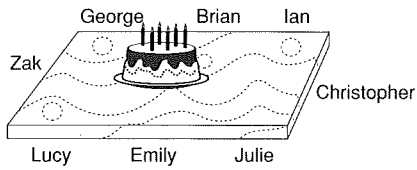


Birthday Party: Solution

Starting with Christopher at the head of the table and moving clockwise around the table, the seating plan is as follows: Christopher, Julie, Emily, Lucy, Zak (opposite Christopher), George, Brian, and Ian.



What if

two more children arrive: Adam and Amy, who are brother and sister? Make up some rules for where they could sit. Try the rules out on a friend. Can they work out where Adam and Amy sit?

Year 4

Maths Challenge

3

Name _____ Date _____

Birthday Party

At Zak's birthday party, Zak is seated along with seven guests at a rectangular table. Zak knows George and Brian from Boy Scouts. Christopher is Zak's cousin. Emily, Ian, Julie, and Lucy are from Zak's class. Zak is sitting at the head of the table, with the girls all sitting on one side, to Zak's right. Zak's cousin is sitting at the opposite end of the table from Zak, between Julie and Ian. Brian is in the middle of one side, opposite Emily.

Draw a seating plan to show where everyone is sitting.

Number Hang-Up: Solution

You will need twenty-one 1s, twenty each of the digits 2 through to 9, and eleven 0s.

What if
the hotel expanded and now has 200 rooms?

How many more of each digit will you need? How are your answers different from the first problem? Explain why some have changed.

Can you guess what you would need for rooms 201 to 300? Write down your guesses and then check.

Year 4

Maths Challenge

4

Name _____ Date _____

Number Hang-Up

The owner of a hotel with 100 rooms wants the room doors numbered in order from 1 to 100. She asks you to buy the numbers and hang them on the doors. Now you must go to the shop and buy all the digits you need to make the numbers.

How many of each digit 0 to 9 must you buy?

Running Racers: Solution

Yasmin is closest to the finish, followed by Katrina, Nikki, Mandy, and Diane.

Year **4**

Maths Challenge

7

Name _____ Date _____

Running Racers

Mandy, Yasmin, Nikki, Diane, and Katrina were in a 100-metre race. When the newspaper photographed the runners, Mandy had just passed the midway mark, Yasmin was 15 metres away from the finish, and Diane had run 40 metres. Katrina had run twice as far as Diane. Nikki was at the 70-metre mark.

Help the photographer identify the runners.

List the runners in order, starting with the runner closest to the finish line.

Library Books: Solution

Laura 1 book
Matt 5 books
Raymond 4 books
Tracey 3 books

What if

the maximum number of books they could each borrow was six? Or seven? Or eight?

What effect would this have?

Year 4

Maths Challenge

9

Name _____ Date _____

Library Books

Laura, Matt, Raymond, and Tracey are working on their group science project. They each got books from a different library. The libraries allow each student to borrow no more than five books at a time. Tracey borrowed three books, Laura found just one book available on the subject, and Matt borrowed the most books. They had a total of 13 books.

How many books did each student take out?

Cheep Challenge: Solution

Cheeps are square numbers. The cheeps are 4, 25, and 49.

What if we looked for all the 'cheeps' up to 200?

What if 'cheeps' were odd square numbers and 'chops' were even square numbers? Which are there most of, 'cheeps' or 'chops'? Why is this?

Year **4**

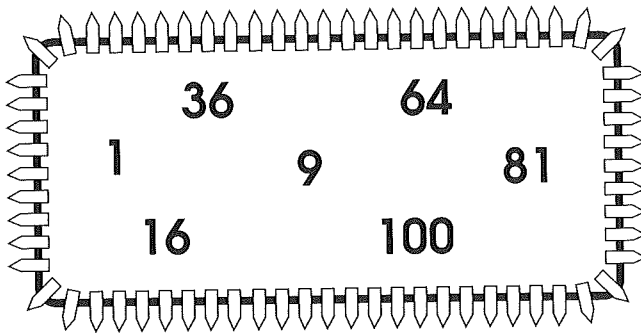
Maths Challenge

10

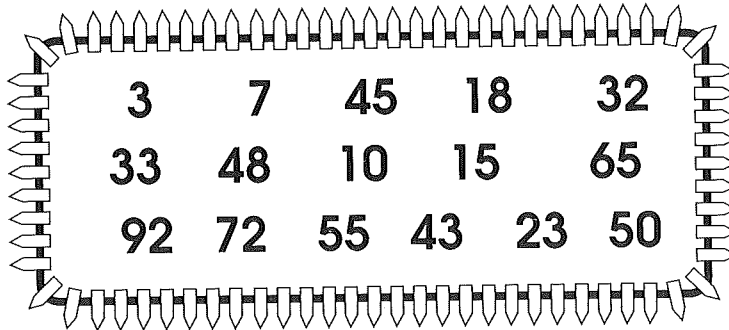
Name _____ Date _____

Cheep Challenge

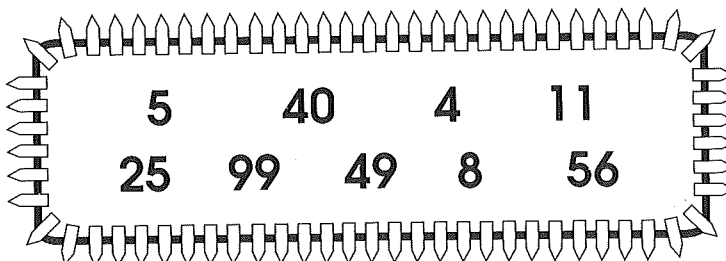
These are cheeps.



None of these are cheeps.



Which of these are cheeps? Why?



Taylor Trucking: Solution

Mr. Taylor drove 330 km and ended up 10 miles from the Taylor Trucking Warehouse.

Mr. Ward drove 335 km and ended up 5 miles from the Taylor Trucking Warehouse.

What if

Mr. Taylor drives on average at 70 km per hour and Mr. Ward at 65 km per hour?

If they both began driving at 10.00 am, and both stopped for 1 hr at lunchtime, what time was it when each man stopped driving?

Year 4

Maths Challenge

13

Name _____ Date _____

Taylor Trucking

Mr. Taylor loaded his truck with timber at the Taylor Trucking Warehouse. Then he drove 60 kilometres north where he dropped off the timber at a furniture factory and picked up a load of furniture. He continued driving north for another 40 km where he dropped off the furniture. He returned 40 km south to the furniture factory, picked up another load, and continued south for another 120 km. He dropped the furniture off, then continued south 10 km to pick up more. With the truck loaded, he turned around and headed north for 60 km where he left the truck overnight.

Mr. Ward loaded his truck at the Taylor Trucking Warehouse. He drove west for 40 km and unloaded the boxes at the Handy Home Hardware Centre. He picked up a dozen cartons and drove east for 70 km, to Eastville. There he filled his truck and drove east for another 100 km. He unloaded his truck and drove for 125 km west to his home.

How many miles did each driver travel, and how far was each driver from the Taylor Trucking Warehouse at the end of the day?

Word Game: Solution

There are many possible words for each target number. Here are some examples:

S	T	A	R
1	1	1	1

= 4

M	O	N	K	E	Y
3	1	1	5	1	4

= 15

J	E	T
8	1	1

= 10

Q	U	I	Z
9	1	1	9

= 20

What if

you played the game properly?

You will need four dice and a partner.

Year **4**

Maths Challenge

15

Name _____ Date _____

Word Game

Kevin and David made up a game. They gave every letter in the alphabet a certain number of points. Frequently-used letters, like E, got only 1 point. Less frequently-used letters, like Z, got more points.

A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
1	3	3	2	1	4	2	4	1	8	5	1	3	1	1	3	9	1	1	1	1	4	4	8	4	9

For every round of their game, Kevin and David threw four dice. They added up the numbers on the cubes. This sum became their target number. Then they each tried to make up a word with a total number of points equal to the target number. The first person to make up a word with the right number of points won that round of the game. For example, when they rolled a target number of 17, Kevin spelled the word

H	A	M	B	U	R	G	E	R
4	1	3	3	1	1	2	1	1

When they rolled a target number of 8, David spelled the word

K	I	D
5	1	2

Now it's your turn. Here are four target numbers. See if you can spell a word for each target number.

4 10 15 20

Shirt Puzzle: Solution

Anita is wearing the polka-dot shirt. Donna is wearing stripes, so either Anita or Bev must be wearing the flowered shirt. Anita never wears a flowered shirt, so she must be wearing the polka dots.

Year **4**

Maths Challenge

18

Name _____ Date _____

Shirt Puzzle

Donna, Anita, and Bev are wearing different shirts. One girl's shirt has polka dots, one has flowers, and one has stripes. Donna has no polka-dot shirts, and Anita never wears a flowered shirt. Bev said she likes the stripes on Donna's shirt.

Which girl is wearing the polka-dot shirt?

Calendar Fun: Solution

The sum is 3 times the middle number of the three dates. You can divide the sum by 3 to find the middle number. If you have a sum of 6, the middle date is $6 \div 3$, or 2. Then, since the middle number is 2, the dates are 1, 2, 3. If you have a sum of 45, the middle date is $45 \div 3$, or 15, and the dates are 14, 15, and 16.

What if

Jason had asked for the dates of three successive Mondays on a calendar? Would it still work?

Try it.

Year **4**

Maths Challenge

21

Name _____ Date _____

Calendar Fun

Jason said, "Pick any three dates that are next to each other in a month on the calendar. Give me only the sum and I'll tell you your dates."

Noriko secretly chose 14, 15, and 16, and gave the sum 45 to Jason. In a couple of seconds, Jason said, "The dates are 14, 15, and 16."

David secretly chose 22, 23, and 24, and gave the sum 69. Again, in a couple of seconds, Jason said, "Your dates are 22, 23, and 24."

What is Jason's trick?

Spring Parade: Solution

The groups are listed in the order that they marched, from first to last.

- 12 circus clowns
- 24 musicians in the marching band
- 30 Girl Guides
- 12 jugglers
- 15 Boy Scouts
- 6 dancers
- 28 football players

Year 4

Maths Challenge

22

Name _____ Date _____

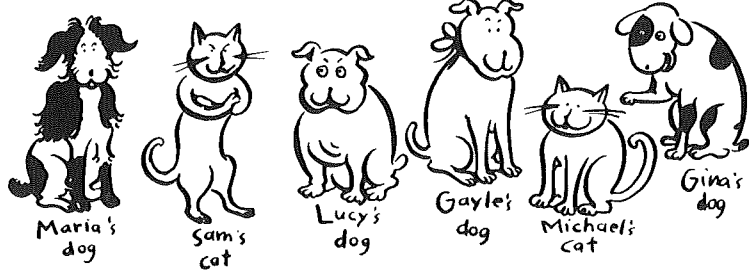
Spring Parade

This year's Spring Parade has a marching band, pairs of dancers, a float with jugglers, a dozen circus clowns, a Girl Guide troop, a Boy Scout pack, and a championship football team.

Read the description of each group carefully and decide how many are in each group and in what order they marched in the parade.

- The marching band was not the leader, but their six rows of four musicians in each row were near the front, just in front of the Girl Guides.
- The football team had two fewer marchers than the Girl Guides. They could take their time signing autographs, because they marched at the end of the parade.
- The Girl Guides and the Boy Scouts were separated by the three groups of four jugglers on the jugglers' float.
- The three pairs of dancers were between the Boy Scouts and the football team.
- The Boy Scouts had five rows of three marchers, and the Girl Guides had twice as many.

Pet Parade: Solution



What if
David's cat joined the parade?

Add a clue so that readers will know where
David's cat will sit.

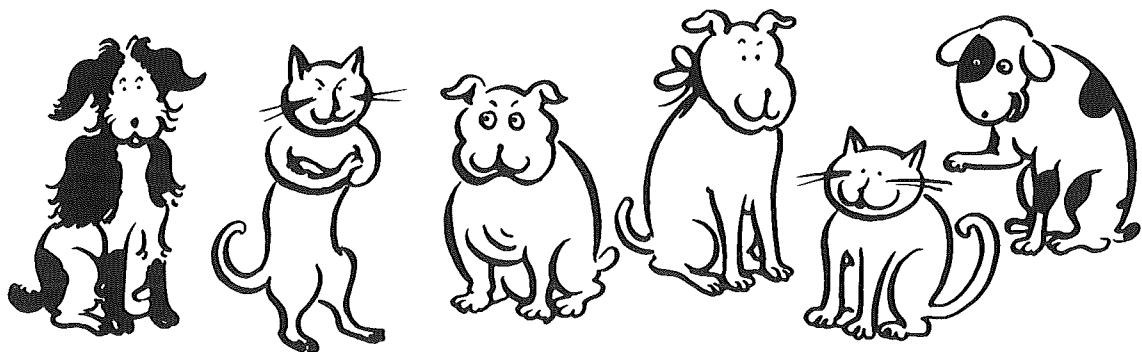
Check by giving the new puzzle to a friend.

Name _____ Date _____

Pet Parade

Use the clues to work out the order in which these pets are sitting.

1. Sam's cat is between two dogs.
2. Gayle's dog is the only animal wearing a bow.
3. There are two animals between Gayle's dog and Maria's dog.
4. Sam's cat is standing next to Maria's dog.
5. Gina's dog is at one end of the line.
6. There is one animal between Michael's cat and Lucy's dog.



Postage Possibilities: Solution

- a 32p flag stamp, a 20p bird stamp, and a 3p bird stamp
- a 32p flag stamp and a 23p flower stamp
- a 52p aeroplane stamp and a 3p bird stamp
- two 20p bird stamps and a 15p ship stamp
- two 23p flower stamps and three 3p bird stamps

What if

Charlie could stick as many stamps on an envelope as he likes?

Year 4

Maths Challenge

30

Name _____ Date _____

Postage Possibilities

Charlie's family is sending family photographs with letters to friends. The weight of each envelope will require 55p postage. They have bought some of each of these different stamps:

- 52p aeroplane stamp
- 32p flag stamp
- 23p flower stamp
- 20p bird stamp
- 15p ship stamp
- 3p bird stamp

Charlie wants each envelope to have exactly 55p in postage. He wants to make as many different combinations of stamps as possible. He has room for no more than five stamps on each envelope.

What are the different stamp combinations Charlie can use on his envelopes?