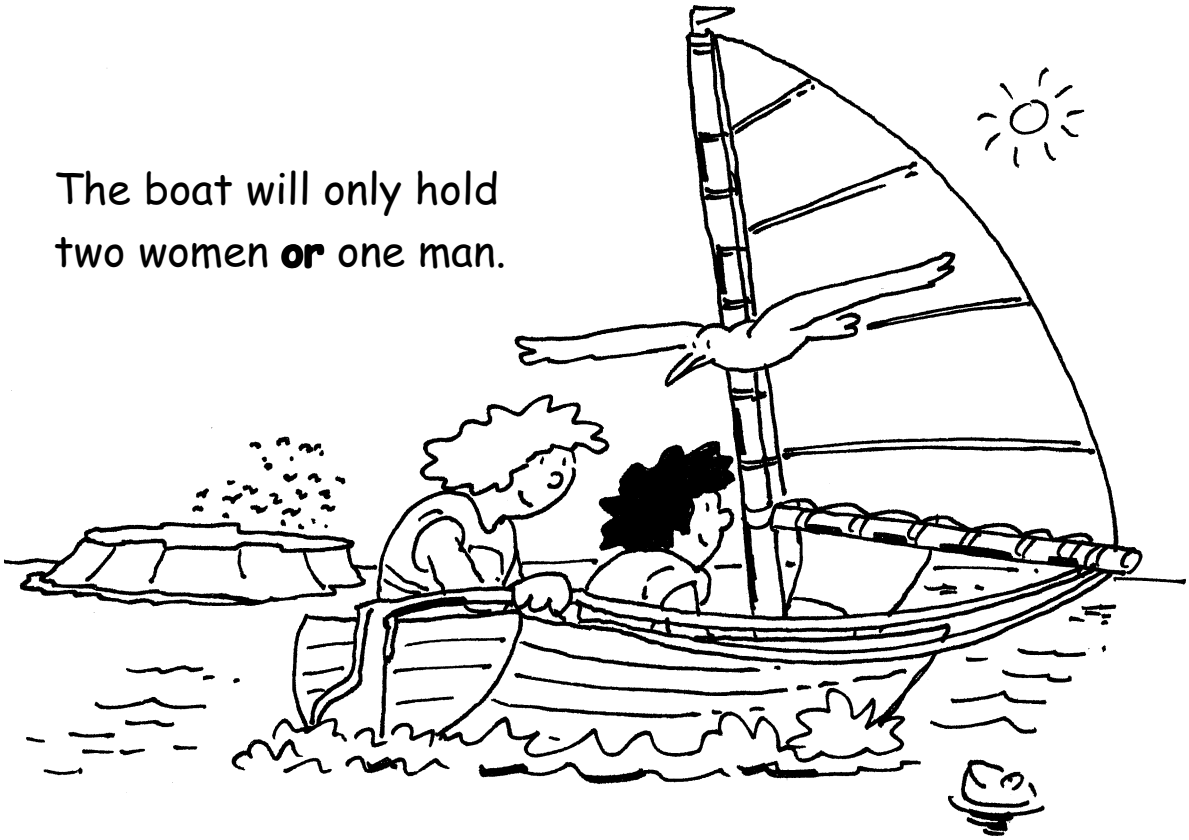
Solve mathematical problems or puzzles.
Add two-digit numbers.

45

Sail away

Two men and two women want to sail to an island.

The boat will only hold two women **or** one man.



How can all four of them get to the island?

46

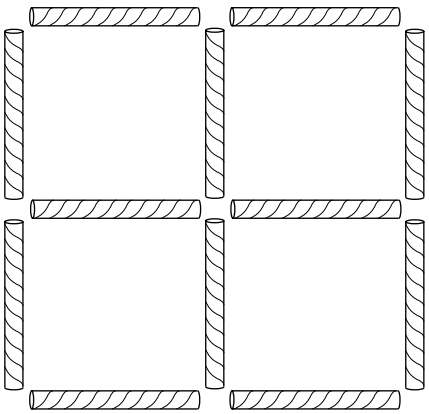
Teaching objectives

Solve mathematical problems or puzzles.
Explain methods and reasoning.

Straw squares

You need 20 straws all the same length.

There are 12 straws in this pattern of 5 squares.



Take 20 straws.
Arrange them to make as many squares as you can.
Don't bend or break the straws!

How many squares did you make?

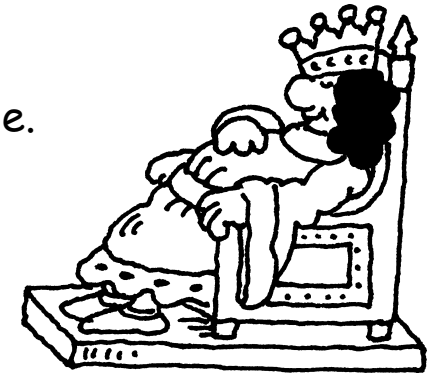
Teaching objectives

Solve mathematical problems or puzzles.
Visualise 2-D shapes.

47

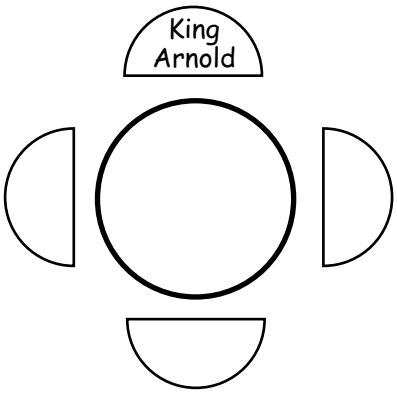
King Arnold

King Arnold sits at a Round Table.



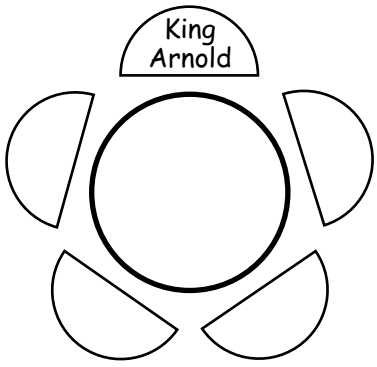
There are 3 empty seats.

In how many different ways can 3 knights sit in them?



What if there are 4 empty seats?

In how many different ways can 4 knights sit in them?



48

Teaching objectives

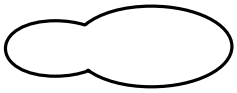
Solve mathematical problems or puzzles.
Solve a problem by organising information.
Explain methods and reasoning.

Footsteps in the snow

Little has size 2 boots.

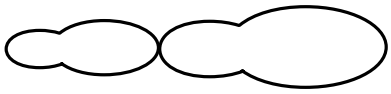
Middle has size 3 boots.

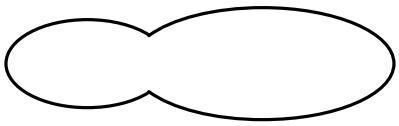
They are one and a half times the length of Little's boots.



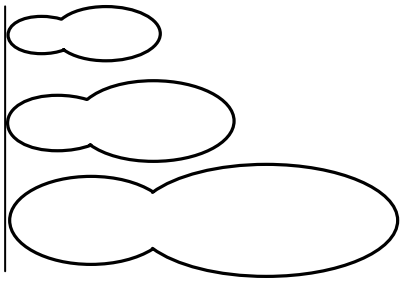
Big has size 5 boots.

A little boot and a middle boot are the same length as a big boot.





They start with the heels of their boots on the same line.



They each walk heel to toe.

When will all three heels be in line again?

Teaching objectives

Solve mathematical problems or puzzles.
Recognise multiples of 2, 3 and 5.

49

Ski lift

On a ski lift the chairs are equally spaced.
They are numbered in order from 1.

Kelly went skiing.
She got in chair 10 to go to the top of the slopes.

Exactly half way to the top, she passed chair 100 on its way down.

How many chairs are there on the ski lift?

Make up more problems like this.

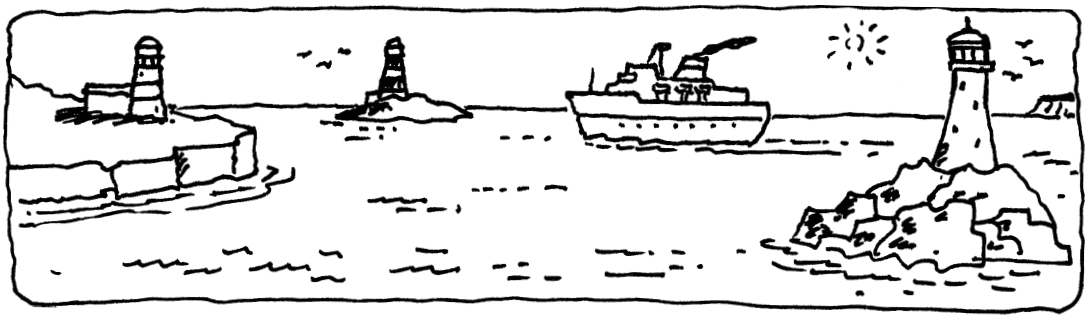
50

Teaching objectives

Solve mathematical problems or puzzles.
Solve a problem by organising information.
Explain methods and reasoning.

Lighthouses

On the coast there are three lighthouses.



The first light shines for 3 seconds, then is off for 3 seconds.

The second light shines for 4 seconds, then is off for 4 seconds.

The third light shines for 5 seconds, then is off for 5 seconds.

All three lights have just come on together.

When is the first time that all three lights will be off?

When is the next time that all three lights will come on at the same moment?

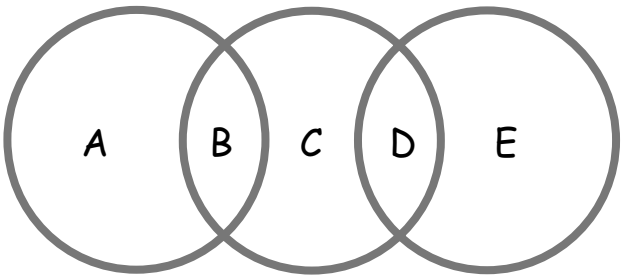
Teaching objectives

Solve mathematical problems or puzzles.
Recognise multiples of 6, 8 and 10.
Explain methods and reasoning.

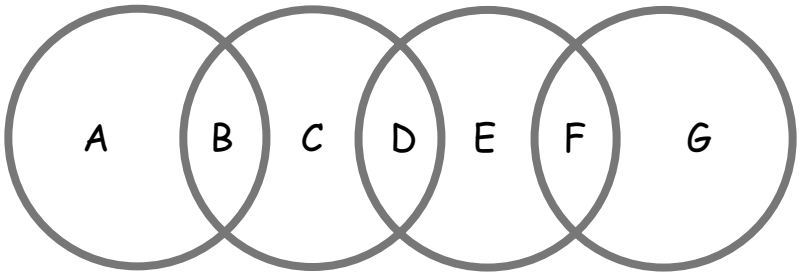
51

Circle sums

1. Use each of the digits 1 to 5 once.
   Replace each letter by one of the digits.
   Make the total in each circle the same.



2. Now use each of the digits 1 to 7 once.
   Make the total in each circle the same.



3. What if you used five circles and the digits 1 to 9?

52

Teaching objectives

Solve mathematical problems or puzzles.
Add several single digits.
Know addition and subtraction facts to 20.