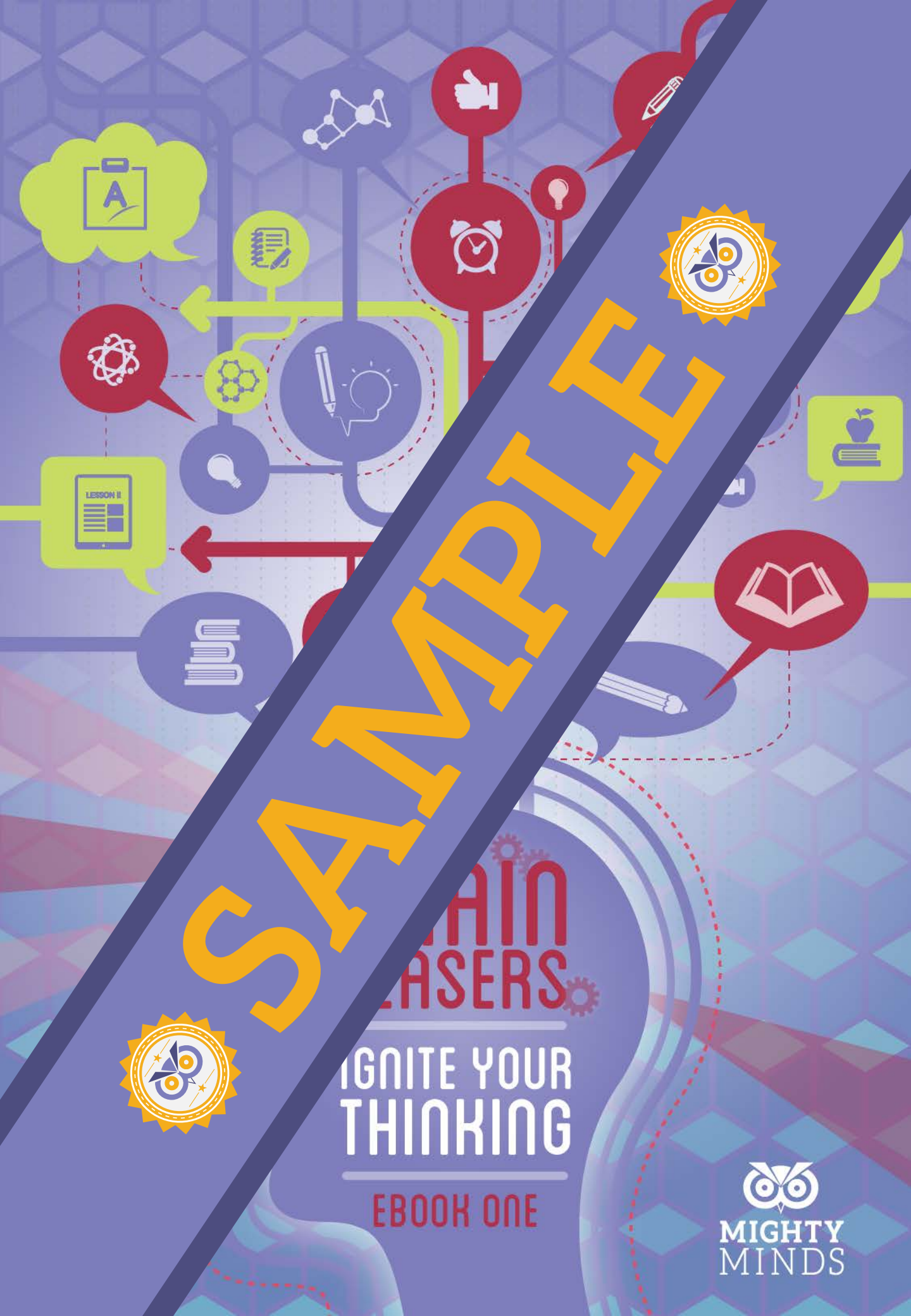

SAMPLE
IGNITE YOUR
THINKING
EBOOK ONE
MIGHTY
MINDS

BRAIN TEASER

GREEDY THIEVES

Five thieves stole a bag of 100 diamonds f… …ocratic thieves, they devised the following meth…

1. The most senior thief will pr… …us.
2. All thieves, including the …
3. If at least 50% of the th… …monds are divided as proposed. If less … …e proposal then the most senior thief w… …rts over with the next most senior thief… …n.
4. The process is… …ved.

You can assume th… …they want to get as many diamonds as they… …quite clever and very greedy.

How will the di…

HINT:

- Simplify the problem down to two thieves, then add thieves to arrive at your answer.

SAMPLE

BRAIN TEASER

RIVER CROSSING

Andrew, Barbara, Cam and Daniel need to ross the river is via a rickety bridge, which can cause it is dark, they can only cross the bridge ch, so two people must cross so one can return an only walk at the speed of the slower person. the other side as quickly as possible (19 minute

Andrew is the slowest and take es ten minutes, Cam takes two minutes and

How can they all cross the

SAMPLE

BRAIN TEASER

FORGOTTEN BIRTHDAY

Alana and Bob's boss, Mr Kingsley, has his ine dates:

- January 2
- January 5
- January 6
- July 6
- July 7
- October 2
- October 5
- November 2
- November 3

Mr Kingsley rthday, and he only told Bob the day. Alana and ey have the following conversation:

1. Bo , but I know the day.
2. nday either, but I know the month.

g to the conversation, then writes Mr Kingsley's without a another word being said. What did she write?

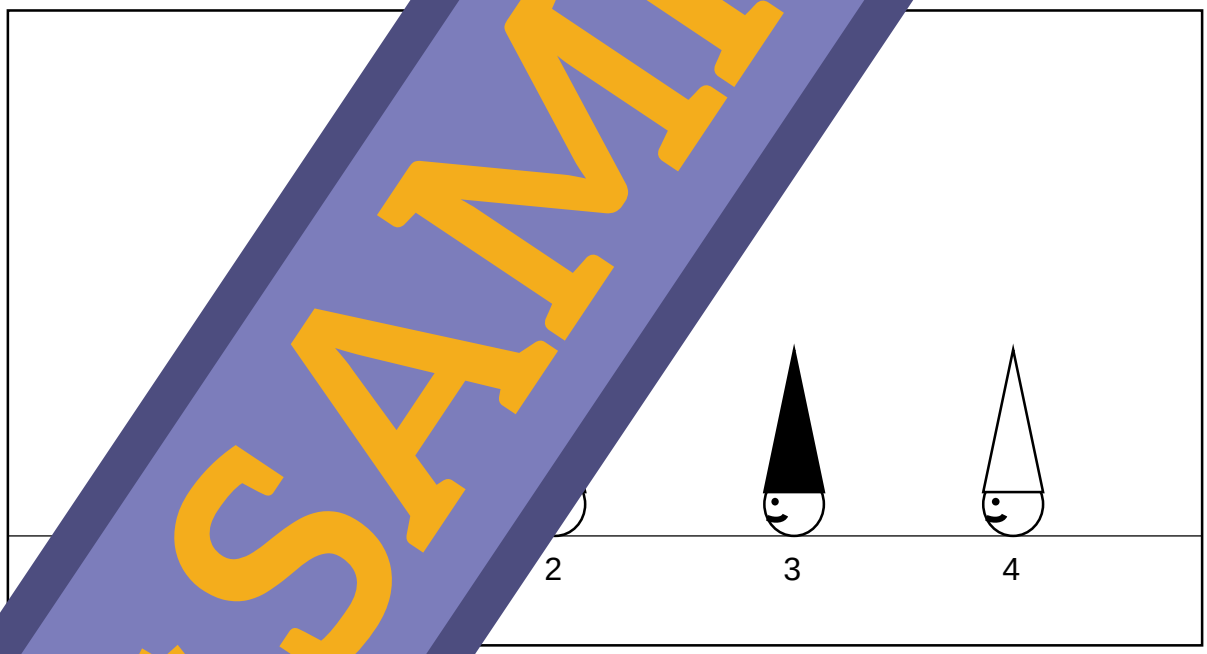
SAMPLE

BRAIN TEASER

THE PRISONER DILEMM

Four prisoners are buried up to their necks
all face
a solid wall and cannot move their heads
s that
two of them are wearing black hats an
ts. They
are not allowed to talk or communica
ell out the
colour of their hat, they can all go f
g, they will all
stay in prison for life.

After a minute of silence, one



The prisoner who yells out is:

_____

SAMPLE

BRAIN TEASER

THE SUSPECTS' DILEMMA

This is a small introduction to game theory … only learn in university if you do economics. Y… game theory to solve this problem. The answ… confess and they will both spend four years in pris… uitive because if they both stay silent they… prison, let's look at what both Tony and Bryan…

This is most easily represented… e):

		Tony: Stay	Tony: Confess
Bryan	**Stay**		…: 5 years T: None
			B: 4 years T: 4 years

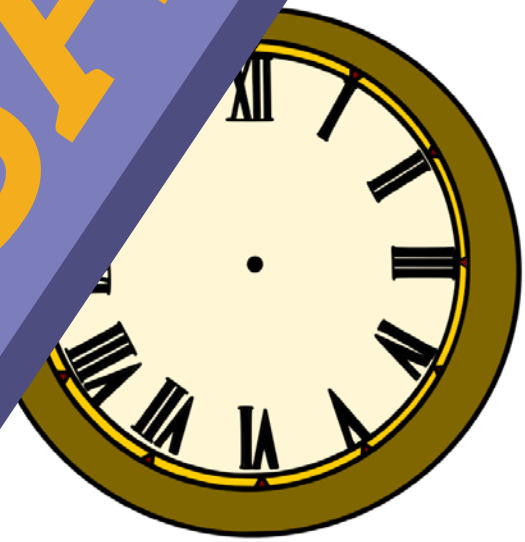
In the ta… eneficial **collective outcome** is if both stay q… ch. However, the thieves are not friends and… whether there are more favourable ou… ok at Bryan. If Tony stays quiet, his best s… ot go to jail at all. If Tony confesses, Bryan's best … ur years is better than five years in prison. … does, Bryan is better off confessing. The same is … quilibrium outcome will be that both confess and both … is is what is known as the Nash Equilibrium, a … by mathematician John Nash, who was the subject of the

SAMPLE

BRAIN TEASER

CLOCK ANGLES

You look at an analogue clock and it is 3:2 the hour hand and the minute hand?



SAMPLE

BRAIN TEASER

FARE SHARE

A wealthy man pays a taxi driver $270 to d back again. Two thirds down the road at point ey can ride with the wealthy man from there t are. The wealthy man, although not needing t aid, "Yes, but only if you can calculate your share e?

SAMPLE

BRAIN TEASER

HILL SPEED

The key to solving this problem is realising
travelling at 20km/h and 50km/h is not e
simply average the speeds. You must f
eed.

To do this, let the distance = d km
e time down the
hill be t_2.

t_1 = d ÷ 20hrs

t_2 = d ÷ 50h

The average speed is
r time (t_1 + t_2).

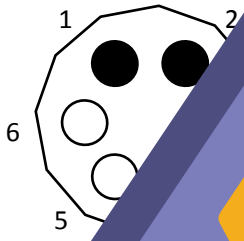
Average speed = 2

SAMPLE

BRAIN TEASER

OLYMPIC SHOOTING

The diagram below illustrates the two bull
The probability of the gun not firing after



The diagram below illus n.

If one nust have been chambers 6, 5, 4 or 3. If
the b next chamber to be fired must be either
cha es apply if the barrel moves clockwise).
T , one of which will fire a bullet (chamber 2).

of the gun firing on the next shot and a ¾ chance that
ed by another empty shot. This is a better probability
ould come after a spin so the best response would be to

SAMPLE